

7 CONSULTATION AND COORDINATION

7.1 PUBLIC SCOPING

The BLM published the NOI to prepare the *Oil Shale and Tar Sands Resources Leasing PEIS* in the *Federal Register* (70 FR 73791–73792) on December 13, 2005 (the title was subsequently changed to the *Oil Shale and Tar Sands Resource Management Plan Amendments to Address Land Use Allocations in Colorado, Utah, and Wyoming and PEIS*). The NOI identified planning criteria, initiated the public scoping process, and invited interested members of the public to provide comments on the scope and objectives of the PEIS and to identify issues to be addressed in the planning process. The BLM conducted scoping from December 13, 2005, through January 31, 2006. During that period, the BLM invited the public and interested groups to provide information on resource use, land allocations, and development and protection opportunities for consideration in preparation of the PEIS.

During the scoping process, the public was given three means of submitting comments to the BLM on the PEIS:

- Open public meetings, which were held in Salt Lake City, Utah (January 10, 2006); Price, Utah (January 11, 2006); Vernal, Utah (January 12, 2006); Rock Springs, Wyoming (January 13, 2006); Rifle, Colorado (January 18, 2006); Denver, Colorado (January 19, 2006); and Cheyenne, Wyoming (January 20, 2006);
- Traditional mail; and
- Directly through a Web site on the Internet.

This variety of ways to communicate issues and submit comments was provided so as to encourage maximum participation. All comments, regardless of how they were submitted, received equal consideration.

It is estimated that as many as 5,000 people participated in the scoping process by attending public meetings, providing comments, requesting information, or visiting the Oil Shale and Tars Sands PEIS Web site (<http://ostseis.anl.gov>). Approximately 4,735 individuals, organizations, and government agencies provided comments on the scope of the PEIS, including the verbal comments provided at the public meetings. Comments were received from 9 state agency divisions (6 from Utah and 3 from Wyoming), 10 federal agency offices (1 from the NPS, 2 from the USFWS, 1 from the EPA, 1 from a USACE office, 3 from the USFS, and 2 from the BLM), 11 local government organizations (City of Rifle, Colorado; Coalition of Local Governments; Colorado River Water Conservation District; Garfield County Board of County Commissioners; New Castle Colorado Town Council; Pitkin County Colorado; Pitkin County Colorado Board of Commissioners; Saratoga-Encampment-Rawlins Conservation District, Wyoming; Sweetwater County Wyoming, Commissioner; Sweetwater County Wyoming, Conservation District; and Uintah County Commission), and more than 60 other organizations (including environmental groups, interest groups, consulting firms, and industry). Of the

comments received in writing, as opposed to those submitted verbally at the public meetings, about 94% were submitted by mail and 6% were submitted via the online comment form.

Comments originated from all 50 states, the District of Columbia, Puerto Rico, 15 foreign countries, and the Armed Forces Europe. Approximately 90% of the comments originated from states outside the three-state study area. The comments that originated within the study area were distributed as follows: 256 comments from Colorado, 110 comments from Utah, and 35 comments from Wyoming. During the scoping period, more than 7,000 visits were made to the Oil Shale and Tar Sands PEIS Web site (<http://ostseis.anl.gov>) by more than 3,600 different individuals.

The BLM published a scoping report (BLM 2006) that summarizes and categorizes the major themes, issues, concerns, and comments expressed by private citizens, government agencies, private firms, and nongovernmental organizations. These comments were considered in developing the alternatives in this PEIS. Copies of the scoping report, individual letters, electronic comments, and other written comments received during scoping are available on the Oil Shale and Tar Sands PEIS Web site (<http://ostseis.anl.gov>).

7.2 PUBLIC COMMENT ON THE DRAFT PEIS

The EPA published the Notice of Availability (NOA) of the Draft PEIS in the *Federal Register* on December 21, 2007 (72 FR 72751–72753). Publication of the NOA began a 90-day public comment period on the Draft PEIS, which was subsequently extended 30 days, ending on April 21, 2008.

The Draft PEIS was posted in its entirety on the Oil Shale and Tar Sands PEIS Web site. Printed copies of the document and CDs containing the electronic files for the document were mailed upon request. Comments on the document were received by two methods:

- An electronic comment form on the project Web site, and
- Traditional postal mail.

More than 102,000 people and organizations participated in the public comment process. Nearly 170 recognized organizations (public and private) provided comments on the Draft PEIS. Ninety-eight percent of the comment letters were campaigns. For the unique letters, 90% were submitted via the project Web site and 10% were sent by postal mail.

All comments, regardless of how they were submitted, received equal consideration. On the basis of the documents received during the public comment period, comment categorization resulted in approximately 4,500 individual comments. The BLM reviewed all comments and made changes to the Final PEIS, as appropriate. Responses to comments are provided in Volume 4 of the Final PEIS. Volume 4 has not been printed for distribution but is provided on a CD in a pocket attached to the back cover of Volume 3. Responses to comments from the cooperating agencies (as identified in Section 7.5) are printed at the end of this chapter.

7.3 GOVERNMENT-TO-GOVERNMENT CONSULTATION

The BLM works on a government-to-government basis with Native American Tribal entities. As a part of the government's Treaty and Trust responsibilities, the government-to-government relationship was reaffirmed by the federal government on May 14, 1998, with E.O. 13084 and strengthened on November 6, 2000, with E.O. 13175 (U.S. President 1998, 2000). The BLM coordinates and consults with Tribal governments, Native communities, and Tribal individuals whose interests might be directly and substantially affected by activities on public lands. It strives to provide the Tribal entities sufficient opportunities for productive participation in BLM planning and resource management decision making. In addition, Section 106 of the NHPA requires federal agencies to consult with Indian Tribes for undertakings on Tribal lands and for historic properties of significance to the Tribes that may be affected by an undertaking (36 CFR 800.2 (c)(2)). BLM Manual 8120 (BLM 2004a) and Handbook H-8120-1 (BLM 2004b) provide guidance for Native American consultations.

The BLM developed a process to offer specific consultation opportunities to "directly and substantially affected" Tribal entities, as required under the provisions of E.O. 13175 and to Indian Tribes as defined under 36 CFR 800.2(c)(2). Starting in February 2006, Tribal entities located in or with interests in the three-state study area were contacted by mail by the BLM State Directors. Table 7.3-1 lists the Tribal entities that were contacted by each state and describes the status of the ongoing consultations with each Tribe. At the time that this Draft PEIS was completed, six Tribes (San Juan Southern Paiute Tribe, Ute Indian Tribe, Ute Mountain Ute Tribe, White Mesa Band of Ute Mountain Ute Tribe, Pueblo of Santa Clara, and Pueblo of Zuni) and five Navajo Chapters (Aneth, Navajo Mountain, Oljato, Red Mesa, and Teecnospos) had yet to respond to the BLM's request for consultation. Four Tribes (Pueblo of Laguna, Pueblo of Nambe, Pueblo of Zia, and Southern Ute Tribe) and two Navajo Chapters (Dennehotso and Mexican Water) have indicated that further consultation is not needed. Eight Tribes have expressed an interest in consultation with the BLM for this project, as summarized in Table 7.3-1.

The BLM will continue to consult with interested Tribes and also will continue to keep all Tribal entities informed about the NEPA process for the PEIS. In addition, the BLM will continue to implement government-to-government consultation on a case-by-case basis for site-specific oil shale and tar sands resource development projects.

7.4 COORDINATION OF BLM STATE AND FIELD OFFICES

This PEIS is being prepared by the BLM to evaluate potential land use plan amendments for oil shale and tar sands resources on public lands in three states. The BLM Washington, D.C., Office has worked extensively with the BLM state offices and multiple field offices throughout the course of this PEIS to ensure adequate coordination. BLM state office and field office representatives have worked directly with BLM Washington, D.C., Office staff to share relevant information about the existing planning documents and decisions, the location and nature of natural and cultural resources within the study area, and other land uses within the study area.

TABLE 7.3-1 Government-to-Government Consultation Summary

Tribes Contacted for Consultation on the PEIS	Status of Consultation Process
Colorado	
Southern Ute Indian Tribe, Ignacio, CO	The Tribe has indicated that further consultation is not needed.
Ute Mountain Ute Tribe, Towaoc, CO	No response to initial consultation letter. Follow-up consultation will be conducted.
Utah	
Hopi Tribe, Kykotsmovi, AZ	The Tribe has indicated it would be interested in the portion of the study area located in eastern Utah as far north as Price; no additional specific information or concerns have been conveyed to the BLM, to date.
Kaibab Paiute Tribe, Fredonia, AZ	The Tribe has expressed interest in development associated with a specific STSA; the Tribe has not conveyed any specific information or concerns to the BLM, to date.
Navajo Nation, Window Rock, AZ	The BLM has provided additional information at the request of the Tribe; the Tribe has expressed concern with certain specific areas that are located in the vicinity of the PEIS study areas. Follow-up consultation will be conducted.
Navajo Nation, Aneth Chapter, Montezuma Creek, UT	No response to initial consultation letter.
Navajo Nation, Dennehotso Chapter, Dennehotso, AZ	Follow-up consultation will be conducted. The Tribe has indicated that further consultation is not needed.
Navajo Nation, Mexican Water Chapter, Teecnospos, AZ	The Tribe has indicated that further consultation is not needed.
Navajo Nation, Navajo Mountain Chapter, Tonalea, AZ	No response to initial consultation letter. Follow-up consultation will be conducted.
Navajo Nation, Oljato Chapter, Monument Valley, UT	No response to initial consultation letter. Follow-up consultation will be conducted.
Navajo Nation, Red Mesa Chapter, Montezuma Creek, UT	No response to initial consultation letter. Follow-up consultation will be conducted.
Navajo Nation, Teecnospos Chapter, Teecnospos, AZ	No response to initial consultation letter. Follow-up consultation will be conducted.
Northwestern Band of Shoshone Nation, Pocatello, ID	The Tribe has expressed concern with certain specific areas that fall within the PEIS study areas, but has not subsequently conveyed any specific information or concerns to the BLM.
Paiute Indian Tribe of Utah, Cedar City, UT	The Tribe has expressed an interest in consulting with the BLM and becoming involved in development of the PEIS; no meetings with the BLM have been conducted, to date.
Pueblo of Laguna, Laguna, NM	The Tribe has indicated that further consultation is not needed.
Pueblo of Nambe, Santa Fe, NM	The Tribe has indicated that further consultation is not needed.
Pueblo of Santa Clara, Espanola, NM	No response to initial consultation letter. Follow-up consultation will be conducted.

TABLE 7.3-1 (Cont.)

Tribes Contacted for Consultation on the PEIS	Status of Consultation Process
Utah (Cont.)	
Pueblo of Zia, Zia Pueblo, NM	The Tribe has indicated that further consultation is not needed.
Pueblo of Zuni, Zuni, NM	No response to initial consultation letter. Follow-up consultation will be conducted.
San Juan Southern Paiute Tribe, Tuba City, AZ	No response to initial consultation letter. Follow-up consultation will be conducted.
Ute Indian Tribe, Fort Duchesne, UT	The Tribe has indicated to the BLM that it would like to be consulted regarding potential leasing for commercial oil shale and/or tar sands development on split estate lands located in the Hill Creek Extension of the Uinta and Ouray Reservation prior to any parcel being put up for leasing.
White Mesa Band of the Ute Mountain Ute Tribe, Blanding, UT	No response to initial consultation letter. Follow-up consultation will be conducted.
Wyoming	
Northern Arapaho Tribe, Fort Washakie, WY	The BLM met with the Tribe at a joint meeting with the Eastern Shoshone Tribe in Ethete, WY, on August 25, 2006; a second meeting was conducted with the Tribe, by phone, on October 5, 2006. Subsequently, the Tribe requested and received copies of ethnohistory and cultural resource overview documents being prepared in conjunction with the PEIS, The BLM met with the Tribe at a joint meeting with the Northern Arapaho in Ethete, WY, on August 25, 2006.
Eastern Shoshone Tribe, Fort Washakie, WY	The BLM has provided additional information at the request of the Tribe and has contacted specific individuals at the request of the Tribe; the Tribe has not conveyed any specific information or concerns to the BLM, to date.

In addition, the BLM Washington, D.C., Office Public Affairs Division has coordinated with Public Affairs Office staff from each of the state offices. Jointly, these staff have been responsible for coordinating all public involvement activities related to the PEIS (e.g., public meetings, local public notifications, and advertisements); conducting the government-to-government consultation process with Tribes; responding to any questions regarding the PEIS received from local parties; and forwarding, as appropriate, any questions or comments regarding the PEIS to appropriate minerals and resource staff.

Coordination with BLM state office and field office staff continued throughout the preparation of the PEIS to ensure that the analysis adequately reflects state- and local-level concerns and issues regarding oil shale and tar sands resources development.

7.5 AGENCY CONSULTATION AND COORDINATION

The BLM invited 50 federal, Tribal, state, and local government agencies to participate in preparation of the Oil Shale and Tar Sands PEIS as cooperating agencies. Fourteen agencies expressed an interest in participating as cooperating agencies, and MOUs between these agencies and the BLM were established. The following agencies are participating as cooperating agencies on the PEIS:

- NPS;
- BOR;
- USFS;
- USFWS;
- State of Colorado, Department of Natural Resources, and the Department of Public Health and the Environment;
- State of Utah;
- State of Wyoming;
- Garfield County, Colorado;
- Mesa County, Colorado;
- Rio Blanco County, Colorado;
- Duchesne County, Utah;
- Uintah County, Utah;
- City of Rifle, Colorado; and
- Town of Rangely, Colorado.

Interactions with the cooperating agencies have included notification of the opening of the scoping period; briefing on the draft alternatives; review of preliminary, internal drafts of the PEIS; and informal meetings and discussions. Comments from 12 of the 14 cooperating agencies and the BLM's responses to those comments can be found at the end of this chapter. No comments on the PEIS were received from Duchesne County or the Town of Rangely.

As required under Section 106 of the NHPA of 1966, as amended, the BLM has initiated consultation with the Colorado, Utah, and Wyoming SHPOs, the Advisory Council on Historic

Preservation, and the Tribes listed in Section 7.3 regarding the proposed plan amendments discussed in Chapter 2 and Appendix C.

In accordance with the Memorandum of Agreement (Appendix G of BLM 2002) between the BLM and the USFWS, the BLM will consult with the USFWS prior to granting leases for oil shale or tar sands development and prior to approving development plans for lease areas. These consultations will be conducted in accordance with the requirements of Section 7 of the ESA (16 USC 1536).

In addition to coordination with each of the three states in preparation of the PEIS, prior to the approval of proposed plan amendments, the governor of each state will be given the opportunity to identify any inconsistencies between the proposed plan amendments and state or local plans and to provide recommendations in writing (during the 60-day consistency review period).

7.6 REFERENCES

BLM (Bureau of Land Management), 2002, *Handbook H-1601-1—Land Use Planning Handbook*, Release 1-1675, U.S. Department of the Interior.

BLM, 2004a, *Manual 8120—Tribal Consultation under Cultural Resources*, Release 8-74, U.S. Department of the Interior.

BLM, 2004b, *Handbook H-8120-1—General Procedural Guidance for Native American Consultation*, Release 8-75, U.S. Department of the Interior.

BLM, 2006, *Summary of Public Scoping Comments for the Oil Shale and Tar Sands Resources Leasing Programmatic Environmental Impact Statement*, prepared by Argonne National Laboratory, Argonne, Ill., for Bureau of Land Management, Solid Minerals Group, Washington, D.C., Jan.

U.S. President, 1998, "Consultation and Coordination with Indian Tribal Governments," Executive Order 13084, *Federal Register* 63:27655, May 19.

U.S. President, 2000, "Consultation and Coordination with Indian Tribal Governments," Executive Order 13175, *Federal Register* 65:67249, Nov. 9.

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ATTACHMENT 7.5A
COOPERATING AGENCY COMMENTS AND RESPONSES

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OSTS_00038



Forest Service

Intermountain Region

324 25th Street
Ogden, UT 84401
801-625-5605

File Code: 2820

Date: MAR 04 2008

BLM Oil Shale and Tar sands PEIS
Argonne National Laboratory EVS/900
9700 S. Cass Avenue
Argonne, IL 60439

Dear Ms. Thompson:

We have completed our review of the Draft Oil Shale and Tar Sands Resource Management Plan Amendments to Address Land Use Allocations in Colorado, Utah, and Wyoming and Programmatic Environmental Impact Statement. Due to the programmatic nature of the analysis and decision we only have a few comments or suggestions.

The description of Alternative C (section 2.4.3.2) states that lands are excluded from leasing where surface disturbance and seasonal limitations are in place to protect known sensitive resources. Excluding those lands at the programmatic level would limit or preclude the ability to address the effects of those exclusions during the leasing analysis. Table 2.4.3-3 identifies things such as slopes, raptor nests or habitat, wildlife habitat, and other as resource areas that would not be available for lease application. If literally applied, there probably are extremely few public lands available for lease application. We therefore continue to support Alternative B as the preferred or more appropriate alternative to select.

38-001

Section 3.1 refers to "Areas Recognized as Having Wilderness Characteristics", i.e., Table 3.1.1-4, Table 3.1.1-9 but it is unclear what such a status implies or means. It states these areas might be addressed in Resource Management Plan revisions, but isn't any resource issue a potential item to be addressed in such a revision? Also, note that WCA is used in Table 3.1.1-11 and WCA is not included in the list of acronyms.

38-002

On page 3-43 is a table listing Federal and State Recreation Areas. Range Creek is another one to consider which is administered by the Utah Division of Wildlife. It is an area of very rich cultural resources, similar to the Nine Mile area and open to the public via a permit process. Following is a web site for more information. It should be fairly close to the Sunnyside Special Tar Sand Area. http://wildlife.utah.gov/range_creek/index.php

38-003

In the first paragraph under 3.10.3 on page 3-231 the second sentence states, "Federal land in these areas includes land administered by the BLM, USFWS, NPS, DOI, and BOR..." Since all of those agencies are within the 'DOI', the use of DOI is redundant. Also should the FS be included in that listing?

38-004

In conclusion, based on the programmatic nature of this analysis we believe the documents are thorough and provide sufficient information for the decision being made. It will also provide an



Ms. Thompson

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excellent document to tier to or reference during subsequent analyses should lease applications be received.

If you have questions, please contact Barry Burkhardt, Assistant Director for Minerals of our Bio-Physical Resources Staff, at 801-625-5157.

Sincerely,



for HARV FORSGREN
Regional Forester

cc: Barry Burkhardt

Responses for Document 00038

00038-001: The BLM acknowledges the commentor's preference for Alternative B.

00038-002: The text in Section 3.1 of the PEIS has been revised to define the meaning of wilderness characteristics. Also, the term Wilderness Characteristic Areas has been added to the notation list and glossary.

“Areas Recognized as Having Wilderness Characteristics” (WCAs) are areas that are not officially identified as “wilderness” under the Wilderness Act of 1964, nor are they “wilderness study areas” (WSAs) that were identified by BLM inventories in the 1970s and 1980s under the authority of FLPMA. Generally, they are areas that were identified by various groups, and then inventoried by the BLM to determine if they possessed the characteristics of wilderness as described in the Wilderness Act. The BLM may manage the lands to protect and/or preserve some or all of those characteristics through the land use planning process. In addition, under the land use planning process, the BLM must consider a range of alternatives for the lands identified with wilderness characteristics. This gives the public the ability to fully compare the consequences of protecting or not protecting the wilderness characteristics on these non-WSA lands.

00038-003: Thank you for the comment. Range Creek is an appropriate addition and has been added to Table 3.1.1-11 in Chapter 3.

00038-004: The text in Section 3.10.3 of the PEIS has been changed to address information provided in the comment.

UINTAH COUNTY



STATE OF UTAH
Our past is the nation's future

COMMISSIONERS:
Michael J. McKee
David J. Haslem
Darlene R. Burns
ASSESSOR - Rolene Rasmussen
ATTORNEY - JoAnn B. Stringham
CLERK-AUDITOR - Michael W. Wilkins
RECORDER - Randy J. Simmons
TREASURER - Wendy Long
SHERIFF - Jeff Merrell
SURVEYOR - John Slaugh

March 17, 2008

Bureau of Land Management
Oil Shale and Tar Sands Resources PEIS
Argonne National Laboratory EVS/900
9700 South Cass Avenue
Argonne, IL 60439

RE: Programmatic EIS Oil Shale and Tar Sands

Dear Sir/Madam:

Thank you for the opportunity to comment on the Oil Shale and Tar Sands Programmatic EIS. Uintah County has always been interested in the further development of Oil Shale and Tar Sands within the County. Enclosed are the comments we feel should be addressed in the PEIS at this time.

Sincerely,

UINTAH COUNTY COMMISSION



Michael J. McKee



David J. Haslem



Darlene R. Burns

General Comments

Of primary concern to Uintah County is how the decisions in this Programmatic Environmental Impact Statement (PEIS) will be incorporated into existing and draft resource management plans of the Bureau of Land Management (BLM).

Appendix C-9 provides all lands within the most geologically prospective oil shale areas that are not excluded from commercial leasing by existing law and regulation, Executive Orders, administrative land use designation, or have not been specifically excluded by the BLM for other reasons, will be available for application for commercial leasing.

The existing and draft RMPs do not analyze oil shale occurrence to the extent that the PEIS does. Thus, decisions that were made may exclude leasing of oil shale and tar sands without full analysis of the decisions. In some cases, the RMP recognized that the decisions in the PEIS would be incorporated at some later date, others did not. As a result, decisions were made that created mineral withdrawals, no surface occupancy rights-of-way exclusion areas, areas with wilderness characteristics and such, which exclude these areas from mineral development and thus commercial leasing of oil shale and tar sands. Some of these areas overlap some of the most accessible and high quality oil shale and tar sand resources.

As a result, some areas identified in the PEIS as available for commercial leasing will be closed by management decisions contained in the RMP without adequate analysis or disclosure of impacts.

It is Uintah County's position that the BLM must remain focused on developing a PEIS for an Oil Shale and Tar Sands Resource Management Plan. Failure to development this will greatly delay attainment of identified national concerns. Two of the most critical are:

United States oil shale, tar sands, and other unconventional fuels are strategically important domestic resources that should be developed to reduce the growing dependence of the United States on politically and economically unstable sources of foreign oil imports.

The Task Force concurs that the domestic and global fuels supply situation and outlook is urgent. Increasing global oil demand, declining reserve additions, and our increasing reliance on oil and product imports from unstable foreign sources require the Nation to take immediate action to catalyze a domestic unconventional fuels industry.

BLM should revert to its original plan to apply the PEIS throughout the entire leasing program, and should use all available methods to expedite development of the program as Congress intended.

94-001

94-002

The PEIS focuses too narrowly on oil sand operations intended to produce Crude Oil Refinery feedstock (a.k.a. Crude Oil), and comes to the conclusion that since the economics of producing crude oil aren't very good, it doesn't make sense to despoil BLM lands for the slim economic margins of such productions. The quality of the bitcmuch of the sands in the Uintah Basin would be of greater value when refined into higher value asphalt products.

94-003

Specific Comments

Page 1-8, 2-39&5

Individual projects should be considered based on site specific analysis and technology specific to the proposed action. Lands should not be eliminated for development based solely on failure to be included in this PEIS. Wording should be added to clearly define how additional lands could be made available should additional lands be feasible and should new data prove development to be feasible.

94-004

Page 5-109

The impacts of temporary construction workforce are inconsistent with facility size anticipated in the project area, which is likely to consist of modules constructed off site.

94-005

Page 5-110

Workforce estimates should be recalculated, as they are based on operations much larger than those anticipated in the project area. After this analysis has been accomplished, other dependent analysis should be adjusted accordingly.

94-006

Page 6-202

Discussion of impacts on recreation. See previous comment.

94-007

Section A.4. Spent Shale Management, Page A-48

2nd Paragraph

Underground disposal of spent shale back into underground mines should not be discounted on its face just because leaching of constituents from spent shale may occur. It predisposes that mitigating measures can be taken to overcome the problem and meet regulatory requirements. The disposal of spent shale, either underground or as in the case of Uintah County, in abandoned gilsonite trenches, would resolve open trench issues. Underground disposal reduces reclamation and visual issues. These opportunities must be fully considered and analyzed.

94-008

3rd Paragraph

Eliminate the term "Popcorn Effect" here and later in the text. Any solid material that is reduced in size as a result of crushing or grinding will create void space between particles and the density will decrease, and the volume of a given mass will increase. Even when compacted, the density cannot reach the original density that the rock had in its original solid condition. This is not an issue specific to spent shale and is a myth that should not be formally perpetuated.

94-009

Section A.5. Ongoing and Expected Future Oil Shale Development Technologies, Page A-50

A.5.3 Future R&D Projects on BLM Administered Lands

2nd Paragraph

The Energy Security Act of 2005 authorizes expansion of the R,D&D leases to up to 5,760 acres, or 640 acres more than cited.

94-010

5-3

It appears that impact analysis was based on production methods having the greatest environmental impacts resulting in impacts that are highly unlikely to occur at the predicted methods of development in the project area. Project analysis would address development impacts should they exceed impacts considered in the PEIS. Impacts should be based on the type of development and technology likely to be used in the project area.

94-011

This section should be reanalyzed to insure that a lease allotment of 5760 acres is adequate to support 20,000 bbl/day of production. If not changed, analysis should be developed to support this assumption.

Preferred Alternative

Selection of Alternative B as the preferred alternative is clearly the decision most consistent with the underlying provisions of the Oil Shale, Tar Sands, and Other Strategic Unconventional Fuels Act of 2005.

The Act “declares that it is the policy of the United States that-- (1) United States oil shale, tar sands, and other unconventional fuels are strategically important domestic resources that should be developed to reduce the growing dependence of the United States on politically and economically unstable sources of foreign oil imports; (2) the development of oil shale, tar sands, and other strategic unconventional fuels, for research and commercial development, should be conducted in an environmentally sound manner, using practices that minimize impacts; and (3) development of those strategic unconventional fuels should occur, with an emphasis on sustainability, to benefit the United States while taking into account affected states and communities.” Alternative B is the most responsive to this direction. Alternative B also is the most responsive to the recommendations of The Task Force on Strategic Unconventional Fuels that was created by the 2005 Act.

94-012

Responses for Document 00094

- 00094-001:** All decisions related to land use planning for oil shale and tar sands resources in the ongoing RMPs will be made in the ROD for this PEIS. The ROD will amend the existing plans (MFP or RMP or ongoing RMP if the PEIS is completed first) by making land use planning decisions on whether or not lands will be available for application for future leasing and development of oil shale or tar sands on public lands for those areas where the resource is present. Additional site-specific NEPA analysis will be completed on any future lease application before any leases would be issued. If, as part of this preleasing NEPA analysis, the BLM determines that leasing and subsequent development of the oil shale or tar sands resources would cause significant impacts, the BLM can require the applicant to: 1) mitigate the impact so that it is no longer significant, 2) move the proposed lease location, or if neither of these options resolves the anticipated conflicts, 3) the BLM can decide that development of the oil shale or tar sands resources outweighs protection of the on-site resources and approve the application. This preleasing NEPA analysis would include opportunities for public involvement and comment that are part of the PEIS process and every other planning and NEPA process the BLM undertakes.
- 00094-002:** The BLM is taking a staged approach to comply with the mandates set forth by Congress. Because of the identified uncertainties in analyzing impacts associated with leasing decisions, it is not possible to meet the requirements of NEPA to support leasing at this time. The BLM believes that the identification of lands open to oil shale and tar sands leasing is the first step in securing the role of oil shale and tar sands as a viable domestic energy source. Each subsequent step (leasing decisions and plan of development decisions) will bring oil shale and tar sands closer to reducing U.S. dependence on foreign oil.
- 00094-003:** Thank you for your comments. The BLM has made no conclusions regarding the economics of oil shale development. The PEIS examines alternatives for making lands available for future commercial leasing of both oil shale and tar sands resources.
- 00094-004:** Although excluded from consideration under decisions in this PEIS, should industry come forward with an economically and environmentally sound proposal outside of the most geologically prospective area identified in the PEIS, the Secretary of the Interior and the BLM have the authority to consider commercial development proposals in a new NEPA analysis that could further amend local land use plans to allow for such a development.
- 00094-005:** Given the programmatic nature of the PEIS, the purpose of the analysis of socioeconomic impacts is to provide an overview of the type and magnitude of impacts that would likely occur with the construction and operation of representative oil shale and tar sands facilities. As the technologies, scale of development, and project locations associated with oil shale and tar sands

resources and ancillary development are not known, the analysis described in the PEIS was based on a series of assumptions regarding project production levels, direct project employment, direct and indirect population (workers and their families) in-migration rates, and the provision and location of direct and indirect worker housing during both construction and operations phases. These assumptions, described in Section 4.11 of the PEIS, were based on publicly available NEPA reviews, past BLM experience with oil shale and tar sands and other energy-related projects, and industry data on power generation and coal mining. These assumptions are reasonable for a programmatic review of potential socioeconomic impacts.

Assumptions regarding the retention of wages associated with housing construction and OSTs and ancillary facility construction and operation are presented in Section 4.11 of the PEIS.

00094-006: See response to Comment 00094-005.

00094-007: The meaning of this comment is not clear, however, the potential impacts to recreation and travel activities are generally discussed in Sections 3.10.3, 4.2.1.4, and 5.2.1.3 of the PEIS. General impacts on recreation and travel management and on areas that might be used by recreationists by alternative are included in the Land Use sections in Sections 6.1 and 6.2. The economics of recreation activities are discussed in Sections 4.11.1.5 and 5.11.1.3.

The discussions that relate to both recreation and travel activities conclude that areas that are undergoing development for oil shale or tar sands would not be available for recreational uses. It is also pointed out that areas that may currently be available for OHV use may be closed if an area is leased for commercial development. The PEIS contains scenarios that describe the economic effect of hypothetical decreases in recreation employment. The overall assessment is that the potential impacts on recreation and travel visitation and the recreation-based economy are not identifiable based on current information and the potential impacts of each of the alternatives are not clear at this time. Impacts to recreation and travel will be highly specific and would be included in any site-specific analysis on a proposed commercial lease. The PEIS is not making any travel-related decisions.

00094-008: Thank you for your comment. The discussion does not discount in-mine disposal of spent shale. Rather, it is intended to point out both the advantages and potential disadvantages of such a disposal strategy. Future lease applications must include a detailed plan of development that would involve characterizing all wastes and identifying proper management strategies that conform to all applicable regulations.

00094-009: The BLM agrees that the bulk density of oil shale will decrease upon crushing and sizing in preparation for retorting. There is conflicting data in the open literature

as to whether additional volume and density changes occur during retorting. The text in Section A.4 has been modified to remove the term “popcorn effect.” From an environmental perspective, the volumetric increase, together with the accompanying reduction in bulk density, may increase the potential both for erosion and for leaching of hazardous constituents and thus is an important consideration in the design of disposal strategies for spent shale from technologies employing AGR.

- 00094-010:** The RD&D leases were issued pursuant to a *Federal Register* Notice that predated the enactment of the Energy Policy Act of 2005. The 5,120 acres is the maximum lease acreage designated in the Mineral Leasing Act of 1920, prior to its amendment by the Energy Policy Act of 2005, which changed the maximum lease size to 5,760 acres. The conversion lease size for those RD&D leases is correct.
- 00094-011:** In the PEIS the BLM analyzes the environmental consequences of an allocation decision, and assumptions in the PEIS are for programmatic analysis purposes only. If commercial applications to lease are received in the future, there will be a subsequent level of NEPA analysis of specific parcels that may be offered for lease, as well as additional land use planning, if necessary, and issues such as the amount of surface disturbance will be considered at that time. The lease size mentioned is statutorily set, but whether that acreage would support a 20,000 bbl/day operation would have to be considered at the site-specific level.
- 00094-012:** The BLM acknowledges the commentor’s preference for Alternative B.

OSTS_00126

DAVE FREUDENTHAL
GOVERNOR



STATE CAPITOL
CHEYENNE, WY 82002

Office of the Governor

March 19, 2008

BLM Oil Shale and Tar Sands
Attn: Draft Programmatic EIS Comments
9700 South Cass Avenue
Argonne, IL 60439

To Whom It May Concern:

Thank you for the opportunity to comment on the Oil Shale and Tar Sands Programmatic Environmental Impact Statement (PEIS). Because I believe a careful, research-driven approach is the key to unlocking the energy potential of western oil shale, I support the "No Action" Alternative A at this time.

126-001

The technologies that may one day be used for large-scale, economical production of synfuels from oil shale are unproven and still unknown. Based on this lack of technological information, it is not feasible to make long-term policy decisions to manage this industry. Potential technologies and their impacts must be understood before oil shale leasing, lease-land allocations and Resource Management Plan modifications move forward.

126-002

The Energy Policy Act and current RD&D projects

Following the enactment of section 369 of the 2005 Energy Policy Act, the U.S. Congress charged the BLM with publishing final regulations for commercial oil shale leasing. Since then, noticeably less emphasis has been placed on oil shale commercialization, and a restriction has been put on Interior Department appropriations preventing the preparation or issuance of final oil shale commercial leasing regulations in fiscal year 2008. The state of Wyoming interprets these signals from Congress as an invitation to take a more deliberate, circumspect approach to oil shale – one which will allow private industry to continue research and development, and provide adequate time for public understanding of what future developments might entail.

126-003

BLM Oil Shale and Tar Sands
 March 19, 2008
 Page 2

The five Research, Development and Demonstration (RD&D) projects currently underway will serve as the foundation from which to identify technological hurdles, gauge economic viability, and assess socioeconomic and environmental impacts. Only if one or more of these 160-acre projects are proven economically and environmentally viable should the ramping up to commercial-scale operations be considered. Finally, the promulgation of regulations should await completion of the RD&D phase, in order to give states the necessary data and time to completely understand the risks.

126-003
 (cont.)

Advantages of Alternative A over Alternatives B and C

Oil shale development has had a checkered past, and, if not undertaken cautiously and correctly this time, efforts at commercial development could be impeded for years to come. The state of Wyoming remembers well the results of the “Colony Project” and “Black Sunday” in the Colorado’s western slope communities. Between 1969 and 1979, the U.S. Department of Energy funded an in-situ fracturing and retort operation near Rock Springs. Efforts to remediate that operation are still ongoing.

Alternative A defers action, but it also does something very important for future oil shale development. It provides adequate time to identify a reserve, the synfuel that theoretically could be contained within the oil shale resource. Alternative A does this without attempting to describe the synfuel reserve. The PEIS has identified a tremendous oil shale resource in Wyoming and estimated billions of barrels of synfuel, but the reserve is governed by unknown technological, environmental, geological, socioeconomic, and economic constraints. Before a reserve is identified and quantified, potential impacts must be assessed. It would seem a peculiar use of time and money to allocate lands available for commercial leasing for an unknown synfuel reserve, especially when there is no known technology to recover the energy reserves.

126-004

Alternatives B and C both intersect with Adobe Town, an area in south central Wyoming that was recently designated by the Wyoming Environmental Quality Council (EQC) as “Very Rare or Uncommon.” Once this designation is finalized under Wyoming Statute 35-11-112 (a) (v) and Chapter 7 of the Rules of Practice and Procedure rules by the Environmental Quality Council, development in the Adobe Town area for oil shale and gravel development will be subject to state regulation. Specifically, non-coal mining will be limited by the Director of the Department of Environmental Quality under Wyoming Statute 35-11-406 (m) (iv) if the proposed mining operation would irreparably harm, destroy, or materially impair Adobe Town.

126-005

Conclusion

I appreciate your consideration of these comments and urge the selection of Alternative A in the PEIS. I firmly believe that it is the best option for both the state and the future of oil shale development. It is worth underscoring once again that Alternative A would still allow the five RD&D leases to operate, which if any of the projects prove

126-001
 (cont.)

BLM Oil Shale and Tar Sands
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Page 3

viable, could result in both commercial-scale development and data sets that would clarify the still-uncertain impacts.

126-001
(cont.)

Best regards,



Dave Freudenthal
Governor

DF:pjb

- c: Senator Mike Enzi
- Senator John Barrasso
- Representative Barbara Cubin
- Governor Bill Ritter, Colorado
- Governor Jon Huntsman, Utah

Responses for Document 00126

00126-001: The BLM acknowledges the commentor's preference for Alternative A.

00126-002: Congress declared its intent in the Energy Policy Act of 2005 for the Nation to pursue the development of oil shale and tar sand resources, among other unconventional fuels, in an environmentally sound manner. As required by that Act, the BLM initiated this PEIS intending to provide the environmental analysis for issuance of commercial leases that would convey development rights to lease holders. As discussed in the Draft PEIS, because of various uncertainties regarding location of developments, technologies to be employed, and the lack of knowledge of specific impacts on various resources, the BLM decided not to analyze the environmental impacts of issuing particular leases at this time and instead decided to analyze amendments of land use plans. Amending those plans is necessary, but not sufficient, to proceed to commercial development of federal oil shale resources.

The decisions analyzed in the PEIS include no commitment by the BLM to offer for lease public lands without additional site-specific NEPA analysis. This additional analysis will consider any new or site-specific information regarding proposed oil shale technology and any anticipated environmental consequences. New information on technologies may be a consequence of research on the RD&D leases or result from research or studies from other sources. Specific mitigation measures, management prescriptions, and the best available practices to minimize impacts will be applied as a result of site-specific NEPA evaluations. In addition, the BLM will involve the state, local communities, and the public throughout the NEPA processes.

00126-003: In the Energy Policy Act of 2005, Congress set a deadline for the BLM to complete this PEIS, and that direction has not been rescinded. While the original Congressional deadline has been exceeded, that does not allow the BLM to postpone this PEIS.

The Energy Policy Act of 2005 directed the Secretary of the Interior to (1) complete a PEIS for a commercial leasing program for oil shale and tar sands resources on public lands, and (2) publish a final regulation reestablishing such a program. The BLM, through its rulemaking process, is drafting a proposed set of regulations to outline the policies and procedures to implement a commercial leasing program. The BLM published a proposed rule for the management of a commercial oil shale leasing program in the *Federal Register* on July 23, 2008. As mentioned in the comment, Congress has provided direction to not finalize the regulations in FY08, but they have not removed the original requirement.

00126-004: The BLM is complying with the intent of Congress. In the Energy Policy Act of 2005, Congress mandates the Secretary to complete the PEIS for oil shale and tar sands resources with emphasis on the most geologically prospective lands within

Wyoming. The purpose of the delineation of these areas is to provide a starting place for the amendment of land use plans and for consideration of commercial development. New sources of energy take a great amount of time and private capital to develop and bring on line. Therefore, it is important to provide a framework for the development of a viable oil shale industry to meet the Nation's future energy needs. This would include a systematic process for the exploration, development, and production of the oil shale resources. The PEIS stipulates that site-specific NEPA analysis will be required prior to any leasing or development decision.

00126-005: The BLM worked closely with 14 cooperating agencies, including the State of Wyoming, to determine the scope of the PEIS. Each agency brought an important local perspective and expertise to the process, resulting in the modification of the PEIS's scope from a leasing decision to an allocation decision. This new allocation decision does nothing more than remove an administrative barrier preventing the BLM from accepting applications to lease oil shale or tar sands resources. The amendment of land use plans does not authorize any ground-disturbing activities and is not an irreversible or irretrievable commitment of resources under NEPA. Moreover, the amendment does not constitute the granting of any property right. In this respect, the allocation decision does not conflict with any State plan or designation. However, the BLM looks forward to the State of Wyoming providing information about the State important designations during subsequent NEPA analysis when specific technical and environmental information is available for analysis. At that time, conflicts with the Wyoming Environmental Quality Council's decisions and/or Adobe Town designation can be addressed.



United States Department of the Interior

FISH AND WILDLIFE SERVICE
Washington, D.C. 20240



In Reply Refer To:
FWS/DHRC/BCPA/DCN035616

MAR 21 2008

Memorandum

To: Director, Bureau of Land Management
Acting Deputy
 From: Director, Fish and Wildlife Service *Rowan W. Gould*
 Subject: Comments on the *Draft Oil Shale and Tar Sands Resource Management Plan Amendments to address Land Use Allocation in Colorado, Utah, and Wyoming Programmatic Environmental Impact Statement*

The U.S. Fish and Wildlife Service has reviewed the Bureau of Land Management's (BLM) *Draft Oil Shale and Tar Sands Resource Management Plan (RMP) Amendments to Address Land Use Allocations in Colorado, Utah, and Wyoming and Programmatic Environmental Impact Statement* (draft PEIS) and has prepared the enclosed detailed comments pursuant to the: (1) Fish and Wildlife Coordination Act; (2) Endangered Species Act; (3) Migratory Bird Treaty Act; (4) Bald and Golden Eagle Protection Act; (5) the Clean Water Act; (6) National Wildlife Refuge System Administration Act of 1966; (7) Section 369 of the Energy Policy Act of 2005 (EPAct), and other applicable Executive Orders, regulations and policies.

The Service appreciates the considerable task before BLM in meeting the requirements of Section 369 of the EPAct while also meeting the requirements of the National Environmental Policy Act (NEPA) and we acknowledge Section 369 requires the Department of the Interior to undertake a series of steps leading to the commercial leasing of BLM-administered lands. The draft PEIS analyzes the effects of amending 12 land use plans in Colorado, Utah, and Wyoming to include areas of oil shale and tar sands resources for commercial leasing, exploration, and development. The draft PEIS presents Alternative A, the No Action Plan, that would not amend current land use plans but would continue six Research, Development and Demonstration (RDD) projects; BLM's Preferred Alternative, Alternative B, which would amend land use plans to make approximately 2 million acres of land containing oil shale and about 430,000 acres of tar sands available for leasing; and Alternative C, which would amend land use plans to make approximately 830,000 acres of oil shale resources and 230,000 acres of tar sands available for commercial leasing.

A programmatic environmental impact statement addresses a group of similar or related actions as a whole, and thus is a powerful tool in assessing broad, cumulative issues and impacts (Service NEPA Procedures, 550 FW 2). The Service's primary concern with the draft PEIS is the lack of

154-001

TAKE PRIDE
IN AMERICA 

information about the potential mining technologies to be employed, to the extent that identifying and mitigating cumulative impacts is extremely difficult. BLM identified this problem in the draft PEIS: "Because commercial oil shale development technologies are still largely in a research and development phase, many details regarding the specific technologies that would be used in the future to produce oil from oil shale are unknown" (page 2-12, draft PEIS).

154-001
(cont.)

To remedy this concern, it is our understanding that once viable technologies are identified through the RDD program, the BLM will conduct additional NEPA analysis to evaluate the large-scale, cumulative effects of a leasing program, including specific areas to be leased and the conditions and stipulations under which leases will be sold. The Service supports this approach.

The Service recommends Alternative C be selected as the agency preferred alternative.

154-002

We have provided General Comments in Attachment 1 and Specific Technical Comments in Attachment 2 to assist the BLM in preparation of a final PEIS. We appreciate the opportunity to provide comments and recognize the BLM for their efforts to coordinate with the Service. Please contact Mr. Gary Frazer, Assistant Director - Fisheries and Habitat Conservation at (202) 208-6394, or Nancy Lee, Chief, Branch of Conservation Planning Assistance at (703) 358-2440, if you have any questions or need further information.

Attachments

Attachment 1

Fish and Wildlife Service (Service) Comments on the Bureau of Land Management's
*Draft Oil Shale and Tar Sands Resource Management Plan (RMP) Amendments to
 Address Land Use Allocations in Colorado, Utah, and Wyoming and Programmatic
 Environmental Impact Statement (draft PEIS)*

GENERAL COMMENTS

The Bureau of Land Management (BLM) proposes to amend 12 land use plans to designate lands available for commercial leasing of oil shale and tar sands and has determined it would have no impact on the environment (p.ES-5, draft PEIS). This conclusion is based on a project description proposing only the *designation* of lands that would be available for leasing. Actual decisions on specific leasing proposals would occur in the future and require additional National Environmental Policy Act (NEPA) compliance. However, the draft PEIS clearly states that BLM intends to establish a commercial leasing program to facilitate future development. Accordingly, the draft PEIS addresses the potential large-scale impacts of mining by evaluating "impact-producing factors" (water used, land disturbed, etc.) and information currently available on mining technologies.

The Service appreciates BLM's considerable task of meeting the requirements of both Section 369 of the Energy Policy Act of 2005 (EPAct) and NEPA. We acknowledge Section 369 requires the Department of the Interior to take steps leading to commercial leasing of BLM-administered lands in Colorado, Utah and Wyoming. The Service also appreciates the stepwise fashion in which BLM has approached the development of a commercial leasing program. It is our understanding that once viable technologies are identified through the Research, Development and Demonstration (RDD) program, BLM will conduct additional NEPA analysis evaluating the large-scale impacts of a leasing program, including specific areas offered for lease and the conditions and stipulations under which leases will be sold. Depending on the scope of actual development actions, and to address the cumulative effects of a commercial leasing program, a separate PEIS may be necessary.

The draft PEIS strives to assess the broad implications of designating lands that could be made available for commercial leasing, but the task is particularly difficult without identifying viable mining technologies to be employed. The draft PEIS notes that additional NEPA analysis will be required prior to commercial leasing, but it is not clear at what level the analysis will take place. The Service believes further NEPA analysis will be needed at the programmatic level to address the cumulative effects of a defined leasing program. Without this level of analysis once technologies are identified and better understood, the Service is concerned that large-scale leasing may have significant impacts to listed and non-listed species.

154-003

The Service recommends Alternative C be selected as the agency preferred alternative (with the modifications provided below), assuming a separate programmatic evaluation is

154-004

conducted once mining technologies and the details of the leasing program are defined. The Service believes Alternative B suggests a commitment to oil shale and tar sands development that is too large to be sustainable and may threaten the existence of a number of species.

General Modifications to Alternative C

The Service recommends that all designated and proposed critical habitat for threatened, endangered and candidate species be excluded from designated lease sale areas. In addition, we recommend that the BLM:

- 1) Exclude watersheds occupied by the Colorado River cutthroat trout (*Oncorhynchus clarki pleuriticus*) from designated lease sale areas.
- 2) Include larger no-lease buffers around designated critical habitat for endangered Colorado River fish. The Service recommends a buffer of at least 500 feet from the stream or river banks (Castelle et al 1992, and USFWS 2001). These larger buffers would also more effectively conserve non-listed species (waterfowl, migratory birds, native fish, etc.) that depend on these river corridors.
- 3) Include no-lease buffers surrounding Mexican spotted owl critical habitat that is at least one-half mile from canyon rims.
- 4) Exclude all sage-grouse leks, brood areas, and winter range from lease sale areas. Many of these use-sites have been mapped, but for those not yet identified, an exclusion radius from leks like those described in Christiansen and Bohne (2008) (e.g., 3 to 4 miles, with 0.6 m no surface-occupancy (NSO)) would be appropriate. Additionally, a number of small lease sale parcels (<1 square mile each) may be located within important sage-grouse habitats. We recommend the BLM coordinate the determination of these exclusion areas with our Ecological Services Field Offices in Utah, Wyoming, and Colorado.
- 5) Exclude from leasing the three Areas of Critical Environmental Concern (ACEC) in the Piceance Basin of Colorado (Duck Creek, Ryan Gulch, and Dudley Bluffs) which have been established to protect known populations of Dudley Bluffs twinpod and Dudley Bluffs bladderpod. We recommend that the ACECs not be available for oil shale leasing to avoid the destruction of plant resources for which these ACECs were designated.

154-004
(cont.)

Threatened and Endangered Species Consultation

The Service commends BLM for including a discussion of known listed species and critical habitat locations that are likely to be encountered by future oil shale and tar sands development projects within the draft PEIS. We also recognize the efforts of the BLM to coordinate with the Service in the development of measures to support the conservation of federally listed threatened and endangered species presented in Appendix F. However,

154-005

the Service remains concerned about the lack of information available on mining technologies and the potential for cumulative impacts to listed species. With particular regard to the potential need for Colorado River water, the unknown effects of area-wide oil shale and tar sands development could threaten listed species within the Colorado River basin. We encourage BLM to further develop and incorporate conservation measures for listed species in the final PEIS and into future NEPA documents associated with specific leasing and development actions. NEPA analyses should include specific conservation guidelines for special-status species that will be applied to site-specific NEPA, consultation, and implementation documents of all future proposed projects. We recommend you contact our Field Offices for assistance in the development of these guidelines. The inclusion of guidelines at this level of NEPA review would set standards to direct the future planning and implementation of oil shale projects and ensure that special-status species are considered for future site-specific projects within the PEIS study area.

154-005
(cont.)

The BLM is proposing to conduct Section 7 consultations during supplemental Environmental Assessments associated with future lease sales and projects. We have concerns regarding a fragmented consultation process and the ability to conduct a cumulative effects analysis using this approach, not only for oil shale and tar sands development but also for other land development in the project area. The Service recommends using a landscape level evaluation approach for several select species in the area once viable technologies and program details are identified. Species that should have landscape level plans based on land use and future oil shale tar sand development include the four endangered fish of the Colorado River and tributaries, the black-footed ferret, white-tailed prairie dog, and the greater sage-grouse. Consultation provides better outcomes for listed species when it occurs early in the process and effects to the species are considered on the larger, landscape scale necessary for recovery.

154-006

Attachment 2

Fish and Wildlife Service (Service) Comments on the Bureau of Land Management’s *Draft Oil Shale and Tar Sands Resource Management Plan (RMP) Amendments to Address Land Use Allocations in Colorado, Utah, and Wyoming and Programmatic Environmental Impact Statement* (draft PEIS)

SPECIFIC TECHNICAL COMMENTS

Table ES-2, p. ES-6 and Table 2.3.2-1, p. 2-17 and 2-18: The Service recommends elaborating on how the Bureau of Land Management (BLM) would monitor and evaluate both indirect and cumulative impacts of extensive leasing, of oil shale and tar sands development and production activities. The draft PEIS is unclear how determinations for new leases and expanded development would be made, and if necessary curtailed, at levels that would effectively protect wildlife, plant, and habitat resources of project areas from indirect and cumulative impacts. 154-007

Section 2.3.3, p. 2-22, lines 1-4: Please clarify the relationship of the draft PEIS to other simultaneous or future administrative action taken by BLM field offices. For example, the Price, Utah, BLM Field Office, has distributed a draft RMP in which the Preferred Alternative removes Areas of Critical Environmental Concern (ACEC) designations. Withdrawal of ACEC designation would seem to conflict with the draft PEIS Alternative B (avoid leasing in existing ACECs closed to mineral development). Please clarify whether ACECs withdrawn by the field office draft RMP implies that those areas would now be open for lease applications, or whether they would lose ACEC designation but remain excluded from oil shale and tar sands development by virtue of the draft PEIS protective measures. 154-008

Table 2.3.3.-3, p. 2-33: This table lists “Resources Covered by Stipulations and Restrictions in Place for Oil and Gas Leasing” for the individual states of Utah, Colorado, and Wyoming not available for application for leasing for commercial oil shale and tar sands development. We believe it would be helpful to maintain a single consistent list of resources not state by state lists. 154-009

Table 2.6-1, p. 2-63, and Table 2.6-2, p. 2-78:
 (1) These two tables summarize the potential impacts of the alternatives. The tables include “wildlife” and “threatened and endangered species” resources but do not specifically address BLM-designated sensitive species. Sensitive species are discussed under Alternative C at page 2-33 and page 2-49. The Service recommends including BLM-designated sensitive species impacts in the summaries presented in these tables. 154-010

(2) These two tables identify raptor habitat of only 147,000 and 13,000 acres, respectively. We recommend reevaluating raptor habitat acres identified. Raptor habitat should include nesting territories, concentration and wintering areas, foraging habitats, and migration corridors. The acres of raptor habitat in Table 6.1.2-5, p. 6-48 and Table 6.2.2-5, p. 6-189 also appear to be low. 154-011

Figure 3.1.1-15, p. 3-37: The Service manages three facilities located within or near BLM-administered lands. Areas with the most geological prospective oil shale resources overlay the boundaries of Seedskadee National Wildlife Refuge, located north of Green River, Wyoming. Ouray National Fish Hatchery and Ouray National Wildlife Refuge are located along the Green River south of Vernal, Utah and are in close proximity to areas designated as the most geologically prospective oil shale resource and Special Tar Sand Area (STSA).

We recommend that the three Service facilities be delineated on the final PEIS maps of the potential impacts of oil shale and tar sands development. The Service can provide geospatial data for these areas and other Service resources to the BLM for their inclusion on the official maps. We also recommend that the potential effects of oil shale and tar sands development on Service facilities be discussed in the final PEIS. The Service is concerned that the potential impacts from future oil shale and tar sands development in these areas could affect the facilities, and in turn our ability to successfully fulfill responsibilities for endangered species recovery (i.e., support for the private-public partnership Colorado River Endangered Fishes Recovery Program) and fish and wildlife conservation. Among the factors that could potentially impact the facilities are diminished water supply, water quality, blasting and other noise, establishment and spread of invasive species, increased vehicular traffic, and fragmentation of habitat buffers. We encourage the BLM to coordinate with the Service to ensure that appropriate measures are included in the BLM land use plans to comply with the compatible use of the National Wildlife Refuges and the integrity of the National Fish Hatchery.

154-012

Table 3.1.2-1, p. 3-43: We recommend that you recheck state recreation areas identified for Utah within the 50-mile radius, as some areas appear to be missing (e.g., Mallard Springs and Stewart Lake Wildlife Management Areas).

154-013

Section 3.4.1.2, p. 3-60; Section 3.4.1.3 p. 3-62; and Section 3.4.3.2, p. 3-84, line 9: In addition to salinity (TDS), selenium is a significant water quality issue in western Colorado and eastern Utah. The potential for increased selenium concentrations in surface waters and the effect on aquatic resources should be considered as a potential project impact. The Service recommends selenium be addressed in the document. Also, at Table 2.6-2, p. 2-78, changes in water quality (increased concentrations of selenium and total dissolved solids) resulting from surface disturbance or water storage/application on top of Mancos shale formations are extremely likely.

154-014

Section 3.4.1.4, p. 3-65: Recovery of ESA-listed fishes in the Upper Colorado River Basin depends in part upon adequate instream flows in the Colorado River and the tributaries used by these fishes. Much work has been done by the Colorado River Endangered Fishes Recovery Program and the Service to evaluate the flow requirements for these fish. We suggest that Tables 3.4.1-2 to 3.4.1-4 include these instream uses and flow requirements for the listed fish. We also recommend that estimates of the water depletions from oil shale and tar sand development be determined, and that these be used to identify the impacts to river flows and to the listed fish. Please contact the Service's

154-015

<p>Utah and Colorado Ecological Services Field Offices for further information on instream flows.</p>	<p>154-015 (cont.)</p>
<p><u>Table 3.4.1-3, p. 3-68:</u> The projected “water surplus” is based on water “legally available,” which is, in turn, based on an assumption of 6 million acre-feet for the upper basin per year. Water allocations are divided among upper and lower basin and are different than identified here. Please indicate how the amount was calculated. Also, because “legally available” water may exceed what is actually available, another metric (such as actual water available over the last 10 years) could be useful in characterizing water availability.</p>	<p>154-016</p>
<p>The text in Section 3.4.1.4, p. 3-72, lines 43-46, states that the demand for water was greater than the available supply of water. This seems to contradict numbers in table 3.4.1-3 which we interpret as showing a water surplus. Please clarify short-term and long-term water usage and consequent impacts to aquatic resources.</p>	
<p><u>Section 3.4.3.1, p. 3-79, entire section:</u> We recommend that this section also identify the possible impacts of groundwater and surface water development on springs and seeps.</p>	<p>154-017</p>
<p><u>Section 3.7.1, p. 3-108, line 21-33, and Table 3.7.1-1, p. 3-109 to 3-111:</u> This text discussion and the table information should include the roundtail chub, and the flannelmouth and bluehead suckers. These three species have all experienced population declines in recent years due to habitat loss through water development and the introduction of nonnative species, and are listed by the State of Utah as “sensitive species.” We recommend that the table identify the species as “rare to common” rather than “common to abundant.”</p>	
<p>In the draft PEIS evaluation of these species, it may be useful to indicate that these three species are managed under interagency “Conservation Agreements” (CA), and identify the conservation measures specified in the Agreements. References for the conservation agreements are:</p>	<p>154-018</p>
<p>Utah Department of Natural Resources, Division of Wildlife Resources. 2006. Conservation and Management Plan for Three Fish Species in Utah: Addressing needs for Roundtail Chub (<i>Gila robusta</i>), Bluehead Sucker (<i>Catostomus discobolus</i>), and Flannelmouth Sucker (<i>Catostomus latipinnis</i>).</p>	
<p>Utah Department of Natural Resources, Division of Wildlife Resources. 2006. Range-Wide Conservation Agreement and Strategy for Roundtail Chub (<i>Gila robusta</i>), Bluehead Sucker (<i>Catostomus discobolus</i>), and Flannelmouth Sucker (<i>Catostomus latipinnis</i>). Prepared for Colorado River Fish and Wildlife Council. Publication Number 06-18.</p>	
<p>The Colorado River cutthroat trout is also managed under interagency Conservation Agreements. We recommend that: (a) this species be listed as such in Table 3.7.1-1; (b)</p>	<p>154-019</p>

the text indicate that the species is managed under an interagency Conservation Agreement; and (c) the CA conservation measures be specified. References are:

CRCT Conservation Team. 2006. Conservation agreement for Colorado River cutthroat trout (*Oncorhynchus clarkii pleuriticus*) in the States of Colorado, Utah, and Wyoming.
Colorado Division of Wildlife, Fort Collins. 10 p.

154-019
(cont.)

Lentch, L.D., and Y. Converse. 1997. Conservation Agreement and Strategy for Colorado River cutthroat trout in the State of Utah. State of Utah Publication Number 97-20. Utah Division of Wildlife Resources, Salt Lake City Utah.

Section 3.7.2, Plant Communities and Habitats: The draft PEIS only briefly mentions that the Green River shale barrens support a plant community comprised of several species endemic to the Green River formation (p. 3-123). This entire plant community is vulnerable to oil shale and tar sand resource development. Within the Uinta Basin in Utah, this community is most prominent along the southern margin of the oil shale lease area. Figure 2.3-1, at page 2-112, illustrates that this area lies within an area delineated in the draft PEIS as potentially surface mineable (i.e., Area Where Overburden is <500 ft).

The endemic species of this community include the following:

Dragon milkvetch (*Astragalus lutosus*)
oil shale columbine (*Aquilegia barnebyi*)
Barney's thistle (*Cirsium barnebyi*)
oil shale catseye (*Cryptantha barnebyi*)
Graham's catseye (*Cryptantha grahamii*)
Ephedra wild-buckwheat (*Eriogonum ephedroides*)
Shrubby reed-mustard (*Glaucocarpum suffrutescens*)
Graham's beardtongue (*Penstemon grahamii*)
White River penstemon (*Penstemon scariosus albifluvis*)

154-020

Additional endemic species of this community occur in Colorado and Wyoming. Because these species are not protected as federally listed endangered or threatened species, and given the potential impacts associated with oil shale development, the Service recommends that they be designated as BLM special status species. Care should be taken to preserve the best representations of this community, because that community structure would be a desirable end-state for a significant portion of the rehabilitated and re-vegetated sites of oil shale and tar sand development projects.

Section 3.7.4.1.10, p. 3-160: The habitat for Dudley Bluffs bladderpod (*Lesquerella congesta*) should be corrected to state that it is restricted to the Thirteenmile Creek Tongue of the Green River Formation.

154-021

Section 3.7.4.1.16, p. 3-163, line 43 and Section 4.8.1.4, p. 4-101, line 6: : For clarification, closed canopy forests are not a requirement for Mexican spotted owls in

154-022

Utah's canyons. The owl has been found to nest in and use sparsely vegetated canyon habitats. Please update this section accordingly.	154-022 (cont.)
<u>Section 3.7.4.1.21, p. 3-167, line 40 and Section 4.8.1.4, page 4-101, line 13:</u> For clarification, southwestern willow flycatchers have been documented along the White River of the Uinta Basin. However, at this time, the subspecies has not been determined for this locality.	154-023
<u>Section 3.7.4.1.22, pp. 3-167 and 3-168, Uinta Basin Hookless Cactus:</u> For clarification, the Service recently published a Federal Register notice (72 FR 53211, September 18, 2007) proposing to recognize three separate species of <i>Sclerocactus</i> for the taxonomic entity <i>Sclerocactus glaucus</i> originally listed in 1979 (44 FR 58868, October 11, 1979). These three species are: <i>Sclerocactus glaucus</i> , now restricted to western Colorado in lowlands in the Colorado and Gunnison River valleys; <i>Sclerocactus brevispinus</i> (Pariette cactus), restricted to the Pariette Dray drainage in the Uinta Basin in northeastern Utah; and <i>Sclerocactus wetlandicus</i> (Uinta Basin hookless cactus), restricted to lowlands above the current flood plains of the Green River from Ouray National Wildlife Refuge to Nine-mile creek in extreme northeastern Carbon County Utah and along the lower reaches of the Duchesne and White Rivers. The range of <i>Sclerocactus brevispinus</i> includes portions of the Uinta Basin oil shale area and the Pariette STSA. The range of <i>Sclerocactus wetlandicus</i> includes portions of the Uinta Basin oil shale area and the Pariette, Argyle Canyon, and Hill Creek STSAs.	154-024
<u>Section 3.7.4.1.23, p. 3-168, lines 34-36:</u> For clarification, the Utah prairie dog is not confined to level mountain valleys. The Utah prairie dog is the only prairie dog species to occur in southwestern Utah and has the most limited range of all the prairie dog species. However, it is one of three species that occur in the State of Utah along with the white-tailed prairie dog and the Gunnison's prairie dog.	154-025
At page 3-169, line 13, please note that the Utah prairie dog is listed as threatened rather than endangered. The Service recently completed a 90-day finding and concluded that a petition to uplist the species from threatened to endangered was not substantially supported. The Service's 5-year status review describes the status of the species.	
<u>Section 3.7.4.4, p. 3-175, Other species of concern:</u> As stated in the draft PEIS, Graham's beardtongue (<i>Penstemon grahamii</i>) was proposed for threatened status and designated critical habitat under the ESA in January 2006 (71 FR 3158). A principal reason for that proposal was the threat of potential extensive habitat destruction of its limited habitat as a consequence of oil shale development, especially surface mining. Graham's beardtongue is strictly endemic to oil shale barrens of the Green River formation and most are closely associated with the kerogen rich shales of the Mahogany Ledge.	154-026
The Service later withdrew that proposal (71 FR 76303, December 19, 2006), in part because the Service was assured by the BLM that surface mining was an unlikely development scenario for oil shale development:	

“*P. grahamii* occurs within a very limited portion (0.035 percent of the land area) of broad geological basins in Colorado and Utah underlain by oil shale, and in fact, the plant depends on oil shale rock outcrops for its habitat. However, our information clearly demonstrates that the location of potential future oil shale research projects and subsequent, foreseeable commercial development operations do not overlap with proposed critical habitat for *P. grahamii*. The facts do not support a conclusion that because this plant only grows directly on the surface of rich oil shale bearing strata it will be extirpated or even impacted by future development. Presently, there is no industry interest in surface mining the Mahogany outcrops. Further, there is no evidence that potential, foreseeable oil shale development would occur in the vicinity of the Mahogany ledge outcrops. Industry’s demonstrated future interests in oil shale development are not in surface mining the Mahogany ledge. In fact, the greatest industry interest is clearly centered nearly 30 miles east of the nearest *P. grahamii* proposed critical habitat¹.”

In addition, the BLM committed to retaining Graham’s beardtongue as a sensitive species e.g.:

“...If the FWS finds the protections of the ESA are not warranted, this species will remain a BLM special status species and will be afforded continued protection under our existing regulatory authorities, policies and land use planning decisions².”

154-026
(cont.)

The Service relied on these assurances in our decision to withdraw the proposed listing of Graham’s beardtongue. However, the draft PEIS delineation of the “Area Where Overburden is < 500 ft” (Fig. 2.3-1, p. 2-11) includes over 90 percent of the area that the Service had formerly proposed as critical habitat units for Graham’s beardtongue, and includes nearly the entire occupied habitat of the species. Also, at pages 2-14, 2-15, 2-25 and Table 2.3.2-1 (p. 2-17) the draft PEIS sets forth in the preferred alternative (Alternative B) leasing for an oil shale surface mine and an associated retort within that area cited above and thus within the occupied range of Graham’s beardtongue. The same leasing proposals are also included within Alternative C, however, Alternative C would provide for the avoidance of a portion of the habitat of Graham’s beardtongue (p. 2-27 and maps at figure 2.3.3-2 (p. 2-24) and figure 2.3.3-5 (p. 2-30)).

The draft PEIS does not recognize Graham’s beardtongue as a BLM sensitive species (3-174 and 4-86 to 4-92, Appendix E). It does, however, provide a discussion of the species as “Other Species of Concern” (p. 3-175). The species does occur in the Uinta Basin Oil

¹ Page 6 The Bureau of Land Management; Formal Response to the U.S. Fish and Wildlife Service, Proposed Threatened Status for *Penstemon grahamii* (Graham’s beardtongue) With Critical Habitat, May 11, 2006

² Kathleen Clarke, Director, Bureau of Land Management, cover letter to: The Bureau of Land Management; Formal Response to the U.S. Fish and Wildlife Service, Proposed Threatened Status for *Penstemon grahamii* (Graham’s beardtongue) With Critical Habitat, May 11, 2006

Shale area in Utah and in the Hill Creek and P.R. Spring STSAs. The Service recommends at Section 3.7.4.4, p. 3-176, lines 1-10, or other sections of the draft PEIS identify the interagency Graham’s beardtongue Conservation Agreement (CA).

We recommend that Graham’s beardtongue (*Penstemon grahamii*) be designated by BLM as a special status species in both Colorado and Utah. The Service also recommends that the BLM avoid oil shale or tar sands lands and any land exchanges within the “Area Where Overburden is < 500ft.” (Fig. 2.3-1, p.2-11) until the conservation measures envisioned in the draft conservation plan for the species are implemented.

154-026
(cont.)

Section 3.7.4.4, p. 3-175, line 18: As a clarification, please note that the bald eagle is still protected by the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act.

154-027

Section 3.7.4.4, p. 3-175, entire section: As clarification, we recommend that this section also include a discussion of the white-tailed prairie dog and the Gunnison prairie dog.

154-028

Section 4.1.1, p. 4-3, line 42: In describing the assumptions of oil shale surface mining, the text states, “Topsoil and subsoil removed as overburden would be separately stockpiled and vegetated to mitigate or eliminate erosion.” We recommend adding that stockpiles should be vegetated with native species only, especially in or near areas of rare endemics plants.

154-029

Section 4.8.1.2, p. 4-64, line 6: Because reclaiming an area with native vegetation (especially mature shrubs) will take up to 20 years, we recommend that the restoration and monitoring plan be established for a similar time period to ensure vegetation and habitat restoration is completed and meets established goals, rather than a short commitment of 3-5 years as identified in the text.

154-030

Section 4.8.1.3.1, p. 4-68, line 19: Depending on type of disturbance activity and avian species (e.g., some raptors), disturbance to bird nesting could occur at distances significantly greater than 0.25 mile. The Service recommends expanding the discussion of habitat disturbance to bird nesting to include more specific information.

Studies have indicated that wildlife are disturbed over surprisingly long distances from rural roads and highway corridors. Disturbance to wildlife has generally been inferred from relative densities of a species or group of animals at varying distances from a road. For instance, Van der Zande et al. (1980) confirmed earlier conclusions of Veen (1973) and showed that lapwings and godwits were disturbed to distances up to 1.24 miles from a highway located in the Netherlands. Similarly, plant, bird, and herptile species richness was observed to diminish with increasing density of paved roads, out to a distance of again at least 1.24 miles from the road (Findlay and Houlahan 1996). Based on their statistical models, a 2m/ha increase in total paved road density was assumed to have the same impact on herptile and mammal species richness as the loss of 50% of the wetland proper. In forested habitats, road noise reduced bird population density and breeding

154-031

success within 0.3 to 0.6 miles of roadways. Breeding dispersal patterns were indicative that roadside areas provided lower quality habitats (Reijnen and Foppen 1994, Foppen and Reijnen 1994, Reijnen et al. 1995).	154-031 (cont.)
<u>Table 4.8.1-2, p. 4-84:</u> Please include water depletions as an Impact Category in this Table.	154-032
<u>Table 4.8.1-2, p. 4-84:</u> The Service recommends the following changes to characterizations of the impacts:	
1) Habitat Fragmentation/Terrestrial Amphibians and Reptiles -- change to "Large" -- because these species have smaller home ranges, habitat fragmentation could affect more than 50 percent of a local population, resulting in a large measurable change in carrying capacity;	154-033
2) Habitat Fragmentation/Terrestrial Birds -- change to "Large" -- there is substantial research/literature regarding the effects of habitat fragmentation (particularly roads) on bird populations;	154-034
3) Habitat Fragmentation/Terrestrial Mammals -- change to "Large" -- it is likely that mammal populations will be measurably affected or eliminated in project areas due to the high degree of habitat loss, habitat fragmentation, and human disturbance;	154-035
4) Alteration of Topography/Terrestrial Invertebrates -- change to "Large" -- small population sizes or small home ranges of many invertebrates could result in measurable effects from topography changes;	154-036
5) Alteration of Topography/Terrestrial Amphibians and Reptiles -- change to "Large" -- small population sizes or small home ranges of many amphibians and vertebrates could result in measurable population level effects from topography changes;	154-037
6) Changes in Drainage Patterns/Terrestrial Amphibians and Reptiles -- change to "Large" -- small population sizes or small home ranges of many amphibian and reptile species could result in measurable population level effects from drainage alterations;	154-038
7) Changes in Drainage Patterns/Terrestrial Mammals -- change to "Large" -- significant changes in drainage pattern can impact burrowing animals such as prairie dogs which are a primary food source for black-footed ferret;	154-039
8) Human Collection/Upland Plants -- change to "Large" -- the Service is aware of numerous instances of collectors poaching endangered plant species, particularly in areas that are more open to access due to roads;	154-040

- 9) Human Collection/Wetland and Riparian Plants -- change to "Large" -- the Service is aware of numerous instances of collectors poaching endangered plant species, particularly in areas that are more open to access due to roads; | 154-041
- 10) Human Disturbance/Harassment/Terrestrial Amphibians and Reptiles -- change to "Moderate" -- at a minimum, there is evidence of individual reptile and amphibian displacement from human presence, and it is likely that continuous human presence would result in a population level effect; | 154-042
- 11) Increased Human Access/Upland Plants -- change to "Large" -- the Service is aware of numerous instances of collectors poaching endangered plant species, particularly in areas that are more open to access due to roads; | 154-043
- 12) Increased Human Access/Wetland and Riparian Plants -- change to "Large" -- the Service is aware of numerous instances of collectors poaching endangered plant species, particularly in areas that are more open to access due to roads; | 154-044
- 13) Increase in Predation Rates/Aquatic and Wetland Animals -- change to "Moderate" -- it is unclear why the determination is "None;" | 154-045
- 14) Increase in Predation Rates/Terrestrial Invertebrates -- change to "Moderate" -- it is unclear why the determination is "None;" | 154-046
- 15) Spread of Invasive Species/Terrestrial Amphibians and Reptiles/Terrestrial Birds/Terrestrial Mammals -- change to "Moderate" or "Large" -- invasive species occur at large, landscape-level scales with effects to entire ecosystems; | 154-047
- 16) Temperature Increase in Water Bodies/Wetland and Riparian Plants -- change to "Moderate." | 154-048

Pages 4-85, 6-38, 6-39: Chapter 4 and Chapter 6 appear to present contradictory information. Page 4-85 referring to all alternatives states, "Three ACECs in the Piceance Basin of Colorado (Duck Creek, Ryan Gulch, and Dudley Bluffs) were established to protect known populations of the Dudley Bluffs twinpod and Dudley Bluffs bladderpod. These areas would not be available for leasing, and, therefore, would be protected from the direct effects of oil shale development." However, pages 6-38 and 6-39 indicate that ACECs that are not closed to mineral leasing include Duck Creek, Ryan Gulch, and Dudley Bluffs ACECs. Please clarify this apparent discrepancy. | 154-049

Table 4.8.1-3, p. 4-86: The Service recommends listing the type of effect (e.g., collection, habitat fragmentation, water depletion, etc.) in the Potential Effect column. | 154-050

Section 4.8.1.4, p. 4-101, lines 13-14: The text reads, "Direct impacts on these habitats are not anticipated because they occur within designated ACECs..." It is the | 154-051

<p>understanding of the Service that areas located within an ACEC are not necessarily precluded from energy development. Please clarify.</p>	<p>154-051 (cont.)</p>
<p><u>Section 4.8.2.1, p. 4-102 and Section 5.8.2.1, p. 5-90, line 16:</u> Previous BLM Resource Management Plans have committed to conserving and recovering all special status species and the ecosystems on which they depend. The Service agrees with this management direction and commends the BLM for placing high importance on special status species, including listed fish species.</p>	
<p>With these conservation goals in mind, the Service is concerned by the threats presented by oil shale and tar sands development within the 100-year floodplain. We recommend that avoidance of oil shale and tar sands development in the 100-year floodplain be listed as a commitment of the Aquatic Resources Mitigation Measures. Avoidance of oil shale and tar sands extraction activities in the floodplain of the Colorado River and its tributaries would lessen the threats posed by toxicant or contaminant spills or leaks in areas with sensitive fish species.</p>	<p>154-052</p>
<p>We also recommend that water quality monitoring be conducted to establish a baseline prior to site-specific project activity, during the life of the project, and be continued for a sufficient period beyond the termination of active operations to ensure the project site does not pose a threat to the river aquatic system.</p>	
<p><u>Table 5.1.1-1, p. 5-4:</u> (1) The draft PEIS indicates that during surface mining, a typical retort or solvent extraction facility would use between 40,000 and 90,000 barrels of water per day and that most of the water ends up in tailing ponds even with recycling. The draft PEIS does not indicate whether there is a sufficient water supply to support this type of mining. We recommend a thorough assessment of water needs, sources, and impacts to aquatic resources.</p>	<p>154-053</p>
<p>(2) The text indicates for the production area 73-88 dBA at 500 ft is considered unacceptable for human residential use. Some further description of affects of noise on wildlife may be appropriate.</p>	<p>154-054</p>
<p><u>Section 5.8.2.3, p. 5-92, line 12:</u> Pertaining to the discussion of waste-water lagoons, the Service recommends that creation of open surface water bodies be avoided because open wastewater pits have the potential to contaminate groundwater, leach selenium, provide vectors for West Nile Virus, and serve as an attraction to migratory birds. Waste pits, especially those with oil or surfactants on the surface of the water, have proven to be a significant source of mortality to migratory birds.</p>	<p>154-055</p>
<p><u>Section 6.1.1.7.3, p. 6-13, line 18:</u> In this section, discussion of the impacts of Alternative A on wildlife appears to be limited to the changes in acres of vegetation or habitat removed due to the ‘footprint’ occupied by well pads, roads, and associated facilities. The footprint acreage is only one aspect of the wildlife impact. Disturbance of wildlife use areas for brooding, foraging, migration, and over-wintering can also occur</p>	<p>154-056</p>

due to increased vehicular traffic, noise, physical structures, increased human presence, alteration of water flow, and fragmentation of habitat. The Service recommends augmenting the text with discussion of these additional types of impacts.	154-056 (cont.)
<u>Section 6.1.2.7, p. 6-46, and Section 6.2.2.7.3, p. 6-188 (entire sections):</u> The wildlife sections do not discuss migratory birds other than raptors (and discusses raptors only briefly). The discussion of the effects of this Alternative on wildlife should include impacts on migratory birds in general. The corresponding sections of the other Alternatives also should include discussions of the impacts on migratory birds.	154-057
<u>Table 6.1.4-5, p. 6-98:</u> The table presents the acres of wildlife habitats identified for protection in the BLM land use plan that could be impacted by commercial oil shale development under each action alternative. The way that the information is presented can be interpreted to suggest that no sage-grouse, raptor, or big game habitats would be lost under Alternative C. This representation is inaccurate or at least presented in a way that may be misinterpreted. Please revise or clarify to reflect that the important habitats for these species are located within the areas open for lease applications under Alternative C.	154-058
<u>Table 6.1.4-7, p. 6-100:</u> This table indicates that no black-footed ferret habitat is included in land available for leasing under Alternative C. We believe this is incorrect. Alternative C appears to overlap a substantial portion of the range for reintroduced ferrets in Coyote Basin. Please contact our Utah, Ecological Services Field Office for clarification of the range of ferret reintroduction.	154-059
Table 6.1.4-7 can also be misinterpreted to imply that no threatened or endangered plant species are found on lands that would be available for leasing under Alternative C. This too would be incorrect. Service maps indicate that Dudley Bluffs bladderpod lie within the Alternative C boundaries, as does other potential habitat for the bladderpod and the Dudley Bluffs twinpod. Please clarify this in the final PEIS.	154-060
<u>Table 6.2.4-3, p. 6-236:</u> A 55-percent reduction in sage-grouse habitat is significant, and if accurate would represent substantial impacts to the species. The Service recommends evaluating the impacts in the draft PEIS on both a local population and range-wide scale.	154-061
<u>Appendix C, Table C-1, Page C-5, para 3, Amendments Common to All Land Use Plans, Alternatives B and C:</u> The text indicates that land use plan amendments would, "Specify that utilization will occur utilizing a lease by application process described in Section 2.2.3." Correct the reference; Section 2.2.3 does not include this description.	
<u>Appendix C, Table C-1, Page C-7, para 2 of Alternative B, and elsewhere in Table C-1:</u> The text states, "As discussed in Section 2.2.3.1, all lands...[not excluded]... will be available for application of commercial leasing." Correct the reference; Section 2.2.3.1 does not exist.	154-062
<u>Appendix C, Table C-1, Page C-7, para 2 of Alternative B, and elsewhere in Table C-1:</u> The text states, "As discussed in Section 2.2.3.2, all lands...excluded from commercial	

leasing under Alternative B will also be excluded under Alternative C.” The reference to Section 2.2.3.2 is in error (the section does not exist). | 154-062 (cont.)

Appendix E, Table E-1, Pages E-21 to E-38: The Service recommends considering the status of Ute ladies'-tresses in Sweetwater and Sublette counties, Wyoming in the analysis. | 154-063

Please clarify table E-1 (p. E-23) such that the endangered Colorado River fishes (bonytail, humpback chub, Colorado pikeminnow, and razorback sucker) are not known to occur in Wyoming, but they are affected by water depletions from the Colorado River basin in Wyoming. | 154-064

Table E-1 on page E-38 indicates that black-footed ferrets do not occur in Wyoming. Please update this table to include black-footed ferrets as potentially occurring in white-tailed prairie dog towns in Sweetwater and/or Sublette counties Wyoming. | 154-065

Appendix F: The title of Appendix F may be somewhat misstated. It is our understanding that that BLM intends the conservation measures to apply to subsequent leasing actions, rather than PEIS action (amendments of land use plans). Also, we understand that the conservation measures are intended to apply to subsequent leasing under any action alternative, rather than just the Preferred Alternative. Please clarify the title. | 154-066

The appendix contains measures to avoid and minimize impacts to federally listed species and proposed plant species. The Service recommends that similar conservation measures also be provided for candidate plant species. | 154-067

The Service recommends that conservation measures for migratory birds and raptor protection guidelines be included in conservation measures, as these birds are protected under the Migratory Bird Treaty Act. Bald and golden eagles are also protected under the Bald and Golden Eagle Protection Act. Additionally, for protection of migratory birds, the Service recommends avoiding initiation of land-disturbing activities during the breeding season. | 154-068

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Response for Document 00154

00154-001: The BLM recognizes that additional NEPA analysis will be required and is committed to preparing the appropriate level of analysis prior to the issuance of any oil shale lease. (See page 2-19 of the Draft PEIS for the description of additional NEPA requirements.) Since leasing will be an entirely different decision, a new NEPA analysis will be required. It is inappropriate to speculate at this stage whether such NEPA analysis will be programmatic in nature.

This new NEPA analysis will analyze the leasing of parcels of land for commercial oil shale exploration and development and under what conditions or stipulations. The analysis will also contain any new information or circumstances relevant to the technology, the affected environment, and any associated environmental consequences. This information may be a consequence of research on the RD&D leases or a result of industry performing research or studies on nonfederal lands.

As required by NEPA, all subsequent NEPA documents will analyze the cumulative effects from other reasonably foreseeable future actions. The scope and nature of the specific proposed action will drive the type of NEPA analysis the BLM performs. As required by NEPA, the cumulative effects analysis would consider the present effects of past actions, to the extent that they are relevant, and present and reasonably foreseeable (not highly speculative) federal and nonfederal actions, taking into account the relationship between the proposed action and these reasonably foreseeable actions.

The affected environment of the action could vary greatly from a large regional area to a small discrete area. The scope of the analysis in the NEPA document would be dependent upon the number of applications received and the type and size of operations proposed by the applicant(s). This could result in a statewide, regional, basin-wide, or a site-specific impact analysis. Overall, the geographic extent of the analysis would be limited to those areas that could experience a change in the pattern of land use, as a consequence of a direct impact or other induced effects on the natural resources. The nature of the action can also vary greatly based on the type of technology or mining method. Another critical factor would be the type of infrastructure needed to support the operation, in particular, the source of electrical power.

Hypothetically, the proposal in subsequent NEPA documents could offer for commercial lease 1) only a limited number of parcels, 2) parcels located in a geologic basin, or 3) parcels located throughout a state. Estimated oil shale exploration and development activities assumed to occur as a result of issuing the leases would be based on actual applications, therefore analyses of proposed operations, hypothetical development scenarios, and an RFDS could be developed. Depending on the information included in the applications, technologies whose impacts would be analyzed could include any or all of

underground and surface mining with surface retort operations and/or in situ operations.

Based on the nature of the proposed action, existing sources of electrical power may be sufficient to power the operation, or electrical power may need to be generated on lease using either conventional energy sources like natural gas or renewable energy sources like wind or solar. A third hypothetical analysis may include the expansion of existing power plants or the construction of additional power plants (coal, gas, nuclear). In each case, the scope of the NEPA analysis would be limited to the extent of the direct and indirect effects from activities described in a reasonably foreseeable development scenario.

For example, if the proposed action were to lease three tracts in Utah, using underground mining technology only, the scope and scale of the analysis would differ from the scope and scale of the analysis that would be done if the proposed action were to lease several parcels in all three states, using a variety of technologies. The geographic extent of analysis for a leasing decision is based on the extent of the potentially affected resource(s). In the first instance, the NEPA analysis would most likely not be a programmatic EIS, but would define the area subject to analysis as the area bounded by the three leases. The analysis may not necessarily include an analysis of building additional power plants (dependent on whether the additional mines could pull power off the existing grid or not). In the second instance, it may be appropriate for BLM to perform a regional NEPA analysis that would look at leasing in all three states and include an analysis of the power plants (coal, gas, nuclear) as well as refinery capacity that might be necessary for any development to occur.

In both instances, the NEPA analysis would be limited to the extent of effects from activities described in an RFDS. While the proposed leasing area may be the three Utah tracts, effects on some resources can be extensive, going beyond the boundaries of the proposed leasing area and determined by the distance over which effects remain significant (e.g., effects on air quality or effects on an entire watershed), while the effects on other resources remain within the leasing area boundary and are geographically limited by the resource itself (e.g., a specific species of threatened and endangered plant or a specific culturally significant feature). The impact zones of particular resources may be superimposed or may overlap only in part. All relevant effects, including those that extend outside the project, or, even, in some cases, the planning area where the project is located, must be evaluated and considered in the leasing decision that is made for the planning area.

Thus, while the BLM is committed to performing NEPA analyses prior to leasing, we cannot commit to a certain type of NEPA analysis (regional, planning area, or local). The proposed action will drive what analysis must be done to comply with the requirements of NEPA.

00154-002: The BLM acknowledges the commentor's preference for Alternative C.

00154-003: The BLM is committed to preparing the appropriate level of analysis prior to the issuance of any oil shale or tar sand lease, including the appropriate level of cumulative effects analysis.

It is inappropriate to speculate at this stage whether such future NEPA analysis will be programmatic in nature. A more appropriate level of analysis for a defined leasing program would be based upon the number of applications received, the location(s) referenced in the application(s), and the type and size of operations proposed by the applicant(s). This could result in a statewide, regional, basin-wide or a site-specific impact analysis. With a more focused scope at the leasing decision stage, the consequences and implications—direct, indirect and cumulative—to listed and nonlisted species, as well as other resources, can be better defined. This will result in a more informed leasing decision, as well as aid in the development of potential mitigation measures to minimize or eliminate any adverse impacts.

When commercially viable technologies are identified and better understood, the BLM will be better able to analyze impacts of leasing decisions. The scale of the leasing will be subject to the Secretary's discretion to offer leases for sale and the industry's interest in bidding for tracts. The exercise of this discretion, and the level of interest expressed by industry, will be informed by the increased amount of information regarding technologies and effects.

00154-004: The BLM notes USFWS's preference for Alternative C.

Alternatives B and C are limited to an allocation decision that provides an opportunity for subsequent levels of NEPA analysis prior to any decision on leasing or development of these resources. The only decision in this respect proposed to be made on the basis of the PEIS is to open or close lands to further consideration of leasing of these resources. With respect to the recommended specific exclusion of watersheds and the creation of no-lease buffers around critical habitat areas, consideration of the need for such exclusions would be more appropriate when areas are designated at the lease sale stage. Please note that all ACECs are excluded from application for commercial leasing under both Alternative B and C for tar sands and for Alternative C for oil shale. ACECs not specifically closed to mineral entry are open for application for commercial leasing in oil shale Alternative B. The fact that ACECs may be open for application does not indicate that they will be disturbed by development. The subsequent NEPA process considering a lease application will make specific decisions regarding the protection and management of any ACECs open for application. See descriptions of the alternatives in Sections 2.3.3, 2.3.3.2, 2.4.3, and 2.4.3.2. All subsequent NEPA analysis and decisions associated with potential leasing of parcels or potential plans of operations will be performed in full compliance with existing environmental laws and associated regulations.

In deciding whether to lease or to approve plans of development, the BLM will comply with the ESA, including all necessary consultations with the USFWS. In addition to compliance with the ESA, the BLM will offer leases only in conformance with its policies and procedures for BLM-designated sensitive species. For example, the BLM's policies for "exclusion radius" around greater sage-grouse leks might be amended between the date of this PEIS and the issuance of a lease or approval of a plan of development.

Furthermore, Alternative B does not imply a commitment to leasing that is too large to be sustainable or that would threaten the existence of species; as noted above, each of the action alternatives only contemplates opening certain lands to further consideration of leasing. Within the areas open for leasing under either Alternative B or Alternative C, the Secretary will retain the discretion to decide which particular tracts to offer for lease and the stipulations on such leases.

00154-005: The specific impacts associated with development and technology deployment cannot be assessed at this time given the state of the science in oil shale and tar sands extraction and processing. Technologies are evolving and specific information on impacts such as water depletions is not fully understood. Information is being gathered as part of the RD&D program. The conservation measures presented in Appendix F of the PEIS were developed in consultation with the USFWS. These measures are presented as examples of the types of measures that will be appropriate to mitigate impacts to special status species. Final conservation measures will be developed at the leasing and project development phase in consultation with the USFWS.

00154-006: The BLM is evaluating the amendment of land use plans in parts of Colorado, Utah, and Wyoming to identify public lands that would be available for future application for leasing for oil shale or tar sands development. The proposed action is a land use allocation and does not commit any mineral resources or authorize any BLM action that would have a direct, indirect, or cumulative impact under either NEPA or Section 7 of the Endangered Species Act (ESA) on threatened or endangered species.

The impact analysis provided in the PEIS qualitatively indicates the types of impacts that could occur as a result of the development of these resources, based on BLM experience with other types of mineral development. The reasons for presenting this information include to address additional information needed and to provide sufficient information for the decision maker to make a reasoned choice among the alternatives. Cumulative impacts, as defined pursuant to NEPA, to threatened and endangered species are discussed in Sections 6.1.5.3.7 and 6.2.5.3.7 of the PEIS. At this time, it is not possible to provide a quantitative evaluation of cumulative effects as requested in the comment. There are many uncertainties regarding the amount of development that is reasonably foreseeable, the types of technologies that might be deployed, and the locations of potential

projects. Cumulative impacts will be evaluated in project-specific NEPA assessments and consultations conducted prior to leasing and development.

- 00154-007:** In consultation with our cooperating agencies, the scope of the PEIS was changed from a leasing decision to an allocation decision. The only decision in this respect proposed to be made on the basis of the PEIS is to open or close lands to further consideration of leasing of these resources. Consequently, the decision to offer specific parcels for lease was dropped from consideration in the PEIS. Specific monitoring requirements to evaluate environmental consequences are more suited at future leasing and/or plan of development stages. Although specific monitoring plans are not included, examples of potential types of mitigation measures to protect wildlife, plants, and habitat resources are provided for consideration at subsequent stages of NEPA analysis (see Sections 4.8.2 and 5.8.2).

The PEIS outlines the process for making subsequent decisions regarding both leasing and development. For example, see Chapter 1 and Chapter 2 (Sections 2.3.3 and 2.4.3).

- 00154-008:** All decisions related to land use planning for oil shale and tar sands resources in the PEIS study area will be made in the ROD for the PEIS. The ROD will amend the existing plans (MFP or RMP or ongoing RMP if the PEIS is completed first) by making land use planning decisions on whether or not lands will be available for application for future leasing and development of oil shale or tar sands on public lands for those areas where the resource is present. Additional site-specific NEPA analysis will be completed on any future lease application before any leases would be issued. If, as part of this NEPA analysis, the BLM determines that leasing and subsequent development of the oil shale or tar sands resources would cause significant impacts, the BLM can require the applicant to: 1) mitigate the impact so that it is no longer significant, 2) move the proposed lease location, or if neither of these options resolves the anticipated conflicts, 3) the BLM can decide that development of the oil shale or tar sands resources outweighs protection of the on-site resources and approve the application. This NEPA analysis would include opportunities for public involvement and comment that are part of the NEPA process.

Under the provisions of FLPMA, the BLM has designated ACECs where special management attention is required to protect and prevent irreparable damage to important cultural, historic, and scenic values, fish and wildlife resources, other natural systems or processes, or to protect life and safety from natural hazards. In ACECs not closed to mineral entry, the BLM has specific management prescriptions outlined in the local land-use planning document to protect the relevant and important values. However, the ACEC Manual (BLM Manual 1613) states: "Normally, the relevance and importance of resource or hazards associated with an existing ACEC are reevaluated only when new information or changed circumstances or the results of monitoring establish a need." Therefore, if there is new information or changed circumstances associated with the leasing of lands

within ACECs open to mineral development, the ACEC will be reevaluated to consider whether to retain the ACEC designation or develop additional management prescriptions in the NEPA analysis associated with the proposed leasing decision. ACECs closed to mineral entry are not available for application for commercial leasing. If an ACEC is closed by the BLM field office, it will have to undergo further NEPA analysis, as it will still have been excluded from the analysis covered in this PEIS.

- 00154-009:** The referenced stipulations are developed for each BLM planning unit. Although BLM plans are generally developed with full knowledge of how other planning areas have handled similar situations, the final decisions are generally tailored to meet local conditions.
- 00154-010:** Tables 2.6-1 and 2.6-2 have been revised to include a summary of impacts on BLM-designated sensitive species.
- 00154-011:** The raptor habitat acreages presented in Tables 2.6-1 and 2.6-2 represent raptor habitats identified in BLM RMPs that have been identified for protection that could be developed under Alternative B for oil shale and tar sands, respectively. The PEIS is a programmatic-level document that analyzes allocation decisions. It is important to note that these allocations do not authorize the immediate leasing of the lands for commercial development. Therefore, providing more detailed discussion of raptor habitat is beyond the scope of the PEIS. Detailed discussion of raptor habitats, and quantitative analyses of potential impacts to raptors, would be conducted for any proposed project. Also, policies and BMPs that would be implemented at the project-specific level are expected to avoid impacts to raptor habitat and, where not possible, minimize and mitigate impacts to the extent practicable.
- 00154-012:** USFWS lands, although subject to the Mineral Leasing Act (16 USC 668dd(c)), are not under consideration to be opened for leasing under this PEIS, and, accordingly, are not subject to direct impacts of potential commercial development on BLM-administered lands. Indirect impacts, however, depending on where commercial development might occur, are possible. Although the specific USFWS facilities are not identified by name, potential indirect effects of commercial development are discussed throughout the Ecological Resources sections of the PEIS in Chapters 4, 5, and 6. Once site-specific proposals are known, potential indirect impacts on USFWS and other federal, state, and private lands will be included in the NEPA analysis reviewing the proposed lease. The requested facilities, plus the Brown's Park NWR, have been added to maps in the document for reference.
- 00154-013:** Thank you for the comment. Mallard Springs Wildlife Management Area has been added to Table 3.1.1-11 in Chapter 3.

- 00154-014:** The Mancos shale formation is recognized as a major source of selenium in the Gunnison Basin, creating an issue in Colorado. The formation is not exposed on the surface in Piceance Basin and is stratigraphically under the productive zones of oil shale. Disturbance of the formation is unlikely. Selenium occurs in other streams in Utah, as shown in the 303(d) list (Table 3.4.1-1). The issue has been added to the text in the PEIS.
- 00154-015:** Tables 3.4.1-2 to 3.4.1-4 focus on the water demand and consumptive uses of water. As instream flows are not considered consumptive uses, they are not included in the tables. CWCB has the exclusive authority to protect instream flows. A list of stream segments with current instream flows requirements in Water Divisions 5 and 6 has been added to the PEIS and is presented in Appendix I. Protection of Endangered Species Fishes is described in Section 3.7.4.

Water depletion due to oil shale development depends on many factors, including project sites, technologies to be used, and various activities involved in the development. The depletion issue would be handled at the project-level when these factors are better defined. Impacts of water depletion would be addressed in subsequent project-specific NEPA documents.

- 00154-016:** The assumed 6 million acre-ft for the Upper Basin is based on the results of the “Hydrologic Determination” study of 1988 that calculated the water availability of the Upper Basin. The study used long-term historical data from 1906 to 1986 and assumed that the Lower Basin states could have 7.5 million acre-ft of water and the Upper Basin’s contribution of 0.75 million acre-ft of water delivered to Mexico.

Historically, the natural flow of the Colorado River fluctuated annually. However, the Hydrologic Determination concluded that the assumed 6 million acre-ft for the Upper Basin per year rarely triggered water calls from the Lower Basin states.

Water demand differs from water consumption. The latter is the basis in various Colorado River compacts. Water demand does not take into account existing water delivery infrastructure (such as reservoirs to trap the water and canals to deliver the water to end users) and represents a desired quantity. The water consumption value that is used in Table 3.4.1-3 represents water actually used and is equal to the amount of water delivered minus the amount of water returned to streams or returned flows. Water demand in the western states generally is much larger than the water consumed.

The stream flow impacts on aquatic resources are described in Section 4.8.1.4.

- 00154-017:** This section describes the water resource, while corresponding sections in Chapters 4 and 5 discuss the possible impacts on the water resource. Impacts to springs and seeps are included in Sections 4.5 and 5.5.

- 00154-018:** Additional information pertaining to the occurrence and distribution of fish species (especially sensitive native fish species) within the Piceance Oil Shale Basin has been added to Sections 3.7.1 and 3.7.1.1.4 of the PEIS, including information about roundtail chub, bluehead sucker, flannelmouth sucker, and mountain sucker. Information about mussel species within the basin has also been added. References to the conservation agreement documents identified in the comment have been added.
- 00154-019:** Text has been added to Section 3.7.1 to identify that the Colorado River cutthroat trout is managed under an interagency conservation agreement, and references to the conservation agreement have been added. Appendix F of the PEIS identifies conservation measures that would be applied to listed and sensitive species, including Colorado River cutthroat trout.
- 00154-020:** Text regarding oil shale endemic species has been added to Sections 3.7.2, 4.8.1.2, 5.8.1.2, 6.1.1.7.2, 6.1.2.7.2, 6.1.3.7.2, 6.1.4.7.2, 6.2.2.7.2, 6.2.3.7.2, and 6.2.4.7.2. The BLM special status species designation is determined by each BLM State Director. The USFWS request to identify all oil shale endemic plant species as special status species should be directed to the BLM State Directors for Colorado, Utah, and Wyoming.
- 00154-021:** The text in Section 3.7.4.1 has been revised as suggested.
- 00154-022:** The text in Section 3.7.4.1 has been revised as suggested.
- 00154-023:** The text in Section 3.7.4.1 has been revised to indicate the currently understood range of the southwestern willow flycatcher.
- 00154-024:** Section 3.7.4.1 of the PEIS has been revised to include recent USFWS findings for the Uinta Basin hookless cactus complex.
- 00154-025:** Section 3.7.4.1 of the PEIS has been revised to indicate that the Utah prairie dog is one of three prairie dog species found in the state of Utah. This section discusses the USFWS 90-day review and the decision to keep the Utah prairie dog listed as threatened.
- 00154-026:** The PEIS identifies lands available for potential future leasing decisions. Leasing decisions will be based on future NEPA analysis where site-specific information will be available for the area under consideration. Appropriate stipulations can and will be developed for those areas that are eventually identified for leasing. Although the overburden is less than 500 ft thick and surface mining would be more economically feasible, underground mining where surface disturbance could create unacceptable risks can be required. Graham's beardtongue is a sensitive species on both the Colorado and Utah BLM sensitive species lists and, as such, is protected by the policies established under BLM Manual 6840. In addition, the BLM is signatory to the interagency Graham's beardtongue Conservation

Agreement and is committed to accomplishing the tasks identified in it to ensure attainment of its goals and objectives, and ultimately the long-term conservation of the species. The Conservation Agreement has not yet been signed by all involved parties.

- 00154-027:** The text in Section 3.7.4.1 has been revised as suggested.
- 00154-028:** This section describes species for which the USFWS and the BLM developed conservation measures specifically for the oil shale program. Because the USFWS and the BLM did not develop conservation measures for the white-tailed prairie dog or Gunnison prairie dog, the text in Section 3.7.4.1 has not been revised.
- 00154-029:** The BLM agrees that only native species should be used to revegetate overburden stockpiles. The text has been modified accordingly.
- 00154-030:** As discussed on pages 4-1 and 5-1 of the Draft PEIS, the PEIS provides examples of mitigation measures that the BLM may consider adopting, if site-specific analysis warrants. The measures are not proposed as a final or a comprehensive list of required stipulations or management prescriptions. Project-specific requirements to ensure the successful reclamation of disturbed land would be established by BLM prior to leasing.
- 00154-031:** The information presented in the PEIS that addresses disturbance impacts to wildlife is of sufficient detail for the purposes of the PEIS. The PEIS is a programmatic-level document that analyzes allocation decisions. Programmatic environmental impact statements are used to evaluate broad policies, plans, and programs and they provide an effective analytical foundation for subsequent project-specific NEPA documents. It is important to note that these allocations do not authorize the immediate leasing of lands for commercial development. Subsequent project- or site-specific NEPA documents will be prepared to evaluate specific occurrences of wildlife, analyze the environmental consequences of leasing (including consideration of direct, indirect, and cumulative effects of disturbance to wildlife), reasonable alternatives, and possible mitigation measures to protect resources and resource values, as well as what level of development may be anticipated. Site-specific NEPA analysis would include mitigation such as best management practices (BMPs), specific protections, or avoidance to mitigate impacts to wildlife from disturbance.
- 00154-032:** Water depletion has been added as an impact category to Table 4.8.1-4.
- 00154-033:** The text in Table 4.8.1-4 has been modified to indicate that the impacts of habitat fragmentation on terrestrial amphibians and reptiles could be large.
- 00154-034:** Table 4.8.1-4 has been modified to indicate that the impacts of habitat fragmentation on terrestrial birds could be large.

- 00154-035:** Table 4.8.1-4 has been modified to indicate that the impacts of habitat fragmentation on terrestrial mammals could be large.
- 00154-036:** Table 4.8.1-4 has been modified to remove the column on impacts to terrestrial invertebrates because no special status terrestrial vertebrates are found in the study area.
- 00154-037:** We disagree that changes in topography would have a large adverse effect on terrestrial amphibians and reptiles. Terrestrial species are less likely to be affected by changes in topography because they are less dependent on water or wetland features that would be affected by the changes in drainage patterns brought about by changes in topography. The text was not changed in response to this comment. Note that vegetation clearing and habitat fragmentation effects on these species are considered large.
- 00154-038:** Table 4.8.1-4 has been changed to combine “alteration of topography” and “changes in drainage patterns” into one impact category. As noted above, we believe that changes in drainage patterns would not have a large adverse effect on terrestrial amphibians and reptiles. Terrestrial species are less likely to be affected by changes in drainage patterns because they are less dependent on water or wetland features. The text was not changed in response to this comment. Note that vegetation clearing and habitat fragmentation effects on these species are considered large.
- 00154-039:** The BLM disagrees that changes in drainage patterns would have a large adverse effect on terrestrial mammals. Terrestrial species are less likely to be affected by changes in drainage patterns because they are less dependent on water or wetland features. Note that the effects on these species of vegetation clearing, habitat fragmentation, and injury or mortality of individuals are considered large. The text was not changed in response to this comment.
- 00154-040:** The text in Table 4.8.1-4 has been revised as suggested.
- 00154-041:** The text in Table 4.8.1-4 has been revised as suggested.
- 00154-042:** Table 4.8.1-4 has been modified to indicate that the impacts of human disturbance and harassment on terrestrial amphibians and reptiles could be moderate.
- 00154-043:** The text in Table 4.8.1-4 has not been revised as suggested. The human access impacts presented in the table relate to trampling or erosion impacts associated with improved access. The human collection category relates to the impacts mentioned in the comment. That impact magnitude has been revised to “large.”
- 00154-044:** The text in Table 4.8.1-4 has not been revised as suggested. The human access impacts presented in the table relate to trampling or erosion impacts associated

with improved access. The human collection category relates to the impacts mentioned in the comment. That impact magnitude has been revised to “large.”

- 00154-045:** Table 4.8.1-4 has been modified to indicate that the impacts of increased predation rates on aquatic and wetland animals could be moderate.
- 00154-046:** Table 4.8.1-4 has been modified to remove the column on impacts to terrestrial invertebrates because no special status terrestrial vertebrates are found in the study area.
- 00154-047:** Table 4.8.1-4 has been modified to indicate that the impacts of invasive plant species on terrestrial amphibians and reptiles, terrestrial birds, and terrestrial mammals could be moderate.
- 00154-048:** The text in Table 4.8.1-4 has been revised as suggested.
- 00154-049:** The text in Chapters 4 and 6 of the PEIS has been modified to remove the inconsistency and indicate that these ACECs would be available for application for leasing.
- 00154-050:** Without project-specific details including development plans, locations of facilities, water needs, mitigation measures, and the locations of special status species, it is not possible to identify the impacts that could occur on specific special status species with any specificity. General habitat information has been added to Table 4.8.1-5 and 4.8.1-6. The reader can use this information to determine the types of impacts possible for each species on the basis of information presented in Table 4.8.1-1.
- 00154-051:** The commentor is correct in stating that some ACECs are available for mineral development. The text in the PEIS has been corrected.
- 00154-052:** There are existing federal laws, regulations, and Executive Orders placing requirements on federal agencies that will require extensive review of potential impacts within 100 year floodplains that would be addressed in subsequent NEPA analysis. Some of these are listed in Appendix D of the PEIS. Additionally, potential mitigation measures that could be applied depending on the specific situation are included in Sections 4.5.3, 5.5.3, 4.8.2, and 5.8.2. The BLM has identified that prior to future leasing and approval of plans of development, site-specific NEPA analysis will be required that, depending on the environment of the site, will address the kinds of issues raised by the USFWS.
- 00154-053:** Section 5.5.2 includes subsections discussing estimated water availability at each of the STSAs. These estimates are related generally to the requirements of operations. Water availability to support a given operation relying on a given technology would be determined in a site-specific NEPA analysis. Determinations

about water would be based in part on state regulations regarding water rights and any reservoir construction.

00154-054: The potential effects of noise from tar sands development on wildlife are presented in Section 5.8.1.3.

00154-055: Any specific evaluation of wastewater lagoon development will be deferred to subsequent project-level planning prior to lease development. However, depending on the process method used and other mitigating circumstances, it may be necessary to establish open-surface water bodies. The mitigation measure pertaining to water bodies in Section 5.8.2.3 has been modified to state that such water bodies could have benefit to wildlife, but that they should be fenced or covered if they have poor water quality.

Site-specific NEPA analysis would include mitigation such as BMPs, specific protections, or avoidance to mitigate or eliminate impacts to wildlife from commercial oil shale or tar sands development. Mitigation measures, including those pertaining to wastewater lagoons or other surface water bodies, would be determined in conjunction with input from federal, state, and local agencies, and interested stakeholders.

00154-056: Section 4.1.8.3 provides an overview of impacts to wildlife that could occur from the types of impacts mentioned in the comment.

The PEIS is a programmatic-level document that analyzes allocation decisions. It is important to note that these allocations do not authorize the immediate leasing of lands for commercial development. Therefore, the specific number and locations of projects cannot be identified within the PEIS. Subsequent project- or site-specific NEPA documents will be prepared to determine whether or not a lease will be offered in a specific area. This will include an evaluation of the specific occurrences of key wildlife habitats, analyses of the environmental consequences of leasing and future exploration and development, including consideration of direct, indirect, and cumulative effects (including those of other existing or reasonably foreseeable future oil shale and tar sands leases), reasonable alternatives, and mitigation measures to protect wildlife habitats, as well as what level of development may be anticipated. Project-specific NEPA analyses would also include mitigation such as BMPs, specific protections, or avoidance to mitigate or eliminate impacts to important wildlife habitats. Mitigation measures would be determined in conjunction with input from federal, state, and local agencies, and interested stakeholders.

00154-057: Impacts on migratory birds that would be common to all alternatives are addressed in Sections 4.8.1.3 and 5.8.1.3 for oil shale and tar sands, respectively. (Impacts on special status [e.g., threatened and endangered] migratory bird species are addressed in Sections 4.8.1.4 and 5.8.1.4.) The discussion in Chapter 6 of the PEIS mainly presents a comparison of the amount and location of lands that

could be developed by commercial leasing under the various alternatives. The wildlife information presented in Chapter 6 was meant to provide a few comparative examples of habitat currently identified for protection or state-identified habitat that overlap with lands available for leasing under the various alternatives.

00154-058: Table 6.1.4-5, which has been updated to include information for Alternative A, pertains to areas of select wildlife habitat that are currently protected under existing land use plans that could either be opened to leasing or remain unavailable to leasing under the various alternatives considered in the PEIS. It is acknowledged that wildlife habitat would be impacted under any alternative, including Alternative C.

See also response to Comment 00154-056.

00154-059: The text in Section 6.1.4.7 has been revised to clarify the entries in the table. The acres presented are those that have been identified in BLM land use plans as having lease stipulations to protect black-footed ferret habitat.

00154-060: The text in Section 6.1.4.7 has been revised to clarify the entries in the table. The acres presented are those that have been identified in BLM land use plans as having lease stipulations to protect threatened and endangered plant species.

00154-061: Table 6.2.4-3 presents the acreage of state-identified wildlife habitat within areas identified that could be available for commercial tar sands development. It is not the intent of the table to imply that all of these areas would be impacted by commercial tar sands leasing.

The sage grouse is a special status species and subsequent leasing decisions will be informed by the need to prevent the species from becoming an ESA-listed species. Site-specific NEPA analysis would include mitigation such as BMPs, specific protections, or avoidance to mitigate or eliminate impacts on sage grouse from commercial oil shale or tar sands development. Mitigation measures would be determined in conjunction with input from federal, state, and local agencies, and interested stakeholders. Mitigation of impacts to sage grouse would include recommendations included in BLM's national sage grouse habitat conservation strategy, as well as those contained in state-wide and regional sage grouse conservation strategies that have been prepared by state agencies.

00154-062: Section references have been corrected in Appendix C.

00154-063: We were unable to find information to suggest the Ute ladies'-tresses is found in either Sweetwater or Sublette counties. In Wyoming, the species is known from Converse, Goshen, Laramie, and Niobrara counties in the Antelope Creek, Horse Creek, and Niobrara River watersheds of the southeastern portion of the state.

- 00154-064:** Table E-1 presents the counties and habitats in which the species are found. Tables 4.8.1-6 and 5.8.1-4 indicate that all depletions from the Colorado River Basin are considered to have an adverse effect on these species.
- 00154-065:** The text in Table E-1, Section 3.7.4.1, and Tables 4.8.1-6 and 5.8.1-4 has been revised on the basis of the comment.
- 00154-066:** The title of Appendix F has been revised as suggested.
- 00154-067:** Conservation measures were mutually developed to address ESA-listed species conservation needs. Conservation measures were not developed universally for all candidate species, due in part to limited information. The PEIS does not preclude the development and application of conservation measures for any species at the next level of NEPA analysis.
- 00154-068:** The list of mitigation measures presented in Chapters 4 and 5, as well as the conservation measures presented in Appendix F, is not meant to be a final list of measures to be employed for an oil shale or tar sands lease. Mitigation and conservation measures would be subject to modification on the basis of consultation with federal, state, and local agencies, and interested stakeholders at the project-specific lease and development stage. Any actions undertaken for oil shale or tar sands leases developed on BLM-administered lands would have to comply with both the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. Spatial and temporal mitigation measures to protect these species would be developed on a lease-specific basis.



United States Department of the Interior

BUREAU OF RECLAMATION
Upper Colorado Regional Office
125 South State Street, Room 6107
Salt Lake City, Utah 84138-1147

IN REPLY
REFER TO:
UC-700
ENV-6.00

March 14, 2008

MEMORANDUM

To: PEIS Manager, Bureau of Land Management
Attention: Sherri Thompson

From: Nancy Coulam
Chief Environmental Officer

Subject: Draft Oil Shale and Tar Sands Resource Management Plan Amendments
to Address Land Use Allocation in Colorado, Utah, and Wyoming and
Programmatic Environmental Impact Statement (PEIS)

Reclamation appreciates the opportunity to work with you on this NEPA analysis. Staff from the Upper Colorado Region reviewed the published document and they have some general and specific comments.

General Comments

We appreciate the attention that the BLM has paid to our prior comments on administrative drafts of the PEIS. Our biggest concern remains that technologies are not presently available to prevent salt loading and the introduction of other contaminants into the Green and Colorado rivers under the action alternatives. The PEIS does document the potential for adverse effects to the water quality in the Colorado River and we appreciate that. We believe the final should acknowledge that increased erosion and sedimentation could lead to increased salt loading and water quality concerns. We believe best management practices that are currently being investigated under the research and development projects could partially take care of this, and that the development of best management practices could be included as mitigation measures.

156-001

Specific Comments

Page 3-61, last paragraph It says, "reservoir salt leaching" and it should be "reservoir evaporation."

156-002

Response for Document 00156

- 00156-001:** The general impacts of oil shale and tar sands development on water resources are described in Sections 4.5.1 and 5.5.1, respectively. However, the specific impacts and the magnitude of the impacts caused by soil erosion, dissolved salts, and sedimentation would be addressed in subsequent project-specific NEPA documents and are not provided in the PEIS.
- 00156-002:** “Reservoir salt leaching” refers to the leaching of soil surrounding a reservoir and the leached dissolved salts that empty into the reservoir.

OSTS_00157

John Martin
Glenwood Springs, CO

Larry McCown
Rifle, CO

Trési Houpt
Glenwood Springs, CO



March 17, 2008

Mike Nedd, BLM Assistant Director
Minerals, Realty and Resource Protection
1849 C Street N.W.
Washington, DC 20240

Dear Mr. Nedd:

We are submitting these comments on the Oil Shale PEIS under the public period. We respectfully appreciate Garfield County being included as a cooperating agency during this entire PEIS process.

Sincerely,

John Martin, Chair
Garfield County Board of County Commissioners

cc: Sherri Thompson, Project Manager
BLM Colorado State Office

A large, handwritten signature in blue ink, appearing to be "John Martin", is written over the typed name and extends across the "cc:" line. The signature is highly stylized and overlaps the text.

DO-BLM
 CO STATE OFFICE
 2008 MAR 19 AM 11:15

GARFIELD COUNTY COMMENTS**ON****BLM OIL SHALE PEIS PUBLIC DRAFT**DO-ELM
CO STATE OFFICE
2008 MAR 19 AM 11:15**INTRODUCTION**

Garfield County wishes to thank the BLM for including the County as a Cooperating Agency throughout this PEIS process. The County has attended a majority of the Cooperating Agency meetings and public meetings that have been conducted over the past two years.

When this process began, the purpose of the PEIS project was to provide for commercial leases for the extraction and processing of oil shale. About a year into the project, the purpose was changed from awarding commercial leases, to identifying what lands might be made available for commercial leasing at a future date. This change in purpose was, in part, driven by a lack of information and knowledge of the exact process(es) that might be utilized in the extraction and processing of oil shale. Without a clear understanding of the process(es) that might be utilized, it was extremely difficult to determine the impacts that might be experienced in the three state area where oil shale operations might take place.

As a basis of Garfield County's analysis of the PEIS documents, and the drafting of these comments, the following assumptions were made:

- That no Tar Sand activities would take place within Colorado;
- That no surface mining activities would take place within Colorado;
- That the purpose of the PEIS study was to identify lands that might be made available for commercial leasing at some time in the future;
- While the bulk of Volumes 2 & 3 address the various existing technologies for extraction of the petroleum product from the shale material, and the refining of the product, it seems premature to provide in depth comments until the specific process is known, which could be totally different than those discussed in the draft document.
- That prior to any future commercial leasing, additional site specific NEPA analysis would be conducted and analyzed; and,
- That this PEIS would be used, as the basis, to amend 12 land use plans in Colorado, Utah, and Wyoming, to provide the opportunity for leasing.
"The land use plans currently in use do not address development of oil shale resources."

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OVERALL COMMENTS

- Garfield County submitted comments on an earlier draft document (June 6,2007), provided to Cooperating Agencies. Many of the comments submitted at that time still apply to this Public Oil Shale and Tar Sands PEIS publication, and have been included in these comments, as appropriate.
- The earlier draft document contained four “Alternatives” none of which were acceptable to Garfield County. Garfield County offered an “Alternative E” which proposed delaying any decisions regarding commercial leasing until such time that the current RD&D projects could be completed and the proposed technologies and their impacts better understood.
- Under this revised draft, the alternatives have been reduced to three alternatives: Alternative A (no action, would include only the development approved in the existing RD&D leases); Programmatic Alternative B, (the BLM’s Preferred Alternative); and, Programmatic Alternative C. Under Alternative B, a total of 1,991,222 acres would be made available for application for commercial leasing, including the 6 RD&D projects. (359,798 acres in Colorado) Under Alternative C, a total of 830,296 acres would be made available for application for commercial leasing, including the 6 RD&D projects. (40,325 acres in Colorado)
- It appears that the reason the BLM rejected Alternative A (the no action alternative) is found on page 6-103, of the Public PEIS document, which states “ Under the no action alternative, the BLM’s approach to commercial oil shale development would be fragmented and would require costly and time-consuming individual land use plan amendments. This is likely to translate into greater costs and, possibly, protracted time lines for establishing commercial oil shale development on public lands”.
- The above statement is somewhat confusing since the existing nine BLM Management Plans will have to be amended prior to any commercial leasing of oil shale lands. It would seem that a delay in the amendments of the Management Plans, until after the RD&D projects are completed, would not result in any additional costs over that required to do them now. The benefit would be that the preferred process would be known and the impacts capable of being accurately determined, so the plans could reflect actual operations.
- If the concern is the loss of time in getting the Management Plans amended, due to waiting for the RD&D projects to be completed, then Alternative C would still drive the amendments, with far less impacts on all concerned.
- Alternative B would make 87% of public lands available for application for leasing, as compared to 36% under Alternative C.
- On page 6-104, of the PEIS document, there is a summary statement that says “ alternative A, the no action alternative, would do the least to facilitate future commercial oil shale development. Alternatives B and C

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would be equally effective in facilitating commercial oil shale development over the next 20 years, by virtue of the land use plan amendments.”

- On page ES-3, it is stated, that “once the PEIS has been completed and additional information becomes available, the BLM will conduct NEPA analyses, including consideration of direct, indirect, and cumulative effects, reasonable alternatives, and possible mitigation measures, as well as what level of development may be anticipated. On the basis of this NEPA analysis to be conducted at the lease stage, the BLM will consider further amendment of one or more plans, including, but not limited to, the establishment of general lease stipulations and best management practices.” Given this statement it again would appear that Alternative C should be the “Preferred Alternative”. This alternative places far less acreage at risk, especially since the actual process(es) are unknown, and the actual impacts are unknown.
- If Alternative C were the preferred alternative, it would seem reasonable that at some future point in time, if oil shale development is proven economically feasible, and is in commercial production, plans could then be amended to provide for more public land to be made available, if necessary, to recover a larger percentage of the resource. An added benefit of such an approach would be possible advancements in technology that would positively benefit oil shale production, and all stakeholders.
- It was noted that the maximum recoverable resource, included in the PEIS, was only approximately 50% of the 1.2 trillion barrels that has been discussed in both public meetings and the public media. This discrepancy places a cloud over all of the estimated data and impacts included in the PEIS.
- The PEIS was very unclear if possible commercial leasing would / could occur south of the Roan Plateau.
- The PEIS referred to Federal, State and private property owner reviews and approvals, but omitted reference to local government review and approval.
- There was no single chart or table provided that showed all of the assumptions included in the PEIS, thus no ability to compare or evaluate conflicts therein.
- There was not a clear understanding or definition of the “threshold effects” statements contained in the PEIS documents. For example: how is “moderate effect” and “large effect” defined? A table showing these definitions, thresholds and effects would be very helpful.
- The PEIS document acknowledges that additional development will most likely occur on private lands, above and beyond the development on Federal lands, but does not include any discussion of possible effects, on a cumulative basis, of such private development.
- The PEIS document does not address how, or if, local land use codes and regulations will be considered in the commercial leasing process, or how such consideration would take place.

157-002
(cont.)

157-003

157-004

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157-006

157-007

157-008

- Population growth, in the different communities within Garfield County, appears to be higher than those shown in the PEIS document, which refers to the growth as “moderate”. At the present time, Garfield projections for just the Rifle area are an increase from approximately 8,200 people to approximately 50,000 people by 2030, which is not deemed as moderate. 157-009
- Local community housing would include “temporary housing built in local communities” per the PEIS document. This appears to run counter to current local land use codes, and local government will. 157-010
- The PEIS document does not adequately deal with the adverse impacts of reductions in traditional recreational use of the Federal lands involved; or the lack of local facilities to support traditional recreational uses of lands in, or near, the ROI. 157-011
- In general, there is a need for the PEIS to address cumulative time lines, population growth, and labor needs in the same section, charts, and analysis for socioeconomic impacts. 157-012

SPECIFIC COMMENTS

Land Use

- On page 6-68 there is a statement that “ although Alternative C makes approximately 1.2 million fewer acres available for application for commercial leasing, it does not provide for less potential development of commercial oil shale than does Alternative B.” 157-013
- If this is an accurate statement, then it makes a compelling argument for Alternative C being the preferred alternative rather than Alternative B.
- Alternative C has an added benefit over Alternative B in that it removes from application for leasing approximately 23,000 acres of land identified as Areas of Critical Environmental Concern (ACECs).
- Under both Alternative B & C, the preference right lease areas established for the five Colorado RD&D projects would not be available for application for leasing, other than to the existing RD&D leaseholders. Does this mean that the leaseholders would use their process, or would they have to use the preferred process, selected from the RD&D projects by the BLM? If a leaseholder, following the RD&D projects, were to decide not to move forward on oil shale production, would the preference acres be frozen, or would they be an asset of the leaseholder and open for sale, pending an additional NEPA process, and approval of the BLM? 157-014
- Under Alternative B, there are approximately 2 million acres of proposed lease area. These lands include 10 ACECs totaling 23,000 acres, approximately 185,000 acres of potential ACECs, and 170,000 acres of lands with wilderness characteristics. Under Alternative C, there are only approximately 830,000 acres of proposed lease area. These lands include 157-013 (cont.)

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- 110,000 acres of lands with wilderness characteristics and 137,000 acres of lands with potential for designation as ACECs.

157-013
(cont.)
- At the present time, the Piceance Basin is in a major natural gas boom. The basin is one of the largest untapped natural gas reserves in the country, at a time when the demand for natural gas is increasing. The region has already experienced a tremendous amount of impacts as a result of this natural gas boom. Technology, and best management practices have worked to increase the extraction of the gas, while reducing the surface impacts on the land. Alternative C would likely have less of an impact on the natural gas play, thus reducing the risk of a substantial reduction in exploration and production of natural gas. Until such time that the process(es) are known for oil shale production, and the cumulative impacts determined, the recovery of natural gas should not be impeded.

157-015
 - The White River BLM Office is in the process of amending their 20 year Management Plan to accommodate an increased level of activity in the exploration and production of natural gas. This plan, at the present time, does not have a provision for oil shale development built into it. The designation of lands, that will be available for future commercial oil shale development, could require the White River Management Plan to be completely revised before it is even completed; again, without any knowledge of how oil shale development will be done in the future, or what the impacts might be.

157-016
 - The BLM anticipated the potential development of 1,100 oil and gas wells in their current plan, and are now projecting more than 21,000 wells could be drilled in the planning area over the next 20 years. How would these projections be impacted by Alternative B, or C? It is stated in the PEIS document, that natural gas recovery is not compatible with the recovery of oil shale. Again, without knowing what process(es) will be used, and the magnitude of the operations, it would appear that a known resource with improving technologies and best practices, would be placed at risk for a totally unknown, at this time.

157-015
(cont.)
 - The PEIS document also states that recreational use of the lands would not be compatible with oil shale recovery operations. Recreational use of the lands, under consideration, is a major economic factor for the counties and municipalities encompassed within the identified acreage. Again to place a known economic driver at risk, for a driver that is so questionable at this time, does not make sense.

157-017
 - There is considerable private acreage within the geographic area under consideration, that will not necessarily be bound by the same rules and regulations that might apply to public lands. This is another unknown that further argues for minimizing the amount of acreage that would be available for future leasing at this time.

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Environmental/Ecological

- Without knowledge of the process(es) that might be used in commercial lease operations, it is not possible to predict or analyze the impacts to the environment or ecological resources.
- Even without specific knowledge, impacts will be proportional to the amount of land impacted.
- Based on the analysis included in the draft PEIS document, there are considerable differences in the potential environmental and ecological impacts between the various technologies under consideration. The potential demand for water is a prime example of these differences. Power demands are another example of how impacts can, and will vary, based on the technology(ies) that will ultimately be used if commercial leasing occurs.
- Wildlife will be greatly impacted as the amount of acreage increases. The geographic area under consideration is prime winter range for many species, as well as major breeding grounds for the Greater Sage Grouse.

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157-019

Socioeconomics

- On page 6-61, and several places within the draft PEIS document, it is stated that, “the designation of lands as available for leasing and the amendment of land use plans would not have socioeconomic impacts.” Garfield County must question this statement on the basis that, the fact lands would be specified for possible oil shale development could alter the potential value of the land on a speculative perspective. Potential impacts on visual resources, noise, air quality, etc. could alter how the public would perceive the value and desirability of properties surrounding lands designated for future commercial leasing.
- Alternative B, could potentially alter the exploration and development of natural gas and oil, thus impacting the economy of the entire region. It could be possible that the identification of lands available for future commercial oil shale leases, could accelerate the exploration and development of gas and oil, thus increasing impacts and the costs of mitigation of impacts on local governments. The reverse could also be possible. How would the White River BLM office react to requests for permits to drill oil and gas wells on lands designated as available for future commercial oil shale leases.
- It is critical that local governments and communities attempt to get ahead of the curve on the development of infrastructure and social programs to manage future growth resulting from energy development. Without accurate knowledge of the direction of commercial oil shale development, it is extremely difficult to plan, much less implement the development of public works and social programs.
- The PEIS document does not take into account the cumulative impacts of existing and future traditional oil and gas development. It is critical that a

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total cumulative, regional, socioeconomic impact scenario be developed and planning be done on a regional basis.	157-023 (cont.)
• The PEIS document, does not address housing issues, except to say that additional housing will be developed by the energy companies on leased land, or by private entrepreneurs on private land. How this will be done and at what costs is not discussed adequately.	157-024
• Discussion of possible changes to public policy, required to address future commercial oil shale development, is also omitted from the PEIS document.	157-025
• Regardless of the future of oil shale development, the fact that lands will be identified for possible future leases, could alter the character of existing communities and the quality of life.	157-026
• The PEIS document clearly identifies two separate areas of the Piceance Basin, the north, and the south. The south Piceance Basin is located within Garfield County and is largely associated with the Parachute Creek drainage. This area is also a major area of natural gas exploration and development. The PEIS document does not address what affect the current natural gas development will have on future commercial oil shale leases and development.	157-027
• The socioeconomic impacts section generally relates to overall impacts and does not provide specific breakdowns of impacts on each county and/or municipality. This makes it very difficult for specific entities to digest and evaluate and estimate mitigation of potential impacts.	157-028
• The PEIS discusses a number of individual steps and/or operations, and indicates potential population and/or worker numbers, but there is no place where these are summarized in one table so the cumulative, timing, impact(s) can be evaluated.	157-029
• Estimated steps in the respective processes, alternatives, need to be shown in a chart where cumulative impacts and timelines are set forth in a clear and precise fashion so total employment, population, and associated socioeconomic impacts can be identified and evaluated.	157-030
• Assumptions necessary to estimate impacts at a more specific level of geographic detail, than the five county "Region of Influence (ROI), needs to be clearly and precisely spelled out.	157-031
• Local governments should not have to develop their own set of assumptions to determine potential impacts, but should be using a common set so consistency, and comparable impacts and costs of mitigation are assured.	
• The PEIS contains much uncertainty, which compounds the ability of counties and local governments to determine socioeconomic impacts to their respective jurisdictions, much less the ability to evaluate the potential impacts and costs of mitigation.	
• The PEIS proposes large, employer-housing compounds located on Federal lands, but does not provide sufficient discussion regarding the socioeconomic impacts, and needs, that will be caused by such	

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- developments; i.e. schools, recreation, shopping, supply and demand impacts on prices, governmental services, etc.
- No expectations of local governments and/or communities related to employer provided, remote housing was discussed. 157-031 (cont.)
- A discussion of the short term verses long term effects / impacts, of remote, employer provided housing needs to be included and evaluated as part of the PEIS document.

Resources / Facilities Required

- The PEIS assumes that any additional power requirements would come from coal fired generation facilities.
- Given the time frames included in the PEIS document for commercial operations to ramp up, there would not appear to be adequate time to permit, build, and test new coal fired generation plants.
- Given the abundance of natural gas in the region, and to be produced as a by product of the oil shale recovery operations, gas fired generation facilities should have been included in the PEIS document and evaluated. 157-032
- Local impacts would be greatly altered based on the type of additional power generation facilities required. (Coal verses Natural Gas generation facilities)
- Environmental impacts would also change based on the type of power generation facilities built.
- If there are compelling reasons for limiting additional power generating facilities to coal, the direct and indirect socioeconomic effects of such generation should be totally considered and evaluated in the PEIS document. 157-033
- The discussion of what, and how much, raw materials, will be utilized for the construction of the oil shale facilities and infrastructure, and where it will be acquired, is very suspect. Gravel for instance is becoming a very scarce commodity in Garfield County and the price has escalated on a geometrically progressing scale. 157-034
- Construction labor in the entire region is in short supply and is currently being recruited from as far away as the east coast. To assume that local labor markets can absorb any of the increased construction demands would be suspect. 157-035
- The PEIS assumes a fairly linear progression of impacts as oil shale ramps up. This assumption does not take into account the local carrying capacity of the county and local municipality infrastructure. In place of a linear projection, it will most likely be a stair step impact, with major infrastructure changes required, to build increased carrying capacity prior to demand, followed by a linear decline in carrying capacity as growth occurs. 157-036
- The ability of local communities to absorb, or ramp up to meet the direct and indirect population growth in housing and / or infrastructure requirements, varies greatly by community. For example, Glenwood Springs is relatively land bound, and its community waste water treatment capacity is near

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| <p>maximum, thus, they would be impacted much differently than Rifle, which has very different land issues, and is in the process of, or has recently expanded their waste water and residential water systems.</p> <ul style="list-style-type: none"> • The PEIS document assumes that all petroleum based products recovered from oil shale will be shipped out of the region and refined at facilities in other areas. The PEIS document does not adequately assess the manner in which these petroleum resources will be transported, or if there is adequate capacity in other locations to receive and refine the resource. Costs of increased transportation systems and refining facilities, to process recovered product, was not adequately addressed. To assume that no other refining facilities will be required is suspect. If additional facilities will be required, where will they be located, how will the resource get to them, and what is the impacts and cost? • There was not adequate discussion within the PEIS document on where and how the water needed in the respective oil shale alternatives would be acquired, or come from. The future / secondary impacts of diverting water from public use, to oil shale, needs to be evaluated. | <p>157-036
(cont.)</p> <p>157-037</p> <p>157-038</p> |
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SUMMARY

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| <ul style="list-style-type: none"> • On page 2-51 “The BLM has determined that Section 369 of the Energy Policy Act of 2005 requires the agency to evaluate establishment of commercial leasing programs for oil shale and tar sands development. “The “no action alternative” for oil shale and tar sands (Alternative A) effectively is a no leasing alternative.” “Any alternative in the PEIS that did not evaluate opening public lands for commercial leasing would not be consistent with the Energy Policy Act.” • Based on this interpretation, the BLM has rejected Alternative A, and feels compelled to select between Alternative B and Alternative C. • Again, we make reference to page 6-68 of the PEIS document, that states “ Although, Alternative C makes approximately 1.2 million fewer acres available for application for commercial leasing, it does not provide for less potential development of commercial oil shale than does Alternative B.” • In the Piceance Basin, Alternative C would likely have less of an impact on oil and gas operations since considerably fewer acres of potentially valuable oil and gas deposits, in a rapidly developing area, would be available for application for commercial oil shale development. • The PEIS document needs to provide a section that includes time lines and cumulative data concerning all impacts on population, labor requirements, facility requirements, and resources required. • The PEIS document makes the statement that no surface mining will be done in Colorado, and that only the In-Situ process will be allowed. There is one below surface mining operation currently allowed under the RD&D | <p>157-002
(cont.)</p> <p>157-039</p> <p>157-040</p> |
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- grants. Is this below ground process already ruled out for commercial leasing within Colorado? | 157-040 (cont.)
- Ongoing cumulative effects on groundwater should be monitored and mitigated if, and when, necessary. The final PEIS document should contain language describing this commitment. | 157-041
- The PEIS process, commercial leasing regulations, and pricing alternatives for commercial leasing are all occurring simultaneously, with overlapping impacts. This process is taking place prior to the results of the current RD&D projects being concluded and a preferred technology determined. Until the appropriate technology is known and evaluated, the impacts and cost of mitigation cannot be determined, thus the lease pricing, and potential bonus payments, is at best a guess. This does not appear to be prudent public policy nor ensure appropriate and adequate protection of public resources, or return on public equity. | 157-042
- The PEIS document acknowledges, in several places, that there will be both primary and secondary impacts, but secondary impacts are not adequately addressed, nor are general growth that will be required to support, and / or address secondary impacts. | 157-043

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CONCLUSIONS

The Energy Policy Act of 2005 directed the Secretary of the Interior to undertake a series of steps. In Summary, Congress directed that the Secretary shall:

- o Complete a PEIS for a commercial leasing program for oil shale and tar sands on public lands;
- o “Not later than 6 months after completion of the PEIS, the Secretary shall publish a final regulation establishing a commercial leasing program;”
- o Consult with the Governors of States with significant oil shale resources on public lands ... and other interested persons;
- o “If the Secretary finds sufficient support and interest exists in a State, the Secretary may conduct a lease sale in that State under the commercial leasing program.”

Given the above charges from Congress, it would appear that commercial leasing could move forward rapidly following final publication of this PEIS document.

And given that the BLM has determined that a “No Action Alternative” (Alternative A) is not consistent under the Energy Policy Act of 2005,

GARFIELD COUNTY WOULD OFFER THE FOLLOWING RECOMMENDATIONS:

- Garfield County’s preferred alternative would still be “The Alternative E” that was included as the final position in our comments previously submitted on June 6, 2007. Under this alternative, it would allow appropriate testing to occur, but would delay the evaluation and decision regarding commercial leasing until such time that the proposed technologies, and their impacts, are better understood, and the current RD&D processes and findings are available concerning economic and commercial viability of oil shale operations. 157-044
- Before the final analysis of a preferred alternative is completed, results of the current RD&D leases should be obtained and evaluated, along with cumulative impacts of each alternative.
- The final PEIS document and Leasing Regulations needs to include a policy statement that requires lessees to work with local and county governments, and accept financial responsibility for developing and funding energy related public services that will be required. 157-045
- The final PEIS document and Leasing Regulations should contain a commitment to continuously provide for air quality monitoring and mitigation if needed for oil shale development, and any additional requirements for power and water generation. 157-046
- The final PEIS document needs to include a commitment to monitor, evaluate, and mitigate impacts on local entities regardless of which alternative is selected. This commitment should carry forward to project specific NEPA analysis, once commercial oil shale leasing programs are underway. 157-045 (cont.)
- Given the BLM’s assertion that Alternative A is not an option, there are only, realistically, two alternatives from which to choose, Alternative B or Alternative C. Since Alternative C does not result in less potential development of oil shale than does Alternative B, and includes far less acreage being made available for commercial leasing, and far less impacts on the environment, wildlife, and local governments and population, Garfield County would recommend that Alternative C be the preferred alternative rather than Alternative B. 157-002 (cont.)

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Responses for Document 00157

- 00157-001:** The BLM has rejected no alternative. The ROD associated with the Final PEIS will provide a concise public record of its decision, which will include the rationale for that decision. The referenced text in Section 6.1.4 of the Draft PEIS on page 6-103 provides comparisons of alternatives. The paragraph and statement compare and contrast the alternatives.
- 00157-002:** The BLM acknowledges the commentor's preference for Alternative C.
- 00157-003:** The BLM has based its analysis on those extraction technologies that are believed to be most likely applied to future oil shale developments; however, allocation decisions are not being based on the resource numbers identified. The resource numbers quoted were for purely comparative purposes. The actual recovery numbers are yet to be determined and are contingent on the type of recovery method. This is also true for any recovery numbers that are being proposed by in situ methods. The purpose of the PEIS is to identify lands to be opened or closed to oil shale development, not to compare technologies. Additionally, the BLM's assumptions are in no way preemptive of alternative extraction technologies, and applicants for future leases are free to propose alternative technologies for extraction and processing of oil shale, together with a detailed plan of operation describing how they will identify, manage, and mitigate anticipated environmental impacts.
- 00157-004:** The southernmost portion of the most geologically prospective area for oil shale is encompassed by the Roan Plateau planning area (see Figure 3.1.1-2). Within the Roan Plateau planning area, some land would be made available for application for commercial leasing under Alternative B and none would be made available under Alternative C (see Figures 2.3.3-1 and 2.3.3-4).
- 00157-005:** Where previously omitted, local government review and approval has been added to the text of the PEIS.
- 00157-006:** Assumptions regarding analysis of oil shale and tar sands technologies are located in Sections 4.1 and 5.1, and assumptions regarding cumulative impact analysis are in Section 6.1.5.1.

The potential magnitude of impacts in different impact categories (e.g., habitat fragmentation and water depletions) is defined for ecological resources in Sections 4.8.1 and 5.8.1 of the PEIS. Impact magnitude is described in these sections as small, moderate, or large using the following definitions. A small impact is one that is limited to the immediate project area, affects a relatively small proportion of the local population (less than 10%), and does not result in a measurable change in carrying capacity or population size in the affected area. A moderate impact could extend beyond the immediate project area, affect an intermediate proportion of the local population (10 to 30%), and result in a

measurable but moderate (not destabilizing) change in carrying capacity or population size in the affected area. A large impact would extend beyond the immediate project area, could affect more than 30% of a local population, and result in a large, measurable, and destabilizing change in carrying capacity or population size in the affected area.

Generally, for other resources, the meaning of comparative statements can be understood from the context of impact descriptions in the text that are specific to each resource area.

00157-007: Sections 6.1.5.2 and 6.1.5.3 have been revised to more clearly acknowledge the potential for oil shale development on nonfederal (e.g., private, state, Tribal) lands. However, the extent and impacts of such development are unknown at this time. It is assumed that development of oil shale or tar sands facilities on nonfederal lands would have impacts similar to such facilities located on federal lands, as described in Chapters 4 and 5 of the PEIS.

00157-008: The FLPMA and the Energy Policy Act of 2005 have specific requirements for coordination of activities with various levels of government (see Section 202(c)(9) of FLPMA and Section 369(e) of the Energy Policy Act). The BLM's Land Use Planning Handbook (H-1601-1) provides extensive guidance in Section I, paragraphs C, D, E, and F, regarding the role and the opportunities for participation in BLM planning and environmental processes.

There are also numerous places in the PEIS (among them, Sections 1.2, 2.3.3, and 2.4.3) that identify requirements for future coordination with various levels of government and for compliance with existing law and regulation. Appendix D contains a nonexclusive list of regulatory requirements potentially applicable to commercial oil shale and tar sands development.

Although rare, it is possible that a local or state regulation could interfere with the implementation of the statutes under which the BLM would lease or approve operations and that such an ordinance would be pre-empted.

00157-009: ROI Population projections presented in Section 6.1.1.10 were taken from county population forecasts prepared by each state and reflect growth rates projected in those forecasts.

Rather than present data at the county level, given the programmatic nature of the PEIS, the purpose of the data presented in Section 3.10 is to provide an overview of socioeconomic conditions in a region of influence around each oil shale and tar sands resource area, based on the likely residential location of project workers, and consequently the region in which the majority of socioeconomic impacts of the prospective facilities would most likely occur.

- 00157-010:** The BLM has stated in the PEIS that housing developments will not be placed on public lands. Local land use regulations will determine how, where, and if both permanent and/or temporary housing will occur within their jurisdictions
- 00157-011:** The economic impact of oil shale and tar sands development on recreation assesses the impact of a 10% and a 20% reduction in ROI recreation employment in each state ROI. Impacts include the direct loss of recreation employment in the recreation sectors in each ROI, and the indirect effects, which represent the impact on the remainder of the economy in each ROI as a result of a declining recreation employee wage and salary spending, and expenditures by the recreation sector on materials, equipment, and services.

In the Colorado ROI, the total (direct plus indirect) impacts of oil shale development on recreation would be the loss of 1,415 jobs with a 10% reduction in recreation employment, and 2,830 jobs if recreation employment were to decline 20% (Table 4.11.1-7). Income lost as a result of the 10% decrease in recreational employment would be \$18.3 million, with \$36.5 lost for the 20% loss in employment. In the Utah ROI, 388 jobs and \$3.2 million in income would be lost in the ROI as a whole as a result of a 10% reduction in recreation employment, and 776 jobs and \$6.3 million in income would be lost with the 20% reduction. In the Wyoming ROI, 1,360 jobs and \$7.2 million in income would be lost under the 10% scenario, with 2,719 jobs and \$14.4 in income lost if 20% of recreation-related employment were lost in the ROI.

Public lands in each ROI are used primarily hunting and other forms of dispersed outdoor activities. Table 3.1.2-1 in the PEIS provides a listing of the many recreational areas and other areas that may provide recreation opportunities located within about a 50-mi radius of the oil shale and tar sands resources. Whether or not there are adequate facilities to support traditional recreational activities in each ROI is beyond the scope of the PEIS.

- 00157-012:** The cumulative impacts analysis was conducted to the extent appropriate, as dictated by the limited scope and narrow allocation decisions proposed in the PEIS (i.e., amending land use plans to allow certain lands to be considered for future leasing). A more specific cumulative analysis of socioeconomic impacts would be more appropriate prior to a leasing or development decision if and when specific technical and environmental information becomes available.

The cumulative impacts analysis in the PEIS summarizes the past, present, and reasonably foreseeable other activities (for example, oil and gas development, coal mining, minerals development) for the study area, and presents a preliminary qualitative assessment of the incremental impacts of those activities considered in conjunction with oil shale and tar sands development. At this preliminary stage, when the specifics of the extent of future oil shale and tar sands development are unknown, the discussion of the potential impacts of oil shale development are based on the BLM's experience with comparable surface-disturbing activities

from other types of mineral development. In order that the decision maker might have sufficient information to make a reasoned choice among the alternatives, the BLM has developed a general analysis of the potential incremental impacts from all past, present, and reasonably foreseeable actions, in conjunction with a single hypothetical oil shale or tar sands facility, with the understanding that there might be more than one, or even many, oil shale/tar sands facilities developed in the future. For the purpose of this analysis, parameters for consideration (such as jobs created) were developed where possible (see Section 6.1.5.3.10). For some parameters (such as air emissions), no estimates with respect to possible development could be made because the data would depend entirely on technology-specific inputs.

Prior to leasing (when site-specific and technology-specific data will be available) or approval of a plan of development (when accurate information on employment, etc., will be available), additional environmental analysis will be performed including a cumulative analysis, as appropriate.

- 00157-013:** Assumptions as to the level of activity are too speculative to support a meaningful RFDS for this PEIS. Therefore, it was decided not to develop an RFDS. However, as part of subsequent NEPA analysis, an RFDS will be developed to project a likely anticipated oil shale and tar sands activity supported by a clear set of supportable assumptions. An RFDS was not developed for this PEIS because most of the information necessary for producing an RFDS is unknown and not reasonably available at the present experimental stage of the oil shale and tar sands industry.
- 00157-014:** The existing terms and conditions of the individual RD&D projects will control the future availability and development of both the RD&D and PRLA acreages. Since these are valid existing rights, decisions regarding the operation of these leases are beyond the scope of this PEIS. The PEIS does, however, consider two separate options for future leasing of lands currently included in these leases should the current lessees relinquish their leases.
- 00157-015:** It is BLM's policy to optimize the recovery of both resources in an endeavor to secure the maximum return to the public in revenue and energy production; prevent avoidable waste of the public's resources utilizing authority under existing statutes, regulations, and lease terms; honor the rights of each lessee, subject to the terms of the lease and sound principles of resource conservation; and protect public health and safety, and mitigate environmental impacts. The projections of oil and gas wells within the current plan are taken into consideration during the cumulative effects analysis (see Section 6.1.5.2.1).
- 00157-016:** All decisions related to land use planning for oil shale resources in the White River RMP area (and in the whole PEIS study area) will be made by the PEIS and should not require a complete revision. The Record of Decision on the final PEIS will amend the existing White River RMP as described in Appendix C. The BLM

recognized that there were several ongoing land use planning efforts, as well as planned planning efforts that would begin while the BLM was preparing the PEIS. The BLM determined that it would be more administratively efficient to prepare the PEIS and provide a more focused analysis of the environmental consequences of a commercial oil shale and tar sands program than to disrupt the ongoing planning efforts.

- 00157-017:** The statement in the current Draft PEIS has been clarified to discuss the potential nature of the conflict between oil shale and tar sands development and other uses of public lands.

The intent of the description in the Draft PEIS was to convey that, although the potential impact (i.e., surface disturbance) and duration of commercial development are unknown (see assumptions in Sections 4.1 and 5.1), impacts are likely to be similar to known uses such as coal mining, or oil and gas development. Surface disturbance during development and production may well displace other uses until reclamation is completed. The expected impact on other public land uses, including recreation, will be reviewed as part of subsequent NEPA analysis.

Recreational use, although important, does not necessarily have absolute priority over other authorized uses of federal land, including mineral development. The FLPMA mandate is one of multiple use and sustained yield of a variety of resources and land uses (Section 102(a)(7)). The BLM appreciates the commentor's concern for the economic importance of recreation, and acknowledges that the economic contributions of commercial oil shale operations will be somewhat uncertain, at least in the beginning. Nonetheless, the Energy Policy Act of 2005 requires the BLM to establish a leasing program for oil shale. There are risks and opportunities in every decision the BLM makes regarding competing land uses. At this stage, as explained in Chapters 1 and 2 of the PEIS, the decision to be made is quite limited. At subsequent stages, when applications for commercial lease of these resources are actually received and accepted, analysis of precisely these issues will take place and decisions made in accordance with BLM's statutory obligations.

- 00157-018:** There is a substantial amount of nonfederal land in the study area (see discussion in Section 3.1); however, the scale and timing of potential future oil shale and tar sands development on these lands, as well as the technologies that would be used for development, are highly speculative at this time. Text has been added in Sections 6.1.5 and 6.2.5 to clarify that future levels of commercial oil shale and tar sands development (both on public and private lands) are unknown.

- 00157-019:** The PEIS is a programmatic-level document that analyzes allocation decisions. It is important to note that these allocations do not authorize the immediate leasing of lands for commercial development. Impacts would depend on many factors, including project sites, technologies to be used, and various activities involved in

the development. The impacts to wildlife (including greater sage-grouse) and surface and groundwater as well as the sources of required electric power would be addressed in subsequent project-specific NEPA documents. Depending on the type and level of development, regional water impacts may limit oil shale and tar sands development (Section 6.1.5.3.4). These site-specific NEPA analyses will evaluate specific occurrences of species of concern, analyze the environmental consequences of leasing and future exploration and development, including consideration of direct, indirect, and cumulative effects, reasonable alternatives, and mitigation measures to protect resources and resource values, as well as what level of development may be anticipated.

00157-020: The text in Sections 6.1.2.10, 6.1.3.10, and 6.1.4.10 of the PEIS has been changed to indicate that there may be impacts on property values resulting from the designation of BLM land for oil shale in tar sands development.

00157-021: Conflicts associated with potential oil shale leasing and existing oil and gas leases will be analyzed, and stipulations could be developed to mitigate the conflict consistent with BLM policy. It is the BLM's policy to optimize the recovery of both resources in an endeavor to secure the maximum return to the public in revenue and energy production; prevent avoidable waste of the public's resources utilizing authority under existing statutes, regulations, and lease terms; honor the rights of each lessee, subject to the terms of the lease and sound principles of resource conservation; and protect public health and safety, and mitigate environmental impacts.

For example, a very high percentage of WRFO is currently leased for oil and gas development and will honor the valid existing rights according to the terms and conditions of the lease. Some leases in the White River Planning Area have specific stipulations, which allow the BLM to locate well pads to not interfere with oil shale leasing (leasing or operations). Oil and gas operators submit applications for Permit to Drill in order to receive approval from the BLM to explore and develop the petroleum resources on their leases. As stated previously, the PEIS does not grant a property right and, therefore, there is no immediate conflict. However, if the area is opened to potential future oil shale leasing, specific conditions of approval could be developed to address potential conflicts, as a result of the NEPA documentation associated with the APD approval process.

Various factors can affect the level of exploration and development associated with oil and natural gas. Economics and market conditions will continue to drive exploration and production activities. The production of oil and gas is also dependent on the ability to transport product to refineries, especially whether there is excess capacity to carry new production. Energy demand, tightening of air quality standards, and protection of sensitive/threatened and endangered species may also impact the location and pace of oil and gas development. It is not anticipated that the designation of lands available for future commercial oil shale

leases would be a major contributing factor to the level of exploration and development.

- 00157-022:** The BLM believes that taking a measured approach to oil shale development, where each step builds upon a prior step, ensures that state and local communities have the opportunity to be involved and are fully informed of the activities associated with the program. The FLPMA and the Energy Policy Act of 2005 have specific requirements for coordination of activities with various levels of government (see Section 202(c)(9) of FLPMA and Section 369(e) of the Energy Policy Act). In addition, the BLM is committed to providing opportunities for state, local and Tribal governments to play a key role, as cooperating agencies, in the land use planning process. The BLM's Land Use Planning Handbook (H-1601-1) provides extensive guidance in Section I, paragraphs C, D, E, and F, regarding the role and the opportunities for participation in BLM planning and environmental processes.
- 00157-023:** The cumulative impacts analysis was conducted to the extent appropriate, as dictated by the limited scope and narrow allocation decisions being proposed in the PEIS (i.e., amending land use plans to allow certain lands to be considered for future leasing). A more specific cumulative analysis of socioeconomic impacts would be more appropriate prior to a leasing or development decision if and when specific technical and environmental information becomes available. However, projected levels of oil and gas development over 20 years (see Tables 6.1.5-4 through 6.1.5-6) were included in the socioeconomic cumulative impact assessment presented in Section 6.1.5.3.10. See also response to Comment 00157-012.
- 00157-024:** As the scale and timing of oil shale, tar sands, and ancillary facility development are not known, the analysis described in the PEIS was based on a series of assumptions regarding direct project employment, direct and indirect population (workers and their families) in-migration rates, and the provision and location of direct and indirect worker housing during both construction and operations phases that may be built to accommodate increases in project populations. The location of project housing is unknown but is not expected to be on public land and is likely to be largely temporary in nature. Additional services may be provided for housing developments, the locations of which are also unknown. Housing developed in local communities may be similar in nature to housing built for the local residential market. Text has been added to Section 4.11 of the PEIS indicating assumptions made with regard to the nature of temporary housing. Sections 4.11 and 5.11 describe the impacts of constructing housing that would be occupied by workers and their families on ROI employment and income. The timing and location of housing developments would be assessed as part of future NEPA reviews associated with individual oil shale and tar sands and ancillary facility development.

00157-025: The BLM is undertaking the PEIS under direction from Congress in the Energy Policy Act of 2005, which was an outgrowth of public energy policy discussions. While the BLM is providing an analysis to assess the impacts of the current direction, public policy discussions are outside the scope of the PEIS. In Chapters 4 and 5, the PEIS has identified a range of issues regarding oil shale and tar sands technologies that could be part of future discussions.

The socioeconomic analysis in the PEIS concluded that there would not be effects associated with the land allocation decisions other than a possible effect on property valuation.

00157-026: Overall, it is BLM's policy to optimize the recovery of both resources in an endeavor to secure the maximum return to the public in revenue and energy production; prevent avoidable waste of the public's resources utilizing authority under existing statutes, regulations, and lease terms; honor the rights of each lessee, subject to the terms of the lease and sound principles of resource conservation; and protect public health and safety, and mitigate environmental impacts. The feasibility of concurrent oil shale and natural gas development on the same properties is discussed in Section 4.2.1.1, which states that existing oil and gas or other mineral leases would likely preclude oil shale development, and also that areas leased for oil shale development in the future would be unlikely to be used for natural gas production. See response to Comment 52763-003.

00157-027: As the scale of development and project locations associated with oil shale, tar sands, and ancillary development, and consequently the size and residential location on in-migrating workers and their families, are not known, assessing the impact on individual local governments was not possible in the PEIS. The analysis in the PEIS was limited to estimating impacts for a region of influence in each state, which includes the counties in which project workers are likely to reside. As described in Section 4.11.1.1 of the PEIS, for the purposes of the analysis, in-migrating population assumed with each facility was assigned to local communities in each ROI based on facility direct workforce, community population, and intervening distances. Expenditure levels to support the in-migrating population at existing levels of service in each community were then projected for each county and aggregated to the ROI level.

When commercial-scale oil shale or tar sands resource development occurs, additional NEPA analyses would be undertaken, where project locations, employment levels, and the residential location and number of in-migrating workers in each phase of development would be known for each individual community in the ROI. This would enable individual local government-specific analyses of oil shale and tar sands development and ancillary facility impacts on local tax revenues, facility and infrastructure capacity and expansion costs, and on the local government expenditures required to maintain different levels of service.

- 00157-028:** Please see response to Comment 00157-012. The cumulative impacts analysis was conducted to the extent appropriate, as dictated by the limited scope and narrow allocation decisions being proposed in the PEIS (i.e., amending land use plans to allow certain lands to be considered for future leasing).
- 00157-029:** See response to Comment 00157-027.
- 00157-030:** The BLM is conducting a phased decision-making process—proceeding from land use planning to leasing to operational permitting. The land use planning or allocation decision does nothing more than remove an administrative barrier preventing the BLM from accepting applications. Therefore, subsequent NEPA analysis will be required prior to the leasing and development phases. Specific impacts on county and local governments will be analyzed in the future NEPA analysis, which can help counties focus on potential impacts associated with a potential leasing or plan of development proposal. The BLM also initiated the RD&D leasing process to provide important information that can be used as the BLM works with communities, states, and other federal agencies to develop strategies for managing any environmental effects, including those of impacts on local communities.
- 00157-031:** The BLM did not propose any employer housing on federal lands in the Draft PEIS. Specifically, the PEIS states that the location of employer-provided housing is unknown but not expected to be on public land. See also response to Comment 00157-027. Additional NEPA analysis would enable individual local government-specific analyses of oil shale and tar sands and ancillary facility impacts on local tax revenues, facility and infrastructure capacity and expansion costs, and on the local government expenditures required to maintain different levels of service provision in local government and educational and recreational services. These analyses could also include impacts on the provision of privately provided services, such as shopping, and on local wholesale and retail price inflation.
- 00157-032:** Based on the nature of the proposed action, existing sources of electrical power may be sufficient to power the operation, or electrical power may need to be generated on lease using either conventional energy sources like natural gas or renewable energy sources like wind or solar. A third hypothetical analysis may include the expansion of existing power plants or the construction of additional power plants (coal, gas, nuclear). In each case, the scope of the NEPA analysis would include the direct, indirect, and cumulative effects from activities described in a reasonably foreseeable development scenario.
- 00157-033:** Please see the response to Comment 00157-032.
- 00157-034:** As discussed in the Draft PEIS, there were various uncertainties regarding location of developments, technologies to be employed, and the lack of knowledge of specific aspects associated with the required infrastructure. These uncertainties also make it difficult to estimate the types and amount of raw

materials required for oil shale and tar sands development. Therefore, the decision to offer specific parcels for leasing was dropped from consideration in the PEIS. Subsequent project- or site-specific NEPA documents will be prepared to analyze the environmental consequences of leasing and future exploration and development taking into consideration the types of resources necessary for full-scale development.

00157-035: As the technologies, scale of development, and project locations associated with oil shale and tar sands resource and ancillary facility development are not known, the analysis described in the PEIS was based on a series of assumptions regarding the source of direct project employees and direct and indirect population (workers and their families) in-migration rates during both construction and operations phases. As the commentor suggests, some positions in each ROI are currently being filled from distant states, with anecdotal evidence of this occurring in the oil and gas industry presented in Section 3.10.2 of the PEIS. Accordingly, the PEIS assumes only a certain portion of labor for OSTs and ancillary development will come from labor markets within each ROI. Assumptions relating to the extent to which local labor would be provided from within each ROI are different for ROI and for the construction and operations phase of each facility. These assumptions, described in Section 4.11 of the PEIS, were based on publicly available NEPA reviews, past BLM experience with oil shale and tar sands and other energy-related projects, and industry data on power generation and coal mining. These assumptions are reasonable for a programmatic review of potential socioeconomic impacts.

00157-036: Given the programmatic nature of the PEIS, the purpose of the analysis of socioeconomic impacts is to provide an overview of the type and magnitude of impacts that would likely occur with the construction and operation of oil shale and tar sands facilities. As the scale of development and project locations associated with oil shale and tar sands resource development are not known, the analysis described in the PEIS was limited to estimating impacts for an ROI in each state, based on the likely residential location of project workers. As described in Section 4.11.1.1 of the PEIS, in-migrating population assumed with each facility was assigned to local communities in each ROI based on facility direct workforce, community population, and intervening distances. Expenditure levels to support the in-migrating population at existing levels of service are then estimated for each community and aggregated for each ROI.

If commercial-scale resource development occurs, additional NEPA analyses would be undertaken, where project locations, employment levels, and the number of in-migrating workers in each phase of development would be known, enabling a detailed analysis of oil shale and tar sands, and ancillary facility impacts on local tax revenues, facility and infrastructure capacity and expansion costs, and on the local government expenditures required to maintain different levels of service. Additional sources of revenue from local, state, and federal sources (including mineral lease revenues) to support increased state and local

government expenditures (including the cost of temporary housing and retail food establishment inspections) would be assessed, including impacts on TABOR local government revenue growth restrictions in Colorado, with some assessment made of the various channels available for local jurisdictions to receive funding from federal and state government.

00157-037: Attachment A1 in Appendix A and Attachment B1 in Appendix B contain descriptions of the expected reaction of the refinery industry to the availability of supplies of oil shale-derived feedstocks. In terms of additional refining capacity, the descriptions in A1 and B1 indicate that recent history has shown that the industry tends to expand existing facilities rather than develop wholly new ones.

Chapters 4 and 5 include summary information from Appendices A and B of the potential impacts associated with electrical transmission and pipelines corridors, additional workforce and housing needs, electrical generation capacity, refinery capacity, and timeline and other considerations (Sections 4.1.4, 4.1.5, 4.1.6, 4.1.7, 4.1.8, 5.1.3, 5.1.4, 5.1.5, 5.1.6, and 5.1.7, respectively). The analysis presented includes information on the impacts for one project to provide an example of the magnitude of potential effects. Section 6.1.5.3 contains the cumulative impact assessment for the alternatives, and Table 6.1.5-9 provides a summary of long-term activities including surface disturbance that would be related to transmission facilities and other activities associated with potential commercial development. The BLM believes that this level of information is adequate to support the proposed allocation decisions in the PEIS.

00157-038: The source of water needed for any oil shale and/or tar sands development projects would be specified in the project-specific NEPA documents and not in this PEIS. The water is unlikely to be diverted from public use water. Agricultural water might be a candidate for sources of water rights. Impacts on water resources caused by transfers of water from agricultural uses to oil shale development have been added to Section 4.5 of the PEIS. It would be a lessee's responsibility to obtain and maintain water rights necessary for its operations in accordance with state law. Thus, it would be mere conjecture to attempt an analysis of impacts from water demands for operations that might not obtain water rights.

00157-039: Please see response to Comment 00157-012. The cumulative impacts analysis was conducted to the extent appropriate, as dictated by the limited scope and narrow allocation decisions being proposed in the PEIS (i.e., amending land use plans to allow certain lands to be considered for future leasing).

00157-040: The only technology excluded from Colorado in Alternatives B and C in the PEIS is surface mining. Underground and in situ processes are allowed in both alternatives. Alternative A, the no action alternative, allows all technologies, including surface mining.

00157-041: At this preliminary stage, when the specifics of the extent of future oil shale and tar sands development are unknown, the discussion of the potential cumulative impacts to groundwater is general (see Section 6.1.5.3.5). Groundwater impacts can be better assessed when the results of RD&D activities are available and when specific proposed locations for oil shale and tar sands development are known.

Prior to leasing (when site-specific and technology-specific data will be available) or approval of a plan of development (when accurate information on water use, air emissions, employment, etc., will be available), additional environmental analysis will be performed including a cumulative analysis of groundwater impacts, as appropriate.

00157-042: Thank you for your comment, but the promulgation of regulations on environmental protection standards, setting royalty rates and addressing bonding, establishing standards for diligent development, and determining the allowable size of leases are outside the scope of the PEIS.

00157-043: As a programmatic evaluation conducted in support of land use plan amendments, this PEIS does not address site-specific issues associated with individual oil shale or tar sands development projects. A variety of location-specific factors (e.g., soil type, watershed, habitat, vegetation, viewshed, public sentiment, the presence of threatened or endangered species, and the presence of cultural resources) will vary considerably from site to site. In addition, the variations in extraction and processing technologies and project size will greatly determine the magnitude of the impacts from given projects. The combined effects of these location-specific and project-specific factors cannot be fully anticipated or addressed in a programmatic analysis. As a result, additional, site-specific NEPA analyses will be conducted prior to the issuance of commercial leases and the approval of specific plans of development. Secondary impacts can be more adequately addressed at this later stage as additional project-specific and site-specific details are available.

00157-044: The BLM believes that the RD&D program will be a source of additional useful information regarding commercially viable oil shale technologies and their impacts. In the Energy Policy Act of 2005, however, Congress did not authorize the BLM to wait for additional information from the RD&D program before completing this PEIS. The BLM will analyze all available, relevant information in an appropriate NEPA document before issuing leases for oil shale or tar sands. That analysis will include any new information from research or lessons learned on the RD&D leases or from studies or operations on nonfederal lands.

The deadline Congress set for the BLM to complete this PEIS has been exceeded, but that does not allow the BLM to postpone this PEIS until new information becomes available or until the industry is ready to invest in commercial operations. Currently, there is sufficient information on a programmatic level to

make a reasoned choice among the alternatives when considering whether lands should be opened or closed for application for commercial oil shale or tar sands leasing. The PEIS analyzes the environmental consequences of this allocation decision. The PEIS also describes the requirement for additional site-specific NEPA analysis prior to both issuance of commercial leases and approval of proposed exploration or development project.

- 00157-045:** The BLM does not have the authority to require industry to fund specific public services, but it has been made clear that any federal lessees will be required to comply with all applicable federal, state, and local laws and regulations.

As noted in response to Comment 00154-007, specific monitoring requirements to evaluate environmental consequences are more appropriate at the leasing and/or plan of development stage. Although specific monitoring plans are not included, examples of potential types of mitigation measures to protect wildlife, plants, and habitat resources are provided for consideration at subsequent stages of NEPA analysis.

- 00157-046:** Any commercial operations will be required by terms of their lease to comply with applicable laws and regulations regarding air quality protection and monitoring. Establishment of monitoring requirements and how they are funded are primarily a state function, and the BLM would have a limited role. As in many aspects of development on public lands, the BLM would expect to have a close working relationship with state and local regulators during the NEPA process.

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Memorandum

To: Colorado State Director, Bureau of Land Management (BLM)
Attn: Sherri Thompson, Programmatic EIS Manager

From: Regional Director, Intermountain Region

Subject: Comments, Draft Programmatic Environmental Impact Statement to Amend Land Use Plans to Allow Oil Shale and Tar Sands Leasing (PEIS)

In our capacity as a Cooperating Agency in the BLM's PEIS, we offer the following comments for your consideration. National Park Service Director Bomar appreciated having the opportunity to meet with the BLM Director and his staff on March 14, 2008 to discuss the PEIS. From that meeting we understand that you envision a three-step process for ultimately leasing oil shale and tar sands resources. The process, as was communicated to the NPS, is to first amend land use plans to allow for oil shale and tar sands leasing, the second step would be to offer the leases, and the third step would be to review and take action on operational permits. As we understand it, BLM envisions amending land use plans based on a broad, generalized look at the potential for leasing with little detail. At the leasing phase where compensatory property rights would be created, the Bureau would prepare a detailed environmental analysis. At the site-specific permitting stage, the Bureau would carry out a final analysis of specific development proposals.

We appreciate that BLM is required to carry out § 369 of the Energy Policy Act of 2005, which directs that "[n]ot later than 18 months after the date of enactment of this Act...the Secretary shall complete a programmatic environmental impact statement for a commercial leasing program for oil shale and tar sands resources on public lands, with an emphasis on the most geologically prospective lands within each of the States of Colorado, Utah, and Wyoming." This Congressional direction calls for an analysis over a very large area under a very pressing timeframe, further complicating the Bureau's task. In addition, we realize that the Bureau has had to contend with a host of uncertainties and has had to make an array of assumptions in preparing this analysis.

As you know the mission of the National Park Service is to protect parks and to provide for their enjoyment in a manner that will leave them unimpaired for future generations. Because oil shale or tar sands development could adversely impact units of the National Park System, the Bureau must take into consideration such impacts in light of the Secretary's duties under the NPS Organic Act (16 USC 1, et. seq.) before opening public lands to such development. Among other things this act directs that "[t]he authorization of activities shall be construed and the protection, management and administration of these areas shall be conducted in light of the high public value and integrity of the National Park System and shall not be exercised in derogation of the values and purposes for which

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these various areas have been established, except as may have been or shall be directly and specifically provided by Congress.”

The following eight units of the National Park System have a very high potential for being adversely affected by cross-boundary or direct impacts from exploration and development activities in what the PEIS calls the Region of Influence: Arches, Black Canyon of the Gunnison, Canyonlands and Capitol Reef National Parks; Colorado, Dinosaur and Fossil Butte National Monuments; and Glen Canyon National Recreation Area. Numerous additional national park units in the western United States could be adversely impacted by the regional air and water impacts likely to be generated from large scale, industrial activities associated with oil shale and tar sand development.

The PEIS contains a great deal more factual and background information useful to the analysis. But, from our perspective, the draft should still comprehensively analyze a mineral leasing and development process in the context of the three-state region that is also home to numerous National Park System units. New technologies may emerge but, fundamentally, what is being considered is an industrial process that requires logistics and infrastructure, uses electrical power and water, needs employees and oversight for operations, produces product that requires transport and has resultant impacts. Thus, we believe many of our comments from the scoping process (January 26, 2006) and our review of the preliminary draft (June 11, 2007) are still relevant.

We remain concerned with the potential impacts to NPS managed lands in light of the special protection they are afforded on behalf of the American public. As a result, we expect that any analysis of possible impacts associated with leasing of oil shale and tar sands will include an evaluation of the large scale, industrial development that may result from amending the twelve BLM Resource Management Plans. We are committed to working closely with BLM as the proposed plan amendment, possible leasing, and development scenarios move forward. We have prepared the attached detailed comments, which are geared toward improving the analysis contained in the environmental document and in assisting the BLM in meeting the requirements set forth in both the Energy Policy Act of 2005 and the National Environmental Policy Act (NEPA).

Thank you for the opportunity to comment on the PEIS. Questions or comments regarding this memorandum may be directed to Cordell Roy, State Coordinator—Utah, at (801) 741-1012, ext. 101 or his eMail address at cordell_roy@nps.gov.


Fr

Michael D. Snyder

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ATTACHMENT

NPS Comments on Draft BLM Programmatic EIS to Amend Land Use Plans to Allow Oil Shale and Tar Sands Leasing in Colorado, Utah and Wyoming (DES 07-06)

General Comments

The National Park Service has three primary concerns with the PEIS. First, the document limits its focus to amending 12 land use plans to open BLM managed lands for commercial leasing. As a result, the document does not fully address the requirements of the Act, which calls for a programmatic environmental impact statement for a commercial leasing program for oil shale and tar sands resources on public lands. It leaves the specifics of a commercial leasing program to a later time, and states that the Bureau intends to handle the NEPA compliance on such a program on a lease by lease basis.

Second, the document presents options for opening lands to commercial scale oil shale and tar sands development through a federal leasing program yet does not adequately analyze the impacts of doing so. Couched in terms that new technologies will emerge that may avoid many of the impacts associated with existing technology, the analysis presents an optimistic picture that impacts associated with the development of oil shale and tar sands can be avoided in the future. While such technologies may be developed in the future, NEPA compels a rigorous analysis based on available technology and information on environmental and socio-economic impacts. The current document does not reflect this requirement.

Third, in the past, BLM has always advised the NPS that it is most helpful to the Bureau if the NPS would raise adjacent park protection concerns during the Bureau's land use planning process when the Bureau is developing and/or amending existing land use plans. However, as relayed in the PEIS and conveyed to Director Bomar, the Bureau is now assuring us that the best time to raise park protection concerns is at the leasing stage. As a result, we will remain fully engaged in this process and will provide input at the leasing and site-specific permitting phase.

Depending upon the proximity of NPS units to potential oil shale or tar sands exploration or development, cross-boundary direct or indirect adverse effects may occur in the form of air or water quality impacts, sound, night sky, or visual impacts, and impacts on biologic or cultural resources. We also believe that large scale, industrial development associated with oil shale and tar sand development carries with it the potential for regional air and water impacts that may affect numerous parks in the western United States.

We realize that the BLM changed the focus of the draft preliminary EIS as a result of the Cooperating Agencies initial comments that the lack of information about specific, emerging technologies and their impacts rendered the analysis too speculative to support a decision to issue any leases. This same issue is evident in the current document, in which BLM's preferred alternative, Alternative B, makes nearly two million acres of public land available for oil shale and tar sands leasing without fully analyzing the magnitude of potential impacts to the environment. Under regulations implementing NEPA at 40 CFR § 1500.2(b), "[e]nvironmental impact statements shall be concise, clear, and to the point, and shall be supported by evidence that agencies have made the necessary environmental analysis."

After a careful review of Appendix A of the draft EIS, we believe that sufficient knowledge does exist to determine probable locations for future oil shale or tar sands development, and to project the type and extent of environmental impacts that may occur using current technology. The extensive history associated with past efforts to develop the oil shale resource along with the known impacts related to that development as presented in Appendix A would allow the BLM to undertake a more detailed and informative analysis than that presented in the existing document.

267-002

267-003

Deferring a detailed analysis of environmental impacts associated with the development of the oil shale and tar sands resource to the leasing stage of the process may not provide decision makers with enough information to fully comprehend the cumulative environmental consequences of making nearly two million acres of public land across a three-state region available for oil shale and tar sands leasing and subsequent commercial scale development.

267-003
(cont.)

Considering the above issues, we offer two separate options for the BLM that we believe would lead to a more appropriate analysis of potential development of the known oil shale and tar sands resource.

1. Postpone the programmatic environmental impact analysis for oil shale and tar sands development until the recently approved Research, Development and Demonstration projects bring to light results that can be applied to large scale development. We realize that given the direction contained in § 369 of the Energy Policy Act of 2005, this option may not comport with that statute.
2. Rewrite applicable sections of the exiting EIS to reflect documented impacts associated with currently available technology for development of the oil shale and tar sands resource. We recommend using the significant amount of information presented in Appendix A of the current document as a starting point.

267-004

Detailed Comments

Chapter 2, Page 2-2, Section 2.2.1, Existing Relevant Statutory Requirements – We recommend that the final EIS indicate that a large portion of the Tar Sands Triangle Special Tar Sand Area is located within Glen Canyon National Recreation Area. Glen Canyon, which is one of three NPS units open to federal mineral leasing, is not analyzed in the draft EIS because NPS lands are not considered “public lands” as defined under the Federal Land Policy and Management Act of 1976. However, lands in Glen Canyon may be subject to leasing of the tar sands resource in conjunction with other lands in the Tar Sand Triangle area thereby contributing to possible local and regional environmental impacts. With this in mind, we suggest the following language be added to Section 2.2.1:

267-005

43 C.F.R. §3141.4-2 (b) states that “[t]he issuance of combined hydrocarbon leases within units of the National Park System shall be allowed only where mineral leasing is permitted by law and where the lands are open to mineral resource disposition in accordance with any applicable Minerals Management Plan. In order to consent to any issuance of a combined hydrocarbon lease or subsequent development of combined hydrocarbon resources within a unit of National Park System, the Regional Director of the National Park Service shall find that there will be no resulting significant adverse impacts to the resources and administration of the unit or other contiguous units of the National Park System in accordance with §3109.2 (b) of this title. (Emphasis added).” We also request that this paragraph contain the statement that “the finding of no resulting significant adverse impacts to the resources and administration of NPS units is a statutory and regulatory responsibility of the Regional Director, National Park Service, and is not a function of this EIS.”

267-006

We recommend that sections of the final EIS addressing tar sands resources leasing contain a statement to the effect that the BLM recently adjudicated the status of 13 expired Combined Hydrocarbon Leases (CHL) in the State of Utah. Due to what the BLM has characterized as an administrative error which caused the leases to expire, BLM proposes to reinstate the leases upon payment of back rentals by lessees. The pending CHL leases cover over 148,000 acres and include lands in the Grand Staircase Escalante National Monument, several Wilderness Study Areas, and Glen Canyon National Recreation Area. The potential development of these leases needs to be factored into the cumulative analysis of the impacts associated with tar sands development in the areas that the Bureau is considering amending lands use plans to allow for new tar sands leasing.

267-007

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Chapter 3, Page 3-95, Section 3.5.1.2, Global Climate Change – This section of the draft EIS addressing climate change contains language from various literature searches (Intergovernmental Panel on Climate Change and the National Academy of Sciences) acknowledging the potential effects of “greenhouse gas” emissions on global climate. However, the document does not present an analysis that would estimate the potential contribution to this phenomenon from oil shale or tar sands development. On February 28, 2008, the International Center for Technology Assessment, Natural Resources Defense Council, and Sierra Club filed a formal legal petition with the Council on Environmental Quality (CEQ) seeking to assure that climate change analyses are included in all federal environmental review documents. While CEQ is not yet requiring that NEPA documents contain an analysis of a project’s potential contribution to global climate change, it is important to note that the Pew Center on Global Climate Change has stated that the refining of Canadian petroleum derived from Alberta oil sands produces 15 to 40 percent more carbon dioxide emissions than conventional oil. Section 526 of the Energy Independence and Security Act of 2007 states that “[n]o Federal agency shall enter into a contract for procurement of an alternative or synthetic fuel, including a fuel produced from nonconventional petroleum sources, for any mobility-related use, other than for research or testing, unless the contract specifies that the lifecycle greenhouse gas emissions associated with the production and combustion of the fuel supplied under the contract must, on an ongoing basis, be less than or equal to such emissions from the equivalent conventional fuel produced from conventional petroleum sources.”

267-008

When considering the global climate change implications associated with the production, refining, and eventual combustion associated with the potential 61 billion barrels of petroleum derived from oil shale and tar sands resources contemplated under BLM’s preferred alternative, we recommend that the BLM include a detailed climate change analysis in the final EIS.

Chapter 3, Page 3-232, Section 3.10.3.1 Visitation Statistics – Visitation to units of the National Park System is carefully tracked and reported in a timely manner. These data with accompanying economic and employment information is available at our website (www.nps.gov). For the eight parks in the Region of Influence the cumulative annual visitation (2006) is 4,460,683. The economic valuation of visitor spending for these parks in 2006 was \$285,501,000. Tourism is a huge industry in the intermountain west. Given the 83 Federal and State Recreation Areas listed in Table 3.1.2-1 a more comprehensive discussion of tourism and visitation could be presented in this section than the one sentence mention of 1999 visitation from three Utah State Parks. The Institute for Outdoor Recreation and Tourism at Utah State University has great expertise in these matters and could provide great assistance to BLM in preparing the final EIS.

267-009

Chapter 3, Page 3-233, Section 3.10.4 Transportation – This brief section seems to focus on county roads. Based on information we have received from State of Utah Department of Transportation logistics planners, state highways in the Region of Influence are already stressed and exhibiting much shorter pavement life-cycling just from today’s intense oil and gas activities. Add to that the level of development anticipated in BLM’s earlier Reasonably Foreseeable Development Scenario for oil shale and tar sands and we are concerned that transportation infrastructure impacts would be compounded. We mention this because such impacts, in addition to creating unsafe conditions, can adversely affect park visitation. For a more complete discussion of this issue, we refer BLM to our June 11, 2007 memorandum.

267-010

Chapter 4, Page 4-29, Section 4.5, Water Resources (and all other water resources sections) – We recommend that BLM undertake a more in-depth analysis of region-wide water consumption needs and possible contamination issues. As a downstream recipient of regional waters and manager of land resources dependent on regional aquifers, the NPS is concerned with the amount of water that may be consumed by large scale oil shale and tar sand development within the BLM’s two million acre preferred alternative. As written, the draft EIS does not model or predict possible water quality and quantity impacts to region-wide resources including those managed or depended upon by other federal land management agencies.

267-011

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Air Resources (all sections) – The draft EIS air quality sections do not analyze potential impacts to air quality in NPS units as well as regional air quality due to oil shale and tar sands development in the three state areas. The draft document states that it is not analyzing impacts to air quality “[s]ince all activities conducted or approved through use authorizations by the BLM must comply with all applicable local, state, tribal and federal air quality laws, statutes, regulations, standards, and implementation plans, it is unlikely that future oil shale/tar sands leasing and development would cause significant adverse air quality impacts.” (See Mitigation Measures sections 4.6.2 and 5.6.2.) Another paragraph states that “[i]mpacts on air quality would be limited by applicable local, state, Tribal, and federal regulations, standards, and implementation plans established under the Clean Air Act and administered by the applicable air quality regulatory agency, with EPA oversight.” There are many potential air quality related ecological effects that can occur at levels well below the values set in the aforementioned air quality laws, statutes, regulations, standards, and implementation plans. The final EIS should evaluate air quality impacts and can not dismiss them by pointing to other regulatory authorities.

267-012

We recommend that the final EIS address air quality impacts to the national ambient air quality standards (sulfur dioxide, nitrogen dioxide, ozone, carbon monoxide, particulate matter, and lead), maximum allowable increases of regulated pollutants (increments), mercury, carbon dioxide, visibility, and atmospheric deposition. We also recommend that it address air quality regionally, globally (carbon dioxide and mercury), and the special protection afforded Class I wilderness areas and national parks designated under the Clean Air Act.

Under some of the alternatives 12,000 to 15,000 megawatts of electrical generation are identified. If this is accomplished with typical coal-fired power plants it would mean the construction of six to eight new generating stations. The NPS experience to date has been that a single power plant has the potential to cause significant, and at times adverse, effects in those areas. The scale of the power generation raises concerns. We recommend that the air quality impacts from power generation in combination with the hydrocarbon processing be analyzed.

Lands Acquired under the Land and Water Conservation Fund (L&WCF) and the Urban Park and Recreation Recovery Programs (UPRR) – We recommend that BLM analyze in the final EIS whether any lands acquired using funds under the L&WCF and the UPRR programs would be affected by proposed oil shale and tar sands leasing and development. The NPS was unable to determine which if any such areas may be impacted. There are 3 sites in Colorado, 4 sites in Utah, and 31 sites in Wyoming acquired with L&WCF assistance.

We recommend that the Bureau consult directly with the officials who administer the L&WCF program in the State of Wyoming, Colorado and Utah to determine any potential conflicts with section 6(f)(3) of the L&WCF Act (Public Law 88-578, as amended). This section states:

267-013

"No property acquired or developed with assistance under this section shall, without the approval of the Secretary [of the Interior], be converted to other than public outdoor recreation uses. The Secretary shall approve such conversion only if he finds it to be in accord with the ten existing comprehensive statewide outdoor recreation plan and only upon such conditions as he deems necessary to assure the substitution of other recreation properties of at least equal fair market value and of reasonably equivalent usefulness and location."

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Responses for Document 00267

00267-001: Thank you for your comments. As a cooperating agency on the PEIS, you provided special expertise and agency knowledge that was valuable in helping to draft the PEIS. As preparation of the PEIS proceeded, and in consultation with all the cooperating agencies, it was determined that the analysis to support leasing decisions would require making many speculative assumptions regarding potential, unproven technologies, and consequently, the decision to offer specific parcels for lease was dropped from consideration in the PEIS. Since the PEIS's allocation decision does nothing more than remove an administrative barrier preventing the BLM from accepting applications, subsequent NEPA analysis will be required prior to the leasing and any development activities.

As required by NEPA, the BLM will prepare the appropriate level of NEPA analysis based on the nature and scope of subsequent leasing and development actions. This additional analysis will consider any new or site-specific information regarding proposed oil shale technology and any anticipated environmental consequences. The BLM is committed to providing the National Park Service the opportunity to become a cooperating agency on any subsequent NEPA analyses.

00267-002: The BLM is aware of the requirements of the Energy Policy Act of 2005, but the BLM is also aware of the requirements of other laws when preparing a programmatic environmental impact statement. The Energy Policy Act of 2005 did not exempt the Secretary from complying with the NEPA and other environmental laws and associated regulations. Consistent with the congressional mandates and in full compliance with NEPA, the BLM is moving forward with this broad-scale PEIS that analyzes the environmental consequences of a land use planning allocation decision. As pointed out by the cooperating agencies, the BLM cannot acquire information at this time to project the number, locations, or technologies of future commercial oil shale operations. Congress has not authorized the BLM to delay this PEIS until technologies have been proven commercially viable. Thus, this PEIS supports the programmatic decisions to amend land use plans to open certain lands to further consideration of oil shale or tar sands leasing and to close other lands to such leasing.

The PEIS, while not exhaustive in its identification of potential impacts of commercial development, discloses potential impacts of oil shale and tar sands development based primarily on BLM experiences with surface-disturbing activities from other types of mineral development (e.g., coal mining and oil and gas). The BLM cannot say for certain that those would be the impacts from commercial oil shale or tar sands development, but we can say, based on our experience with other types of mineral development, that those type of impacts may occur.

This PEIS fulfills three purposes: (1) it provides sufficient information for the decision maker to make a reasoned choice among the alternatives as to which lands should be open or closed to oil shale or tar sands leasing; (2) it addresses additional information needed by industry, government, and the public to facilitate future environmental analysis of leasing and development actions; and (3) it allows operators to compare environmental impacts of their proposed operations with those identified in the PEIS, and to include proposed mitigation measures (although not necessarily those potential mitigation measures discussed in the PEIS) as part of their proposed actions. It puts operators on notice that development of oil shale and tar sands can occur only if it is done in an environmentally acceptable manner. It also reiterates the obvious requirements that any development must comply with existing laws and regulations regarding the protection of the natural, social, and cultural environment.

00267-003: It is correct that it is most helpful to the BLM if the National Park Service raises adjacent park protection concerns during the BLM's land use planning process. However, for oil shale development, the BLM anticipates that it would proceed in a three-step decision-making process instead of, although similar to, that used for federal onshore oil and gas (two-step process). The BLM determined that it was necessary to segregate the normal process into (1) the allocation decision, (2) the leasing decision, and (3) the permit or plan of development decision because of the experimental stage of the oil shale and tar sands technologies. Normally, the BLM is able to include sufficient site-specific information in its NEPA documentation for RMP amendment so that an additional NEPA document is not required for issuing an oil and gas lease. The BLM welcomes the National Park Service's continued participation in subsequent NEPA analysis.

For the BLM to undertake a more detailed analysis, as suggested, too many unsupportable and highly speculative assumptions would need to be made, which would call into question the ability to make an informed decision. However, the BLM, using comparable information based on BLM's experience with surface-disturbing activities from other types of mineral development and the best available information, such as that contained in Appendix A, discloses potential impacts (direct, indirect, and cumulative) and provides the decision maker with available, essential information for making the allocation decision. At the leasing decision stage, a more specific analysis would be able to be completed based on more specific technical and environmental information.

00267-004: The National Park Service correctly states that Option 1 does not comport with the requirements of Section 369 of the Energy Policy Act of 2005. As discussed in response to Comment 00267-003, for the BLM to perform the analysis as suggested in Option 2 would require too many unsupportable and highly speculative assumptions and would call into question the ability to make an informed decision.

- 00267-005:** Thank you for your suggestion to enhance the description of the process that would take place if oil shale or tar sands development would be considered on NPS lands. However, this PEIS addresses only BLM-administered lands, and the process for NPS lands is outside the scope of the decision to be made.
- 00267-006:** This comment is a continuation of the previous comment; please see response to Comment 00267-005.
- 00267-007:** Although these CHL leases do exist, for the purposes of analysis in the PEIS, the BLM assumed no development on these leases, because during the last 20 years no activities or development proposals were submitted to the BLM (see Section 2.4.2). The industry has not demonstrated any technology for tar sands that would be commercially viable. However, the cumulative impacts analysis for tar sands development (Section 6.2.5) does acknowledge the potential for tar sands development on nonfederal lands, and text has been added to state that there may also be future development on CHLs.
- 00267-008:** Section 3.5.1.2 of the PEIS describes the existing state of knowledge regarding climate change. However, no climate change-related pollutant emissions would result from the alternatives examined for making BLM-administered lands available for potential future commercial leasing of either oil shale or tar sands resources. This section also indicates that the assessment of GHG emissions and climate change is in its formative phase, and it is not yet possible to know with confidence the net impact on climate. In addition, the Final PEIS has been modified to include the following text: “The lack of scientific tools designed to predict climate change on regional or local scales limits the ability to quantify potential future impacts. However, potential impacts on air quality due to climate change are likely to be varied. For example, if global climate change results in a warmer and drier climate, increased particulate matter impacts could occur because of increased windblown dust from drier and less stable soils. Cool season plant species’ spatial ranges are predicted to move north and to higher elevations, and extinction of endemic threatened and endangered plants may be accelerated. Because of the loss of habitat, or competition from other species whose ranges may shift northward, the population of some animal species may be reduced. Less snow at lower elevations would be likely to impact the timing and quantity of snowmelt, which, in turn, could impact aquatic species.”
- 00267-009:** As public land in the three state ROIs is primarily used for hunting and other forms of dispersed outdoor activities, the numbers of visitors using these lands for these recreational activities are not available from all administering agencies. Although, as the commentor suggests, data on visitation may be available from some agencies, total visitation to each ROI is incomplete. Assessment of the impacts of oil shale or tar sands development on the recreational economy analyzes the impact of losses in employment and income in the sectors providing recreation goods and services in each ROI, and does not depend on visitation

statistics. Resources in each ROI used for recreation are listed in Table 3.1.2-1 of the PEIS.

00267-010: The transportation sections in Chapters 4 and 5 of the Final PEIS have been supplemented to ensure that the discussion of impacts are consistent with the decisions in the PEIS. The Natural Park Service's comments are being addressed at a general level because of the lack of information regarding where development may occur.

00267-011: The PEIS uses long-term hydrologic data, states' water plans, and historical water consumption data to evaluate regional water availability in the oil shale basins. Potential contamination of water resources is also addressed at a programmatic level (see Section 4.5). The PEIS lays an analytical foundation for subsequent project-specific NEPA documents regarding oil shale leasing and development. The amount of water that may be consumed depends on many factors, including scale of development, technologies used in the development, economy, and the locations and hydrologic conditions of project sites. The development also is restricted by the ownership of water rights by developers at the time they apply for leasing. Finally, whether enough water is available for development depends on the results of intensive negotiations between various parties, including water rights owners, state and federal agencies, and municipal water providers as well as the developers.

The PEIS does not model possible water quality and quantity impacts to region-wide resources because there are so many factors that remain undefined. This PEIS is a programmatic-level document, analyzing allocation decisions. These allocations do not authorize the immediate leasing of the lands for commercial development, nor do they authorize commercial development. Modeling at this stage would rely on many speculative assumptions and would generate unreliable results for use in future project-specific NEPA analyses.

00267-012: As stated in Section 1.1 of the Draft PEIS, the BLM proposes to amend 12 land use plans in Colorado, Utah, and Wyoming to describe the most geologically prospective areas administered by the BLM in these states where oil shale and tar sands resources are present, and to decide which of those areas will be open to application for commercial leasing, exploration, and development. Additionally, the analysis conducted in preparation of this PEIS was based on available and credible scientific data. As a programmatic evaluation, conducted in support of land use plan amendments, this PEIS does not address site-specific issues associated with individual oil shale or tar sands development projects. A variety of location-specific factors (e.g., soil type, watershed, habitat, vegetation, viewshed, public sentiment, the presence of threatened or endangered species, and the presence of cultural resources) will vary considerably from site to site. In addition, the variations in extraction and processing technologies and project size will greatly determine the magnitude of the impacts from given projects. The combined effects of these location-specific and project-specific factors cannot be

fully anticipated or addressed in a programmatic analysis. As a result, additional, site-specific NEPA analyses will be conducted prior to the issuance of commercial leases and the approval of specific plans of development. The BLM would invite other federal, state, local, and Tribal agencies to participate as cooperating agencies on these site-specific project-level NEPA documents.

The proposal (describing where oil shale and tar sands resources are present, and to decide which of those areas will be open to application for commercial leasing, exploration, and development) would not result in the emissions of any climate change-related (or other) air pollutants. Speculation about project locations and how development might occur would require many assumptions that are premature at this stage in the process. If a decision is made to make oil shale and/or tar sands available for future leasing, detailed potential air quality and climate impacts will be appropriately evaluated in detailed, site-specific NEPA analyses (including potential direct, indirect, and cumulative impacts) before issuing leases and approving plans of development.

- 00267-013:** The decisions in the PEIS would only apply to BLM-administered lands that are open to mineral entry. In the case of any acquired lands, the BLM must publish an “opening order” that would make them available for mineral development. In the specific case of lands acquired by the BLM utilizing LWCF funds, the lands are not opened to mineral entry because of the clause contained in the comment. For that reason, no BLM-administered lands acquired utilizing LWCF funds would be available for application to lease under any alternative in the PEIS.

Thank you for your comment, Kenneth Parsons.

The comment tracking number that has been assigned to your comment is OSTSD52770.

Comment Date: March 19, 2008 16:33:43PM

Oil Shale and Tar Sands

Comment ID: OSTSD52770

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Privacy Preference: Don't withhold name or address from public record

Attachment: RIO BLANCO COUNTY COMMENTS.doc

Comment Submitted:

[See Attachment.](#)

**RIO BLANCO COUNTY COMMENTS
ON
OIL SHALE PEIS DRAFT**

Introduction

Rio Blanco County thanks the BLM for including us as a Cooperating Agency during the PEIS process. When this process began, we understood the purpose of the PEIS project was to provide for commercial leases for the extraction and processing of oil shale. However, the purpose was changed roughly a year into the process from awarding commercial leases, to identifying what lands might be made available for commercial leasing at a future date. One reason for this change in purpose was, as we understood it, driven by a lack of definition of what processes had the potential to be commercially viable for the extraction and processing of shale oil. Without a clear understanding of these processes, it is extremely difficult to determine the impacts that might be experienced in the tri-state area where oil shale operations would take place. Further, there was a need for a contemporary, in-depth look at the current socioeconomic status in the region prior to projecting what the affect of oil shale leasing and development might be.

It is our understanding that no surface mining activities would take place within Colorado; that the purpose of the PEIS study was to identify lands that might be made available for commercial leasing at some time in the future; that the bulk of Volumes 2 and 3 address the various existing technologies for extraction of the petroleum product from the shale material, and the refining of the product, it seems premature to provide in depth comments until the specific process is known, which could be totally different than those discussed in the draft document, that prior to any future commercial leasing, additional site specific NEPA analysis would be conducted and analyzed; and, that this PEIS would be used, as the basis, to amend 12 land use plans in Colorado, Utah, and Wyoming, to provide the opportunity for leasing.

Rio Blanco County submitted comments on an earlier draft document, provided to Cooperating Agencies. Virtually all of the comments submitted at that time still apply to this Public Oil Shale and Tar Sands PEIS publication, and have been included in these comments, as appropriate. The earlier draft document contained four "Alternatives" none of which were viewed favorably by Rio Blanco County.

Research and Development

We reiterate our concern that none of the alternatives provide for a continuation of RDD leasing even though there is currently no proven commercial in-situ shale oil extraction process. This would seem to close the door to any research project which does not now currently have a RDD lease or own the mineral rights to oil shale outright. This does not seem conducive to developing a viable domestic commercial shale oil industry expeditiously.

52770-001

Local Government and Housing

The PEIS referred to Federal, State and private property owner reviews and approvals, but omitted reference to local government review and approval. Further, the PEIS document does not address how, or if, local land use codes and regulations will be considered in the commercial leasing process, or how such consideration would take place. Local community housing would include "temporary housing built in local communities" per the PEIS document. This appears to run counter to current local land use codes, and expressed views of local government. Given the current and projected levels of natural gas development in the Piceance and Uinta basins and the current utilization of mancamps due to housing limitations, this approach would mean building complete new towns from scratch. Significant limitations on domestic water sources will likely prevent the construction of new towns in Rio Blanco County. The PEIS proposes large, employer-housing compounds located on Federal lands, but does not provide sufficient discussion regarding the socioeconomic impacts that will be caused by such developments; i.e. schools, recreation, shopping, supply and demand impacts on prices, governmental services, etc. No expectations of local governments and/or communities related to employer provided, remote housing was discussed.

52770-002

SocioEconomics

In general, there is a need for the PEIS to address cumulative time lines, population growth, and labor needs in the same section, charts, and analysis for socioeconomic impacts. For example, population growth, in the different communities within Rio Blanco County, appears to be higher than those shown in the PEIS document, which refers to the growth as "moderate". At the present time, Rio Blanco projections for the county are an increase from approximately 6,200 people to approximately 18,000 people by 2030, which is not deemed as moderate.

A socioeconomic study is nearing completion which could potentially fill this need. This study, funded by the state of Colorado, has been overseen by a committee of local government officials from the study area and representatives of affected state agencies. The report documents the development and calibration of the Northwest Colorado Socioeconomic Projection (NWCSP) model and presents socioeconomic and fiscal forecasts for a multi-county region of northwest Colorado. The study area encompasses Mesa, Garfield, Rio Blanco and Moffat counties although economic projections recognize the resort influences in some adjoining counties and the interrelationship with similar resource development in nearby Wyoming and Utah. It is the hope of Rio Blanco County that this study, available April 11, 2008, at www.agnc.org, can be incorporated into the documentation for this PEIS.

52770-003

Air Quality

In reference to the conclusion stated on page ES-6 of "Some minor impacts on sensitive species, air quality, and visual resources may occur off-site. The environmental analyses completed previously by the BLM on the projects resulted in Findings of No Significant

52770-004

Impact.” does not seem warranted. The current and projected levels of natural gas development in the Piceance and Uinta basins, coupled with 3 class I wilderness areas just to the east (prevailing winds from the west), combusting natural gas at this level will likely violate air quality limits. The two recent air quality warnings for ozone issued in the upper Green River basin of Wyoming bear witness to how rapidly air quality can be affected by development in hitherto pristine regions.

52770-004
(cont.)

Power Generation

The PEIS assumes that any additional power requirements would come from conventional coal-fired generation facilities. Given current and projected levels of natural gas development in the Piceance and Uinta basins coupled with 3 class I wilderness areas just to the east (prevailing winds from the west), combusting coal conventionally in Moffat Co, CO, and Uintah Co, UT, is not a realistic assumption. Current projections for the Central Rockies indicate that current power production is already inadequate to deal with current growth rates. One new power plant is already under construction at Bonanza, UT, and more are needed. Also, given the time frames included in the PEIS document for commercial operations to ramp up, there would not appear to be adequate time to permit, build, and test new coal fired generation plants. The abundance of natural gas in the region, and to be produced as a by product of the oil shale recovery operations, gas fired generation facilities should have been included in the PEIS document and evaluated. Local impacts would be greatly altered based on the number and type of additional power generation facilities required.

52770-005

Miscellaneous

There was not a clear understanding or definition of the "threshold effects" statements contained in the PEIS documents. For example: how is "moderate effect" and "large effect" defined? A table showing these definitions, thresholds and effects would be very helpful.

52770-006

The PEIS document does not adequately deal with the adverse impacts of reductions in traditional recreational use of the Federal lands involved; or the lack of local facilities to support traditional recreational uses of lands in, or near, the ROI.

52770-007

Summary

Rio Blanco County thanks the BLM for this opportunity to critique the OSTs PEIS as it applies to our region. We see several areas such as air quality, power generation, and socioeconomic impacts which need further analysis and hope that these concerns may be addressed in order to provide a document which accurately and realistically depicts the implications of oil shale development.

Responses for Document 52770

- 52770-001:** The description regarding the relationship of the RD&D projects to the PEIS, including the PRLA acreages, have been rewritten to clarify their situation. The scope of the analysis for the PEIS does not include review of the decisions by the Secretary to issue the existing RD&D leases described in Section 1.4.1. Those leases authorize activities on six 160-acre parcels located in Colorado and Utah and also identified conditions under which commercial development could occur on 4,970-acre preference right lease areas included in the leases. A total of 30,720 acres may be developed under terms of these leases. The RD&D leases are prior existing rights, and they are not subject to decisions in the PEIS with the exception that both Alternatives B and C address the subsequent availability of the lands contained in the leases should the initial lease holder relinquish the existing leases. Additional RD&D leases may occur on lands open for oil shale leasing.
- 52770-002:** Programmatic environmental impact statements are used to evaluate broad policies, plans, and programs, and they provide an effective analytical foundation for subsequent project-specific NEPA documents. When applications to lease are reviewed, the BLM will conduct further site-specific NEPA analysis, including consideration of direct, indirect, and cumulative effects; reasonable alternatives; and mitigation measures, as well as what level of development may be anticipated. This future analysis will be done in the context of ongoing and anticipated future development of other resources within the area of influence of any proposed oil shale lease and will take into account the types of local government impacts raised in this comment.
- 52770-003:** Given the programmatic nature of the PEIS, the purpose of the analysis of socioeconomic impacts is to provide an overview of the type and magnitude of impacts that would likely occur with the construction and operation of representative oil shale, tar sands, and ancillary facilities.

The socioeconomic analysis described in the PEIS was limited to estimating impacts for an ROI in each state based on the likely residential location of project workers and, consequently, the region in which the majority of socioeconomic impacts of the prospective facilities would most likely occur. If commercial-scale resource development occurs, additional NEPA analyses would be undertaken, taking into account actual worker residential locations by county, and the consequent impacts on county population growth.

Population baseline data and projections were the most recent data available when the Draft PEIS was released. Population projections for each ROI, including data for 2004 presented in Section 6.1.1.10, were taken from county, population forecasts prepared by each state and reflect growth rates projected in those forecasts. The report cited in the comment was used to describe the potential growth of the oil and gas industry in northwest Colorado in the PEIS.

52770-004: Thank you for your comment.

52770-005: Evaluation of the complete impacts of power requirements for oil shale/tar sands development is considered to be too speculative for analysis at this time. The amount of power required varies with technology to be implemented, and the source of the power (and therefore the impacts) is unknown. Required power could come from coal-fired plants, nuclear plants, natural gas, or renewable energy sources.

52770-006: The potential magnitude of impacts in different impact categories (e.g., habitat fragmentation and water depletions) are defined for ecological resources in Sections 4.8.1 and 5.8.1 of the PEIS. Impact magnitude is described in these sections as small, moderate, or large using the following definitions. A small impact is one that is limited to the immediate project area, affects a relatively small portion of the local population (less than 10%), and does not result in a measurable change in carrying capacity or population size in the affected area. A moderate impact could extend beyond the immediate project area, affect an intermediate portion of the local population (10 to 30%), and result in a measurable but moderate (not destabilizing) change in carrying capacity or population size in the affected area. A large impact would extend beyond the immediate project area, could affect more than 30% of a local population, and result in a large, measurable, and destabilizing change in carrying capacity or population size in the affected area.

Generally, for other resources the meaning of comparative statements can be understood from the context of impact descriptions in the text that are specific to each resource area.

52770-007: Programmatic environmental impact statements are used to evaluate broad policies, plans, and programs and provide an effective analytical foundation for subsequent project-specific NEPA documents. The PEIS is considering the effects of the proposed decision to identify lands for application for commercial leasing, and no rights in federal lands are included in the proposed actions. The BLM did consider impacts on recreation use in the Land Use and Socioeconomic sections of Chapter 6 and found that, other than possible socioeconomic impacts on property values, there were no significant impacts associated with the proposed decision.

The issue of the adequacy of local recreation facilities is a highly specific issue and is beyond the scope of the PEIS considering land allocation decisions. This is an issue that may be addressed in subsequent NEPA analysis considering an application(s) for commercial leasing depending upon the situation in the particular area that would be affected.

Thank you for your comment, Governor Bill Ritter, Jr..

The comment tracking number that has been assigned to your comment is OSTSD52837.

Comment Date: March 20, 2008 12:47:36PM

Oil Shale and Tar Sands

Comment ID: OSTSD52837

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Attachment: Governor Bill Ritter Jr FINAL.pdf

Comment Submitted:

Attached are the comments from Governor Bill Ritter, Jr., State of Colorado

These supercede the previous version. [See Attachment.](#)

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Bill Ritter, Jr.
Governor

March 20, 2008

BLM Oil Shale and Tar Sands Draft Programmatic EIS
Argonne National Laboratory
9700 S. Cass Avenue
Argonne, IL 60439

Re: *Draft Oil Shale and Tar Sands Resource Management Plan Amendments to Address Land Use Allocations in Colorado, Utah, and Wyoming and Programmatic Environmental Impact Statement (DES 07-60)*

To Whom It May Concern:

As the Governor of the State of Colorado, and in coordination with the Colorado Department of Natural Resources, Colorado Department of Public Health and Environment, and Colorado Department of Local Affairs (Departments), I respectfully submit the following comments regarding the Department of the Interior, Bureau of Land Management's (BLM) *Draft Oil Shale and Tar Sands Resource Management Plan Amendments to Address Land Use Allocations in Colorado, Utah, and Wyoming and Programmatic Environmental Impact Statement (Draft PEIS)*. The Draft PEIS raises important issues for Coloradans, and all Americans, with respect to energy supplies, environmental protection, socioeconomic impacts, and national security. If BLM were to authorize a commercial oil shale industry in Colorado, such a development would likely constitute the largest industrial development in the State's history with enormous implications for all of Northwest Colorado and for the State itself.

For Colorado, there is much at stake in the outcome of this program. Colorado recognizes the importance of the oil shale resource to the country. In our uncertain world, a reliable, sustainable domestic oil-based resource is increasingly important. But equally important, from Colorado's perspective, is protection of the State's exceptional environment including our air quality, water quality, vegetation and soil resources. Northwest Colorado is blessed with a remarkably diversified economy in which agriculture, tourism, recreation, hunting & fishing, natural gas & mineral development, retirement communities, and their economic drivers co-exist in a relatively balanced and supportive way. Within the Piceance Basin, Colorado is beneficiary of some of the nation's most important wildlife resources, including robust elk populations and the largest migratory mule deer in North America. These wildlife treasures, the envy of other states, have gradually evolved and grown over the past century to the exceptional levels of today. The importance of the State's wildlife resources is not something Colorado takes for granted.

Similarly, Colorado is very mindful of the potential impacts of oil shale development on Colorado's water resources. The State is rapidly approaching full allocation of its Colorado River entitlements where Colorado will enter a new period of trading and sharing water between different users. If oil shale were to consume vast quantities of water, there would be corresponding impacts to the State's agricultural, recreational, and other energy sectors on the West Slope, the Front Range and even along the Eastern Plains. Hence, the State is very concerned that the water implications of this industry be understood prior to decisions regarding commercialization.

Therefore, the State places great importance on a thoughtful, comprehensive PEIS, whereby federal, state and local decision-makers will have the necessary tools in hand to evaluate what type of federal program makes the most sense at this point in time. Based on our evaluation of the Draft PEIS and the information in hand, it is premature for the BLM to make any decisions that allocate federal land to a commercial leasing program through its resource management plans or otherwise.

BLM must gain critical answers to many questions before any commitment to commercial leasing occurs. Equally important, BLM must similarly gain answers to such questions before any rules and regulations for commercial oil shale development can or should be finalized. Absent obtaining these answers, BLM and Colorado run the serious risk of development that will have tremendous adverse impacts on Colorado.

The State continues to believe that the best course of action is to see the research and development program authorized by BLM developed, tested, and monitored so the answers can be forthcoming. Colorado is host to five of the six federal research and development sites and we are confident these programs will yield the necessary information upon which rules and regulations and commercial leasing can be based.

Importance of Northwest Colorado

Northwest Colorado is blessed with diverse, exceptional natural resources and a vibrant, diversified economy. For starters, it is the home to world-class hydrocarbon resources, holding trillions of cubic feet of clean-burning natural gas which are currently undergoing an unprecedented and historically unanticipated gas development boom. In 2006, natural gas and other energy-related development accounted for 15 percent of direct and secondary employment in the region. Similarly, the region has one of the most important oil shale deposits in the world, as described below.

The region also supports superlative wildlife resources. The Piceance Basin is home to the largest migratory mule deer herd in North America, a robust migratory elk population, one of only six greater sage-grouse populations in Colorado, populations of Colorado River cutthroat trout, and a host of other wildlife species. These wildlife resources have been built up over millennia and are of long-term statewide and national economic, ecological, and aesthetic importance. Colorado's future is reliant on these resources remaining strong and healthy.

In the last twenty years, the region has developed a growing recreational tourism industry as well as a vigorous hunting and fishing community. In 2006, approximately 17,000 jobs were found to be supported by the tourism industry for the region including Moffat, Rio Blanco, Garfield, and Mesa counties, representing about 15 percent of the jobs in the area. About 20 percent of the tourism jobs in Northwest Colorado are in the outdoor recreation segment -- or about 3,400 jobs.

The region also sustains a healthy agriculture industry, a vibrant and long-standing ranching tradition, and growing retirement communities. Employment in the agriculture and ranching industries contribute between 6 percent and 15 percent of all base jobs in the counties in this region. Retirees comprise 13 percent of the population in the region and their spending supports 11 percent of the basic jobs.

As a result of its abundance of natural resources, Northwest Colorado is experiencing extraordinary growth in population and associated challenges. Housing costs in the region, roughly 35 percent below comparable Denver metropolitan area costs just six years ago, now often match or exceed Denver-area prices. Housing affordability is a significant challenge to these local communities, and the capacity of local communities to absorb growth is already largely consumed. Many workers are housed in hotels and motels rather than conventional housing. Many of the conventional resources available to local governments to meet infrastructure needs, like aggregates and construction materials, are being diverted to the gas patch. Much of the transportation infrastructure in these communities is in disrepair and is being severely stressed by growth pressures. The costs to repair infrastructure will require up-front financing, before revenues become available from traditional sources such as severance taxes, property taxes, sales taxes, and federal royalties.

This region is thus vitally important to Colorado's future. It is in a precarious balance in the face of extraordinary pressures precipitated by possibly the largest industrial development in the history of the state. Everything state and federal policy makers do with regard to Northwest Colorado must protect the resources, values, and diverse economies and interests found there, and we cannot simply think of this region as an area to be sacrificed for any one purpose.

A Rational Approach to Oil Shale Development

Northwest Colorado is also home to extraordinary oil shale resources, among the richest in the world, yielding 25 gallons of oil or more per ton of rock and estimated to hold nearly 500 billion barrels of recoverable shale oil, which is more than double the proven reserves of Saudi Arabia. Successful development of this resource could provide a substantial new source of domestic oil for the United States, which would have positive implications for our national energy policy and national security. Demand for oil is rapidly increasing while additions to reserves are in decline, both domestically and globally. The United States currently imports considerable quantities of oil from unstable regions and regimes whose interests may conflict with ours.

Remarkable as Colorado's oil shale resource is, however, it has remained in the ground since its discovery over a hundred years ago. Past attempts at development have failed due to a

number of challenges -- technical, economic, and environmental -- that have yet to be addressed, notwithstanding significant investment over the last 40 years by both government and industry. Given the significant oil shale resource and exigent national energy interests, Colorado is committed to seeing ongoing oil shale research and development move forward. Colorado officials have assisted BLM in reviewing applications for federal research and development leases, and the State currently hosts five of the six federal research and development leases issued in 2006. If successful, these research and development projects could set the foundation of a subsequent commercial oil shale industry.

Therefore, Colorado maintains that a prerequisite to federal oil shale leasing, regulation, and development is the development of information that will allow us to address historic challenges. Construction has not yet begun on the federal research and development leases, and these projects are critical in showing that new proposed technologies work, that they can be utilized economically, and that they will not have unacceptable impacts on Colorado's environment and communities.

Colorado is committed to working with the federal government and industry on oil shale efforts going forward. But this requires a thoughtful approach -- economically, environmentally, and socially -- rather than a rush to premature leasing and regulatory decisions. Yet another boom and bust cycle for energy development will be dire for Northwest Colorado, a region that retains considerable skepticism and frustration over the collapse of the oil shale boom of the 1970s. Another failed attempt at oil shale development could preclude development of this nationally significant resource for decades. Sound public policy requires allowing research projects to yield information that will answer crucial questions and allow the industry to proceed with public support, and Colorado will roll up our sleeves to work with other stakeholders to ensure that this happens.

As set forth more fully below and in the attached technical comments from the Departments, the approach set forth in the BLM's Preferred Alternative is misguided and unacceptable. The BLM proposes to open nearly 2 million acres of federal oil shale resources to potential oil shale development, yet it lacks information about the technologies that would be used or their impacts on the environment. Colorado recommends selection of Alternative A, which would allow activities on federal research and development leases to continue and potentially expand to commercial leases. Under this alternative, 223,860 acres in the White River Resource Area's Piceance Basin would continue to be available for future oil shale leasing under existing BLM plans.

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Because proven development technologies do not yet exist, the BLM cannot reliably analyze likely effects on water resources or air quality, impacts on local communities, energy requirements, or impacts on wildlife resources, and this information is critical to making sound land-allocation decisions in compliance with the law. The BLM also failed to consider adequately the cumulative impacts of its proposed land allocation decisions, and this important analysis will be impossible when performing lease-by-lease reviews as the BLM proposes. There is simply no substitute for doing a thorough, comprehensive analysis at the programmatic stage that might set the framework for later individual leases. The BLM also proposes, without analysis, to do away with long-standing carrying capacity thresholds for the protection of

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communities, the environment, and wildlife resources. Given the information missing from the BLM’s analysis, a decision to make 360,000 acres available for oil shale leasing is ill-advised. 52837-004 (cont.)

Similarly, the BLM lacks the information necessary to finalize any comprehensive set of rules and regulations for oil shale development. These regulations will establish environmental-protection standards, set royalty rates and address bonding, establish standards for diligent development, determine the allowable size of leases, and make myriad other important decisions that will directly and significantly affect how oil shale development proceeds. Until the basic answers are derived from the research and development program, establishing the rules for commercial leasing is premature. 52837-005

Again, Colorado supports the research and development approach and pledges its continued support of that effort. Once data is available from the research and development projects, it is possible that land allocation decisions can be made and regulatory requirements can be developed. But making land available or promulgating regulations in the absence of underlying data from the research and development projects is reckless and will lead to long-term and significant negative impacts on Colorado. 52837-006

DISCUSSION

The State of Colorado has consistently urged that federal oil shale leasing, regulation, and development be based on solid, reliable results that will emanate from the research and development leases. Such development could provide a substantial new source of domestic oil for the United States, but it must proceed in a reasoned and responsible manner. The process must take into account what has been learned from 100 years of efforts to develop this important resource, what we know and do not know about current proposed technologies, and the various changes in the environmental and social landscape of the region. Colorado is home to five of the federal research, development, and demonstration (RD&D) leases issued in 2006. The State supports an oil shale program in which research and development activities provide information that may inform commercial regulatory and leasing decisions. Because oil shale development will likely utilize untested technology with potential long-term impacts to Colorado’s communities and the environment, the State has consistently opposed plans to commercialize leasing or production of federal oil shale resources prior to a meaningful evaluation of the results of the RD&D projects.

For these reasons, Colorado cannot support the BLM’s selection of Alternative B – making 1,991,222 acres available for application for oil shale leases in the three-state region, including 359,798 acres in Colorado – as the Preferred Alternative in the Draft PEIS. As more fully set out below, Colorado recommends that the BLM adopt the **Alternative A** as the Preferred Alternative in the Final PEIS. Under this alternative, activities on federal research and development leases could continue and potentially be expanded to commercial leases, and 223,860 acres in the White River Resource Area would remain available for future oil shale leasing.¹ Colorado further recommends that the BLM explicitly commit to preparing a 52837-007 52837-008

¹ BLM White River Resource Area, Record of Decision and Approved Resource Management Plan at 2-6 (July 1997).

supplemental PEIS at a later date, when adequate information, including information from the RD&D leases, is available, prior to proceeding with the establishment of commercial oil shale regulations and subsequent offering of commercial leases.

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Decisions about land allocations, regulatory requirements, financial assurances, taxation structures, and leasing should not be made until land managers and the public can reliably predict and understand the impacts that are likely to result from those decisions. Because the information necessary to develop that understanding does not yet exist, making any federal oil shale resources available for application for commercial oil shale leases is premature. It is highly probable that no production from the RD&D leases will occur within the next six years, and commercial oil shale production is not anticipated before 2020.

52837-009

Below are Colorado’s summary comments about the BLM’s management approach in the Draft PEIS. Supporting detailed technical comments from state officials with significant expertise regarding the potential for oil shale development’s impact to Colorado’s air and water quality, wildlife, communities, and quality of life are attached. From a regulatory standpoint, Colorado recognizes that there are several areas of complimentary jurisdiction and analysis. For instance, water quality issues arise in the technical comments of several Divisions, highlighting both the importance of this issue and the cross-cutting nature of the concerns raised by the possibility of oil shale development. As noted in the technical comments, the Draft PEIS identifies many significant concerns and contains several major deficiencies that must be remedied in the Final PEIS and before the BLM signs a Record of Decision (ROD). These include:

- The Piceance Basin contains unique or irreplaceable habitats for a host of wildlife species such as leks for greater sage-grouse, movement corridors for big game species, winter range for North America’s largest migratory mule deer herd, and streams containing native cutthroat trout. The primary concern for wildlife due to oil shale development is the overall loss and fragmentation of this valuable wildlife habitat, the feasibility of reclamation of disturbed areas, and the damage that would accrue to wildlife populations. The detail provided in the Draft PEIS is insufficient to allow for an accurate or complete assessment of the cumulative impacts to wildlife habitats and populations that will occur from commercial-scale oil shale projects.
- The amount of water that may be available for oil shale development is a significant concern, as is the impact oil shale development poses to the State’s entitlements under the Colorado River Compacts. We are also concerned about the impacts of oil shale development on existing instream flow segments in and adjacent to the leased land and any potential increases in flooding as a result. Finally, we are concerned about the interactions between oil shale development and the Colorado River Salinity Program and the Upper Colorado River Recovery Implementation Program. Oil shale development has the right to benefit from these programs, but adverse impacts must be minimal.
- The BLM’s socioeconomic analysis did not address statutory and regulatory oversight relative to the licensing, inspection, and enforcement of labor camps (man camps), retail

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food establishments, wholesale food firms, schools, childcare, mobile home parks, public accommodations (hotels/motels) and campgrounds.

- There is tremendous uncertainty of what the environmental impacts will be on both surface water and ground water quality due to commercial shale extraction operations. The PEIS does not address the impacts of additional growth on water and wastewater infrastructure in nearby communities. The PEIS also does not address potential impacts of water withdrawals on flows upstream of wastewater facilities, and the concomitant reduction in permit limits that might result for these facilities.
- The PEIS does not present sufficient data to assess potential degradation of the human environment and resulting health impacts to the affected public, potentially resulting from direct or indirect exposure to contaminated media. Scientifically defensible conclusions about potential risks and health impacts cannot be developed until detailed RD&D results are available to better characterize the potential for community exposure and the toxic potential associated with different development alternatives, based on technology-specific processes and fate and transport characteristics.
- The Draft PEIS fails to document or consider the large amount of information about baseline air monitoring being conducted in Colorado. The BLM must discuss this monitoring and commit to conducting the monitoring studies needed in the future to assess baseline air quality conditions. This would include, for example, monitoring in both the Piceance Basin and the Flat Tops Wilderness Area. Further, there is no emissions or operating data from any of the five RD&D leases.
- All diversions and use of water must be done in compliance with Colorado Water Law. This will require all necessary approvals from the Colorado Water Courts, the Division of Water Resources and other governmental agencies, and gaining such approvals will require applicants to address all relevant technical concerns. The Draft PEIS fails entirely to acknowledge or discuss the need to comply with Colorado Water Law.
- There is no information about potential levels of Mercury, Ozone precursors, and Hazardous Air Pollutants occurring from oil shale development. This deficiency must be resolved prior to a Record of Decision.
- There is no discussion of the air quality impacts of the additional energy development for electricity generation that is an integral part of future commercial shale development on regional air quality levels (both for visibility and public health). If there is significant additional energy needed to develop this resource, then the impacts must be identified and disclosed in the BLM's PEIS.
- The Draft PEIS is woefully inadequate in assessing the needs and impacts of an industrial complex significantly greater than the infrastructure that exists today. While commercial oil shale development decisions will not be made until the 2012-2014 time frame (with commercial production around 2020), the same lead time will be required to

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develop water treatment and storage and power plants or networks to support such a commercial oil shale industry.

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Preferred Alternative

The State of Colorado recommends that the BLM abandon its intention to make large areas of Colorado available for application for commercial oil shale leasing, and instead adopt Alternative A as the Preferred Alternative in the Final PEIS.

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Colorado recognizes that oil shale development may offer potential to supplement the nation’s energy supplies. Colorado’s goal is that commercial oil shale development be done right – in a manner that avoids unacceptable and irreparable impacts on Colorado’s land, air, water, wildlife resources, and communities and that minimizes those adverse environmental and socioeconomic impacts that would result from such development through front-end planning and financing and long-term monitoring and mitigation. According to the Draft PEIS, the lands the BLM proposes to make available for oil shale leasing in Colorado would result in production of 16 billion barrels of oil. Draft PEIS at 2-22. Elsewhere, however, the Draft PEIS concedes that “[f]uture production levels are unknown at this time,” and that its discussion of impacts would necessarily be limited to “potential impact-producing factors.” *Id.* at 4-2.

In view of the substantial adverse environmental impacts that could result from commercial oil shale development, and given the lack of reliable information and analysis to meaningfully assess likely impacts at this time, the only defensible alternative is Alternative A. BLM argues that “the amendment of land use plans to designate lands as available for application for commercial leasing would have no impact on the environment” since the actual decision whether to issue leases would be made at a later date. Draft PEIS at ES-5. This is an inconsistent argument that inherently undermines the value of this document. In summarizing a comparison of “Potential Environmental Impacts” of the three alternatives on various resources – water resources, air quality, land use, wildlife, socioeconomics, etc. – the BLM repeatedly states that each resource “would not be impacted by land use plan amendments.” See Draft PEIS at 2-55 to 2-84. Yet, in other places BLM indicates that the result of this action will “facilitate” or “make possible” commercial oil shale development. Draft PEIS at E-5 and 6-36. BLM cannot have it both ways. The bottom line is that the great uncertainty that currently exists about the potential impacts of commercial oil shale development means that any change to the current applicable Resource Management Plans relative to oil shale development is premature and insupportable – and not without consequences on the land, resources, communities, and economy.

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Selection of the Alternative A would still allow activities on the five federal RD&D leases to proceed, and these leases could still potentially be converted to commercial production. Because concrete environmental and technological information is necessary to make long-term policy and land-management decisions, Colorado supports the RD&D efforts underway. Making additional lands available for application to lease prior to the results of these projects will foreclose the necessary comprehensive analysis of the direct, indirect, and cumulative environmental impacts from commercial oil shale in conjunction with non-oil shale activities planned or currently underway. In addition, oil companies own substantial holdings of oil shale

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in the Colorado's Piceance Basin.² Though the BLM acknowledges that 14 companies owned private oil shale lands in 1979, *see* Draft PEIS at 3-207, the Draft PEIS fails entirely to acknowledge the development potential of private oil shale holdings. Without substantially more information about the technologies to be used, their effects on the environment, the potential for oil shale development activities on private land, and the ability to effectively mitigate potentially significant environmental and socio-economic impacts, it is imprudent to allocate any additional federal lands as available for commercial oil shale leasing at this time. It is necessary to await the results from the RD&D projects before making additional federal oil shale resources available for application for commercial lease. Similarly, the results of these tests are necessary to inform the scope of rules and regulations for a commercial leasing program.

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If planning for and implementation of oil shale development efforts are not done responsibly and thoughtfully in the first instance, there is a greater risk that development will be delayed, and that any development that does occur will have unacceptable impacts. More specifically, BLM's preferred alternative would subject a substantial portion of Colorado to uncertain impacts that are likely to be significant, and this will erode public and political support for the fledgling industry.

52837-014

As noted by the RAND Corporation in Congressional testimony last year, the knowledge base about the economic, technical, and environmental feasibility of oil shale development is not yet adequate to support the formulation of a commercial oil shale leasing program.³ This testimony noted that while a number of companies are making appreciable investments in oil shale research, "none of these firms has gathered technical information adequate to warrant a decision to invest hundreds of millions, if not billions, of dollars on first-of-a-kind commercial oil shale plants." RAND testimony at 3. The RAND Corporation found that "industry is years away from establishing commercial viability." *Id.*

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Because industry is currently unable to commit its substantial resources to large-scale oil shale development, it is likewise premature for the BLM to select any alternative that would make federal oil shale lands available for application for commercial lease or to adopt leasing regulations at this time.

Missing Information

The decision to make federal lands available for application for commercial lease is "intended to facilitate the establishment of a long-term program of commercial [oil shale] leasing." Draft PEIS at ES-5. This program, in turn, would lead to development activities utilizing untested technology to convert kerogen to shale oil, with unknown potential long-term negative impacts to Colorado's environment, public health and welfare, wildlife, and communities. The BLM concedes that "impacts on specific resources located within the

52837-015

² Federal lands overlie only about 80% of the estimated in-place oil shale resources, leaving 20% in private hands. *See* Bartis, *et al.*, "Oil Shale Development in the United States: Prospects and Policy Issues," RAND Corporation (2005) at 9.

³ Senior Policy Researcher James T. Bartis, RAND Corporation, "Policy Issues for Oil Shale Development," testimony before House Committee on Natural Resources, Subcommittee on Energy and Mineral Resources, April 17, 2007, available at <http://www.rand.org/pubs/testimonies/CT279>.

1,991,222 acres [as provided in the Preferred Alternative] cannot be quantified at this time because key information about the location of commercial projects, the technologies that will be employed, the project size or production level, and development time lines are unknown.” Draft PEIS at 6-36.

This finding triggers further information-disclosure requirements, according to regulations implementing NEPA. Because the information on oil shale impacts is essential to a choice as to whether to make land available for application for commercial oil shale leases yet cannot be obtained because it does not yet exist, the BLM is required to assess the relevance of the incomplete information and provide a summary of existing credible evidence relevant to the evaluation. 40 C.F.R. § 1502.22. The BLM, however, fails in the Draft PEIS to assess the relevance of the missing information on likely impacts of the oil shale development activities it is facilitating, and it provides only a general summary of the existing information. The BLM thus appears to dismiss the missing information as not necessary in assessing the propriety of making nearly 360,000 acres of federal oil shale resources available for application for commercial oil shale leases in Colorado.

52837-016

Given the paucity of information concerning the likely impacts of commercial-scale oil shale development, as well as the contradictory interpretations of NEPA requirements, Colorado continues to support the RD&D approach as a way to obtain an important part of the missing information that is required to make a reasoned choice among the various land management and policy alternatives. Colorado will continue to oppose any commercialization plan that calls for commercial leasing, or for the promulgation of leasing regulations, prior to a meaningful evaluation of the RD&D projects and proper NEPA analyses.⁴

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In order to be able to perform a meaningful environmental impact analysis and to reach a reasoned and informed decision regarding the feasible and appropriate scope of commercial oil shale development, BLM needs to proceed now to develop the information needed to fill the information gaps that limit the effectiveness of the current PEIS analysis. For example, needed information includes:

- a. Baseline air quality monitoring;
- b. Baseline ground and surface water quality monitoring;
- c. Baseline wildlife monitoring and specific conservation measures for deer, elk, sage grouse, and Colorado River cutthroat trout;
- d. An analysis of the availability of water supplies;
- e. An analysis of options for meeting power demands for oil shale development in a manner consistent with Colorado’s renewable energy standard;
- f. Paleoseismic studies of faults within the oil shale basin;
- g. A thorough realistic housing analysis incorporating local constraints including buildable land and infrastructure; and

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⁴ See Colorado Statement on Unconventional Fuels, Task Force on Strategic Unconventional Fuels, America’s Strategic Unconventional Fuels, Volume I at I-79 (Sept. 2007), available at http://www.unconventionalfuels.org/images/Volume_I_IntegratedPlan_Final_.pdf.

- h. Baseline data for community infrastructure capacity that can be used to assess what additional infrastructure will be required to support oil shale development.

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Cumulative Impacts

The BLM proposes to make large areas of Northwest Colorado available for application for commercial oil shale leasing, without conducting the required analysis of the cumulative impacts of doing so. While the BLM claims in the Draft PEIS that it will study the cumulative impacts of proposed oil shale development projects when it receives an application for a commercial lease, the proper time to evaluate the regional cumulative impacts of a new oil shale leasing program is at the PEIS stage. In 2007, the Colorado General Assembly unanimously acknowledged that comprehensive planning of energy development on a basin-wide scale should be performed in order to adequately assess cumulative impacts. See HB07-1298, *codified at* C.R.S. § 34-60-128(3)(d)(II).

The BLM is proposing to make hundreds of thousands of acres open to application for oil shale leases, which could lead to multiple applications for large-scale oil shale projects. Logistically, the BLM simply cannot analyze the cumulative impacts of this decision when performing NEPA review on a project-specific, piecemeal basis in response to an individual application for a commercial lease. For example, an accurate assessment of cumulative impacts would be impossible where there are multiple applications under review simultaneously, at various times of review, and without knowing the number and size of projects that will be proposed in the future. The BLM has provided no assurance that it will be able to perform an adequate comprehensive review of cumulative impacts for each individual application prior to consideration and review of additional applications.

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It is important to understand the social and environmental circumstances present in Colorado today, as the analysis of cumulative impacts required by NEPA and requested herein is not merely an academic exercise. The State of Colorado is currently experiencing an unprecedented energy boom in many portions of our state. In particular, the areas that the BLM proposes to make available for application for commercial oil shale leases are experiencing rapid natural gas development. In Colorado's Piceance Basin, the BLM proposes to make 359,798 acres available for application for commercial oil shale leasing. Draft PEIS at 2-27. In this same area, the BLM is analyzing a change to management plans that could allow over 17,000 new natural gas wells to be drilled over the next twenty years.⁵ In addition, the areas the BLM proposes to make available for application for oil shale leasing are seeing increased tourism and recreation opportunities. In 2006, approximately 17,000 jobs were found to be supported by the tourism industry for the region including Moffat, Rio Blanco, Garfield, and Mesa Counties, and tourism as a whole represents about 15% of the jobs in the area. Past research on segments of the tourism industry found that about 20% of the tourism jobs in Northwest Colorado came from the outdoor recreation segment -- or about 3,400 jobs. In the Piceance Basin's Game Management Unit 22, there were 4,582 deer and elk hunters in 2006.

⁵ See Reasonable Foreseeable Development Scenario for Oil and Gas Activities in the BLM White River Field Office: Rio Blanco, Moffat, and Garfield Counties, Colorado, Executive Summary at 3, available at http://www.blm.gov/rmp/co/whiteriver/documents/RFD_Executive_Summary.pdf.

Any oil shale leasing on top of this existing network of energy development and changing land uses will put significantly more pressure on an already fragile ecosystem and public temperament, and it will further stress the system that provides the goods and materials for infrastructure needs driven by the current demands.⁶ Furthermore, the inherent limitation of the oil shale industry may be in the existing environmental standards for the area. The proposed gas development, under current leasing schedules, coupled with other current industry-based activities in the area, may leave only a small increment under existing environmental performance standards for oil shale. The limit may not be land, may not be economics, but rather the air and water quality standards themselves. This cannot be determined without a detailed cumulative analysis.

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(cont.)

Thus, it is vitally important to the Departments and to the State of Colorado that the BLM proceeds cautiously and moves forward thoughtfully with the development of a commercial oil shale leasing program that truly looks at the cumulative impacts in a programmatic way. As the epicenter of the developable oil shale resource in the United States, Colorado has much to gain if this resource is developed responsibly, and much to lose if the risks are not assessed and managed appropriately.

A Programmatic Environmental Impact Statement is intended to provide a meaningful analysis of the impacts of an overall program, prior to proceeding with project-by-project approvals. *See Kleppe v. Sierra Club*, 427 U.S. 390 (1976) (“[W]hen several proposals for coal-related actions that will have cumulative or synergistic environmental impact upon a region are pending concurrently before an agency, their environmental consequences must be considered together.”). Because of the absence of information to allow a meaningful assessment of the potential impacts of commercial oil shale development at this time, the Draft PEIS does not satisfy its intended purpose. Therefore, BLM should explicitly commit to preparing a supplemental PEIS at a later date, when adequate technical information is available and the agency is committed to conducting the necessary cumulative impacts analysis, prior to proceeding with commercial oil shale regulatory and leasing actions. Only in such a document may the BLM perform the analysis of cumulative impacts required by NEPA and demanded by responsible public policy.

52837-019

Carrying Capacity Thresholds

Recognizing the importance of resources in the oil shale region and the threat posed by large-scale oil shale development, the BLM’s 1987 RMP for the Piceance Basin set “Critical Carrying Capacity” thresholds for oil shale development for air quality, annual growth rate of communities, wildlife, and water quality.⁷ The Piceance RMP provides for continual monitoring of oil shale development in relation to the carrying capacity thresholds, and mandates that “[a] project exceeding any one of the thresholds will not be leased or approved as proposed.” These

52837-20

⁶ See DNR Executive Director Russell George on behalf of Governor Bill Owens, testimony before Senate Committee on Energy and Natural Resources, Oil Shale and Oil Sands Resources Hearing, April 12, 2005.

⁷ BLM, White River Resource Area, Piceance Basin Resource Management Plan Record of Decision at 2-3, 2-6 (May 1987).

carrying capacity management decisions were specifically incorporated when the BLM adopted a new RMP for the White River Resource Area in 1997: “The oil shale management decisions developed in the Piceance Basin Resource Management Plan (March 1985) are carried forward as decisions in this document (See Map 2-6).”⁸

Because the areas of the Green River Formation are relatively sparsely populated, boom and bust cycles associated with oil shale could have disastrous effects on the communities, stressing existing infrastructure with increased population and associated needs. Recognizing this, the 1987 Piceance Basin RMP set a carrying capacity threshold of 5-15% annual growth rate in communities. Because of the potential for significant effects on wildlife habitat from oil shale development, the Piceance RMP imposed a carrying capacity threshold for wintering mule deer. The RMP imposed on the BLM the obligation to preserve the habitat needed to maintain 24,900 mule deer (24,650 AUMs). This figure was found to be 83% of the actual wintering Piceance Basin herd of 30,000 on all lands, and to represent the minimum acceptable herd size agreed to by BLM and Colorado Division of Wildlife (CDOW) in 1987. The Piceance RMP also found that “[s]tringent wildlife habitat mitigation” could be imposed instead of prohibiting leasing, depending on actual site-specific and cumulative impacts to mule deer, although it neglects to set out any potential mitigation measures.

In the Draft PEIS, the BLM describes the carrying capacity of a system as being “the maximum level of activity that can be sustained within a specific area without significant, detrimental impact.” Draft PEIS at 2-53. Nonetheless, and without analysis, the BLM appears to propose doing away with the carrying capacity thresholds for Colorado oil shale lands entirely. Though the BLM acknowledges that development of an oil shale lease “would represent a loss of habitat for these species and potentially a reduction in carrying capacity in the area,” Draft PEIS at 4-72, it again relies on future, site-specific NEPA reviews to consider impacts. It states that “programmatic alternatives do not explicitly consider carrying-capacity thresholds nor propose that commercial leasing levels be constrained in the future by these thresholds.” Draft PEIS at 2-53.

While the Departments cannot say with certainty that the numeric standards in the Piceance Basin and White River RMPs for carrying capacities continue to be the proper thresholds, the concept of carrying capacity thresholds should not be disregarded lightly. These carrying capacity thresholds have been in place for over two decades, imposing objective standards to guard valuable and imperiled public resources from the cumulative impacts of unchecked oil shale management decisions. Given that the BLM is here effectively deferring an analysis of cumulative impacts to the site-specific leasing stage, the carrying capacity thresholds are even more important. The BLM’s apparent proposal to jettison these standards without any analysis of the impacts of doing so ignores the work of BLM and the State of Colorado through the years on the issue.

In the Final PEIS, the BLM should analyze data on the current populations of wintering mule deer and elk and update, if necessary, the number that must be supported for the benefit of the species. Likewise, the BLM should assess the likely socioeconomic impact of a significant

⁸ See *supra* note 1, at 2-6.

new industry in the oil shale region, in conjunction with the current localized natural gas industry. The agency should also reevaluate the carrying capacities for air and water quality in order to assess whether they are currently adequate to protect these vitally important public resources.

52837-020
(cont.)

The BLM's anticipated leasing regulations

The Draft PEIS attempts to address the BLM's proposal to amend resource management plans to allow for potential oil shale lease applications, as opposed to any regulations for such lease applications or a leasing program. However, the BLM has indicated that it expects to later promulgate such regulations pursuant to section 369(d)(2) of the Energy Policy Act of 2005. During recent stakeholder meetings, the BLM has also indicated that it intends to issue an Environmental Assessment (EA) in conjunction with such leasing regulations. Colorado is concerned that such an approach will not comply with NEPA.

It appears that the BLM's leasing regulations will address such critical issues as the leasing process, bonding, royalty rates, fair market value, and bonus bids. Such regulations would thus set in place factors that will directly and significantly affect how oil shale development proceeds. As such, promulgation of such regulations would constitute a "major federal action significantly affecting the quality of the human environment," and would require preparation of an EIS and signing of a Record of Decision prior to adoption. *See NEPA § 102(C), 42 U.S.C. § 4332(2)(C).*

According to the BLM, "Actions whose impacts are expected to be significant and which are not fully covered in an existing EIS must be analyzed in a new or supplemental EIS. An EIS should also be prepared if, after or during preparation of an EA, it is determined that the impacts of a proposed action are significant." *National Environmental Policy Act Handbook and Department of the Interior NEPA Guidance Manual 516, BLM Handbook H-1790-1*, at p. I-2.

52837-021

While an EA may be used to decide whether to prepare an EIS, such an interim step is not necessary here. An agency need not prepare an EA if it prepares an EIS. *See 40 CFR § 1501.3(a).* Congress and the BLM have already determined that an EIS is appropriate for the BLM's proposed leasing program. Moreover, the BLM's Draft PEIS amending resource management plans repeatedly makes clear that due to missing and incomplete information, the BLM cannot adequately assess the potential impacts of commercial oil shale leasing at this time. There are thus serious questions as to how a NEPA analysis for leasing regulations (particularly a mere EA) could adequately tier off of, or otherwise rely on, the current Draft PEIS amending resource management plans.

Preparing draft leasing regulations without the benefit of data from the RD&D projects that these regulations would address will make any conclusions and recommendations premature, incomplete, and possibly irrelevant. While the State of Colorado will have to await the BLM's publication of draft leasing regulations before providing further comment, Colorado wants BLM to know in advance the test to which the State will put such proposals.

Conclusion

Thank you for this opportunity to comment. The State of Colorado believes that the issues discussed above and in the attached technical comments must be addressed in the Final PEIS.

We look forward to continuing to work cooperatively with BLM to ensure that the significant challenges associated with oil shale development are addressed in a thorough and protective manner.

Sincerely,


Bill Ritter, Jr.
Governor

**Technical Comments of
Colorado Department of Natural Resources,
Colorado Department of Public Health and Environment, and
Colorado Department of Local Affairs
on Bureau of Land Management's
Draft Oil Shale and Tar Sands Resource Management Plan Amendments to Address Land
Use Allocations in Colorado, Utah, and Wyoming and Programmatic Environmental
Impact Statement (December 2007)**

The following technical comments from divisions and staff of the Colorado Department of Natural Resources (CDNR), Colorado Department of Public Health and Environment (CDPHE), and Colorado Department of Local Affairs (DOLA) highlight major technical deficiencies in the Bureau of Land Management's (BLM) Draft Oil Shale and Tar Sands Resource Management Plan Amendments to Address Land Use Allocations in Colorado, Utah, and Wyoming and Programmatic Environmental Impact Statement (Draft PEIS).

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COLORADO



DEPARTMENT OF
NATURAL
RESOURCES

Bill Ritter, Jr.
Governor
Harris D. Sherman
Executive Director

1) Division of Reclamation, Mining and Safety

There is very little real data with which to determine what the environmental effects of *in-situ* processing of oil shale will be since there has not yet been a commercial sized *in-situ* project to date. This information may be obtained in the next 5-10 years upon development and close monitoring through the various permitting processes of the RD&D projects. There is no stated mechanism to revisit the PEIS process in order to re-evaluate regional effects of commercial development if there is critical information gleaned from the RD&D operations. Instead, the PEIS states that such changes will be dealt with on a case by case basis via NEPA review of specific projects, a manner which is similar to the way that coal mining environmental impacts are evaluated. This approach will preclude consideration of regional impacts from the widespread use of new technologies for oil shale development.

52837-022

In Section 4.1.6, Table 4.1.6-1, the effects and needs of a 2,400 MW generating station are listed. Conspicuously missing are the effects of the coal mine that would be needed to feed the generating station. For example, the Craig Generating Station (1,284 MW) is fed primarily by the Trapper Mine which has a permitted acreage of 10,000 acres and a disturbed acreage of approximately 3,200 acres over its 25 year life. It is noted that the commercial options B, C and D would require the equivalent of almost 10 Craig-sized generating stations over the life of the commercial oil shale operations (12 GW of power required – although estimates of the electrical need for *in-situ* operations is not well documented since no commercial-scale operations have been started) for a total of not only the acreages listed in the table but also some 32,000 additional acres disturbed via coal mining with its own environmental and socio-economic effects and additional water requirements for coal processing, dust suppression, and other mine and workforce related activities. Additionally, if these mines are located near oil shale development areas, they will have their own effects on air quality which has also not been factored in. Moreover, there is no discussion on the effects of uranium fueled power plants and their environmental effects and operating needs if this type of power plant is used.

52837-023

Chapter 4, Table 4.5-1 lists the water resources available and expected to be available by 2040 (presumably when commercial oil shale operations would be fully functional). It is notable that the water requirements (on the lower estimate of the needs for commercial oil shale operations) will exceed those available in 2040 from surface sources. It is stated that the requirements can be made up from the ground water resources but the estimate of that resource varies by an order of magnitude (2.5 to 25 M ac-ft). The possible diminution of surface and ground water quantity and quality from the direct effects of oil shale development (e.g. mixing of aquifers, drainage of the upper aquifer into the lower aquifer, quality degradation from the release of organics, salts and metals via pyrolysis) is not accounted for in this table but should be estimated and included.

52837-024

Related to water balance for commercial operations, it is known that ground water in the Piceance Basin travels rather slowly and, therefore, is recharged rather slowly. It is also known and stated that both Piceance and Yellow Creeks (the main drainages out of the Piceance Basin) are both ground water fed creeks. It therefore seems reasonable to assume that withdrawal of the ground water for use in oil shale operations will most probably have a flow lessening effect on one or both of these creeks through the disruption of spring or seep flows that feed them. It is unclear whether this diminution in surface flow has been taken into account in the water balance estimates except for the statement that the freeze wall will mitigate these effects. The freeze wall will not be in existence after oil withdrawal and subsequent rinsing of the retorted area is complete and that area will have to recharge by some mechanism. This doesn't seem to be accounted for.

52837-025

The Draft PEIS omits discussion of several important issues. There is no mention or discussion of dissolved metals (boron, molybdenum, arsenic, and possibly others) and their effects on ground water from the *in-situ* pyrolysis of oil shale. There is no discussion of noise levels from resource development. There is no discussion on wilderness characteristic areas in Colorado.

52837-026

Legal Requirements

The Draft PEIS defers site specific NEPA analysis of potential impacts to 360,000 acres of public land in Colorado to future evaluations. There has to date never been commercially viable production of oil from Colorado oil shale resources, even though Colorado possesses the richest and most extensive global reserves. It is stated in the Executive Summary to the Draft PEIS that "As part of this PEIS, potential impacts of currently known technologies also have been described at the programmatic level to aid decision makers and readers in understanding the potential effects of future development." While this may be a currently legitimate course of action, it must be recognized that research and technology development for oil shale will require further analysis at the programmatic level, as opposed the project specific level, as the draft PEIS seems to presume.

52837-027

Chapter 2, Section 2.2.1 describes "Existing Relevant Statutory Requirements" and breaks out potentially applicable laws into general categories. Appendix D, Table D-3 places the Colorado Mined Land Reclamation Act (MLRA) into the "Energy Project Siting" category. The Energy Project Siting category is described in Chapter 2 as being relevant to "construction of facilities such as pipelines, gathering lines, transmission lines, or generation facilities."

52837-028

Essentially none of these activities are subject to regulation under the MLRA. The MLRA should be removed from the Energy Project Siting category in Appendix D, and should be included in the Appendix D tables under the following categories, over which the MLRA does exercise authority:

- TABLE D-4 Floodplains and Wetlands
- TABLE D-5 Groundwater, Drinking Water, and Water Rights
- TABLE D-6 Hazardous Materials
- TABLE D-7 Hazardous Waste and Polychlorinated Biphenyls
- TABLE D-10 Pesticides and Noxious Weeds
- TABLE D-13 Water Bodies and Wastewater
- TABLE D-14 Wildlife and Plants

52837-028
(cont.)

It is stated in the Draft PEIS that Chapter 2, Section 2.2.1 “discusses, in very general terms, the major laws, Executive Orders (E.O.s), and policies that may provide environmental protection and compliance requirements for oil shale or tar sands development projects on public lands in Colorado, Utah, and Wyoming.” However, there is little or no discussion, and no identified category of State mined land reclamation laws, even though each of the three potentially affected States have such laws. Mined land reclamation should be included in the listing of “major laws” for each of the three states, and the Colorado Mined Land Reclamation Act (34-32-101, *et. seq.*) should be specifically cited.

52837-029

Comments on Specific Passages of Draft PEIS

On page 1-3, the Draft PEIS states, “The BLM has identified the most geologically prospective areas for oil shale development on the basis of the grade and thickness of the deposits.” Are the deposits sufficiently characterized that the agency can definitively state where the most geologically prospective areas are? Is the definition of a geologically prospective area based on detailed exploratory data, such as delineation drilling or geophysical surveys, or have extrapolations and generalizations been made from existing data? If there are deficiencies in the characterization of the geologically prospective areas, then important decisions regarding lease locations, or locations of facilities for exploration, extraction, infrastructure, and support are in danger of being made without adequate background information, leading subsequently to the risk of poorly conceived resource utilization.

52837-030

On Table 2.2.3-1 on page 2-8 of the Draft PEIS, the importance of the ACEC areas in this table are given considerable weight in the overall context of environmental impacts of oil shale development, yet very little specifics are provided for the ACEC areas.

52837-031

On page 3-73, the Draft PEIS states that “Oil shale basins and STSAs are situated in much smaller areas,” yet it is unclear from the context of the passage to what the oil shale basins and STSAs are being compared.

52837-032

On page 3-77, the passage starting with “Topper et al. (2003) list common sources of...” is not particularly relevant to the subject of oil shale extraction. The passage refers to contaminants derived from hardrock and metal mines. The mining methods employed, and the geologic environment existing at oil shale deposits will be vastly different than those existing at

52837-033

hardrock or metal mining sites. The inclusion of this passage implies that the two types of mining situations could give rise to common environmental contaminants, which is an inaccurate and misleading implication. | 52837-033 (cont.)

On page 4-3, the passage referring to the quantity of water used by oil shale operations, is one of many passages referring to the quantity of water that will be “used” by oil shale development, without sufficient explanation as to whether the water is actually consumed or simply diverted, used, and cycled back to the watershed as return flow. Proper emphasis on the amount of total water consumption versus simple usage will help provide a more realistic picture of the actual water demands of the oil shale industry. | 52837-034

On page 4-6, the Draft PEIS states, “Regardless of the retort, spent shale volume would increase by 30%,” yet it is unclear from the context of the passage over what the spent shale volume would increase by 30%. | 52837-035

On page 4-12, the Draft PEIS states, “Project economics would likely select for sites closest to existing infrastructure.” This passage is inconsistent with other passages in the document stating that companies will construct their own plants to provide power for operations. It seems a foregone conclusion that, due to the economic potential of oil shale development, project economics will drive the locations of power supply and infrastructure, not the other way around. | 52837-036

On page 4-25, the Draft PEIS states, “In Colorado or Utah, 150 to 600 acres would be disturbed at any one time, while in Wyoming, the figure would be 1,000 to 2,000 acres.” This is one of several passages in the document referencing the size of impacts or disturbances. However, it is unclear here and in other passages whether these numbers represent the total disturbance at any particular time, or per-site numbers within larger projects containing multiple sites, or something else. | 52837-037

On page 4-33, in the paragraph that starts with “For in situ processes, the impact of in situ processing...” it is important to note that the permeabilities of the aquifers and aquitards may be affected not only by rock fracturing, but also by the removal of hydrocarbons. | 52837-038

Finally on page 4-35, the Draft PEIS states, “In addition, the filled mine could become a vertical conduit for groundwater, resulting in a discharge area for the shallow aquifer and a recharge area for the deeper aquifer.” An additional consideration is that of an upward hydraulic gradient. In the case of an upward hydraulic gradient, the opposite could be true, i.e., the filled mine could become a discharge area for the deeper aquifers and a recharge area for the shallow aquifer. | 52837-039

2) Division of Wildlife

The Colorado Division of Wildlife (CDOW) appreciates the opportunity to comment on the December 2007 draft of the Bureau of Land Management’s (BLM) Oil Shale and Tar Sands Resource Management Plan Amendments to Address Land Use Allocations in Colorado, Utah, and Wyoming Programmatic Environmental Impact Statement (OSTS PEIS). Proposed oil shale | 52837-040

development in Colorado would occur in the Piceance Basin, which includes portions of the BLM's White River, Glenwood Springs and Grand Junction Field Offices. As each of these field offices are currently undergoing or are about to begin Resource Management Plan (RMP) revisions, it will be important to incorporate new information from these revised RMPs in the OSTIS PEIS, especially those areas protected by stipulations that would affect lands available for lease under Alternative C. It will be equally important for BLM to incorporate the impacts and other implications of oil shale development into these RMPs and to evaluate the cumulative impacts of oil shale leasing and development in each of the revised RMPs as well. It is as imperative now as ever that potential oil shale development impacts are evaluated and that an oil shale management strategy is developed to ensure that BLM's multiple use and sustained yield mandates are retained. CDOW expects the BLM to conduct meaningful analysis that is both specific and measurable to evaluate cumulative impacts resulting from mineral extractive industries.

52837-040
(cont.)

The Piceance Basin is home to the largest migratory mule deer herd in North America, a large migratory elk population, one of only six greater sage-grouse populations in Colorado, conservation and core conservation populations of Colorado River cutthroat trout, and a host of other wildlife species. These resources are of statewide economic, ecological, recreational, and aesthetic importance. Impacts to these wildlife resources from oil shale development will have local, regional, statewide, and even national implications to sportsmen and other wildlife enthusiasts. Areas that would be opened for commercial leasing under Alternative B include:

- 880 acres of important aquatic habitat
- 7 acres of bald eagle active nests (buffered at ½ mile--no surface occupancy)
- 190,478 acres of elk production area
- 6,506 acres of greater sage-grouse leks (buffered at 0.6 mile--no surface occupancy)
- 125,563 acres of greater sage-grouse production area (mapped as a 4 mile radius from leks to protect nesting and brood rearing habitat)
- 78,093 acres of mule deer critical winter range
- 31,479 acres of mule deer migration corridor(s)

52837-041

This list identifies the minimum set of specific species and habitats that CDOW believes require *detailed and comprehensive* analysis prior to any future commercial oil shale leasing in the Piceance Basin. The sum of these areas is shown on the attached map. When and if commercial leasing occurs, CDOW expects to consult with the BLM regarding the suitability of any lands proposed for leasing, the extraction mechanisms proposed, and mitigation techniques required to offset any impacts to wildlife and wildlife habitat that cannot be avoided. For CDOW to most effectively offset these impacts, it will be important for CDOW to be engaged in discussions with BLM early and often. This consultation should occur prior to the release of a NEPA scoping notice whenever possible.

Leasing Alternatives

Five Research, Development and Demonstration tracts have been recently permitted in the Piceance Basin, primarily for the purpose of evaluating oil shale extraction techniques and assessing the environmental impacts of oil shale development. Exploration of geologic

conditions and development plans for these RD&D sites are only in preliminary stages. Therefore, the ability to successfully predict environmental impacts is yet to be determined. While we understand that some amount of RD&D must occur to determine if oil shale can be produced without impacting the environment, CDOW supports BLM’s decision not to allow any additional RD&D projects and their associated preference lease right acreages to be permitted. The five existing RD&D tracts include preference rights for commercial leasing of more than 25,000 acres within the Piceance Basin.

CDOW supports a “go slow” approach to oil shale development while it remains in this “experimental” phase and prefers that BLM adopt Alternative A—the No Action Alternative—to allow these RD&D projects sufficient time to provide necessary information to support future commercial leasing. Alternative A includes preference rights allowing more than 25,000 acres of commercial oil shale leasing within the Piceance Basin.

52837-042

Alternatives B and C propose significant additional lease areas in Colorado. CDOW considers the lease availability proposed in these alternatives, especially the identification of the entire Piceance Basin in Alternative B, to be an irrevocable commitment of the mineral resource that, when developed, will have significant, adverse, and long term impacts on the wildlife resource and that will complicate BLM’s statutory mandate to manage federal lands in compliance with the “multiple use” and “sustained yield” concepts required by the Federal Land Policy and Management Act of 1976.

52837-043

Section 4.8.1.3 of the OSTs PEIS describes a number of impact mechanisms, from direct mortality to habitat loss and fragmentation, through which wildlife could be impacted by oil shale development proceeding from decisions made in the OSTs PEIS. CDOW believes that each of these mechanisms will indeed occur as a direct or indirect result of oil shale development in the Piceance Basin and that the resulting impacts on wildlife will be severe and potentially long lasting. Table 4.8.1-1 states that the effect on wildlife from one or more of these impact mechanisms will be moderate to large for each class of wildlife evaluated. Moderate effects are defined as resulting in measurable loss of wildlife carrying capacity of up to 50% within the affected area. Large effects would result in more than 50% loss of affected wildlife. CDOW believes that the loss of 50% or more of the ability of the landscape to support wildlife from any single activity is neither moderate nor acceptable. In addition, the Piceance Basin does not currently and may not ever have the capacity to meet oil shale’s requirements for infrastructure, power, or water. CDOW anticipates this could be a substantially limiting factor to development and should be reflected in the decision about the appropriate amount of the Piceance Basin to make available for leasing.

52837-044

Alternative B, BLM’s Preferred Alternative, proposes to make the entire Piceance Basin available for leasing. Adoption of this alternative is unsupportable given the complete lack of understanding affirmed in the OSTs PEIS about the extraction processes that may be feasible and the impacts that development will create for wildlife and wildlife habitat. While the pre- and post-lease NEPA requirements established by the OSTs PEIS will provide substantial additional protection for wildlife, designating the entire Piceance Basin as open for leasing conveys some expectation to industry, governmental agencies and others that substantial commercial leasing will occur relatively quickly. This expectation cannot be met, given the current state of

52837-045

knowledge, and still meet the “environmentally sound” standard under which commercial oil shale leasing is to occur.

52837-045
(cont.)

Finally, CDOW believes that the three alternatives proposed in the draft OSTs PEIS, the no-action alternative and two commercial leasing alternatives, do not constitute a complete range of actions for analysis. Analysis of additional alternatives, including a phased approach to lease availability, would provide a more thorough understanding of the implications of lease availability and the development impacts that will follow.

52837-046

Additional Recommendations for Analysis Prior to Commercial Leasing

1. Neither the OSTs PEIS nor the White River RMP adequately addresses either the commercial development potential or the likely impacts that will result from oil shale development on the tens of thousands of acres of oil shale that were patented during the previous oil shale boom and that are now privately owned. Additionally, neither document combines an analysis of the landscape effects of additional BLM oil shale leasing and development, private oil shale development, existing oil and gas development levels, or the proposed increase in oil and gas activity within the White River Field Office. This separation of oil shale and oil and gas development impacts results in a piecemeal approach to NEPA that prevents a full presentation and analysis of the full effect of these federal actions.

52837-047

2. The OSTs PEIS needs to provide a more detailed analysis as to how the proposed alternatives will impact wildlife populations and habitat. For example, the Colorado Division of Wildlife believes that oil shale RD&D activities within the central portion of the Piceance Basin will increase oil and gas activity on the periphery. If oil shale is considered the priority mineral in the area of the RD&D’s, and coincident oil and gas development occurs, ecosystem-level effects will significantly impact many different wildlife species. For instance, the Parachute/Piceance/Roan (PPR) greater sage-grouse population utilizes higher elevation areas in the southern portion of the Piceance Basin and in the Magnolia area. The PPR population of greater sage-grouse is geographically isolated. The unique characteristics of greater sage-grouse habitat in the PPR and the high range fidelity exhibited by the species will make adjustment to the increased activity challenging. Consequently, availability of expanded leases for commercial oil shale development, as proposed in the OSTs PEIS, in conjunction with expanded oil and gas development will likely lead to extirpation of the PPR sage-grouse population. The PPR population is one of only six greater sage-grouse populations in Colorado. Extirpation of this population will make the avoidance of future Endangered Species Act (ESA) listing actions substantially more difficult. Any ESA listing will directly affect industry as well as any other users of public lands within the oil shale development areas.

52837-048

3. The alternatives detailed within the OSTs PEIS need to more fully assess the off-site impacts that might result from oil shale development, including issues such as:

52837-049

- damage that private landowners will suffer from big game species as a result of added pressure of oil shale development on lands already impacted by natural gas development.
 - effects of big game being forced to occupy alternate winter range habitat, resulting in reduced survival of big game herds and increased competition with livestock on private lands.
 - effects of oil shale development on water quality and quantity in federally designated critical habitat for threatened and endangered aquatic species in the White River below the confluence with Piceance Creek.
- 52837-049 (cont.)
4. An assessment of the water quality impacts to all wildlife species that utilize the Piceance Basin should be provided for each alternative presented in the OSTs PEIS. The assessment should not only factor in the effects of oil shale development, but also consider existing and anticipated oil and gas development within the Piceance Basin, coal extraction areas and new power plants needed to supply power to the oil shale extraction operations, and pipelines and other infrastructure needed to support the oil shale and oil and gas operations. The assessment should include an evaluation of the direct or indirect effects to wildlife populations from:
 - a. increased sedimentation;
 - b. increased stormwater runoff and salinity;
 - c. rising water temperatures and lower stream water levels due to oil shale de-watering activities;
 - d. increased contaminant spills to natural waterways; and
 - e. increased concentrations of minerals, metals and other by-products liberated during the oil shale extraction and final reclamation processes and the level to which they cause detrimental water quality impacts to aquatic life and cold water fish species.
- 52837-050
5. The assessment of changes to water quantity at a watershed level from oil shale development for each alternative should address the anticipated resulting impacts to wildlife populations due to:
 - a. elimination of springs, seeps, or other naturally occurring surface water expressions; and
 - b. potential reduction and/or elimination of riparian habitat.
- 52837-051
6. The discussion in the cumulative impacts section within the present draft OSTs PEIS lacks sufficient detail and analysis to make any determination of the cumulative impacts to wildlife resources resulting from oil shale development and the interplay between oil shale, natural gas, and other types of development occurring in the Piceance Basin. The section of the OSTs PEIS which analyzes cumulative impacts should be substantially expanded to include temporal and spatial boundaries outside the immediate defined project area in order to effectively address impacts to migratory wildlife.
- 52837-052

7. The analysis of cumulative impacts should include an assessment of the reasonable foreseeable development of commercial oil shale development in terms of the timing and distribution and size of oil shale production that will occur, including the maximum number of leases that could be in development at any one time and the maximum "footprint" of surface disturbance for any one operation. The assessment of cumulative impacts to wildlife should include an assessment of impacts to all wildlife species occurring within the most geologically prospective area of the Piceance Basin and also on lands within the Piceance Basin that will be subject to surface disturbance via other forms of mineral development and land uses. It should also be expanded to include impacts occurring on other lands outside the boundaries of the prospective area of oil shale development that contain populations of wildlife that utilize all or portions of the prospective area of oil shale development periodically throughout the year. The cumulative impacts analysis section of the OSTs PEIS should include:
- a. an assessment of baseline wildlife data including an evaluation of the status or health of existing populations and how the various populations have been affected previously by other forms of disturbance (oil & gas development, roads, etc.);
 - b. detail regarding the thresholds that will cause significant damage to various species;
 - c. an inventory of all types of disturbance including oil shale development;
 - d. an overlay of crucial habitats including existing migration corridors over the areas slated for commercial oil shale development;
 - e. an assessment of the magnitude and extent of crucial habitat areas that will be eliminated as a result of oil shale development;
 - f. an assessment of the magnitude and extent of crucial habitat areas that will be adversely affected; and
 - g. the duration of time that wildlife populations will be affected.

52837-053

Additional Issues That Should Be Addressed in the OSTs PEIS or in Subsequent NEPA Analyses

1. Range-wide and interstate conservation agreements and strategies exist for several species present within the Piceance Basin, including Colorado River cutthroat trout, flannelmouth sucker, bluehead sucker, roundtail chub, and greater sage-grouse. These agreements, and conservation actions recommended within them, should be incorporated and referenced in the OSTs PEIS and subsequent NEPA documents.
2. Specific detail should be presented on how the landscape will be managed for multiple uses as well as diverse assemblages of wildlife species as required by NEPA. The OSTs PEIS should contain an evaluation of how industrialization and the accompanying urbanization through oil shale development will reduce the carrying capacity of the landscape. For example, where existing agricultural water rights are acquired to support oil shale development, existing irrigation-based agricultural uses of the land from which the water is acquired will be modified to support lower value dry land use of the lands and may result in a complete loss of agricultural benefits. The final OSTs PEIS and subsequent NEPA documents need to detail how these impacts to the carrying capacity of the landscape at a regional scale will directly and indirectly affect the wildlife

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52837-055

populations of the region. The final OSTs PEIS needs to include detail how the “multiple uses” of the landscape will be maintained at a regional scale in light of oil shale lease availability and subsequent development.

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(cont.)

3. The OSTs PEIS contains very limited information and analysis of the feasibility of reclamation of commercial scale oil shale operations. Oil shale development coincident with oil and gas development will likely result in long-term surface disturbance and severely fragment wildlife habitat for extended periods. Additional information should be provided as to the types of habitat and vegetation that will likely not be re-established during final reclamation, those habitat types and vegetation that will be difficult to re-establish, and the length of time needed to successfully re-establish the habitats and vegetation that sustain resident and migratory populations of wildlife and the quality of these reclaimed areas for wildlife following final reclamation. The OSTs PEIS analyses should also include an assessment of the feasibility of reclaiming affected surface and groundwater resources that are used by wildlife within the Piceance Basin.

52837-056

4. The OSTs PEIS should include an assessment of the existence, location, and extent of noxious weed species and/or infestations within the Piceance Basin and the likelihood that they will become established more widely in the Basin as a result of widespread oil shale development.

52837-057

5. The OSTs PEIS should include a comprehensive and detailed analysis of the economic impact that changes in wildlife populations resulting from commercial oil shale development, along with oil and gas development, coal extraction and power plant generation, and supporting infrastructure, will have on local communities. Local communities in western Colorado rely heavily on hunting revenue. The short-term influx of energy development may offset the immediate economic impact that will result from loss of hunting revenues. However, as Colorado’s history has shown, energy booms do not last forever, whereas the regional wildlife resource is renewable and provides a stable source of revenue to communities like Craig, Meeker, and Rifle.

52837-058

Research Cooperation Recommendation

Because the Piceance Basin holds such valuable energy reserves and also supports some of the richest wildlife habitat and most abundant wildlife resources in North America, CDOW has developed research proposals to evaluate methods to improve conservation of sage-grouse, mule deer, native plant communities, and the aquatic environments in the Piceance Basin as energy development proceeds. Determining how to extract energy reserves without negatively impacting wildlife populations is an essential test of the ability to promote responsible development. This information is a prerequisite to commercial oil shale development.

The key objectives of the research are to:

- Provide scientific, peer-reviewed, and experimentally-based research to test the effectiveness of mitigation strategies on mule deer and sage-grouse population performance and behavior in Colorado habitats.
- Avoid reliance on studies done in other states.

- Provide opportunities for evaluating creative mitigation solutions versus historically implemented timing regulations or fixed buffer zones.
- Provide a basis for developing consistent guidelines on a landscape level rather than an individual site basis.
- Reduce the need for individual energy companies to conduct independent studies on sage-grouse, mule deer, and appropriate habitat restoration.
- Evaluate potential solutions to allow for responsible energy development and still maintain Colorado’s productive wildlife, natural resource values, and heritage.
- Obtain and evaluate baseline aquatic species and water quality information.

Many measures proposed to minimize and mitigate oil shale and natural gas development impacts on wildlife have not been tested. CDOW seeks to fill that knowledge gap. This project represents a comprehensive and coordinated effort to improve understanding of the effectiveness of energy development mitigation practices. CDOW is committing personnel and operational resources to the success of this project over the next decade. This project has been planned within BLM’s White River Field Office. Support of this project by industry and land managers is very important. It may prove to be of critical importance in helping wildlife and land managers develop mechanisms to balance wildlife and their habitat requirements with energy development.

Summary

CDOW appreciates the opportunity to comment on this draft resource allocation OSTs PEIS pertaining to oil shale development in Colorado. The Piceance Basin and surrounding areas provide a significant wildlife resource and natural heritage to the people of Colorado and visitors to the state. CDOW understands the importance of the Piceance Basin’s mineral resource. However, oil shale development is currently experimental, with poor understanding of the economic and technical aspects of development as well as the environmental impacts of development. For those reasons, CDOW advocates the “go slow” approach to oil shale development embodied in Alternative A.

CDOW is encouraged by the leasing approach taken in the OSTs PEIS, where detailed site-specific NEPA analysis will be required before parcels can be offered for commercial oil shale lease and before a site-specific plan of development is approved. The ability to evaluate impacts and to apply lease terms, stipulations, and mitigations once the development is fully understood provides substantially improved protection for wildlife and other resources on public lands eventually leased for commercial oil shale development. CDOW will participate in future BLM actions pertaining to oil shale leasing and development, including the Leasing NEPA stage and Plan of Operations stage, in order to ensure that adequate planning occurs and that measures for avoidance, minimization, and mitigation of impacts to wildlife are incorporated in future oil shale decisions.

52837-059

CDOW expects that oil shale leasing potential, commercial development, and cumulative impacts will be evaluated in great detail in the White River, Glenwood Springs and Grand Junction Resource Management Plan revisions that are currently in progress or that will begin soon as well as in this OSTs PEIS. Consideration of potential oil shale impacts along with those resulting from oil and gas development will be important for a complete analysis of impacts on

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wildlife and wildlife habitats and the possibility of maintaining desired future conditions. CDOW also strongly encourages BLM to engage in research, such as the Piceance Basin research project described earlier in this letter, to evaluate wildlife impacts and effective habitat mitigation.

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(cont.)

We encourage the BLM to strike a balance between the mineral and wildlife resources in the Piceance Basin by integrating these comments into a final Programmatic Environmental Impact Statement that contains adequate detail to assess the potential effects and impacts that the land allocation decisions being made will have on the other natural resources in the Piceance Basin and surrounding areas. Thank you for your consideration of these comments. We look forward to seeing them incorporated in the final OSTIS PEIS.

3) Colorado Geological Survey

The Colorado Geological Survey (CGS) conducted a review of the BLM Draft Oil Shale and Tar Sands Resources Leasing Programmatic Environmental Impact Statement (PEIS) for content relevant to geologic resources including water. This review was conducted in order to determine whether the document is adequate to go forward with a decision to have a commercial leasing program for oil shale.

While the total content of the document is immense, it misses the mark in adequately addressing potential impacts to geologic resources by development of oil shale in Colorado and fails to clearly identify constraints under which leasing, exploration, and development would be allowed, particularly with respect to water and potentially damaging seismicity.

52837-061

The document purports that there will be no impact from simply changing management plans. However, dealing with oil shale leasing in individual management plans, rather than as a programmatic EIS that evaluates the cumulative effects of all resource development within the Piceance Basin, including oil shale; is a violation of the spirit and intent of Congress in directing that an EIS be performed for the programmatic leasing of commercial oil shale. Therefore, because a programmatic environmental impact statement was not performed for commercial oil shale leasing, the only acceptable alternative is Alternative A.

52837-062

Comments on Water Resources

Whereas the draft PEIS does use current estimates for water availability to Colorado from the Colorado River Basin under the Colorado River Compact, BLM really does not know how much water is available to apply to meet any new demands, regardless of the type of demand. A study, funded through SB07-122, is currently underway to evaluate water availability in the Colorado River Basin. The PEIS is inadequate without reliable data on Colorado River Basin water availability.

52837-063

The draft PEIS only addresses groundwater as it is tributary to the rivers. The document does not address “non-tributary” groundwater in the region, particularly as it relates to cumulative impacts from in situ processes within the groundwater aquifers. Non-tributary groundwater is important because its availability and use could affect the entire water demand

52837-064

equation in this region. The PEIS does not adequately address this aspect, and therefore, is inadequate in assessing cumulative impacts to water resources. 52837-064 (cont.)

There is too much uncertainty in what technologies might be used, and therefore, what the water demands associated with those technologies will be to make reasonable estimates of water demands for oil shale development under the three scenarios.

Both the Colorado River Basin and Yampa/White/Green Basin roundtables have embarked on needs assessments addressing M&I, agricultural, and non-consumptive needs within their watershed areas. Results from these needs assessments would also be of great value to evaluating potential cumulative impacts under different oil shale development scenarios. In addition, the Energy Development Water Needs Study, (funded through the statewide Water Supply Reserve Account) is underway and will address anticipated water needs associated with all energy development in the region. Without these assessments, the PEIS is inadequate to address cumulative impacts on water resources. 52837-065

Comment on Soil and Geologic Resources

The draft PEIS falls short in integrating cumulative impacts that might arise from oil shale development under the different scenarios. For example, additional power generation would be necessary to meet the demand at the thermo-electric in-situ facilities; however the draft PEIS does not appear to account for the increase in coal mining in the basin that would be required by the additional power plants to produce this energy. 52837-066

Comments on Hazardous Materials and Waste Management

Impacts of hazardous materials and waste management due to oil shale production cannot be differentiated between alternatives because significant data related to differing technologies, in particular in-situ oil shale processes, is yet to be generated. Without this type of data, the cumulative impacts for specific constituents of concern related to oil shale development in Colorado, such as mercury and arsenic among others, cannot be estimated. Therefore the PEIS is inadequate in allowing discrimination among the alternatives regarding hazardous materials and waste management. Alternative A is the only option in the absence of this data. 52837-067

Note: Constituent concentration units are not given in Table A-6. 52837-068

Discussion of 3.2.1.4- Piceance seismology

The draft PEIS is inadequate in terms of evaluating the earthquake risk that could have serious consequences for development in the Piceance Basin resulting from the issuance of rights to extract oil from the Green River Formation oil shale. The PEIS contains only one dismissive sentence on the seismic potential of the Piceance Basin. The seismicity section is inadequate to safely allow leasing from several standpoints: 52837-069

1. It does not address potential, induced seismicity from fluid injection near fault zones.
2. It does not address the seismogenic potential of Neogene faults in the area.

3. It does not address the probabilistic ground accelerations higher than 5% g in the USGS National Earthquake Hazard Maps, nor
4. It does not address deterministic ground accelerations of >50% g from a strong earthquake on the Dudley Graben fault.

a. Neogene faulting

Forty five years ago, there were no faults in Colorado that had been identified as being active during the Quaternary Period. Today, the catalog contains more than 90. And yet, many parts of Colorado have not been studied in detail for the extent and hazard of young faults, e.g. northwestern Colorado being one of the least studied areas of the state.

Ten, northwest-trending normal faults are shown on the Geologic Map of Colorado cutting Tertiary sediments of the Piceance Basin in the area of most prospective oil shale deposits. Several have prominent topographic expression that suggests a very young history with the potential of generating strong earthquakes. Their orientation and character show that they are Neogene in age and therefore should have been evaluated for potential earthquake hazards before any decisions to lease be made.

The Cimarron fault located at the southern end of the Piceance Basin, is a normal fault of identical attitude and has been shown to have Quaternary movement. The Cimarron fault has been assigned a Maximum Credible Earthquake of M 6.5.

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(cont.)

The Dudley Bluffs graben is in the heart of oil shale country. This fault is so youthful in appearance that a major geotechnical firm attributed it as the source of the Magnitude 6.6 earthquake that struck Colorado in 1882. Although that has been largely discredited, the recurrence interval for large earthquakes and the date of the most recent event on this fault has not been determined. If the fault is indeed active and if the mapped length of the fault ruptured in a single event, then the fault would generate a magnitude 6.7 event, with ground accelerations exceeding 50% g.

b. Induced Seismicity

Colorado is the world's premier location for induced earthquakes from liquid injection. The best known events were located at the Rocky Mountain Arsenal and were associated with fluid injection that triggered hundreds of earthquakes in the 1960s, twelve of which caused damage.

Two additional localities with extensive records of induced seismicity are in western Colorado in the Paradox Valley and on the north edge of the Piceance Basin at Rangely field. The potential for induced seismicity from injection of waste fluids including CO₂ sequestration must be thoroughly investigated before any leasing decisions are made.

c. Probabilistic and Deterministic Ground Accelerations

The highest area of probabilistic ground accelerations in Colorado as shown on the 2002 USGS Earthquake Hazard Maps lies in the southern Piceance Basin. The PEIS correctly cites the 5% g accelerations from the 10% probability maps, but ignores the 20-30% g accelerations in the 2% probability map, and further ignores a >50% g from a deterministic event.

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(cont.)

The potential for damaging earthquakes in the Oil Shale province of Colorado needs much more study before any leasing decisions are made.

4) Division of Water Resources

The Draft PEIS does a good job of identifying potential physical impacts attributed to ground surface disturbance, water uses, wastewater disposal, alteration of hydrologic flow systems in surface water and groundwater, and the interactions between groundwater and surface water. However as detailed below, while the document includes what appears to be a comprehensive list of potential injury to water resources, it contains little discussion regarding the magnitude or mitigation of these impacts.

Because of the large openings created in underground mining operations, the hydrologic properties of the geologic material in the mine are permanently altered. Abandoned mine shafts, as well as partially refilled (by spent shale) mines, will enhance vertical and lateral groundwater movement in the mined area after dewatering ceases and groundwater levels are reestablished.

Groundwater may be extracted from aquifers for use as a resource or for dewatering to control groundwater inflow into a mine. Mine dewatering would be necessary where saturated conditions, including perched aquifers, are present. Dewatering would lower the potentiometric surfaces and/or water table of the aquifers that are intercepted by the surface mine. Because some deeper groundwater is the source for springs and seeps in the region, the lowering of the potentiometric surface would have the same effect as withdrawals from shallow, surficial aquifers, reducing or eliminating flow of the connected springs and seeps. Existing groundwater supply wells within the cones of depression also would have reduced yields or could be dewatered.

52837-070

Diversion or modification of some natural drainage, and the creation of new drainage near access roads and construction sites. In the case of natural drainage channels that are rerouted, modified, or diverted, the surface runoff would be altered accordingly, affecting downstream flow. Ground surface disturbance would degrade surface water quality and enhance streamflow in areas downstream of development sites, access roads, gravel pits, employer-provided housing, power plants, refinery plants, pump stations, substations, various support facilities, and along the ROWs of pipelines and electrical transmission lines.

In the case of the Shell's in situ conversion process (ICP) sites, fractures could also form in rocks across the entire freeze column. Increased porosity (and permeability) would also occur after kerogen, nahcolite, and other soluble minerals were removed from the rock. Such alteration of permeability would promote vertical as well as horizontal flow and transport of groundwater. The thermal fractures and fractures created by steam, water, or CO₂ in the source rock could potentially enhance the groundwater flow within aquifers and potentially increase the vertical

hydraulic conductivities of aquitards after the retorted areas are refilled by groundwater. In other words, the flow system in the subsurface would be modified, as would be the groundwater discharge to the surface water bodies.

Dewatering operations prior to heating of the oil shale could lower the local groundwater potentiometric surface below overburden by as much as 1,600 ft (see Appendix A), and thus reduce groundwater discharge to local springs or streams that are hydraulically connected to the groundwater. Groundwater withdrawal to supply water for oil shale development would have a similar effect. The cone of groundwater depression could extend more than 2 miles from a dewatering well for one foot of drawdown. Existing groundwater supply wells within the cones of depression could have reduced groundwater yields or could be dewatered.

The retorted zone may become a groundwater discharge zone for the shallower aquifers and a groundwater recharge zone for the deeper aquifers.

The streamflow would be reduced in areas downstream of water intakes and could be increased downstream from discharge outfalls.

Withdrawal of water from surface water bodies would reduce streamflows.

Groundwater withdrawals from a shallow, surficial aquifer would produce a cone of depression and reduce groundwater discharge to connected surface water bodies. The withdrawal could reduce streamflows.

If a reservoir is constructed to accommodate the water demand of a project, the construction and the operation of the reservoir can impact the environment. The flow pattern downgradient of the reservoirs could be altered, depending on the release schedule of the reservoirs.

In Colorado, the potential underground mining sites are located in the vicinity of Piceance Creek, Yellow Creek, and East Fork Parachute Creek. If the oil shale mine is situated above the water level of one of those creeks, dewatering the aquifers above the oil shale in support of mining operations could reduce groundwater discharge to the creek. On the other hand, if the oil shale mine is situated below the water level of the creek, the dewatering operations on the aquifers above the oil shale could dewater the creek.

The document provides an estimate of the amount of water necessary for oil shale development and water availability, although the authors are advised to revise the estimates based on the water availability estimates developed by Colorado's Statewide Water Supply Initiative (SWASI). There is very little analysis regarding the severity of the impacts.

The report does not consider in detail the potential sources of water for oil shale development, fails to identify that existing water rights in the Colorado and White River drainages that are decreed for such use, and overlooks the potential administrative impacts on these drainages (i.e. alteration of call periods, curtailment of junior water rights, etc.). Note that these impacts may affect the Upper Colorado River Endangered Fish Recovery Program.

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52837-071

52837-072

The following are general comments that have appeared in prior reviews of the proposed oil shale demonstration projects:

The Applicant will need to document that the water used at the site was obtained from a legal source, or the water was diverted in priority under a water right decreed for such use or under an approved substitute water supply plan (see <http://www.water.state.co.us/wateradmin/wateradmin.asp#swsp>) or plan for augmentation.

The proposed operations may have potential impact on existing water rights near the project location. A plan for augmentation (or a State Engineer approved substitute water supply plan) will be required to replace all water depletions in time, place and amount such that no injury will occur to the vested water rights of others. The Applicant needs to demonstrate that the proposed project will not alter or impact the historic operation of existing vested water rights.

Water is commonly collected via surface water drainage collection and conveyance systems to manage drainage throughout mining sites. These systems typically consist of ditches, storm sewers, culverts, curbs, paving and storm water ponds. Stormwater runoff collected and stored out-of-priority, must be released to the stream system within 72 hours. This may require a discharge permit from CDPHE-WQCD. Otherwise, the operator will need to make replacements for evaporation through an approved substitute water supply plan (see <http://www.water.state.co.us/wateradmin/wateradmin.asp#swsp>) or plan for augmentation.

52837-073

Jurisdictional size dams must be approved by the State Engineer prior to construction. For non jurisdictional size dams, a Notice of Intent to Construct a Non-jurisdictional Water Impoundment Structure must be filed 10 days prior to construction. These structures are governed by CRS 37-87-101 through 125 and the Rules and Regulations for Dam Safety Construction 2CCR-402-1. (See <http://www.water.state.co.us/damsafety/dams.asp>)

All monitoring wells, injection wells, freeze wells and heater wells must be permitted as monitoring wells pursuant to CRS 37-92-602. All de-watering wells and/or water supply wells, or wells that will be converted to de-watering wells and/or water supply wells, must be permitted pursuant to CRS 37-90-137.¹ All water well construction must be in compliance with the Water Well Construction Rules 2CCR-402-2, which may require submittal and approval of a variance from the rules. All wells permitted by the State Engineer must be constructed by a water well construction contractor licensed by the State of Colorado.² All permanent pump installations and cistern installations shall be completed by only a pump installation contractor licensed by the State of Colorado or a private pump installer (CRS 37-91-102(12.5) and 37-91-109(2)). Pumping equipment may be installed in wells constructed and used solely for purposes of aquifer remediation (recovery well) or temporary dewatering of the aquifer (dewatering well) by authorized individuals or anyone directly employed by or under the supervision of an authorized individual. (See <http://www.water.state.co.us/boe/>)

¹ See <http://www.water.state.co.us/groundwater/groundwater.asp>.

² See Board of Examiner Rules 2 CCR 402-14.

In conclusion, note that due to the complexities of the hydrogeologic systems and the lack of information regarding the impacts of such projects, which are currently in the research and development phase, the detail provided by the PEIS is insufficient to allow for a complete and accurate determination of the effects to water resources that will occur from a specific Oil Shale and/or Tar Sands project. As such, each project must be reviewed based upon its own merits.

52837-074

5) Colorado Water Conservation Board

The Colorado Water Conservation Board (CWCB) is the state agency charged with promoting, protecting, conserving and developing Colorado's water resources in order to secure the greatest utilization of those resources for the benefit of present and future generations, and to minimize the risk of flood damage and related economic losses. The CWCB, as the state water planning agency, has a long association with activities concerning the Colorado River Compact and the "Law of the River." The CWCB submits the following technical comments on the draft *"Oil Shale and Tar Sand Sands Resource Management Plan Amendments to Address Land Use Allocations in Colorado, Utah, and Wyoming Programmatic Environmental Impact Statement" (PEIS)*, which comments will be included as part of the State's overall comment package. The CWCB has had the opportunity to review previous comments concerning the use of water for oil shale development and reaffirms their support of those comments. However, we feel it necessary to expand on those comments in certain areas.

While the document provides an estimate of the amount of water necessary for oil shale development and a discussion of water availability, there remains a need for additional information and clarity. The authors are advised to review and revise the estimates of water availability and uses by the State of Colorado based on information contained in the recently released Phase I Report done pursuant to Colorado's Statewide Water Supply Initiative (SWSI) and to utilize that information to better analyze the severity of various impacts. Not only is the amount of land impacted important, but with respect to water related impacts the amount of water used to support various levels of production at any given point in time is important in order to determine the impact to Colorado's water allocations under the Colorado River and Upper Colorado River Compacts. It would be much more useful to move Table 3.4.1-5 and the discussion of it to Section "3.4.1.1 Water Allocation" and expand that discussion to show the impact to states allocations at various levels of oil shale production. Without this type of analysis, the impacts of oil shale development can not be gauged with any real understanding.

52837-075

The report while discussing water availability and some water features still does not adequately describe the water available to projects on the lands potentially leased. There needs to be a clear linkage between water available, the water remaining available to a state under the compacts, and some indication of the availability under various hydrologic conditions. It is not sufficient to simply say so much water is available at a given point without providing some broad estimate of the water available for appropriation under various levels of compact development. The maps would be more useful if there was better linkage to water supplies in addition to showing watersheds and features. The potential sources of water for oil shale development fail to identify and consider existing water rights in the Colorado and White River drainages that are decreed for such use. The PEIS also overlooks the potential administrative impacts on these

52837-076

drainages (i.e. alteration of call periods, curtailment of junior water rights, etc.) by not considering water rights. Furthermore, the PEIS utilizes a hydrologic determination of water available to the Upper Colorado River Basin of 6.0 million acre-feet. However, the PEIS needs to also acknowledge that the Upper Basin has a legal entitlement to 7.5 million acre-feet and footnotes to that affect need to be made to the appropriate tables in the PEIS as well.

52837-076
(cont.)

The CWCB is a participant in the Colorado River Salinity Control Program and while the discussion of the Program is very helpful it remains incomplete. The discussion does not identify any specific BLM salinity control projects in or near the potentially leased lands and whether or not those projects will be impacted or how they may be protected during development of an oil shale leasing program. While BMP's will be employed during a leasing program, there is no discussion or cross reference to those BMP's. There are also NPDES permitting requirements administered by the respective state health departments that must be complied with for salinity control and those policies should be referenced as part of this discussion. It is fine to state that these NPDES standards must be complied with, but additional discussion of those policies and BMP's jointly is necessary to understand the relationships and how help minimize impacts of oil shale development.

52837-077

Colorado is also a participant in the Upper Colorado River Endangered Fish Recovery Implementation Program (UCRIP). While the purpose of the UCRIP is to offset the impacts of water development while recovering the Colorado River endangered fish, the UCRIP nevertheless is concerned about the potential impacts of oil shale development on the UCRIP efforts to recover the fish and the progress the Program has made to date. In addition to the very extensive discussion of threatened and endangered species already included, the PEIS needs to include a brief discussion of the UCRIP and the BMP's that BLM may require to help insure the recovery efforts of the UCRIP are supported and not adversely impacted.

52837-078

The CWCB administers an Instream Flow Program and has some instream flow segments either on leased lands or on streams that may be impacted by oil shale development. Those stream segments have not been identified. Identifying and incorporating a list of impacted water rights along with consultations with the CWCB and BLM's instream flow coordinator will help identify the affected stream reaches and measures that can be taken to mitigate the impacts of oil shale development on those streams.

52837-079

The PEIS needs to discuss whether or not there are any increases in flood potential resulting from oil shale development and whether or not any water users, agricultural operations or other communities will be impacted. If impacts are identified, what measures will be taken to mitigate those impacts?

52837-080

STATE OF COLORADO

Bill Ritter, Jr., Governor
James B. Martin, Executive Director

Dedicated to protecting and improving the health and environment of the people of Colorado

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Colorado Department
of Public Health
and Environment

1) Water Quality Control Division

The PEIS contains insufficient data defining potential environmental impacts to justify moving forward with a lease program for 360,000 acres of land in Colorado for oil shale production. The BLM should commit to gathering baseline surface water and ground water quality data at locations in and around the RD&D project sites for appropriate parameters and monitor at those sites during the construction and operation of the RD&D projects to gather data that could be used to establish expected environmental impacts for a commercial-scale project.

52837-081

We are concerned that the approach (Executive Summary – Page 5) of generally describing impacts in this PEIS and the proposal to identify detailed environmental impacts on a lease-by-lease basis will not address cumulative impacts to the environment on a geographic scale. The PEIS proposes that each EIS for a lease would have to describe off-site impacts but does not provide a process to address the cumulative impact of all leases on environmental conditions. For example, the impact on a watershed of discharges from sources on multiple leases would not be captured in an EIS for a single lease. As well, if power or water would need to be imported to support an in-situ project, this proposed approach would have each project proponent evaluating environmental impacts due to their proposal (e.g. power transmission lines, water pipe and reservoirs, etc.) without assessing the cumulative impact of these actions. Furthermore, this approach would not encourage consolidation of these types of infrastructure which could reduce the overall environmental impact. Of note, the cumulative impacts section (6.2.5) does not provide information of any value to allay the concern that the lease-by-lease approach will result in a reasonable assessment of cumulative impacts.

52837-082

The PEIS does not address the impacts of additional growth on water and wastewater infrastructure in nearby communities nor does it address potential impacts of water withdrawals on flows upstream of wastewater facilities and the concomitant reduction in permits limits that might result. Similarly, detailed water supply projections would need to be compared to available stream flows to determine if there is a sufficient water supply. In order to address this issue, specific population growth projections would need to be made for all the potentially impacted communities. Then, the capacities of the water and wastewater infrastructure would need to be assessed to identify gaps. At that point, projections could be made about the cost and impact of the efforts that would be needed to fill the gaps.

52837-083

A more meaningful environmental impact analysis should include regional numeric ground water modeling, including predictive simulations of both quantity and quality impacts.

52837-084

<p>Our involvement with other EIS investigations has included such modeling efforts, and it is not uncommon to assess regional groundwater and surface water impacts using numeric models. A regional numeric model to assess oil shale development impacts on surface and groundwater would allow some quantitative assessment of the development on the scale envisioned by BLM under their current preferred alternative. There is currently no attempt to quantitatively assess cumulative impacts to surface and groundwater resources within the PEIS. Without additional information regarding these impacts the only feasible alternative would be the no-action alternative.</p>	<p>52837-084 (cont.)</p>
<p>General comment on socioeconomic analysis: State and local governments will need to invest significant resources to support these efforts, much of which (such as providing permits, etc.) would need to occur prior to actual commercial operations. The proposed socioeconomic studies do not appear to address funding for these efforts. This analysis is in Chapter 4. There is still no discussion of the impact on State and local governments. State approval is needed prior to constructing a new water or wastewater treatment system or expanding existing systems. Thus, if a city or town would need to expand its drinking water and/or wastewater treatment systems to meet the demands of the oil shale project workforce, either for direct service or water hauling, then that entity would need state approval prior to undertaking construction. The analysis suggested above could be evaluated to determine the number of systems needing to be constructed and/or expanded and the extent of the expansion, to estimate the levels of state and local government impacts.</p>	<p>52837-085</p>
<p>The PEIS does not address that surface waters may also be used as drinking water supplies. Specifically, the PEIS should state that commercial development projects will be designed to avoid (if possible) or mitigate impacts to surface waters that are used as public water supplies.</p>	<p>52837-086</p>
<p>Section 7.4 does not list CDPHE as a cooperating agency.</p>	<p>52837-087</p>
<p>Water quality issues</p>	
<p>On page 2-5, first paragraph, the Draft PEIS should state that any discharge of spent shale leachate into waters of the United States or waters of a state <u>would</u> require a National Pollutant Discharge Elimination System (NPDES) permit or the state equivalent. The discussion that follows that sentence on page 2-5 is irrelevant as any discharge to state waters would require a state-issued permit under Colorado law.</p>	<p>52837-088</p>
<p>On page 2-5, second paragraph, this section should note that Colorado regulations prohibit the cumulative discharge of one ton per day or more of salinity from a commonly owned development unless amounts greater than one ton per day are mitigated elsewhere.</p>	<p>52837-089</p>
<p>In Section 3.4.1.2 (page 3-60), the Draft PEIS seems to focus on salinity as the key water quality issue. Although salinity was discussed, we found no discussion of the potential for any contribution of selenium or other pollutants expected to be found in the native soils/formations to area waters. Selenium is a significant water quality issue in the Colorado River Basin and around Colorado in general. The Department is aware that, according to the USGS, the targeted oil shale rich layers are expected to be at least 6000' to 7000' above the Mancos shale which is</p>	<p>52837-090</p>

<p>the significant source of selenium. That being said, in addition to identifying and addressing the issue of other potentially naturally occurring contaminants, the PEIS should address other sources of selenium as well.</p>	<p>52837-090 (cont.)</p>
<p>In Section 3.4.1.3, addressing 303(d) listed water bodies does not address listed segments along the lower Colorado River. The current 303(d) list for the lower Colorado River includes 8 segments, and it is anticipated that the number of listed segments could easily double during the next listing cycle. The PEIS lacks any substantive discussion of potential ramifications of the proposed preferred alternative on 303(d) list water bodies. Until such analysis is conducted the only appropriate alternative is the no-action alternative.</p>	<p>52837-091</p>
<p>Section 4.5 describes potential impacts from nonpoint source runoff, but does not attempt to quantify any potential impacts, nominally due to mining exemptions from NPDES requirements. However, Colorado does not exempt any construction activity from stormwater discharge permits impacting areas larger than one acre. Construction associated with oil shale development will represent a significant cumulative impact, especially in light of the increase emphasis on sedimentation impairments to surface water. The PEIS inadequately address the nonpoint source sedimentation impacts of the preferred alternative, and therefore until such impacts can be quantified the no-action alternative represents the only viable option.</p>	<p>52837-092</p>
<p>In Section 4.5.1, the Draft PEIS indicates that runoff from surface disturbances related to the oil shale operations would be non-point sources. In fact, and disturbance of one acre or more during construction would require a point source stormwater permit. This error is repeated in section 4.5.1.1.</p>	<p>52837-093</p>
<p>Section 4.5.1.2 states that the drawdown associated with ground water withdrawals from the shallow aquifers will impact springs, seeps, and surface water flows. The PEIS fails to address the magnitude of this impact, nor address the potential cumulative affect on both water availability and water quality. Significant dewatering associated with several of the currently envisioned oil shale production technologies will impact the timing and long term availability of water within the basin. These cumulative impacts are currently not addressed under the preferred alternative, and need to be considered. Therefore only the no-action alternative is appropriate.</p>	<p>52837-094</p>
<p>In Section 4.5.1.3, second paragraph, the Draft PEIS incorrectly states “Since discharge of surface runoff at a mining site is exempted from NPDES permits, surface runoff not intercepted at these sites could create a nonpoint source of contaminants and degrade the water quality of downgradient surface water bodies.” As a mining activity, runoff from the mine site would require a Colorado stormwater permit.</p>	<p>52837-095</p>
<p>Section 4.5.1.3 describes implementation of potential UIC disposal of poor quality water and states that EPA R8 is responsible for permitting. While this is true for Colorado, it is not necessarily true for Utah or Wyoming which have delegated UIC programs. Current Colorado ground water regulations also address several potential oil shale related ground water contaminants that would not be addressed through the Region 8 UIC permitting process. The</p>	<p>52837-096</p>

<p>PEIS does not address Colorado’s independent authority to regulate potential ground water contamination not addressed under the Region 8’s UIC implementation of the SDWA.</p>	<p>52837-096 (cont.)</p>
<p>Section 4.5.1.4 describes the potential of aquifer degradation due to alterations in the permeability and hydraulic conductivity of both aquifers and aquitards. This could have ramifications for contamination of ground water from pollutants remaining in after extraction activities at an in-situ operation are suspended and could lead to increased loadings, including TDS, in surface water bodies as well. Information to confirm that impacts from pollutant leaching due to increased porosity and permeability due to in-situ mining can be appropriately managed should be addressed at one or more RD&D projects before commercial development to determine whether ground water contamination will occur during production or after production when the aquifer in the zone of withdrawal becomes saturated.</p>	<p>52837-097</p>
<p>Section 4.5.2 assumes that power requirements for a traditional mining scenario would not increase over current energy consumption levels. One of the largest consumptive uses of both power and water under a traditional mining scenario is associated with dewatering. This assumption cannot be validated until realistic estimates of the amount of traditional mining that would occur can be made. The preferred alternative inadequately estimates the amount and associated cumulative impacts associated with potential oil shale development utilizing traditional mining methods.</p>	<p>52837-098</p>
<p>Section 6.1.2.4 states “The inability to predict specific locations for potential future commercial development and the lack of information regarding the type of technology that might be employed make it impossible to predict the specific impacts on water resources that could occur with commercial development. Quantification of such impacts would depend on the specific location of the lease area being developed, as well as the design of the project and associated infrastructure.” Again, this underscores a the lack of information that should preclude moving forward with a selected alternative that proposes developing 360,000 acres of land in Colorado for oil shale production.</p>	<p>52837-099</p>
<p><i>Drinking water and source water protection</i></p>	
<p>Page 2-4 line 5 should indicate that compliance with Colorado Primary Drinking Water Regulations is required.</p>	<p>52837-100</p>
<p>Page 2-4 lines 32 to 38 should indicate that compliance with state and local regulations and ordinances with respect to Source Water Protection is required.</p>	<p>52837-101</p>
<p>Appendix A Pages A-27 (beginning on line 36) and A-29 (beginning on line 4) describe two recovery techniques, solvent flooding and chemically assisted recovery, which may be of concern if used near water supply aquifers. The PEIS should state that one of the criteria used to select recovery technique would be water supply protection.</p>	<p>52837-102</p>
<p>Appendix A Pages A-69; A-71; A-72; A-72; A-78; all refer to “potable water” and the trucking or hauling of that water. Trucked or hauled water must meet the requirements of the Colorado Primary Drinking Water Regulations.</p>	<p>52837-103</p>

Appendix D should recognize that Colorado has primacy for implementing the Safe Drinking Water Act in Colorado. This has impacts throughout the document. All systems meeting the definition of public water system must comply with Colorado Primary Drinking Water Regulations which includes water hauling and the need for design approval prior to constructing a new system or expanding existing systems. Thus, if a city or town would need to expand its drinking water treatment system to meet the demands of the oil shale project workforce, either for direct service or water hauling, then that entity would need design approval prior to undertaking construction.

52837-104

Table D-5 on page D-9 should refer to any of the Colorado regulations relating to groundwater or drinking water. Similarly, Tables D-12 and D-13 should specifically reference Colorado’s regulations.

52837-105

In Appendix D there should be sections under D.2 ADDITIONAL INFORMATION REGARDING THE REGULATORY AND POLICY ENVIRONMENT addressing each of the tables (this was done for Air Quality – it needs to be done for all).

52837-106

The document refers vaguely to environmentally sensitive areas, but there does not seem to be specific approach to defining these areas or a method of selecting best management practices for sensitive areas (e.g.: around drinking water intakes, wells). Other questions come to mind like... will waste pits be allowed in environmental sensitive areas? This leads to question of how the BLM might incorporate locally driven source water protection plans in the potentially impacted areas and downstream. Is there a plan to develop a watershed protection plan with specific best management practices that will be implemented, enforced, and evaluated over the time frame of the project? The BLM’s process to addressing local concerns and selecting Best Management Practices (BMPs) in environmentally sensitive areas should be clearly defined.

52837-107

In the mass volume of information provided, source water protection is mentioned once in section 2-4, but there is no mention of a process for planned coordination. It also indicates that ... “If hazardous chemicals or materials are used during the construction or operation of a project that is located within a wellhead protection area, reporting or control measures **may** apply”. This language is very weak and does not significantly address potential drinking water impacts.

52837-108

Table 2.2.3-1 indicates existing ACEC’s Intersecting Oil Shale or Tar Sand Areas. There seems to be a fair amount of ACEC’s in the oil shale areas, but no specific environmental plans for the ACEC areas. The document indicates it will be handled by the local BLM offices. Will a guidance document be prepared to assist these local offices? Will there be an effort to establish standardized BMP’s?

52837-109

2) Air Pollution Control Division

Overarching Comments

The scope of this one document is huge and the format, style of the writing and organization of the document seems to reflect a “business as usual approach” by the BLM. This

52837-110

is disappointing, given the history of oil shale development in the west and the significance it now is taking on when considering it alongside the expansion of oil and gas and coal development. In our mind, a much more creative and informative approach should have been pursued. As a result of the document's size and organization, the interested reviewer must be highly motivated to seek out critical information so as to form conclusions. There is probably no way to easily remedy this at this stage but assessing this development proposal's impact over three states is not going to be easily accomplished with the document in its current form.

52837-110
(cont.)

There are a number of significant issues that Colorado must have comprehensive and clearly written information about for the state to make any recommendation about the further development of this resource. For example, there are a number of air quality concerns that are not addressed in this draft PEIS to any substantive degree. These include:

1. **Regional air quality concerns** – There are several areas of concern not described to any sufficient degree in the document. These include: impacts from Mercury emissions; regional and local ozone impacts (both health and secondary impacts); impacts on regional haze; impacts on nitrogen deposition; and the impacts of hazardous air pollutants.
2. **Urban and small community air quality levels** – Currently the Denver metro area is developing a SIP revision for the 8-hour ozone NAAQS. The draft document should describe whether and how the proposed development will affect the attainment and maintenance of the ozone standard. Additionally, the state has been required to develop and submit air quality plans for PM10 in many western Colorado towns. The state, in cooperation with the western slope communities of Aspen, Steamboat Springs, Telluride and Pagosa Springs, has successfully developed and implemented air quality plans (SIPs) to address violation of the PM10 NAAQS. The draft document has not adequately identified how these areas are going to maintain compliance with the NAAQS.
3. **Community exposure to Hazardous Air Pollutants** – Colorado has been implementing a state-wide air toxics program for several years and high on our list of source categories of concern are categories related to energy development. The Colorado Air Quality Control Commission adopted significant additional control requirements on oil and gas drilling and extraction operations and we are concerned about the levels of benzene and other HAPs compounds on the residents of Colorado. The impact of these pollutants deserves greater attention in the draft PEIS.
4. **Oil shale related electrical power generation development** – The draft PEIS identified the need for significant additional power generation capacity to drive the shale (and tar sands) extraction/refining process across the west. Then the BLM backs off this major issue entirely. Nowhere in the document is the role of alternative energy applications raised or discussed as an option in meeting the additional power needs for this proposal. Further, the impacts of energy development itself should receive more attention in this document. This is an issue of tremendous significance because of the impact of coal fired utility plants and their impact on air quality. The

52837-111

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52837-113

52837-114

PEIS should identify this issue a support a no action alternative until the overall energy needs and howi t will be provided can be more specifically detailed

52837-114
(cont.)

- 5. **Cumulative impacts to air quality** – The overarching direction of the narrative in the air quality impacts section, Section 6.1.4.5 Air Quality Impacts, last paragraph, page 6-94 can only lead to the conclusion of supporting the No Action Alternative. This paragraph states that “Because of the need for project- and site-specific information, it is not possible to identify the nature and magnitude of regional air quality impacts of commercial oil shale development under either Alternative B or Alternative C.” Given this, the only logical selection is Alternative A (No Action). This is the only proposed alternative that presents any substantial evidence that no significant, adverse direct or cumulative air quality impacts are likely to occur (analyzed under previous NEPA analyses for the six RD&D projects, which would proceed under Alternative A). The potential adverse impacts which could occur under Alternatives B and C may be unacceptable to Colorado and therefore these Alternatives can not be supported without further analysis and quantification of impacts. This again points to a need for a comprehensive dispersion modeling analysis that will address the near-field and far-field impacts of both the oil shale leasing program and cumulative sources (all existing and reasonably foreseeable non-oil shale/tar sands development sources, including existing and proposed oil and gas leasing on federal and private lands, and the expansion of electric utilities in the region). The current proposal lacks the comprehensive analysis necessary for Colorado to support either Alternative B or Alternative C.

52837-115

- 6. **Baseline monitoring for Colorado’s Class I areas** – This is a critical concern. The Draft PEIS misses a great deal of information about baseline ambient air quality monitoring currently being conducted in Colorado. As part of the PEIS, the BLM needs to discuss recent air quality monitoring in the prospective oil shale areas, and to commit to future ambient monitoring needed to assess the baseline environmental conditions. In Colorado, monitoring is needed both in the Piceance Basin itself, and in the Flat Tops Wilderness, a sensitive area that is likely to be impacted by industry emissions.

For the Flat Tops area, we note the following history, and future needs.

Recent AQRV Monitoring In and Near Flat Tops Wilderness Area

Shell began baseline monitoring in the Ripple Creek Pass (RCP) area, north of the Flat Tops Wilderness Area (FTWA) in January 03. Shell is to be commended for contacting federal land managers, the Air Division, and the US Geological Survey back in 2002 for input about what parameters needed to be monitored and characterized. Some monitoring is scheduled to cease in March 08, while other work will continue.

52837-116

Flat Tops: What Should Be Monitored and Why

- 1. Every-Third-Day chemically speciated fine particles with an IMPROVE II sampler at RCP (this was run at RCP from Jan 03 thru March 08). Purpose: Very

good indicator of type of particles in the air; excellent measure of visibility/haze; and very useful for trends as well as event/episode characterization.

2. Hourly Nephelometer at RCP (at RCP in past). Purpose: Very good high time resolution air quality indicator; very useful for better understanding of short-term episodes that are averaged over by the IMPROVE sampler.

3. Hourly meteorological parameters (at RCP in past): full suite of parameters necessary for AERMOD model. Purpose: Very useful as inputs to air quality modeling; very useful in understanding air flow trajectory and source area/receptor area relations on average and in episode characterizations.

4. Digital camera system, at least 3 images/day (9am, noon, 3pm). Purpose: Provides images of visual air quality; helps establish relationships between other quantitative measures and how the air actually looked; can help communicate with public and officials about haze/visibility concerns; can be used for trends over time.

5. Wet deposition by NADP/NDN (at RCP in past). Purpose: chemistry of precipitation (rain, snow etc) in bulk help understand sources, possible concerns about aquatic and terrestrial impacts of acids or metals, and is very useful tool to track changes in chemistry of wetfall over time. Dry Deposition is needed also.

6. In Situ Snow Pack Sampling (in and near FTWA and RCP, this has been and continues to be done by USGS). Purpose: chemical characterization of what chemicals, acids, metals are actually accumulated in the snowpack is essential to understanding what the ecosystem sees during snowmelt; also provides helpful trend information over time. Near or in FTWA and further downwind is essential.

7. Mercury sampling in bulk sampler (MDN) and in snowpack as well as other accumulators (some work has been done with this and may continue in RCP and FTWA by USGS). Purpose: mercury has the potential to be released in oil shale development. It is a potent neuro-toxin that needs to be tracked and better understood. USGS is very interested in sampling additional lakes in FTWA to learn whether they vary in mercury amount and sensitivity. USGS also looking at fish samples and potentially phytoplankton samples to test for mercury in lakes.

8. Lake sampling (Ned Wilson lake in FTWA was sampled in recent past). Purpose: chemical characterization of what ends-up in actual aquatic ecosystem after emissions are released, transported, deposited etc and ultimately end-up in a lake/pond. These areas are the locations where fish, salamanders etc are impacted. Several lakes should be sampled long-term after a lake reconnaissance has been conducted in and around FTWA.

52837-116
(cont.)

For the Piceance Basin and Areas Affected by Oil Shale Development:

9. Additional long-term baseline monitoring sites are needed in both rural areas and within potentially affected communities. The monitoring network should be designed to support all applicable regulatory programs. Sites should monitor meteorology and the concentrations of criteria pollutants, particularly sulfur dioxide (SO₂), ozone (O₃), oxides of nitrogen (NO_x), PM_{2.5}, PM₁₀, and carbon monoxide (CO). Meteorological data collection should include 10 meter towers, taller towers, and profilers. Meteorological instrumentation and collection should be designed to meet the needs of air quality modeling systems. In addition, meteorological data should be collected for purposes of evaluating the performance of the meteorological models.

10. A TSP sampler, to analyze for lead and other metals, is also suggested. Mercury levels in air should be sampled, to establish pre-industry levels of this air toxic. Due to recent oil and gas development, concentrations of benzene, toluene, ethylbenzene and other petroleum-related air toxics need to be determined.

11. In addition, monitoring short-term field studies should be designed and conducted to support application of regional air quality modeling systems. Specifically, baseline data is needed to evaluate baseline model performance.

All monitoring protocols should be developed in consultation with CDPHE and subject matter experts. Data should be publically available."

52837-116
(cont.)

The Air division staff members have prepared additional general and specific comments in several areas. Critical comments relate to BLM commitments to address monitoring, dispersion modeling, and the emission impact from leasing and project development. These comments are included below.

1. In several areas, the Draft PEIS lacks a meaningful analysis that is necessary to make an informed decision about the appropriate scale of commercial oil shale development.

Comment/What is still needed
<p>Until some or all of the Research Design and Development projects are underway and are able to provide information to inform a potential commercial leasing program the BLM will not have enough detailed information about the various processes to analyze the potential direct. The Final PEIS must provide a clear direction to ensure that information that is currently lacking will be collected and evaluated. The BLM should indicate in the Final PEIS how a broad stakeholder process will be initiated.</p>

52837-117

Comment/What is still needed	
<p>Several sections of the document refer to additional project-specific NEPA analyses that would be performed, subject to public agency review and comment, prior to approval of commercial leasing programs. However, to ensure that cumulative impacts from commercial scale development are adequately addressed, the PEIS should emphasize and provide more detail regarding BLM commitment to performing a cumulative local and regional scale modeling assessment prior to issuing leases for commercial-scale development. The PEIS document should emphasize the importance of the stakeholder process and indicate that any decision by BLM to grant commercial leases would be made only after completion and acceptance of a comprehensive local and regional scale cumulative air quality modeling analyses that has been developed with input and approval from all affected federal, state, and local agencies.</p>	52837-118
<p>Volume 2, Section 4.1.6 Expansion of Electricity-Generating Capacity, page 4-13 The Draft PEIS indicates, "Additional power generation capacity would need to be developed in the region to support commercial oil shale development; however, at this time, definitive information about the power requirements of commercial oil shale development is not available." even though the power requirements are not known at this time. The Final PEIS should set the standards for what is expected of the lease applicants as far as mitigation expectations for their power generation needs.</p> <p>Most of the Western States have established Renewable Portfolio Standard Programs, with the goal of increasing the percentage of renewable energy in the state's electricity mix to 20 percent over the next 20 years. This is the same time frame the BLM is considering in this Draft PEIS. The BLM should require that all leases obtain at least 20 percent of their energy needs from renewable energy. There are a number of rural residences in the area surrounding the proposed land use allocations that utilize renewable energy for nearly 100% of their energy needs.</p>	52837-119
<p>Volume 2, Section 4.6.2 Mitigation Measures (Air Quality), page 4-5-- The Draft PEIS is 1460 pages long and about one-half of a page has been devoted to providing 5 possible mitigation measures for air quality. The Final PEIS needs to include a better discussion of the mitigation measures indicated and provide more examples of possible mitigations that will be required of lease applicants. Offset programs should be included in the list of potential mitigation programs.</p>	52837-120

Comment/What is still needed	
<p>Volume 2, Section 6.1.4.5 Air Quality, page 6-94 According to the Draft PEIS, "Thus, compared to Alternative B, the areas where local air quality could be affected by future commercial oil shale development under Alternative C would be reduced by 89% in Colorado, 22% in Utah, and 70% in Wyoming."</p> <p>Without more information about the potential direct, indirect and cumulative air quality impacts of the oil shale development in Colorado, we must support the alternative with less significant air quality impacts.</p>	52837-121
<p>Comments Regarding the Next Step (Amendment of Specific Resource Management Plans)</p> <p>This Oil Shale PEIS provides the basis to amend specific Bureau of Land Management Resource Management Plans (RMPs) in Colorado, Wyoming, and Utah. The Colorado Air Pollution Control Division believes that these resource management plans should determine which areas of each BLM region should, or should not, be available for an oil shale leasing program. Therefore, the RMPs should carefully address the issue of which land areas are least sensitive to oil shale activities, and make only those areas available to the program. This is particularly important, since the current Utah oil shale research, development, and demonstration lease can be potentially expanded to include an area that is eligible for Wild and Scenic River status. According to lines 32 – 38 on page 2-28, major portions of the five Colorado RD&D "preference" lease areas for expansion to commercial scale would not be allowed for leasing under the present Alternative C, because they involve some sensitive areas. Lease areas should be delineated in ways that avoid such impacts in the future.</p>	52837-122
<p>The Draft PEIS states "in situ processing does not involve mining, with limited waste material disposal, it does not permanently modify land surface topography and therefore produces fewer air pollutant emissions."</p> <p>This is not so. Though this phase produces fewer <i>PM</i> emissions, it produces other criteria and hazardous air pollutants. These pollutants are not even addressed in this paragraph.</p>	52837-123
<p>Volume 2, Sections 6.1.2.5, 6.1.3.5, 6.2.2.5, 6.2.3.5 Air Quality, pages 6-47, 6-71, 6-185, 6-211</p> <p>These identical sections mention "[o]perational releases of certain hazardous air pollutants (such as benzene, toluene, formaldehyde, and diesel PM) could also affect onsite workers and nearby residences (if any are present), but these impacts would be localized to the immediate project location and subject to further analyses prior to implementation."</p> <p>No mention is made of mercury even though research indicates that mercury is a component released from oil shale with even more severe environmental and health impacts than the HAPs mentioned.</p>	52837-124

Comment/What is still needed	
<p>Volume 2, Section 6.1.1.5 Air Quality, pages 6-8 and 6-9</p> <p>In this section, BLM states that “the EAs, prepared for the RD&D projects ... predicted potential air quality impacts using atmospheric dispersion methods....The air quality analyses presented in the EAs indicate that no significant adverse direct, or cumulative air quality impacts are likely to occur.”</p> <p>The air quality analyses presented in the EAs indicate that no significant adverse direct, or cumulative air quality impacts are likely to occur.” These air quality analyses have already been deemed suspect and inadequate by the Division.</p>	52837-125
<p>Appendix A Volume 3, Table A-10 EGL RD&D Project Air Emissions Summary, page A-66</p> <p>EGL’s sulfur dioxide emissions are unreasonable high. There is no discussion of how these could be reduced. Can they mitigate this by scrubbing the boiler emissions or using a lower sulfur fuel? Further, there is no mention of VOC or hazardous air pollutants in their emission inventory yet these are inevitable.</p>	52837-126
<p>Volume 3, Table A-14 Phase 3 Estimated Emissions, page A-83</p> <p>The estimate for hazardous air pollutants is 1.8% of VOC emissions This is an unreasonably low estimate and should be researched and verified in the Final EIS.</p>	52837-127

2. The Draft PEIS has indicated that substantial adverse impacts to air quality are likely to occur.

Impact identified/Level of certainty in PEIS

The overarching direction of the narrative in the air quality impacts section, Section 6.1.4.5 Air Quality Impacts, last paragraph, page 6-94 can only lead to the conclusion of supporting the No Action Alternative. This paragraph states that "Because of the need for project- and site-specific information, it is not possible to identify the nature and magnitude of regional air quality impacts of commercial oil shale development under either Alternative B or Alternative C." Given this, the only logical selection is Alternative A (No Action). This is the only proposed alternative that presents any substantial evidence that no significant, adverse direct or cumulative air quality impacts are likely to occur (analyzed under previous NEPA analyses for the six RD&D projects, which would proceed under Alternative A). The potential adverse impacts which could occur under Alternatives B and C may be unacceptable to Colorado and therefore these Alternatives can not be supported without further analysis and quantification of impacts. This again points to a need for a comprehensive dispersion modeling analysis that will address the near-field and far-field impacts of both the oil shale leasing program and cumulative sources (all existing and reasonably foreseeable non-oil shale/tar sands development sources, including existing and proposed oil and gas leasing on federal and private lands, and the expansion of electric utilities in the region). The current proposal lacks the comprehensive analysis necessary for Colorado to support either Alternative B or Alternative C.

The overarching direction of the narrative in the air quality impacts section, Section 6.1.4.5 Air Quality Impacts, last paragraph, page 6-94 can only lead to the conclusion of supporting the No action alternative. This paragraph states that "Because of the need for project- and site-specific information, it is not possible to identify the nature and magnitude of regional air quality impacts of commercial oil shale development under either Alternative B or Alternative C." Given this, the only logical selection is Alternative A (No Action). This is the only proposed alternative that presents any substantial evidence that no significant, adverse direct or cumulative air quality impacts are likely to occur (analyzed under previous NEPA analyses for the six RD&D projects, which would proceed under Alternative A). The potential adverse impacts which could occur under Alternatives B and C may be unacceptable to Colorado and therefore these Alternatives can not be supported without further analysis and quantification of impacts. This again points to a need for a comprehensive dispersion modeling analysis that will address the near-field and far-field impacts of both the oil shale leasing program and cumulative sources (all existing and reasonably foreseeable non-oil shale/tar sands development sources, including existing and proposed oil and gas leasing on federal and private lands, and the expansion of electric utilities in the region). The current proposal lacks the comprehensive analysis necessary for Colorado to support either Alternative B or Alternative C.

52837-128

3. Several information gaps must be filled to support an informed decision regarding the feasible and appropriate scope of commercial oil shale development at a later date, when more information is available.

Area of concern/What is needed to make decision
<p>Regional air quality concerns – There are several areas of concern not described to any sufficient degree in the document. These include: impacts from Mercury emissions; regional and local ozone impacts (both health and secondary impacts); impacts on regional haze; impacts on nitrogen deposition; and, the impacts of hazardous air pollutants.</p> <p>Until some or all of the Research Design and Development projects are underway and are able to provide information to inform a potential commercial leasing program, the BLM will not have enough detailed information about the various processes to analyze the potential direct, indirect, and cumulative environmental, cultural, and socioeconomic impacts of a commercial leasing program. The Final PEIS must provide a clear direction to ensure that information that is currently lacking will be collected and evaluated. The BLM should indicate in the Final PEIS how a broad stakeholder process will be initiated. This stakeholder group should be utilized to collect and evaluate the data that is needed to inform future site-specific EIS's and develop regulations for potential commercial leasing. The information provided in the Draft PEIS does not provide the State of Colorado and others enough information to determine whether commercial oil shale leasing program in Colorado could be developed without significant direct, indirect and cumulative environmental, cultural, and socioeconomic impacts.</p>
<p>Oil shale related electrical power generation development – The EIS identified the need for significant additional power generation capacity to drive the shale (and tar sands) extraction/refining process across the west. Nowhere in the document is the role of alternative energy applications raised or discussed as an option in meeting the additional power needs for this proposal. Further, the impacts of energy development itself should receive more attention in this document.</p> <p>The draft PEIS identified the need for significant additional power generation capacity to drive the shale (and tar sands) extraction/refining process across the west. Then the BLM backs off this major issue entirely. Nowhere in the document is the role of alternative energy applications raised or discussed as an option in meeting the additional power needs for this proposal. Further, the impacts of energy development itself should receive more attention in this document. This is an issue of tremendous significance because of the impact of coal fired utility plants and their impact on air quality. The PEIS should identify this issue a support a no action alternative until the overall energy needs and how it will be provided can be more specifically detailed</p>

52837-129

52837-130

Area of concern/What is needed to make decision	
<p>In the Draft PEIS Volume 1, Section 2.3.1, page 2-16, BLM commits to the following: "If and when applications to lease are received and additional information becomes available, the BLM will conduct NEPA analyses, including consideration of direct, indirect, and cumulative effects, reasonable alternatives, and possible mitigation measures, as well as what level of development may be anticipated."</p> <p>Only if these analyses contain approved analysis techniques, and if the cumulative effects include the appropriate sources, will the information be useful for stakeholders to make a determination of the potential impacts of the commercial leasing program.</p>	52837-131
<p>Several sections of the document refer to additional project-specific NEPA analyses that would be performed, subject to public agency review and comment, prior to approval of commercial leasing programs.</p> <p>However, to ensure that cumulative impacts from commercial scale development are adequately addressed, the PEIS should Emphasize and provide more detail regarding BLM commitment to performing a cumulative local and regional scale modeling assessment prior to issuing leases for commercial-scale development. The PEIS document should emphasize the importance of the stakeholder process and indicate that any decision by BLM to grant commercial leases would be made only after completion and acceptance of a comprehensive local and regional scale cumulative air quality modeling analyses that has been developed with input and approval from all affected federal, state, and local agencies.</p>	52837-132
<p>Volume 1, Section 3.5.3 Air Quality, page 3-101: The Draft PEIS states, "On the basis of limited monitoring data, air quality in the region is expected to be good (i.e., concentration levels for most criteria pollutants [except O3] are well below their applicable standards)." There is limited monitoring data in the region and background values will be crucial in making informed decisions on site-specific proposed commercial leasing projects in the future. It is time for the BLM to participate with other state, local and federal agencies in developing and funding a monitoring program in the region. A state must have better understanding of the contribution of oil and gas development to air quality emission levels, especially ozone, is needed. Since much of the oil and gas development is occurring on BLM lands and will be in the same areas as those proposed for oil shale development, BLM should take the lead in providing background monitoring for this region. Therefore to pile on the oil shale issue on top of this makes a decision to proceed with amending the documents to facilitate leasing premature.</p>	52837-133

4. Other areas of concern/comment

<p>Topic- Climate change - Section 4.6.1 Common Impacts, last paragraph, page 4-48: The last two paragraphs of this section discuss greenhouse gas emissions (GHG) and potential impacts of direct emissions of GHG from oil shale activities. The statement is made that “increasing concentrations of GHG, however, are likely to accelerate the rate of climate change” but that “direct emissions of climate change air pollutants from oil shale development facilities are likely to be a small fraction of global emissions”. Since the technology and potential emissions from future commercial oil shale development are virtually unknown, the last statement cannot be supported. Furthermore, even if these emissions will be a small fraction of global emissions, it is plausible that they will be a significant fraction of local and regional GHG emissions and may in fact be a significant contributor to climate warming on a regional level. Given the large uncertainty regarding commercial oil shale emissions and the implications for climate change, the “No Action” alternative should be supported until further evidence and analysis can be provided.</p>	<p>52837-134</p>
<p>Volume 1, Table ES-1, page ES-5 The Colorado Air Pollution Control Division cannot support an alternative that will make areas identified as Areas of Critical Environmental Concern (ACEC) available for commercial oil shale leasing.</p>	<p>52837-135</p>
<p>Page 2-51, Section 2.5.2, Lines 24-40. The No-Action Alternative. This section indicates that several comments received during the public scoping process “suggested that BLM should not move forward to establish commercial leasing programs for oil shale”. The PEIS addresses these concerns by stating: “The no action alternatives for oil shale and tar sands (Alternatives A) effectively are no leasing alternatives. Any other alternatives in the PEIS that did not evaluate opening public lands for commercial leasing would not be consistent with the Energy Policy Act.”</p>	<p>52837-136</p>
<p>Colorado notes that Alternative A includes the six research and development leases that currently exist on public lands. Therefore, the BLM has made public land leases available to the oil shale industry. The limited-size, developmental nature of these projects is appropriate, given that technology for processing oil shale is not mature. Colorado also notes that NEPA requires that for any contemplated action, the no-action alternative must be given serious consideration. Therefore, choosing the no-action alternative is feasible.</p>	

<p>Page 4-17, Section 4.2.1.1. Lines 17 –26. This section states: “A significant portion of the land within the most geologically prospective oil shale areas is already undergoing mineral development, particularly for the development of oil and gas resources. Commercial oil shale development, using any technology under consideration in this PEIS, is largely incompatible with other mineral development activities and will likely preclude these other activities while oil shale development and production are ongoing.”</p> <p>Page 6-3, Section 6.1.12, lines 32 – 39 indicates that, due to natural gas flammability, gas wells cannot be allowed near an in-situ oil shale site. If a goal of the Congress was to increase US energy independence, via the development of fuel from oil shale, then Colorado asserts that this goal is already being met by the large expansion of traditional oil and gas activity in the area. Indeed, oil shale, an unproven technology, can interfere with established operations for extracting oil and gas.</p>	<p>52837-137</p>
<p>Volume 1, Section 2.3.3.2, Alternative C, pages 2-28 and 2-32.</p> <p>This section states,</p> <p>“Although the White River and Book Cliffs RMPs allow commercial leasing for oil shale development, as shown in Figures 2.3.3.4, 2.3.3-5, and 2.3.3-6, under Alternative C, portions of three of the five preference right lease areas for the Colorado RD&D leases are not available for application for commercial leasing. These include portions of the areas associated with the Chevron, EGL, and Shell Site 2 RD&D projects. For the other two Colorado RD&D projects, Shell Sites 1 and 3, none of the preference right lease areas coincide with the areas available for application for commercial leasing. As with Alternative B, for the OSEC RD&D project in Utah, portions of the area are not available for application for commercial leasing under Alternative C because they are excluded due to the presence of a potentially eligible WSR, Evacuation Creek (see Section 2.3.3.). Under the terms of the RD&D program, the federal government has a commitment to grant the RD&D companies leases for commercial development within the preference right lease areas, provided that all conditions of the program are met (See Section 1.4.1). As a result, all lands within the preference right lease areas would be available for issuance of commercial leases to the RD&D companies under Alternative C if they meet all conditions of the program. For commercial oil shale development to occur on lands excluded by Alternative C, the specific land use plans would need to be amended to consider the excluded area for potential leasing. The federal government is not under an obligation to grant leases for commercial development within these areas to any other applicants.”</p> <p>It is somewhat unclear as to what “under an obligation” means. In order for the RD&D areas to expand to their full preference areas, additional NEPA analyses are required, because the original Findings of No Significant Impacts addressed only the research scale of 160 acres, not the full-scale areas.</p>	<p>52837-138</p>
<p>Most of the Western States have established Renewable Portfolio Standard Programs, with the goal of increasing the percentage of renewable energy in the state's electricity mix to 20 percent over the next 20 years. This is the same time frame the BLM is considering in this Draft PEIS. The BLM should require that all leases obtain at least 20 percent of their energy needs from renewable energy. There are a number of rural residences in the area surrounding the proposed land use allocations that utilize renewable energy for nearly 100% of their energy needs.</p>	<p>52837-139</p>

3) Hazardous Materials and Waste Management Division

Oil shale development offers tremendous potential to supplement the nation’s energy supplies. Colorado’s goal is that commercial oil shale development be done right – in a manner that avoids unacceptable impacts on Colorado’s land, water and wildlife resources, and minimizes and mitigates those adverse environmental and socioeconomic impacts that would result from such development. If planning for and implementation of oil shale development efforts are not done responsibly and thoughtfully in the first instance, we all lose. There is a greater risk that development will be delayed and that any development that does occur will have unacceptable impacts.

In view of the potentially substantial adverse environmental impacts that the PEIS acknowledges could result from commercial oil shale development, and the lack of factual information and analysis to meaningfully assess likely impacts at this time, the only defensible alternative is the “no action” alternative. The information currently presented provides no support for amending the current Resource Management Plans to “facilitate” or “make possible” commercial oil shale development. Just as it was inappropriate for the BLM to select a leasing alternative in the Preliminary Draft PEIS that the State reviewed in June due to substantial uncertainties, it is inappropriate for the agency to select any alternative here that would make lands available for applications for commercial lease.

52837-140

A Programmatic Environmental Impact Statement is intended to provide a meaningful analysis of the impacts of an overall program, in this case commercial oil shale development, prior to proceeding with project by project irrevocable commitments of resources. Because of the absence of information to allow a meaningful assessment of the potential impacts of commercial oil shale development at this time, the current draft PEIS does not satisfy its intended purpose. Therefore, BLM should commit to preparation of a supplemental PEIS at a later date, when adequate information is available, prior to proceeding with commercial oil shale leasing.

52837-141

While the BLM claims that it will study the cumulative impacts of proposed oil shale development when it receives an application for a commercial lease, the proper time to evaluate the regional cumulative impacts of new oil shale development is at the PEIS stage. The BLM is proposing to make hundreds of thousands of acre open to oil shale leasing, which could lead to multiple applications for large-scale oil shale projects. The BLM cannot analyze the cumulative impacts of this decision when performing NEPA review on a project-specific, piecemeal basis.

52837-142

Although BLM’s plans regarding the development of commercial oil shale leasing regulations are unclear at this time, we note that the current PEIS also provides no meaningful analysis of environmental impacts that could form the basis to support the issuance of such regulations. For example, setting an appropriate royalty rate should be based on the feasibility and cost of oil shale development technology, the anticipated environmental impacts of such technology, and the costs of mitigation of such impacts. None of that information is included in this PEIS.

52837-143

Oil shale development will use untested technology with potential long-term negative impacts to Colorado’s environment and communities. Colorado therefore supports the RD&D approach. Colorado will not support any commercialization plan that calls for commercial leasing, or for the promulgation of leasing regulations, prior to a meaningful evaluation of the RD&D projects.

52837-144

Specific Technical Comments:

Capacity: There is insufficient information to determine exactly what type or types of solid and/or hazardous waste treatment, storage and disposal facilities will be required for the RD&D projects. The information, such as geology, hydrology and engineering requirements may require substantial effort, resources and time. It is not clear that the resources and time were allocated, even in the RD&D process to define the needs and develop the capacity to support the RD&D project. This is important because all waste types and all waste volumes must be accounted for and managed appropriately. Without an understanding of the types and volumes of the wastes to be generated, it is not possible to determine the additional capacity for the waste storage, treatment and disposal facilities needed to support even the RD&D approach identified in #6 above.

52837-145

Regulatory Compliance: While this comment pertains to the later aspect of commercial oil shale development, there appears to be a flaw even in the RD&D phase identified in element #6 above. Page 2-18 Table 2.3.2-1 under the Regulatory and Operational Constraints for Alternative A (960 acres for 6 RD&D projects) where it states "[N]ot applicable; no commercial leasing would occur under this alternative." The federal, state and local solid and hazardous waste statutes and regulations must be adhered to for RD&D projects, even if no commercial leasing occurs. This would be applicable to the generation, storage, treatment, transportation and ultimate disposal of solid and/or hazardous waste.

52837-146

4) Disease Control and Environmental Epidemiology Division

1. Current knowledge about in-situ and other oil shale (OS) technology is inadequate to fully assess associated environmental impacts or determine necessary mitigation measures. More detailed analysis of enhanced potential for community exposure and potential toxic impacts associated with different in-situ OS technologies is needed before an appropriate action alternative can be selected. Data gaps/inadequacies that need to be addressed to fully and adequately compare PEIS alternatives include:

52837-147

- Development of a chemical inventory associated with different OS technologies and select alternatives;
- Assessment of the toxic potential of various chemically-assisted OS technologies, based on detailed R&D findings;
- Identification of metrics to establish baseline conditions;

- Identification of metrics to assess baseline risks, analyze trends over time, and generally improve the scientific accuracy of the analysis of degradation to the human environment and potential risk to health associated with specific OS technologies;
 - Determination of areas of greatest community impact anticipated during the active production phase of commercial OS development projects, through identification of significant exposure pathways associated with specific technologies;
 - Quantitative estimate of exposure dose and potential health impacts to the affected public, due to direct impacts from air, water or surface contamination, or from indirect exposure to contaminated media, such as use of contaminated surface or ground water for drinking water, agricultural, or recreational use;
 - Identification of methods to assess cumulative effects, where additive impacts are anticipated. Additional environmental studies are needed to be able to assess incremental impacts within the common geographic area. Establish risk-based systems to support decisions about avoidance or mitigation of adverse impacts to public health, and to allow meaningful comparison of alternatives in the future.
2. Development of the PEIS and leasing for commercial OS development should include sufficient detail to ensure stipulations for protection of resources and prevention or mitigation of impacts to the public that are consistent with other allowed energy uses, such as conventional oil and gas development.

52837-147
(cont.)

52837-148

Specific Comments

Page 2-50, section 2.5.1, 2nd paragraph - The PEIS states that published information is too dated to accurately describe commercial OS technologies of the future. This section of the report concludes that, under conservative assumptions, impacts could be significant, but uncertainties are currently too great to develop reliable assumptions. While this conclusion seems reasonable, it also appears to indicate there is very little basis to compare action alternatives at this time. For example, the lack of detailed process information makes it impossible to determine the degree of degradation, potential for exposure, or significance of toxic impacts associated with chemical-specific technologies prior to availability of RD&D results. No information is available to fully assess the long-term potential for health impacts to the affected public due to direct or indirect exposure to contaminated media (i.e., use of contaminated groundwater or surface water for drinking water or agricultural use; recreational contact with degraded surface water).

52837-149

Page 4-2, Section 4 - The paragraph at the top of the page states that information presented in section 4 “does not necessarily define the range of possible technologies and issues that may develop”. Alternative technologies are anticipated to have different potential to cause significant impacts, due to differences in associated process methods and chemicals, and unique fate and transport characteristics. It is not possible to assess the effects of activity or evaluate actual outcomes with the general information available. Therefore, conclusions about potential risks and impacts to public health associated with the various alternatives are highly uncertain.

52837-150

Table 4.14-2 - Estimated health risks for chemical exposure in workers fails to take into account systemic toxic effects, other than cancer, which may be associated with process chemicals, naturally-occurring pollutants, or other by-products of OS development.

52837-151

Section 6 - Impact assessments of the OS alternatives are generally lacking in discussions of the toxic potential of process chemicals and wastes, or potential routes for offsite exposure. Impacts would depend on factors such as location and quantity of leases and technology-specific differences in fate and transport of contaminants, but no detailed analysis is provided in the discussion of the alternatives. Benchmarks to compare toxic potential for different technologies, under different conditions, are not provided or discussed. These data gaps preclude a firm scientific basis for selection of the preferred alternative.

52837-152

5) Consumer Protection Division

Section 3.10, 4.10 and 4.11 Appendix I (Socioeconomic analysis methodology).

Statutory and regulatory oversight relative to the licensing, inspection, and enforcement specific to labor camps (man camps), retail food establishments, wholesale food firms, schools, childcare, mobile home parks, public accommodations (hotels/motels) and campgrounds are not addressed.

Inspections relative to mobile home parks, public accommodations and campgrounds are only done on a complaint basis. The increase in the number and use of these facilities will dictate the need for additional resources to respond to the associated complaints which are not addressed in the PEIS.

Labor camp housing is only inspected on a complaint basis, however the food service portion is addressed as indicated in the bullet below addressing retail food establishments. The labor camp regulations are the authority used to address man camps. The Labor Camp regulations were adopted in 1968 and a revision will be needed to address issues relative to man camps.

52837-153

Retail food establishments (restaurants, grocery stores, school cafeterias, food service to summer camps) whether associated with man camps or are community-based require minimally, plan review and approval, pre-opening inspections, licensing, routine inspections on a semi-annual basis, and any additional regulatory activity needed for non-compliance. If an establishment moves from one location to another, which may occur more frequently with man camps, the license is non-transferable and all the plan review, pre-opening, etc. must be repeated. All these activities are resource intensive and additional increases needed to perform these functions are not addressed in the PEIS.

Schools are inspected on an annual basis. Any new construction must go through the plan review submittal and approval process. There are no statutory or regulatory fees required to be paid for the plan review and inspection services. The increase in resources needed to perform these functions are not addressed in the PEIS.

Child care facilities are inspected on an annual basis. There are no regulatory or statutory fees assessed for these facilities. The increase in resources needed to perform these functions are not addressed in the PEIS.

6) CDPHE Climate Change

Commercial development of oil shale will result in carbon dioxide emissions from production, refining and transportation. Because production of oil from oil shale is expected to be energy intensive, commercial oil shale development will have significant greenhouse gas implications. Most of these emissions will come from processing plants as well as power plants that provide electricity to oil shale facilities. While some of these emissions could be reduced by capturing carbon dioxide for enhanced oil recovery in nearby oil production areas and geological sequestration of the carbon dioxide, section 2.5.3 indicates that such an evaluation should occur at the time of site-specific NEPA analysis of a specific plan of development. In addition, there will be indirect greenhouse gas emissions from population growth and the commensurate demand for infrastructure and services, none of which is addressed.

While sections 3.5.1.2 and 4.6.1 offer brief tutorials on the science behind climate change and point out that increasing concentrations of greenhouse gas emissions are likely to accelerate the rate of climate change, section 4.6.1 goes on to merely conclude that “direct emissions of climate change air pollutants from oil shale development facilities are likely to be a small fraction of global emissions.” It is irrelevant whether the emissions will be a small fraction of total global emissions. That is true for every major emitter. The PEIS offers no specificity or any analysis of the primary contributors of carbon dioxide emissions from oil shale development, such as the power plants needed to provide electricity to oil shale facilities. The PEIS is lacking a meaningful analysis of impacts from oil shale development to climate change and, accordingly, offers no substantive provisions on which to comment.

52837-166

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Governor

Susan Kirkpatrick
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Division of Local Government, State Demography Office

General Comments:

The Colorado Department of Local Affairs evaluated the Colorado socioeconomic components of the "Draft Oil Shale and Tar Sands Resource Management Plan Amendments to Address Land Use Allocations in Colorado, Utah and Wyoming and Programmatic Environmental Impact Statement". Due to the uncertainty of the oil shale development technology and resulting impacts the total socioeconomic effects of oil shale development cannot be properly evaluated. Making lands available through the resource management plans does not address the scope or magnitudes of oil shale development and its resulting socioeconomic impacts.

52837-154

Additionally, the assumptions of socioeconomic impacts provided in the PEIS are very narrow and do not provide the reader the broad spectrum of potential production realities. The assumptions are for **one operation** with three different types of technology at **one level of production**. Chapter 6 which compares the alternatives does not discuss how likely one operation versus 10 operations would be or how different levels of production would increase or decrease employment levels.

52837-155

Finally, after reviewing the Draft PEIS we strongly feel that the PEIS is missing important components. Below we have identified socioeconomic impacts that we feel have not been addressed or not addressed fully. These issues should be addressed prior to decisions being made.

Issue: A thorough, realistic, housing analysis must be included in the PEIS. The assumptions used concerning the use of "temporary" housing, especially the ability to locate buildable land and infrastructure for the housing and related structures seem very unrealistic. Additionally, a clearer discussion of the meaning of the concept "temporary", as it relates to workforce and housing, needs to be presented. One of the primary assumptions in Chapter 4.11 is that a high percentage of the workforce would be housed in temporary company housing. However, no data or research is presented that supports that assumption. The indirect and induced effect of the direct oil shale workers would create additional demand for housing that has not been adequately addressed in the PEIS. Affordable and attainable housing is a current concern in the ROI. Even a moderate spike in demand for housing will impact the entire community.

52837-156

Recommendation: Include a complete, realistic, housing impact analysis in the PEIS. Research and present information from other similar projects throughout the world. Identify the elements included in the concept of "temporary" as it relates to workforce and housing needs and present

information and research regarding this “temporary” assumption when the timeline appears longer term. Present information or support documents regarding workers choosing to live in temporary work camps when the time frame may be longer term. Present information on the strengths and threats of this “temporary” or not so temporary workforce. Include in the “mitigation measures” the need for a housing program that would engage the industry, the community, and where necessary the state or federal government.

52837-156
(cont.)

Issue: The baseline information related to housing vacancy is not a true picture. Vacant housing units can either be truly vacant and for sale or for rent, they can be “seasonal” housing or they can be second homes and not a primary residence. In this case and especially in this ROI it would be very wrong to assume that all vacant homes are available for use. Additionally, the BLM PEIS suggests that up to 15 % of the workforce would be accommodated in rental housing and motels - this seems unrealistic in a market with 1 - 3% vacancy rates.

52837-157

Recommendation:

Review the Census Bureau vacancy data to identify what percentage of the housing units could be considered available for a local workforce and are not a part of the growing second home cohort. Review and revise assumptions that the local housing market could absorb 15% of the workforce.

Issue: There is no baseline data presented for community infrastructure capacity. (water, sewer, water treatment, energy, schools, hospitals, emergency management etc.) Without this baseline data it is impossible to evaluate what the community infrastructure demands will be with oil shale development. For example, will population increases due to oil shale development push local infrastructure capacity over their current planning horizon and create major unforeseen costs to local governments.

Recommendation: A standard state and local government fiscal analysis is needed which would include:

52837-158

- 1) Community facility capacity over the period of analysis.
- 2) Baseline facility utilization rate (is there available capacity or a deficit?)
- 3) Project facility capacity requirements over time
- 4) Capital costs of facility capacity required by project impacts
- 5) Public revenues generated by the project
- 6) Discussion of the net of cost and revenues with regard to timing or jurisdictional mismatch.

Issue: One of the primary socioeconomic impacts resulting from population change is the impacts to local governments. Chapter 3 mentions that maintenance of county roads is the largest dollar impact to Rio Blanco County yet, in Chapter 4.11. there are no transportation/infrastructure costs included in the impact assessment. Additionally, other impacts to local governments are noted in terms of social disruptions (4.11.) and again, no costs are included in the analysis.

52837-159

Recommendation: A more complete set of costs to local governments needs to be included in the analysis to enable an adequate evaluation of the total costs of oil shale development.

Issue: A cumulative socioeconomic analysis must be performed when more information is available. It does make sense to evaluate the magnitude and extent of the impacts at the project level, which it states in Chapter 2.6, however it is just as important to look at the cumulative impacts across all projects.

52837-160

Issue: The socioeconomic data is not broken down by county in the PEIS and it is therefore impossible to accurately evaluate the impacts. The counties in the ROI in Colorado are very different from each other and their current conditions and policies will influence how the potential growth from oil shale development will impact their county and municipalities. The distribution of the socioeconomic impacts is very important to consider because it will impact resources and costs to the counties and municipalities differently.

52837-161

Recommendation: Break the region of influence down by state and county to estimate the economic impacts.

Issue: One of the key assumptions is that the local economy in each ROI would minimally provide materials, goods, and services related to the construction and operation of oil shale facilities therefore reducing the risk of local inflation. The Draft PEIS makes the assumption that 50% of the materials and labor for the construction of temporary employer-provided housing and housing provided by local communities would come from each ROI. However, the price inflation created both in the labor market as well as in the housing materials/construction market are not included in the socioeconomic analysis. Current impacts from gas development in the ROI show that local factor price inflation does occur especially in the labor market, housing and housing/construction materials. Chapter 3 of the PEIS discusses the historical and current factor price issues yet it is not included in Chapter 4 of the PEIS.

52837-162

Recommendation: The socioeconomic analysis must include a component that reflects the impact of the oil shale development on local prices in the labor, goods and services, and construction materials markets.

Issue: The total employment impact from a direct construction or direct operation job is not complete. The socioeconomic sections of the PEIS present the direct and indirect employment and income impacts using IMPLAN as the model source. We do not see that the work has included the “induced” effect, the spending of the income earned locally. Chapter 3 of the PEIS which presents the history of the prior oil shale boom and acknowledges that when the direct oil shale jobs pulled out that there were the indirect suppliers effected as well as the local businesses that provided services to the workers. The PEIS states in Chapter 3 “Exxon decided to close leaving 2100 oil shale workers and 7500 support workers unemployed. Our current research using IMPLAN shows that the employment multiplier for an oil and gas job is around 2.5 (each 1 direct oil and gas job creates an additional 1.5 indirect and induced jobs). The data in the PEIS shows the multiplier closer to 1.6 which is underestimating the true total impact of oil shale jobs by almost 100%.

52837-163

Recommendation: Review the work from IMPLAN and provide information supportive of the low multipliers being used or adjust the multiplier to acknowledge the true total impact.

Issue: The impact to an area from a large new project(s) is not just in the “Boom” but also in the risk of the “Bust”. Chapter 3 of the PEIS describes the historic context of the oil shale “boom and bust” yet no attention is paid to the risk of a “bust” in the impact analysis sections or in terms of mitigation. The ROI suffered a 20 year recession due to the last oil shale boom/bust.

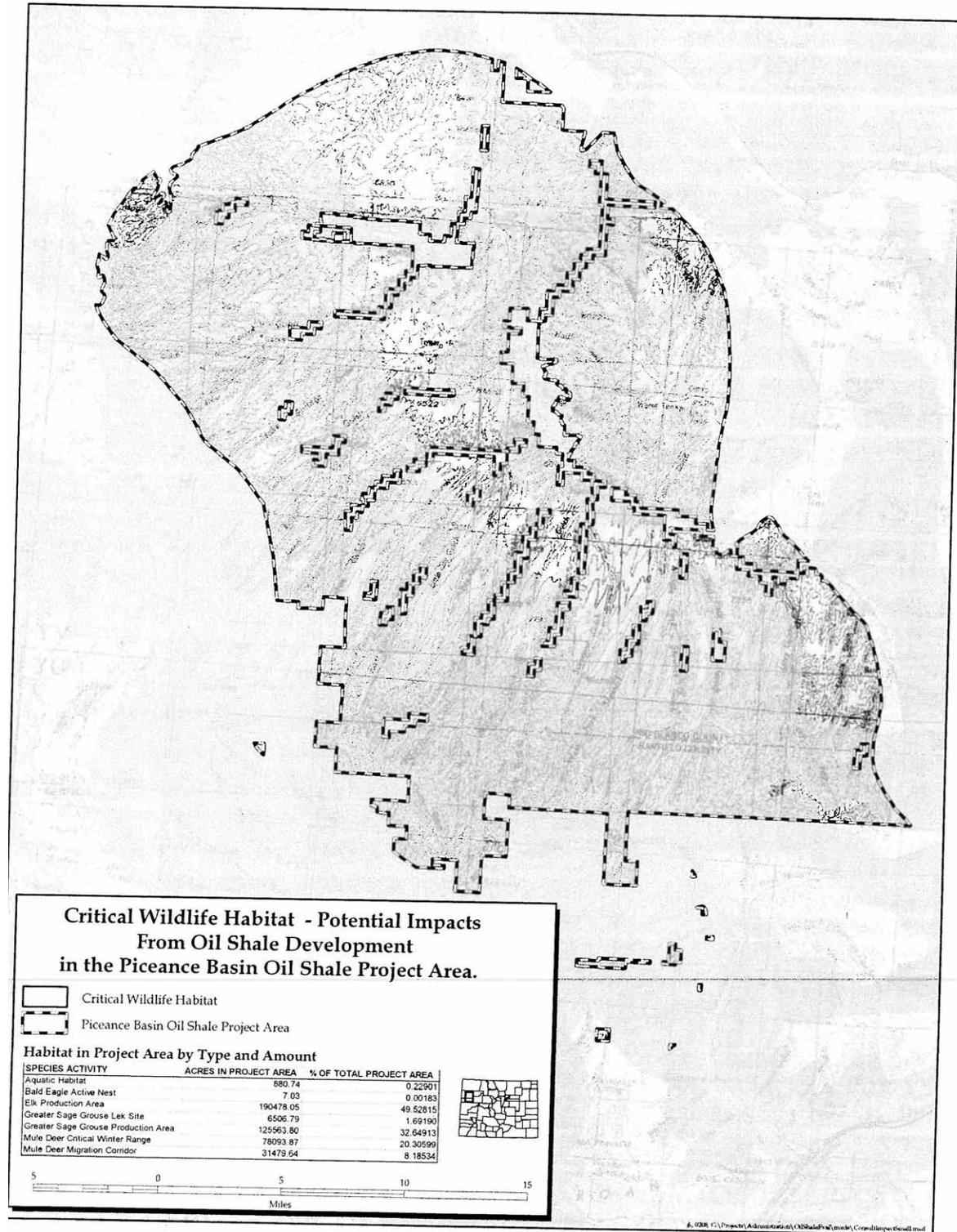
52837-164

Recommendation: The socioeconomic analysis must address the risk and impacts of a bust and what mitigation measures will be put in place to keep the ROI from suffering similar impacts from the previous oil shale boom and bust.

Issue: There is a cost to the loss of economic diversification which is related to the ability of a region to bounce back from either a bust or change in the business cycle. The socioeconomic analysis does discuss the impact of oil shale development on agriculture and on tourism in terms of total jobs and income but does not address how the loss of economic diversification increases the economic risks of the region.

52837-165

Recommendation: Address the risks and/or costs of the loss of economic diversification caused by oil shale development on tourism, agriculture or other industries.



Responses for Document 52837

52837-001: Pursuant to Congress's mandate in Section 369 of the Energy Policy Act of 2005, the original intent of the PEIS was to amend 12 existing BLM land use plans to support commercial oil shale and tar sands leasing. As preparation of the PEIS proceeded, and in consultation with BLM's cooperating agencies, it was determined that the analysis to support leasing decisions would require making many speculative assumptions regarding potential, unproven technologies. Consequently, the decision to offer specific parcels for lease was dropped from consideration in the PEIS. To still be responsive to Congress' direction, the focus of the PEIS was changed to only identify public lands to be opened or closed to application for commercial oil shale and tar sands leasing.

Nevertheless, there is sufficient information at the programmatic level to make a reasoned choice among the alternatives when considering lands open or closed for consideration of commercial leasing. The PEIS analyzes the environmental consequences of this allocation decision in sufficient detail for the decision maker to choose which lands would be available for further consideration for leasing. It is important to note that these allocations do not authorize the immediate leasing of lands for commercial development nor do they create any development rights. When applications to lease are received and additional information becomes available, the BLM will conduct further site-specific NEPA analysis, including consideration of direct, indirect, and cumulative effects; reasonable alternatives; and possible mitigation measures, as well as what level of development may be anticipated.

52837-002: The BLM initiated the RD&D leasing process to provide important information that can be used as the BLM works with communities, states, and other federal agencies to develop strategies for managing any environmental effects and enhancing communities' ability to support the orderly development of the oil shale resource. The alternatives within the PEIS do not alter the intent of the RD&D program. Under each alternative, the RD&D lessees would continue their efforts to prove their oil shale technology and gather additional technical and environmental information. In Section 369 of the Energy Policy Act of 2005, Congress authorized a commercial leasing program for oil shale in addition to the RD&D program. Additional information about environmental impacts from commercial oil shale operations would be required before the BLM would issue commercial oil shale leases or approve plans of development.

52837-003: This PEIS is a programmatic-level document analyzing land use allocation decisions. Programmatic environmental impact statements are used to evaluate broad policies, plans, and programs and provide an effective analytical foundation for subsequent project-specific NEPA documents. The BLM believes there currently is sufficient information at the programmatic level to make a reasoned choice among the alternatives as to whether lands are suitable for future consideration for commercial oil shale leasing.

The PEIS presents, for the purposes of analysis, a cumulative analysis based on the nature and scope of the proposed action and on available nonspeculative information. It provides a summary of the extensive ongoing activities in the Piceance Basin and elsewhere in the study area, and considers these in its overview of potential cumulative impacts (see Sections 6.1.5 and 6.2.5). The PEIS analyzes the environmental consequence of an allocation decision that does not commit any resources or grant any lease rights.

Please see also the response to Comment 52837-018.

- 52837-004:** The affected environment of the PEIS covers portions of three states and nine separate land use plans. It is important to note that the carrying capacity thresholds included in the WRFO RMP are unique to that plan. There are no comparable management prescriptions in the other eight land use plans. These thresholds are based on existing statutory requirements or site-specific analysis and are only applicable to oil shale. Prior to changing the proposed action to an allocation decision, the intent was to review and subsequently revise or remove the thresholds based on new information since 1989 when the thresholds were first established. However, after the purpose of the PEIS was changed from providing opportunities for commercial leasing to making only land use allocations, the revision or removal of the thresholds was no longer applicable. The PEIS does not modify or eliminate the carrying capacity thresholds for the protection of communities, the environment, and wildlife resources contained in the WRFO RMP. The statement regarding the WRFO RMP land use plan amendment, which would remove the thresholds, as described on page C-9 of the Draft PEIS, should have been deleted prior to the release of the draft. Any decisions concerning the application of thresholds will be made at the site-specific level where detailed information relevant to that determination can be made and where interagency consultation can be accomplished.
- 52837-005:** The promulgation of regulations on environmental protection standards, setting royalty rates and addressing bonding, establishing standards for diligent development, and determining the allowable size of leases, are outside the scope of the PEIS.
- 52837-006:** The decisions analyzed in the PEIS include no commitment by the BLM to offer for lease public lands within Colorado without additional site-specific NEPA analysis. This additional analysis will consider any new or site-specific information regarding proposed oil shale technology and any anticipated environmental consequences. New information on technologies may be a consequence of research on the RD&D leases or result from research or studies from other sources. Specific mitigation measures, management prescriptions, and the best available practices to minimize impacts will be applied as a result of site-specific NEPA evaluations. In addition, the BLM will involve the State, local communities, and the public throughout the NEPA processes. The Energy Policy

Act of 2005 requires the BLM to finalize this PEIS, knowing that results from the RD&D program would probably not be available for inclusion in this document. It is not necessary to await the results from the RD&D program prior to amending the land use plans under analysis in this PEIS.

As noted in the response to Comment 52837-005, the promulgation of regulations is outside the scope of the PEIS.

52837-007: The BLM acknowledges the commentor's preference for Alternative A.

52837-008: The BLM does recognize that additional NEPA analysis will be required and is committed to preparing the appropriate level of analysis prior to the issuance of any oil shale lease. (See page 2-19 of the Draft PEIS for the description of additional NEPA requirements.) A supplemental EIS as defined under the CEQ regulations, 40 CFR 1502.9, however, would not be appropriate for such additional NEPA analysis. This is because the nature and scope of the proposed action (i.e., leasing) will be different from the plan amendment action analyzed in the PEIS. Supplemental EISs are prepared when the agency makes substantial changes to a proposed action analyzed in an EIS or when there are significant new circumstances or information bearing on a proposed action analyzed in an EIS. Supplemental analyses focus on only those parts of the EIS that require updating before a decision on that proposed action is actually made. Since leasing will be an entirely different decision, a new NEPA analysis will be required. It is inappropriate to speculate at this stage whether such NEPA analysis will be programmatic in nature.

This new NEPA analysis will analyze whether to offer for lease parcels of land for commercial oil shale exploration and development and under what conditions or stipulations. The analysis will also contain any new information or circumstances relevant to the technology, the affected environment, and any associated environmental consequences. This information may be a consequence of research on the RD&D leases or a result of industry performing research or studies on nonfederal lands.

As required by NEPA, all subsequent NEPA documents will analyze the cumulative effects from other reasonably foreseeable future actions. The scope and nature of the specific proposed action will drive the type of NEPA analysis the BLM performs. As required by NEPA, the cumulative effects analysis would consider the present effects of past actions, to the extent that they are relevant, and present and reasonably foreseeable (not highly speculative) federal and nonfederal actions, taking into account the relationship between the proposed action and these reasonably foreseeable actions.

The affected environment of the action could vary greatly from a large regional area to a small discrete area. The scope of the analysis in the NEPA document would be dependent upon the number of applications received and the type and

size of operations proposed by the applicant(s). This could result in a statewide, regional, basin-wide, or site-specific impact analysis. Overall, the geographic extent of the analysis would be limited to those areas that could experience a change in the pattern of land use as a consequence of a direct impact or other induced effects on the natural resources. The nature of the action can also vary greatly based on the type of technology or mining method. Another critical factor would be the type of infrastructure needed to support the operation, in particular, the source of electrical power.

Hypothetically, the proposal in subsequent NEPA documents could offer for commercial lease (1) only a limited number of parcels, (2) parcels located in a geologic basin, or (3) parcels located throughout a state. Estimated oil shale exploration and development activities assumed to occur as a result of issuing the leases would be based on actual applications; therefore, analyses of proposed operations, hypothetical development scenarios, and an RFDS could be developed. Depending on the information included in the applications, technologies whose impacts would be analyzed could include any or all of underground and surface mining with surface retort operations and/or in situ operations.

Based on the nature of the proposed action, existing sources of electrical power may be sufficient to power the operation, or electrical power may need to be generated on lease using either conventional energy sources like natural gas or renewable energy sources like wind or solar. A third hypothetical analysis may include the expansion of existing power plants or the construction of additional power plants (coal, gas, nuclear). In each case, the scope of the NEPA analysis would be limited to the extent of the direct and indirect effects from activities described in an RFDS.

For example, if the proposed action were to lease three tracts in Utah using underground mining technology only, the scope and scale of the analysis would vary from that which would be performed if the proposed action were to lease several parcels in all three states using a variety of technologies. The geographic extent of analysis for a leasing decision is based on the extent of the potentially affected resource(s). In the first instance, the NEPA analysis would most likely not be a programmatic EIS but would define the area subject to analysis as the area bounded by the three leases. The analysis may not necessarily include an analysis of building additional power plants (dependent on whether the additional mines could pull power off the existing grid or not). In the second instance, it may be appropriate for the BLM to perform a regional NEPA analysis that would look at leasing in all three states and would include an analysis of the power plants (coal, gas, nuclear) as well as refinery capacity that might be necessary for any development to occur.

In both instances, the NEPA analysis would be limited to the extent of effects from activities described in an RFDS. While the proposed leasing area may be the

three Utah tracts, effects on some resources can be extensive, going beyond the boundaries of the proposed leasing area and determined by the distance over which effects remain significant (e.g., effects on air quality or effects on an entire watershed), while the effects on other resources remain within the leasing area boundary and are geographically limited by the resource itself (e.g., a specific species of threatened and endangered plant or a specific culturally significant feature). The impact zones of particular resources may be superimposed or may overlap only in part. All relevant effects, including those that extend outside the project, or even, in some cases, the planning area where the project is located, must be evaluated and considered in the leasing decision that is made for the planning area.

Thus, while the BLM is committed to performing NEPA analyses prior to leasing, we cannot commit to a certain type of NEPA analysis (regional, planning area, or local). The proposed action will drive what analysis must be performed to comply with the requirements of NEPA.

52837-009: Please see Comment 52837-001 above for the response regarding land use allocations.

Regarding regulatory issues, those are being considered in a separate rule-making process and are outside the scope of the PEIS.

52837-010: The comment contains a summary of issues identified in the technical sections of the State's comment letter. Responses to the individual agency technical comments are provided later in this response, but it is important to note that many of the issues cannot be addressed without reference to site-specific locations and conditions. Additionally, many of the comments address compliance with existing law and regulation. This PEIS states repeatedly that lessees will be required to comply with applicable local, state, and federal laws and regulations. The specific methods of compliance will be established by the appropriate regulatory authorities when a specific proposal can be evaluated against those legal and regulatory requirements.

As described in the response to Comment 52837-001, the BLM has determined that there is sufficient information to support the land allocation decisions proposed in the PEIS. The local conditions identified in the State's comment summary will be included in the NEPA analysis that will accompany future site-specific leasing and/or development applications if those conditions are present. Note also that activities occurring on nonfederal lands, though at times foreseeable, are usually beyond the authority of the BLM to regulate. The BLM will welcome the participation of local, state, and other federal agencies in the NEPA processes for those future decisions.

52837-011: Congress declared its intent in the Energy Policy Act of 2005 for the Nation to pursue the development of oil shale and tar sand resources among other

unconventional fuels in an environmentally sound manner. As required by that Act, the BLM initiated this PEIS intending to provide the environmental analysis for issuance of commercial leases that would convey development rights to lease holders. As discussed in the Draft PEIS, because of various uncertainties regarding location of developments, technologies to be employed, and the lack of knowledge of specific impacts on various resources, the BLM decided not to analyze the environmental impacts of issuing particular leases at this time and instead decided to analyze amendments of land use plans. Amending those plans is necessary, but not sufficient, to proceed to commercial development of federal oil shale resources.

Thus, this PEIS: (1) identifies the most geologically prospective oil shale resources on public lands in Colorado, Utah, and Wyoming; (2) supports amendment of certain land use plans to identify areas as available for application for commercial leasing in the future; (3) supports amendment of certain land use plans to identify areas as off-limits to application for commercial leasing in the future; (4) supports amendment of land use plans to specify that the BLM will consider and give priority to the use of land exchanges to facilitate oil shale development; and (5) discloses what is known about oil shale development as well as what information and data must be obtained in order to be able to complete the NEPA analysis necessary to lease. This PEIS clarifies, to the extent possible, how potential oil shale development could proceed on public lands and stipulates that site-specific NEPA analysis will be required prior to leasing and development. This PEIS, therefore, facilitates subsequent environmental analysis but it does not convey any lease or development rights on public lands. For that reason, and coupled with the requirements for subsequent site-specific NEPA analysis prior to leasing and development, the BLM has determined that, other than potential impacts to property values, there will be no impact on the environment as a result of these allocation (land use plan amendment) decisions.

The PEIS, while not exhaustive in its identification of potential impacts of commercial development, has disclosed potential impacts of oil shale development based primarily on BLM experiences with surface-disturbing activities as a result of other types of mineral development, such as coal mining and oil and gas development. We cannot say for certain that those would be the impacts from commercial oil shale or tar sands development, but we can say, based on our experience with other types of mineral development, that those type impacts may occur. The result is that this PEIS fulfills three purposes: (1) it provides sufficient information for the decision maker to make a reasoned choice among the alternatives as to which lands should be open or closed to oil shale leasing; (2) it addresses additional information needed by industry, government, and the public to facilitate future environmental analysis of leasing and development actions; and (3) it allows operators to compare environmental impacts of their proposed operations with those identified in the PEIS and to include proposed mitigation measures (although not necessarily those potential mitigation measures discussed in the PEIS) as part of their proposed actions. It

puts operators on notice that development of oil shale can only occur if it is done in an environmentally acceptable manner. It also reiterates the obvious requirements that any development will have to comply with existing laws and regulations regarding protection of the natural, social, and cultural environment.

The Rand Corporation testimony cited in the comment—that is, that commercial development will not occur for some time—is consistent with statements in the press and those heard during public open house meetings on the Draft PEIS. Industry is proceeding cautiously, which underscores the point that Rand was making; however, that commentary alone does not obviate the need for BLM to analyze the environmental impacts of amending land use plans to allow or to prevent leasing of oil shale and tar sands. Industry advocates for certainty about what a new government program will look like before it will invest several million dollars in development projects. The PEIS, along with oil shale regulations (such as those proposed separately by the BLM), would be the foundation for that program.

Finally, in the Energy Policy Act of 2005, Congress set a deadline for the BLM to complete this PEIS. That deadline has been exceeded, but that does not allow the BLM to postpone this PEIS until new information becomes available or until the industry is ready to invest in commercial operations.

52837-012: The PEIS analyzes the environmental consequences of proposed allocation decisions in sufficient detail for the decision maker to choose which lands would be available within the most geologically prospective areas for further consideration for leasing. The proposed allocations do not authorize the immediate leasing of lands for commercial development nor do they create any development rights. When applications to lease are reviewed, the BLM will conduct further site-specific NEPA analysis, including consideration of direct, indirect, and cumulative effects, reasonable alternatives, and mitigation measures, as well as what level of development may be anticipated. This future analysis will be done in the context of ongoing and anticipated future development of other resources within the area of influence of any proposed oil shale lease.

52837-013: There is a substantial amount of nonfederal land in the study area (see discussion in Section 3.1); however, the scale and timing of potential future oil shale and tar sands development on these lands, as well as the technologies that would be used for development, are highly speculative at this time. Text has been added in Sections 6.1.5 and 6.2.5 to clarify that future levels of commercial oil shale and tar sands development (both on public and private lands) are unknown.

As stated in Sections 6.1.5 and 6.2.5 of the PEIS, for the purposes of analysis, the cumulative impacts assessment looks at the incremental impacts of a single oil shale facility and a single tar sands facility, recognizing that there may be more than one of each type of these facilities brought into operation during the study period. Additionally, for the general cumulative analysis conducted for this PEIS,

the impacts of potential development on nonfederal lands were included by assuming that the impacts of oil shale or tar sands facilities on nonfederal lands would be similar to the impacts of such facilities on federal lands (see text added in Sections 6.1.5.3 and 6.2.5.3). Therefore, the cumulative analysis was conducted to the extent appropriate, as dictated by the limited scope and narrow allocation decision and the uncertainty of oil shale and tar sands development on private lands.

A more specific analysis of cumulative impacts of facilities on nonfederal lands in conjunction with impacts from facilities on federal lands may be conducted at a future step in the assessment process, when an RFDS for oil shale development would be included. An RFDS was not developed for this PEIS because most of the information necessary for producing an RFDS is unknown and not reasonably available at the present experimental stage of the oil shale and tar sands industries. Assumptions based on the limited available information would be too speculative to support a meaningful scenario. An RFDS at a future step in the assessment process would be based on a clear set of supportable assumptions associated with a leasing or development proposed action.

52837-014: As stated in the Energy Policy Act of 2005, the development of oil shale, tar sands, and other strategic unconventional fuels for research and commercial development should be conducted in an environmentally sound manner using practices that minimize impacts. The BLM believes that analyzing an allocation decision provides the opportunity to build on scientific, governmental, or industry research in order to analyze, in a general way, the possible impacts of commercial development of these resources. The analysis of this land use planning (allocation) decision is just one step, however. Prior to offering for lease any parcels of land for commercial oil shale exploration and development, further analysis will be carried out and documented in accordance with NEPA to support any decisions in this regard. That NEPA analysis will evaluate the environmental impacts of the oil shale exploration and development and develop specific mitigation measures to mitigate or eliminate the identified impacts. The BLM believes that such a phased approach ensures that commercial oil shale development programs both meet the intent of Congress and take advantage of the best available practices to minimize impacts, and that state, local communities, and the public have the opportunity to participate in the process. While uncertainty is an inherent part of planning in accordance with FLPMA's multiple-use mandate, and delays are possible in bringing any new resource into commercial development, the BLM manages public lands in compliance with the FLPMA principles of sustained yield and multiple use, to protect the public lands, and to provide for domestic sources of minerals.

52837-015: With the passage of the Energy Policy Act of 2005, Congress recognized the importance of encouraging research and development of this resource, as well as of establishing a commercial leasing program to reduce the growing dependence on foreign oil imports. After beginning the analysis of a leasing program, and in

consultation with cooperating agencies, the PEIS was modified from a leasing document to one analyzing the impacts of an allocation decision, creating a “staged” or “phased” approach to an oil shale program. This provides an opportunity to build on scientific, governmental, or industry research, including findings from the existing RD&D leases. Any new information and/or circumstances will be taken into consideration in the preparation of future NEPA analysis. Future analysis will consider a full range of alternatives, as well as specific mitigation measures, such as BMPs or stipulations to avoid or mitigate short-term or long-term adverse impacts to Colorado’s environment, public safety, wildlife, and local communities.

52837-016: The CEQ regulations at 40 CFR 1502.22 require an agency to disclose whether there is “incomplete or unavailable information” and to seek to acquire that information if it is “relevant to reasonably foreseeable significant adverse impacts” and is “essential to a reasoned choice among alternatives.” The purpose of the provision is to advance decision making even in the absence of complete information regarding environmental effects associated with the proposed action. Agencies are required to comply with this provision when evaluating “reasonably foreseeable significant adverse effects.”

The PEIS proposed action is to amend land use plans thereby allowing certain lands to be considered for future leasing. The decision does nothing more than remove the administrative barrier to BLM considering any application for leasing for some lands, while leaving other lands unavailable for leasing. The amendment does not commit any resources or grant any lease rights. For that reason and because there will be subsequent site-specific NEPA analysis prior to leasing and development, the BLM has determined that there will be no impact on the environment as a result of these allocation decisions and, therefore, does not trigger the requirements of 40 CFR 1502.22.

For the purposes of analysis, in the absence of more specific information on the technology and environmental consequences of commercial development of oil shale and tar sands, this PEIS employs information derived from other types of mineral development (i.e., oil and gas, and underground and surface mining of coal). The BLM has taken this approach because it anticipates, to the best of its knowledge, that the surface-disturbing activities involved with these other types of mineral development are comparable to those that may result from oil shale and tar sands development. There is a wealth of information concerning the consequences of oil and gas and underground and surface mining activities, and projecting on the basis of this information, to the extent that it is applicable, permits a decision maker to decide whether to open areas to future application for leasing or to protect the specific resources by closing areas. Therefore, it is not a case of information missing that is needed to make a land use allocation decision such as that contemplated here; rather, the BLM is engaged in a projection based on these anticipated similarities. To the extent that additional information will be required in order to analyze alternatives to a leasing or development decision, that

is not a matter of information missing with respect to the land use allocation decision under consideration here, but a matter of information that will be developed in its proper place—during the NEPA analysis for these later decisions.

Therefore, the PEIS need not assess the relevance of the missing information needed to make an oil shale leasing or development decision. The PEIS, however, does disclose the fact that BLM will consider new information, such as that emerging from the RD&D leases, during subsequent NEPA analysis performed as the basis for making any leasing decisions.

Also, see the response to Comment 52837-015 above that describes the “staged” or “phased” approach that is expected to facilitate development of necessary additional information to support actual leasing and development activities.

52837-017: The prerequisite level of information necessary to make a reasoned choice among the alternatives is based on the scope and nature of the proposed action. An allocation decision is very limited in scope and, therefore, does not require an exhaustive gathering and monitoring of baseline data. See response to Comment 52837-001 regarding the level of information needed to support land allocation decisions.

The level of information necessary for subsequent NEPA analysis will be based on the nature and scope of the proposed action and gathered in full compliance with BLM’s land use planning and NEPA procedures. The BLM’s land use planning decisions and associated NEPA analysis guides decisions for every action on the public lands. A major component of the NEPA process associated with such planning is working with cooperating agencies to collect inventory data and analyze the current management situation (BLM Planning Handbook H1601-1, F.2.c.). In preparing a land use plan, amendment, or revision, a systematic interdisciplinary approach is used to provide accurate, objective, and scientifically sound environmental analysis based on the best available information to formulate management prescriptions, including mitigation measures to avoid or mitigate adverse impacts. The BLM uses a public scoping process to identify issues, concerns, and alternatives and to solicit information or identify information gaps concerning a wide range of topics, including water quality and quantity, air quality, wildlife resources, and socioeconomic impacts. Analysis of the information gathered through these processes provides the foundation for the decision maker to make informed decisions concerning the various management prescriptions. In addition, the BLM recognizes the merits of the oil shale RD&D program to provide information not only about technologies, but also about possible impacts to resources to ensure that oil shale technologies operate at economically and environmentally acceptable levels. The BLM believes this effort will significantly enhance the collective knowledge regarding the viability of innovative technologies for oil shale development on a commercial scale and provide additional information on environmental consequences and potential mitigation measures. Data will be collected, as

appropriate, to ensure that operations are in compliance with state and federal statutes and regulations.

If there is incomplete or unavailable information regarding any particular decision, the BLM will comply with CEQ regulations (40 CFR 1502.22) and make it clear that such information is lacking. If the incomplete information relevant to reasonably foreseeable significant adverse impacts is essential to making a reasoned choice among alternatives and the overall costs of obtaining it are not exorbitant, the BLM will obtain the information. If overall costs of obtaining the information are exorbitant or the means to obtain it are not known, the BLM will provide the appropriate statements on the relevance of the information and a summary of any existing information.

52837-018: This PEIS is a programmatic-level document analyzing land use allocation decisions. Programmatic environmental impact statements are used to evaluate broad policies, plans, and programs and provide an effective analytical foundation for subsequent project-specific NEPA documents. The BLM believes there currently is sufficient information at the programmatic level to make a reasoned choice among the alternatives as to whether lands are suitable for future consideration for commercial oil shale leasing.

The PEIS does provide a summary of the extensive ongoing activities in the Piceance Basin and elsewhere in the study area and considers these in its overview of potential cumulative impacts. For example, Table 6.1.5-4 shows that over 30,000 oil and natural gas wells are planned for installation over the 20-year study period in the affected field offices. The approximate land disturbance for these well installations, as well as from other activities, was used to estimate total cumulative land disturbance from other activities in the study area over the next 20 years. Section 6.1.5.3.10 acknowledges that income in the recreation sector may be lost due to oil shale and tar sands development. Also, Sections 6.1.5.3.4 and 6.1.5.3.5 note that depending on the type and level of development, regional water and air impacts may limit oil shale and tar sands development.

The BLM anticipates that oil shale development would proceed in a three-step decision making process similar to that used for federal onshore oil and gas: land use planning (i.e., amending RMPs); leasing; and approval of a drilling permit or a plan of operations. In the present experimental stage of the oil shale and tar sands industries, however, the BLM believes that the stages of NEPA compliance will be different from those used in oil and gas.

As a result of the maturity of the oil and gas industry, the BLM is usually able to include sufficient site-specific analysis in its NEPA documentation for amendments to RMPs so that an additional NEPA document is not required prior to issuing an oil and gas lease in conformance with the RMP. Nonetheless, the BLM does prepare a NEPA analysis before approving a plan of operation or a drilling permit that would authorize significant disturbance of the leased area. The

NEPA analysis for both decision levels includes cumulative effects analysis. Analysis of each oil and gas decision is based on technical information associated with the particular proposed action, as well as information about other reasonably foreseeable future actions in and near the area of the proposal.

In contrast, the present experimental state of the oil shale and tar sands industries does not allow this PEIS for land use allocation to include sufficient site-specific information or cumulative impact analysis to support issuance of a lease. Accordingly, unlike in oil and gas leasing, prior to oil shale leasing, additional NEPA analysis that will be required. That NEPA analysis could result in decisions not to lease in specific areas, or to lease particular areas with stipulations, such as a stipulation precluding disturbance of the surface.

As with oil and gas leases, although the lease would grant the lessee the right to explore and develop the oil shale and tar sands resources, the lease would not authorize surface disturbance. Before disturbing the surface, the operator would have to obtain the BLM's approval of a plan of development through a project-level NEPA analysis.

NEPA analysis at the leasing and at the development approval stages of oil shale and tar sands decision making would be based on reasonably available technical information associated with the proposed action and on information about other reasonably foreseeable future actions in and near the area of the proposal.

The BLM believes that cumulative impacts would be adequately assessed at the leasing stage. As required under NEPA, all subsequent NEPA documents will also analyze the cumulative effects from other reasonably foreseeable future actions. The scope and nature of the specific proposed action will drive the type of NEPA analysis that the BLM performs. The cumulative effects analysis would consider the present effects of past actions, to the extent that they are relevant, and present and reasonably foreseeable (not highly speculative) federal and nonfederal actions, taking into account the relationship between the proposed action and these reasonably foreseeable actions.

As described in the proposed action in the PEIS, the BLM is committed to performing NEPA analyses prior to leasing and development, but until the scope of the potential leasing and/or development is known, we cannot commit to the scope of the NEPA analysis (regional, planning area, or local) that will be required. The proposed action will drive what analysis must be performed to comply with the requirements of NEPA.

52837-019: Before any activities can take place on public lands, such activities must be allowed for in the land use plan governing use of those lands. As explained in the document itself, this PEIS analyzes the environmental consequences of allocating certain lands for the possible commercial exploration and development of these resources. The allocation decisions to be made do not commit any resources or

grant any lease rights. Therefore, in addition to the analysis of direct and indirect effects of these land allocation decisions, including consideration of alternative ways of making these decisions, the PEIS presents a cumulative impact assessment based on the nature and scope of this proposed action and on available nonspeculative information. Programmatic EISs such as this one are considered adequate without site-specific analysis when the federal action proposed, as here, does not involve a site-specific or critical decision. As explained in the document itself, as well as in responses to other comments (see, e.g., response to Comment 52837-018), prior to any commercial leasing, additional NEPA analysis will take place. Because it is still a matter of speculation as to whether leasing and development will ever take place, and because there will be additional environmental analysis prior to leasing, a cumulative analysis associated with the effects of the land use allocation decision contemplated here need not analyze the impacts of leasing and development.

In fact, if parcels are considered for potential leasing in the future, a NEPA analysis, including a cumulative analysis, appropriate to that action, will be required prior to any leasing. This cumulative analysis would include other Reasonably Foreseeable Future Actions, such as local oil and gas exploration and development, and any connected actions associated with the specific proposed action, such as, for instance, the establishment of a source of electrical power generation, if relevant. See response to Comment 52837-008 for a discussion on the scope of potential subsequent cumulative analyses.

The comment recommends preparation of a supplemental PEIS when additional information is available. Please see the response to Comment 52837-008, which contains a discussion of the use of a supplemental EIS.

- 52837-020:** Please see the response to Comment 52837-004.
- 52837-021:** The Energy Policy Act of 2005 directed the Secretary of the Interior to (1) complete a programmatic environmental impact statement for a commercial leasing program for oil shale and tar sands resources on public lands, and (2) publish a final regulation reestablishing such a program. The BLM, through its rulemaking process, is drafting a proposed set of regulations to outline the policies and procedure to implement a commercial leasing program. The BLM published a proposed rule for the management of a commercial oil shale leasing program in the *Federal Register* on July 23, 2008. The BLM rulemaking process is separate and apart from the drafting of the PEIS. The PEIS analyzes the environmental consequences of an allocation decision, and therefore comments concerning the regulatory process are outside the scope of the PEIS.
- 52837-022:** The BLM does recognize that additional NEPA analysis will be required and is committed to preparing the appropriate level of analysis prior to the issuance of any oil shale lease. (See page 2-19 of the Draft PEIS for the description of additional NEPA requirements.) This new NEPA analysis will analyze whether to

offer for lease parcels of land for commercial oil shale exploration and development and under what conditions or stipulations. The analysis will also contain any new information or circumstances relevant to the technology, the affected environment, and any associated environmental consequences. This information may be a consequence of research on the RD&D leases or a result of industry performing research or studies on nonfederal lands.

The affected environment of the action could vary greatly from a large regional area to a small discrete area. The scope of the analysis in the NEPA document would be dependent upon the number of applications received and the type and size of operations proposed by the applicant(s). This could result in a statewide, regional, basin-wide, or site-specific impact analysis. Overall, the geographic extent of the analysis would be limited to those areas that could experience a change in the pattern of land use, as a consequence of a direct impact or other induced effects on the natural resources. The nature of the action can also vary greatly based on the type of technology or mining method. Another critical factor would be the type of infrastructure needed to support the operation, in particular, the source of electrical power.

Thus, while the BLM is committed to performing NEPA analyses prior to leasing, we cannot commit to a certain type of NEPA analysis (regional, planning area, or local). The proposed action will drive what analysis must be performed to comply with the requirements of NEPA.

- 52837-023:** The PEIS serves as the basis for land allocation and does not support leasing decisions. It is, therefore, premature and highly speculative to predict or assume power sources, when, at this time, definitive information about the technologies, including the amount of power needed, the size of the operations, the locations, etc., are unknown. The effects associated with a surface coal mine are different from those associated with an underground operation. Effects associated with a power plant could change drastically depending on where the plant is located and the power requirements of the operations. The assumptions made in the PEIS are based on the best information available. The PEIS analysis is a consequence of those assumptions, the available data, and an attempt to present the potential impacts that reflect known conditions or circumstances.
- 52837-024:** Table 4.5.2-1 shows examples of how much water would be needed in oil shale development under different technologies. It does not imply that commercial oil shale development is committed or is functioning. The table also shows projected available water for the states of Colorado, Utah, and Wyoming. Therefore, a comparison of what is available to address the water needs using different oil shale development technologies could be made.

Information on groundwater availability is limited. A range of groundwater available is used in this PEIS and shown in the table.

Common impacts on the quality of water resources are described in Section 4.5.1.

52837-025: Withdrawal of groundwater that discharged to certain segments of Piceance and Yellow Creeks would generally decrease stream flow, especially during the summer seasons. The decrease of the stream flow depends on the amount of groundwater withdrawn, the location of project sites, the hydrologic connections between the creeks and aquifers, and any discharge of water from the project sites. As these are factors unknown, their impacts on the water resources, therefore, could not be evaluated. However, the impacts would be evaluated at the project levels when these unknown factors are better quantified.

The general impacts that could occur after the melting of the freeze wall are described in Section 4.5.1.

52837-026: The PEIS is a general document and is not intended to list all potential contaminants that may be associated with commercial leasing of oil shale and tar sands. Section 4.5.1.3 of the Draft PEIS recognizes that contaminants to water could be introduced through different means associated with commercial operations. Future site-specific NEPA analyses will consider potential contamination and mitigating measures.

Sections 4.7 and 5.7 contain analysis of noise issues, including information regarding different phases of commercial operations.

There are no areas in Colorado that were identified to have wilderness characteristics outside of Wilderness Areas and Wilderness Study Areas within the PEIS study area.

52837-027: The BLM does recognize that additional NEPA analysis will be required and, as described in the PEIS itself, is committed to preparing the appropriate level of analysis prior to the issuance of any oil shale lease. The BLM is conducting phased decision making—proceeding from land use planning, to leasing, to operational permitting—as the BLM does for other resources such as oil and gas. This first step—RMP amendment to allow the BLM to consider applications for leasing—may be followed by the subsequent steps of leasing and plans of development, if necessary. The locations, scales, and scopes of the later steps are too speculative at this point and will require their own distinct decision making process when the industry can provide the necessary information. Therefore, it is inappropriate to speculate at this stage whether such NEPA analysis will be programmatic in nature.

52837-028: The reference to the Colorado Mined Land Reclamation Act has been removed from Table D-3 but added to Tables D-4,-5,-6,-7,-10,-13, and-14.

52837-029: The mined land reclamation laws have been added to Appendix D of the Final PEIS.

- 52837-030:** The best available information to define the geologically prospective area was used, and the deposits were sufficiently characterized so the BLM could delineate where the most geologically prospective resources are located. The specific reports used to delineate the most geologically prospective areas are cited in footnote 2 on page 1-6 of the Draft PEIS. In the Piceance Basin, the deposits were characterized using USGS data. The Green River, Washakie, and Uinta Basins were characterized by a BLM geologist using Fischer Assay data from existing exploration drill holes. It can be assumed that comparable procedures would be developed, as in the coal, oil, and gas program, etc., to explore the oil shale deposit in order to obtain geological, geophysical, environmental, and other pertinent data concerning the oil shale deposit, thereby gathering adequate information for subsequent stages of exploration and development.
- 52837-031:** The information in Table 2.2.3-1 is supplemented in Section 3.1.1 of the PEIS where the existing ACECs included in the discussion of the Field Office in that they are located are discussed. The relevance and importance criteria that supported the designation as ACEC are included along with specific acreages.
- 52837-032:** The referenced text has been revised to clarify the comparison.
- 52837-033:** The referenced paragraph in Section 3.4.2.1 has been deleted.
- 52837-034:** Thank you for your comment.

There is large potential variability in water use depending upon the technologies used, the source of the water, the economics of treatment versus injection disposal, and so forth. The question of water consumption versus water diversion must be dealt with in subsequent and site-specific NEPA analysis.

- 52837-035:** Volume expansion comes from known and suspected sources. The referenced increase (30%) comes from all activities (including mining, crushing, and sizing in preparation for retorting) and compares the spent shale to the in situ condition of the raw shale.

Clarifications have been made to the text.

- 52837-036:** The maturing oil shale industry will influence the placement of power generation sources and other supporting infrastructures. In the early years of the industry, however, the BLM believes it is reasonable to assume that oil shale developers will have to install their own power generating capabilities. Those developers are expected to rely on existing pipeline infrastructures, however, and must bear the cost of connecting their facility to that infrastructure. Additionally, with respect to pipeline conveyance of raw shale oil, shale oils that have not been sufficiently upgraded at the mine site to remove contaminants (especially nitrogen-bearing contaminants) may not be eligible for transport in existing conventional crude oil

pipelines for fear of contamination of those conventional crudes, and a fully independent pipeline network for delivery of raw shale oil to refineries may be required.

- 52837-037:** Tables in Section 4.1 of the PEIS present the acreage figures noted in the comment. The Tables' footnotes present the assumptions associated with the acreage figures. For example, Table 4.1.1-1 describes the assumed values for surface disturbance (and other factors) for one surface mine with retort that could be located in either Utah or Wyoming. Footnote b identifies the surface disturbance number as the estimated range of surface disturbance that could occur at any given time during the life of the project.
- 52837-038:** The text in Section 4.5.1.2 has been modified accordingly.
- 52837-039:** The text in Section 4.5.1.4 has been modified accordingly.
- 52837-040:** You are correct that the areas considered in the PEIS and the three referenced RMPs overlap. All decisions related to land use planning for oil shale and tar sands resources in the PEIS study area will be made in the ROD for the PEIS. The ROD will amend the existing RMPs by making decisions on whether or not lands will be available for application for future leasing and development of oil shale on public lands for those areas where the resource is present. Additional site-specific NEPA analysis will be completed on any future lease application before any leases would be issued. If, as part of this preleasing NEPA analysis, the BLM determines that leasing and subsequent development of the oil shale resources would cause significant impacts, for example, to ACECs or important wildlife habitat, the BLM can require the applicant to: (1) mitigate the impact so that it is no longer significant, (2) move the proposed lease location, or if neither of these options resolves the anticipated conflicts, (3) the BLM can decide that development of the oil shale resource outweighs protection of the on-site resources and approve the application. This preleasing NEPA analysis would include opportunities for public involvement and comment that are part of the PEIS process and every other planning and NEPA process the BLM undertakes.
- 52837-041:** Site- and species-specific analyses will be conducted for any proposed project. The purpose of these analyses is, in part, to identify any habitats or species that warrant special consideration during project siting, design, construction, operation, and decommissioning. The scope and approach for these analyses, as well as any particular species or habitats to be evaluated and additional mitigation measures to be incorporated as project stipulations, will be determined on a project-by-project basis in conjunction with input from federal, state, and local agencies and interested stakeholders.

52837-042: The BLM acknowledges the commentor's preference for Alternative A.

52837-043: It is important to recognize that the plan amendment being analyzed in the PEIS merely allocates certain land for future consideration of applications for commercial development of oil shale and tar sands resources. There is no commitment of resources or granting of any leases; therefore, there is no "irrevocable commitment" of resources made in the PEIS.

The FLPMA directs the BLM to manage public lands for multiple use (Section 102(a)(7)). As a multiple-use agency, the BLM is required to implement laws, regulations, and policies for many different and often competing land uses and to resolve conflicts and prescribe land uses through its land use plans. The FLPMA makes it clear that the term "multiple use" means that not every use is appropriate for every acre of public land and that the Secretary can "make the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use." Wildlife resources, although important, do not necessarily have an absolute priority over other authorized uses of public lands.

At such time as applications to lease are accepted, and as additional information becomes available, an interdisciplinary team of resource specialists, with on-the-ground knowledge of the area, will analyze the current management situation, desired conditions, and the uses and activities to create alternatives or mitigation measures to resolve any issues raised or conflicts identified. That interdisciplinary team will use a balanced approach consistent with FLPMA's principles of multiple use and sustained yield. Furthermore, the BLM will seek the participation of CDOW and other agencies as cooperating agencies for providing the analyses required under NEPA.

52837-044: The definitions of moderate and large impacts have been modified in Tables 4.8.1-1, 4.8.1-2, 5.8.1-1, and 5.8.1-2 of the Draft PEIS, and some of the potential magnitude of impacts have also been changed to indicate that a number of impacts to wildlife species could be large if not mitigated. The PEIS is a programmatic-level document that analyzes allocation decisions. It is important to note that these allocations do not authorize the immediate leasing of lands for commercial development. The potential for the Piceance Basin to meet the capacity requirements for infrastructure, power, or water would be determined at the project-specific level (i.e., on a lease-by-lease basis).

52837-045: The BLM is conducting a phased decision-making process—proceeding from land use planning to leasing to operational permitting. The land use planning or allocation decision does nothing more than remove an administrative barrier preventing the BLM from accepting applications. Therefore, subsequent NEPA analysis will be required prior to the leasing and development phases, and potential impacts to wildlife resources will be one of the areas addressed in any analysis. Part of that NEPA analysis will be to determine the cumulative impacts

of the decisions, including determination of the potential cumulative impacts to wildlife populations. This additional analysis will consider any new or site-specific information regarding proposed oil shale technology and any anticipated environmental consequences. Specific mitigation measures, management prescriptions, and the best available practices will be applied to minimize or eliminate impacts as a result of the NEPA analysis.

52837-046: While there are many possible alternatives or actions, the BLM, in consultation with 14 cooperating agencies and as mandated by Congress in the Energy Policy Act of 2005, used the scoping process to determine a reasonable range of alternatives that best addressed the issues, concerns, and alternatives identified by the public. It was determined that the three alternatives provided a reasonable range because the allocation decisions, as being proposed in the PEIS, had a very narrow and limited scope—to allow certain lands to be considered for future leasing. This approach is in full compliance with NEPA since the purpose and need of the PEIS serves as the basis to determine the reasonable range of alternatives in a NEPA document. A broad “statement of need” may necessitate a wider range of alternatives, while a more limited and narrow scope would have a limited number of alternatives. The “No Action Alternative is the “no change” from current management direction or level of management intensity. Alternative B was structured to make the most geologically prospective lands available. Alternative C was structured to apply existing land use plan decisions to the planning area.

52837-047: The potential level of oil shale development that could occur in the near future is unknown and has made it impossible to prepare a nonspeculative assessment of the cumulative effects of ongoing oil and gas development. The cumulative impact analysis for the PEIS does include the potential oil and gas development being analyzed in the WRFO RMP amendment as well as other activities forecasted for BLM-administered lands.

Section 6.1.5.2 and 6.1.5.3 have been revised to acknowledge the potential for oil shale development on nonfederal (e.g., private, state, Tribal) lands. However, the extent and impacts of such development, just as on public land, are unknown at this time. It is assumed that development of oil shale or tar sands facilities on nonfederal lands would have impacts similar to such facilities located on federal lands, as described in Chapters 4 and 5 of the PEIS.

52837-048: The PEIS is a programmatic-level document that analyzes allocation decisions. It is important to note that these allocations do not authorize the immediate leasing of lands for commercial development. The impact analyses provided in the PEIS qualitatively indicate the types of impacts that could occur to wildlife, including the greater sage-grouse, based on BLM experience with other types of mineral development. Sections 6.1.5 (oil shale) and 6.2.5 (tar sands) provide an overview of impact-producing factors and potential cumulative impacts, including cumulative impacts to ecological resources (see Sections 6.1.5.3.7 and 6.2.5.3.7).

Tables 6.1.5-4, 6.1.5-5, and 6.1.5-6 of Section 6.1.5.2.1 summarize potential oil and gas development that could occur within the oil shale and tar sands region of the three states.

Quantitative analyses of potential impacts to greater sage-grouse and other wildlife species would be conducted for any proposed project. Project-specific NEPA analyses would also identify and assess any cumulative impacts that are beyond the scope of the cumulative impacts addressed in the PEIS. Policies and BMPs that would be implemented at the project-specific level are expected to avoid sage grouse habitat and, where not possible, minimize and mitigate impacts to sage grouse to the extent practicable. Sage grouse mitigation would be incorporated as project stipulations, as needed. The need for these mitigation measures would be determined on a project-by-project basis in conjunction with input from federal, state, and local agencies and interested stakeholders. Mitigation of impacts to sage grouse would include recommendations included in the BLM's National sage grouse habitat conservation strategy, as well as those contained in state-wide and regional sage grouse conservation strategies and management plans that have been prepared by state agencies.

- 52837-049:** Chapters 4 and 5 of the PEIS contain substantial discussion of the types of impacts that might occur to both wildlife and water resources from commercial oil shale or tar sands development, including discussions of effects of displacement of big game from winter range and impacts to sensitive and threatened and endangered fish species.
- 52837-050:** The impact analyses provided in the PEIS qualitatively evaluate the water quality impacts mentioned in the comment to fish and wildlife species based on BLM experience with other types of mineral development (see Sections 4.8.1.1, 4.8.1.3, 5.8.1.1, and 5.8.1.3).

The PEIS is a programmatic-level document that analyzes allocation decisions. It is important to note that these allocations do not authorize the immediate leasing of lands for commercial development. Therefore, the specific number and locations of projects within the Piceance Basin or elsewhere cannot be identified within the PEIS. Sections 6.1.4.7 and 6.2.4.7 of the PEIS compare potential impacts of the allocation decisions on ecological resources but are based on a comparison of lands available for leasing among alternatives with key aquatic and terrestrial habitats that overlap the lease areas. Subsequent project- or site-specific NEPA documents will be prepared to determine whether or not a lease will be offered in a specific area. These will include quantitative analyses of water quality impacts to fish and wildlife species that occur within the project area, including considerations of direct, indirect, and cumulative effects (including other infrastructure required to support oil shale and tar sands development), reasonable alternatives, and possible mitigation measures to protect fish and wildlife habitats. Mitigation measures would be determined in conjunction with input from federal, state, and local agencies and interested stakeholders.

52837-051: Tables 4.8.1-1 and 5.8.1-1 of the Draft PEIS have been modified to add water depletion as an impact category that could potentially affect wildlife. A paragraph has been added to the discussion of habitat disturbance (Sections 4.8.1.3.1 and 5.8.1.3.1) that qualitatively assesses the impacts of water depletions to wildlife.

52837-052: The BLM is evaluating the amendment of land use plans in parts of Colorado, Utah, and Wyoming to identify public lands that would be available for future application for leasing for oil shale or tar sands development. The proposed action is a land use allocation and does not commit any resources or authorize any BLM action that would have a direct, indirect, or cumulative impact on migratory or other wildlife species.

Cumulative impacts to wildlife species (including migratory species) are discussed qualitatively in Sections 6.1.5.3.7 and 6.2.5.3.7 of the PEIS. At this time, it is not possible to provide a quantitative evaluation of cumulative effects as requested in the comment because there are many uncertainties regarding the amount of development that is reasonably foreseeable, the types of technologies that might be deployed, and the locations of potential projects. These details would be needed to perform the type of analysis requested in the comment. Cumulative impacts will be evaluated in greater detail in project-specific NEPA assessments and consultations conducted prior to leasing and development. These cumulative impact analyses will take into consideration other reasonably foreseeable oil shale and tar sands developments.

52837-053: The PEIS is a programmatic-level document that analyzes allocation decisions. It is important to note that these allocations do not authorize the immediate leasing of lands for commercial development. Therefore, it is justifiable that the evaluation of specific occurrences of resources and supporting facilities, analyses of the environmental consequences of oil shale or tar sands development, and the assessment of the cumulative effects of oil shale and tar sands development together with the other factors mentioned in the comment be included in subsequent project- or site-specific NEPA documents rather than in this PEIS.

As stated in Sections 6.1.5 and 6.2.5 of the PEIS, for the purposes of analysis the cumulative impacts assessment looks at the incremental impacts of a single oil shale facility and a single tar sands facility, recognizing that there may be more than one of each type of these facilities brought into operation during the study period. This cumulative analysis was conducted to the extent appropriate, as dictated by the limited scope and narrow allocation decision and the uncertainty of oil shale and tar sands development on private lands. Most of the topics identified in the comment are addressed in the PEIS. Section 3.7.3 describes existing wildlife resources in the study areas. Section 4.8.1.3 describes the types of impacts that are known to affect or that could affect wildlife resources. Sections 6.1.1.7, 6.1.2.7, 6.1.3.7, 6.2.2.7, and 6.2.3.7 present maps showing crucial habitats relative to oil shale basins and STSAs. Sections 6.1.5.2 and

6.2.5.2 present an inventory of other disturbances that could contribute to cumulative impacts to wildlife species. Other requested items (e.g., overlays of areas to be developed, an assessment of the magnitude and extent of crucial habitat that will be affected) are not sufficiently well known at this time.

A more specific analysis of cumulative impacts of oil shale and tar sands facilities in the study area may be conducted at a future step in the assessment process, when an RFDS for oil shale and/or tar sands development would be included. An RFDS was not developed for this PEIS because most of the information necessary for producing an RFDS is unknown and not reasonably available at the present experimental stage of the oil shale and tar sands industries. Assumptions based on the limited available information would be too speculative to support a meaningful scenario. An RFDS at a future step in the assessment process would be based on a clear set of supportable assumptions associated with a leasing or development proposed action. Information pertinent to developing an RFDS will be gained from RD&D projects.

Additionally, the NEPA analyses at the leasing and development stages will consider effects from Reasonably Foreseeable Future Actions (RFFAs) (40 CFR 1508.7). If the proposed action would impact a particular resource that one or more RFFAs would also impact, the impacts of those RFFAs would be included in the cumulative effects analysis for the proposed action. At the leasing or development stage, the scope of a cumulative effects analysis will be determined by the location and number of potential leases/projects and the specific resources that may be affected by those leases/projects. For example, the geographic extent of a cumulative effects analysis for leasing or for a proposed development project will reflect not only the geographical limits of the proposed lease/projects, but also the geographical limits of the resource being affected (e.g., elk winter range).

52837-054: The comment expresses concern for impacts on a number of federally protected species or other species of national concern. The impacts of leasing and development on these species are presented and discussed in the PEIS. The text box on greater sage-grouse presented in both Sections 4.8.1.3.1 and 5.8.1.3.1 has been modified to include reference to state and regional greater sage-grouse conservation and management plans that contain mitigation measures to minimize potential impacts to the species. Additional information pertaining to the occurrence and distribution of fish species (especially sensitive native fish species) within the Piceance Oil Shale Basin has been added to Sections 3.7.1 and 3.7.1.1.4 of the PEIS, including information about Colorado River cutthroat trout, roundtail chub, bluehead sucker, flannelmouth sucker, and mountain sucker. The existence of conservation agreement documents for these species has been noted and referenced in these sections as well. Appendix F of the PEIS identifies conservation measures that would be applied to listed and sensitive species.

The BLM is evaluating the amendment of land use plans in parts of Colorado, Utah, and Wyoming to identify public lands that would be available for future application for leasing for oil shale or tar sands development. The PEIS is a programmatic-level document that analyzes allocation decisions. It is important to note that these allocations do not authorize the immediate leasing of the lands for commercial development. Subsequent project- or site-specific NEPA documents will be prepared to determine whether or not a lease will be offered in a specific area. These documents will evaluate specific occurrences of the species mentioned in the comment, analyze the environmental consequences of leasing (including consideration of direct, indirect, and cumulative effects) to these species, evaluate reasonable alternatives, and consider mitigation measures to protect the species and their habitats.

- 52837-055:** The PEIS is a programmatic-level document, analyzing allocation decisions. Programmatic environmental impact statements are used to evaluate broad policies, plans, and programs and provide an effective analytical foundation for subsequent project-specific NEPA documents. Currently, there is sufficient information on a programmatic level to make a reasoned choice among the alternatives as to whether lands are suitable for future consideration for commercial oil shale leasing. Depending on the situation in the area being considered for future leasing, wildlife- and landscape-level issues may be included in subsequent NEPA analysis. At that time, the BLM will strive to ensure that the goals and objectives of each program (representing resource values and uses) are consistent and compatible for a particular land area. Not all uses and values can be provided for on every acre. That is why land use plans are developed through a public and interdisciplinary process. The interdisciplinary process helps ensure that all resource values and uses are considered to determine what mix of values and uses is responsive to the issues identified, such as carrying capacity, water rights, and impacts to wildlife and wildlife habitat.
- 52837-056:** An evaluation of reclamation success following oil shale development is presented in Section 4.8.1.2. The PEIS acknowledges that reestablishment of some vegetation types (e.g., shrubland communities) may require several decades. The PEIS also states that reestablishment of native plant communities in particularly arid regions (e.g., Uinta Basin Floor ecoregion in Utah and portions of the Rolling Sagebrush Steppe and Salt Desert Shrub Basins ecoregions in Wyoming) may not be successful. The loss of intact native plant communities could result in increased habitat fragmentation, even with the reclamation of impacted areas.
- 52837-057:** The presence of non-native invasive species in potential oil shale lease areas and the potential introduction and spread of such species into uninfested areas as a result of oil shale development are discussed in Section 4.8.1.2 of the PEIS.
- 52837-058:** The BLM is preparing a programmatic-level document analyzing land use allocation decisions. Information needed to support those decisions is general in

nature. The BLM has disclosed in the PEIS information regarding potential impacts of commercial development on wildlife populations. At this time, however, there is no way to accurately predict those impacts or the magnitude of those effects.

Nevertheless, there is sufficient information at the programmatic level to make a reasoned choice among the alternatives when considering lands open or closed for consideration of commercial leasing. The PEIS analyzes the environmental consequences of this allocation decision in sufficient detail for the decision maker to choose which lands would be available for further consideration for leasing. It is important to note that these allocations do not authorize the immediate leasing of lands for commercial development nor do they create any development rights. When applications to lease are received and additional information becomes available, the BLM will conduct further site-specific NEPA analysis, including consideration of direct, indirect, and cumulative effects; reasonable alternatives; and possible mitigation measures, as well as what level of development may be anticipated.

- 52837-059:** Thank you for your comment. The BLM looks forward to continuing its strong working relationships with the Department.
- 52837-060:** Please see the response to Comment 52837-040. Additionally, although decisions regarding whether or not public lands will be available for application for commercial oil shale leasing and development, all three RMPs mentioned will, as part of the planning and NEPA process, include an analysis of the cumulative effects of actions relevant to each of the plan areas. This cumulative analysis would include analysis of the effects of other RFFAs, such as local oil and gas exploration and development, anticipated oil shale development, and any actions associated with the proposed actions.
- 52837-061:** Geologic resources in Colorado's Piceance Basin are described in general in Section 3.3.1.5. Resources at the local scale are not addressed in the PEIS. Seismic risk is described in Section 3.3.1.4 as fairly low. Whether operations would increase seismic risk would be addressed in leasing and project-specific NEPA analyses, including the analysis of the key aspect of any potential permitted deep injection of wastewater. If significant impacts are identified as part of these NEPA analyses, mitigation, in the form of constraints on leasing and/or operations, would be applied to lessen or eliminate those impacts.
- 52837-062:** The BLM is taking a measured approach to oil shale development where each step builds upon a prior step. This staged approach ensures that any commercial oil shale program meets the intent of Congress and takes advantage of the best available information and practices to minimize impacts and offer opportunities for states, Tribes, local communities, and the public to be involved at each decision point. At future stages of environmental evaluation (i.e., leasing and/or plan of development), a landscape-level analysis will be performed if appropriate.

This analysis would consider effects from Reasonably Foreseeable Future Actions, including other oil shale/tar sands leases/projects. Please also see the response to Comment 52837-027. The BLM notes the State of Colorado's preference for Alternative A.

The BLM is aware of the requirements of the Energy Policy Act of 2005. Consistent with those mandates, the BLM is moving forward with this broad-scale PEIS that reviews the reasonably available information. As pointed out by the cooperating agencies, the BLM cannot acquire information at this time to project the number, locations, or technologies of future commercial oil shale operations. Congress has not authorized the BLM to delay this PEIS until technologies have been proven commercially viable. Thus, this PEIS supports the programmatic decisions to amend land use plans to open certain lands to further consideration of oil shale or tar sands leasing and to close other lands to such leasing.

- 52837-063:** The sources of projected demands and water uses are from the states of Utah and Wyoming in their water plan documents (see footnotes of Tables 3.4.1-2 to 3.4.1-4) and the *Statewide Water Supply Initiative* study of Colorado (CWCB 2004). These documents provide information on water demands of different sectors over the next 20 to 40 years. The PEIS uses the best available information for its analyses. Any pending, planning, or ongoing study results would not be included unless they formally have been made publicly available.
- 52837-064:** Section 3.4.1.4 of the PEIS describes Colorado's tributary and non-tributary groundwater nomenclature. The discussions of potential impacts and cumulative effects do not distinguish whether groundwater at a potential commercial site is tributary or non-tributary, because that is site-specific information, and the document is programmatic in its coverage. Instead, the document considers groundwater use as a whole. Groundwater usage, whether pumped for mine dewatering, in situ zone dewatering, operations support, or other purposes, would affect cumulative water impacts whether the groundwater is tributary or non-tributary.
- 52837-065:** This PEIS is a programmatic-level document, analyzing allocation decisions. It is important to note that these allocations do not authorize the immediate leasing of the lands for commercial development. Subsequent NEPA documents will be prepared to analyze the environmental consequences of leasing and future exploration and development, including consideration of direct, indirect, and cumulative effects; reasonable alternatives; and possible mitigation measures to protect resources and resource values, as well as what level of development may be anticipated.

The amount of water to be needed for oil shale development, if it occurs, would depend on the scale of the development, technologies, economy, acceptable environmental impacts, and many other factors. Subsequent NEPA assessments will also consider the results of the needs assessments cited in the comment.

52837-066: Additional power needs for in situ oil shale development are considered in the cumulative impact assessment (e.g., the ground disturbance and water needs for power generation are included in estimates for individual in situ oil shale facilities; see Section 6.1.5.3). However, at this time it was considered too speculative to assume that the coal used would be mined within the study area (e.g., it could come from northeast Wyoming). More specific data would be available when NEPA documents are prepared to analyze the environmental consequences of leasing and future exploration and development.

52837-067: The types and amounts of hazardous waste that would be generated vary with the various oil shale technologies and would also depend on the scale of the development. The BLM believes that the RD&D program will be a source of additional useful information regarding commercially viable oil shale technologies and their impacts, including hazardous waste generation and management.

This PEIS is a programmatic-level document, analyzing allocation decisions. It is important to note that these allocations do not authorize the immediate leasing of the lands for commercial development. Subsequent NEPA documents will be prepared to analyze the environmental consequences of leasing and future exploration and development, including consideration of direct, indirect, and cumulative effects; reasonable alternatives; and mitigation measures to protect resources and resource values, as well as what level of development may be anticipated. These analyses will incorporate new technology-specific data where available.

52837-068: Thank you. The “units” were omitted by accident. The text has been appropriately modified.

52837-069: Injection is permitted by the EPA, as noted in the text. The text in the PEIS has been modified to include mention of the possibility of induced seismicity due to injection.

The potential mitigation measures (Sections 4.3.2 and 5.3.2) have been modified to recommend literature studies focused on faulting; however, specific faults are not mentioned. A recent publication by the Colorado Geological Survey shows no faults in northwest Colorado. See B.L. Widmann, R.M. Kirkham, M.L. Morgan, W.P. Rogers, 2002, *Colorado Late Cenozoic Fault and Fold Database and Internet Map Server Part I*, Colorado Geological Survey, IS-60A, with mapping updated in 2007, available at http://geosurvey.state.co.us/Portals/0/co_eq_map_2006v7.pdf. This map marks the estimated location of the 1882 earthquake as a location in central Colorado, 150 miles east-northeast of the Dudley Bluffs of the Piceance. Also, the Cimarron fault is 70 miles southeast of the portion of the Piceance under consideration.

Regarding the seismic hazard, the 2005 USGS reference cited in the PEIS does not support the commentor's claim of 20–30% g accelerations with a 2% probability, but rather 14–16%. The 2% probability information has been added to the seismic description of each of the four basins.

52837-070: The commentor has echoed many of the potential impacts identified in Section 4.5 of the PEIS, including mining-enhanced groundwater movement, mine dewatering, spring source water, drainage modification, increased porosity and permeability, changes in groundwater/surface water interaction, and changes in groundwater and surface water flow patterns. The commentor would like discussion of the magnitude and mitigation of these potential impacts. The PEIS is a programmatic-level document, and it cannot address or quantify issues at the site-specific level. It is expected that groundwater monitoring at the RD&D sites will provide information at a pilot scale on the degree of impact from different technologies and that this information would be used to determine mitigation measures and also decisions regarding possible future developments. It should be noted that an in situ approach relying on freeze wall technology would require dewatering within the treated volume only, rather than throughout the much larger volume that would be affected by a cone of depression. Also, note that the drawdown associated with typical dewatering (without bounding freeze walls) is dependent on the pumping rate and hydrogeological factors. The theoretical extent of drawdown is unbounded, although the drawdown is practically immeasurable at increasing distances from a pumping well.

If the policy of oil shale development is adopted, a development plan for each project would be prepared. At the project levels, specific infrastructure, roads, and facilities are better defined. Project locations, technologies to be deployed, and anticipated activities would be specified. With this information, more detailed environmental impact analyses would then be conducted. The results would be reported in project-specific NEPA documents.

52837-071: This PEIS is programmatic in scope. The document provides a range of water availability estimates, options (surface water and groundwater), and demands (varied with technologies) and potential impacts. The magnitudes of various impacts and specific types of impacts, would be provided at project-specific NEPA documents in the next phase.

52837-072: The PEIS is a programmatic-level document that analyzes allocation decisions and their consequences. The PEIS does not commit any resources or grant any lease rights. When applications to lease are reviewed, the BLM will conduct further site-specific NEPA analysis, including consideration of direct, indirect, and cumulative effects; reasonable alternatives; and mitigation measures, as well as what level of development may be anticipated.

The water estimates used in the PEIS are what an oil shale project plan could use, based upon today's knowledge of oil shale development and assumed plant

capacity. Although the PEIS estimates water availability, water rights are not evaluated as that issue is outside the scope of the PEIS. Water rights are also tradable and are going to change with time. They are more appropriately addressed in site- and project-specific NEPA documents.

The Upper Colorado River Endangered Fish Recovery Program uses instream flow water rights to protect endangered fish species. CWCB is the sole agent administering the instream flows and has acquired water rights to maintain instream flows since the program started. The potential oil shale developers need to follow applicable laws and adhere to existing instream flow water rights to acquire enough water resources for their uses.

52837-073: The comment appears to deal with specific compliance with state water law. The BLM has stated in the PEIS in many places that “commercial development of oil shale or tar sands resources on public lands will be subject to existing federal, state, and local laws and regulatory requirements as well as established BLM policies” (e.g., see Section 2.2 of the PEIS). Appendix D has been amended to include the referenced CRS citations.

52837-074: Please see Comment 52837-081 regarding the level of information required for this PEIS. To reiterate, the BLM is committed to preparing the appropriate level of analysis prior to the issuance of any oil shale or tar sand lease or approval of a plan of development in full compliance with the requirements of NEPA. The BLM will work with any cooperating agencies to determine a reasonable range of alternatives that best address the issues, concerns, and alternatives identified by the public such that a balanced mix of uses results.

52837-075: The PEIS is a programmatic-level document that analyzes allocation decisions and their consequences. The PEIS does not commit any resources or grant any lease rights. When applications to lease are reviewed, the BLM will conduct further site-specific NEPA analysis, including consideration of direct, indirect, and cumulative effects; reasonable alternatives; and mitigation measures, as well as what level of development may be anticipated. Such analysis covers the impacts on water resources.

The *Statewide Water Supply Initiative Phase I* study was one of many references used to prepare the PEIS. Based on the study, the projected and current water availabilities in Colorado are evaluated. As the water allocation of Colorado under the Colorado River and Upper Colorado River Basin Compacts is dictated by the compacts, the allocation would not be affected by oil shale development.

Oil shale and/or tar sand development is at the very beginning stage. The water use is going to change with developing technologies. Similarly, the landscape of water use and demand in the Upper Colorado River basin changes with time. Any evaluation of impacts on water resources must consider supply, demand, and legal issues. By the time a leasing application is submitted, it would be at least 3 to

5 years away. At that time, the water use environment will have changed. Any elaborate evaluation based on today's water use conditions and the many uncertain assumptions used in the development eventually would produce results with questionable reliability. Therefore, it is better to make such evaluation at the project level later when there is less uncertainty.

52837-076: Water availability is discussed in Section 3.4.1 by hydrologic basins and by states in the oil shale and tar sand regions. The range of water needed for oil shale and tar sands development and the water remaining available to a state under the compacts are described in Sections 4.5.2 and 5.5.2 and summarized in Tables 4.5.2-1 and 5.5.2-1.

This PEIS assumes that 6,000 thousand ac-ft per year is available for use in the Upper Colorado River Basin. The same amount was used in Colorado's *Statewide Water Supply Initiatives* study (CWCB 2004). It was based on long-term historical hydrologic data with a mean undepleted flow at Lees Ferry of about 15,000 thousand ac-ft/year and was confirmed by another CWCB study (2007). The data were collected from 1906 to 2005 within which wet and drought years existed. Other studies (Kuhn 2005, Tipton 1965) suggested that a mean undepleted flow of 13,500 thousand ac-ft/year be used. The Tipton study was based on historical data from 1930 to 1964. A tree-ring study supported the 13,500 thousand ac-ft/year figure (Kuhn 2005).

The assumed 6,000 thousand ac-ft/yr is the amount legally available for the Upper Basin states and has to be consistent with the flow at the Lees Ferry site. For example, the Lees Ferry is 15 million ac-ft; at least 7.5 million ac-ft has to be sent to Lower Basin states and 0.75 million ac-ft to Mexico. The maximum water available to the Upper Basin states has to be less than 6.75 million ac-ft (15 million ac-ft minus 7.5 million ac-ft minus 0.75 million ac-ft) to meet the requirements of various compacts of the Colorado River. The legal entitlement issue has been discussed in Section 3.4.

To evaluate the water supply of the Colorado River Basin, the BLM prefers the use of long-term historical data over relatively short-term data. Historically, we learned that short-term historical data fluctuates and is less reliable than long-term data, resulting in biased assumptions. That happened in the Colorado River Compact of 1922 that assumed a mean flow of 16,400 thousand ac-ft/year (Smerdon et al. 2007). Similarly, if we select the drought years of early 2000s data for our evaluation, we would likely produce another kind of biased results.

The shares of the Colorado River Basin states are specified in the various compacts of the Colorado River. It is inappropriate for the PEIS to speculate on the outcome of future compact development and consider that outcome to evaluate water availability.

The most geologically prospective areas of oil shale are shown in Figure 2.3-1. The water resources of various oil shale basins are described in Section 3.4.2 and shown in the maps of that section.

Water rights ownership is quite dynamic and is changing rapidly in the last several years. By the time an oil shale and/or tar sand project is developed, the ownership may differ greatly from what we have today. Therefore, the issue is more appropriately addressed in subsequent project-specific NEPA documents.

See also response to Comment 52837-075.

52837-077: The PEIS is a programmatic-level document that analyzes allocation decisions and their consequences. The PEIS does not commit any resources or grant any lease rights. When applications to lease are reviewed, the BLM will conduct further site-specific NEPA analysis, including consideration of direct, indirect, and cumulative effects; reasonable alternatives; and mitigation measures, as well as what level of development may be anticipated.

Development of oil shale and/or tar sand projects could create local sources of salts for water resources through ground disturbance and soil erosion, generally in the vicinity of project sites, access roads, and rights-of-way. Salinity impacts are closely related to the types of project activities and would be evaluated in subsequent project-specific NEPA documents. Specific BLM salinity control projects and measures to protect these projects near oil shale and/or tar sand sites would be addressed.

The development of oil shale and/or tar sand projects would require compliance with existing applicable regulations, including NPDES. It is described in Section 3.4.1. In Section 4.5.1.3, the PEIS showed that surface runoff at a mining site could be exempted from NPDES permits, provided that the runoff not be contaminated by contact with any overburden, raw material, intermediate product, finished product, by-product, or waste product located on the site of operation. Surface runoff not intercepted at these sites could create a non-point source of contaminants.

52837-078: The Upper Colorado River Endangered Fish Recovery Implementation Program and conservation measures to protect the Colorado River endangered fish species are discussed in Appendix F of the PEIS.

52837-079: The stream segments with instream flow water rights in Water Divisions 5 (Colorado River Basin) and 6 (White River Basin) have been listed in Appendix I. Unfortunately, we could not show their locations on a map because their graphical location information is not available. Specific impacts on instream flows of these streams would be evaluated in subsequent project-specific NEPA documents.

- 52837-080:** Increase in flooding potential resulting from oil shale development is unlikely, as works in streams are very limited. Under the arid and semiarid environment, flooding is more likely triggered by thunderstorms and snowmelts.
- 52837-081:** As is described in Chapter 1 of the PEIS, commercial leasing will not be authorized by this PEIS. Lands are only being identified as available for application for leasing. Monitoring of the RD&D activities is an ongoing activity that is required as part of the RD&D EA approvals.
- 52837-082:** At this time, it is neither required nor possible for this PEIS to present a cumulative effects analysis showing the impacts of leasing and development of these resources across the entire landscape of these three states. First, the decisions to be made on the basis of this PEIS are limited in character, consisting as they do only of planning/allocation of lands where nominations to lease can be considered. Second, the locations, scope, and scale of future oil shale and tar sands development are highly speculative, and because there will be additional NEPA prior to leasing. These points have been clarified in the introduction to the cumulative impacts sections (Sections 6.1.5 and 6.2.5).

A more specific analysis of cumulative impacts of multiple oil shale and tar sands facilities in the study area may be conducted at a future step in the assessment process, when an RFDS for oil shale and/or tar sands development would be included. An RFDS was not developed for this PEIS because most of the information necessary for producing an RFDS is unknown and not reasonably available at the present experimental stage of the oil shale and tar sands industries. Assumptions based on the limited available information would be too speculative to support a meaningful scenario. An RFDS at a future step in the assessment process would be based on a clear set of supportable assumptions associated with a leasing or development proposed action. Such an analysis may include comparison of impacts with and without consolidation of infrastructure development.

The projected water needs for population growth related to oil shale development have been included in PEIS water needs projections (see Table 4.5.2-1). Oil shale project sites generally have facilities to treat sewer on-site. The need for new infrastructure in communities is addressed qualitatively in the socioeconomics sections (Sections 4.11 and 5.11) of the PEIS. The overall impacts of oil shale/tar sands development on water resources are difficult to evaluate at the programmatic level because of the dependence on the scale of development but would be addressed in more detail (possibly including numeric modeling) in future NEPA assessments.

- 52837-083:** The comment addresses issues that must be dealt with at the site-specific level. Since this PEIS is programmatic in nature, the information provided is general, but Section 4.5 provides extensive discussions on water demands and water

quality associated with oil shale technologies and also addresses water demands that arise from the coincident growth of support industries and communities.

- 52837-084:** The PEIS cumulative impacts analysis was conducted to the extent appropriate, as dictated by the limited scope and narrow allocation decisions being proposed in the PEIS (i.e., amending land use plans to allow certain lands to be considered for future leasing). A more specific cumulative analysis would be more appropriate prior to a leasing or development decision if and when specific technical and environmental information becomes available.

This PEIS does include in the cumulative impacts analysis a discussion of the possibility of land disturbance and other impacts from planned power lines, both those required for oil shale/tar sands facilities and those planned for other purposes (e.g., the transmission and pipeline rights-of-way are included in the total acreage estimate of 14,000 acres for an oil shale facility [Table 6.1.5-9 of the PEIS]), and the potential impacts from other energy corridors are also acknowledged in Section 6.1.5.3.1

A more specific analysis of cumulative impacts of oil shale and tar sands facilities in the study area may be conducted at a future step in the assessment process, when an RFDS for oil shale and/or tar sands development would be included. An RFDS was not developed for this PEIS because most of the information necessary for producing an RFDS is unknown and not reasonably available at the present experimental stage of the oil shale and tar sands industries. Assumptions based on the limited available information would be too speculative to support a meaningful scenario. An RFDS at a future step in the assessment process would be based on a clear set of supportable assumptions associated with a leasing or development proposed action and could include numeric modeling of surface and groundwater impacts as suggested in the comment.

- 52837-085:** As the scale of development and project locations associated with oil shale and tar sands resource and ancillary development are not known, the analysis described in the PEIS was limited to estimating impacts for a region-of-influence in each state based on the likely residential location of project workers. As described in Section 4.11.1.1 of the PEIS, the in-migrating population assumed with each facility was assigned to local communities in each ROI based on a facility's direct workforce, community population, and intervening distances. Expenditure levels to support the in-migrating population at existing levels of service are then estimated for each community and aggregated for each ROI. Estimates of the impact of oil shale and tar sands development on local government expenditures are presented in Section 4.11.1.2 of the PEIS.

When commercial-scale oil shale and tar sands resource development occurs, additional NEPA analyses would be undertaken, where project locations, employment levels, and the number of in-migrating workers in each phase of development would be known, enabling a detailed analysis of oil shale and tar

sands and ancillary facility impacts on local tax revenues, facility and infrastructure capacity, and expansion costs, and on the state and local government expenditures required to maintain different levels of service.

52837-086: The water from major rivers (and reservoirs along the rivers) has multiple uses, including as drinking water supplies. Any impacts on the major rivers, as described in this PEIS, have implications on drinking, agricultural, and industrial water supplies. Treating drinking water supplies differently becomes artificial and unnecessary.

The PEIS is a programmatic-level document that analyzes allocation decisions and their consequences. The PEIS does not commit any resources or grant any lease rights. When applications to lease are reviewed, the BLM will conduct further site-specific NEPA analysis, including consideration of direct, indirect, and cumulative effects; reasonable alternatives; and mitigation measures, as well as what level of development may be anticipated.

52837-087: Our apologies. CDPHE was included in the list in Chapter 1 but was inadvertently not included in Chapter 7. The text has been corrected in Chapter 7.

52837-088: The sentence has been changed to state that the discharge of wastewater or the discharge of spent leachate into waters of the United States or a state will require an NPDES permit or state equivalent.

52837-089: This section of the PEIS is designed to provide a summary level discussion of the categories of possibly applicable legal requirements. The suggested addition provides detailed information, which would be more appropriate during a site-specific NEPA analysis.

52837-090: The source of selenium in the Colorado River Basin is from Mancos Shale, which is stratigraphically much lower than the Green River Formation (the productive zone of oil shale). Mancos Shale is not exposed in the Piceance Basin or other oil shale prospective basins examined in this PEIS. It does occur in Gunnison Basin south of the Piceance Basin. Given the above situation, the issue of selenium is not emphasized in the PEIS.

Low levels of selenium are found in a few streams. These streams impaired with selenium are shown in Table 3.4.1-1, which lists all impaired streams in the three states in the Upper Colorado River Basin.

52837-091: The most recent 303(d) streams within the oil shale and tar sands regions are listed in Table 3.4.1.3. Because the locations of potential project sites are still uncertain under alternatives B and C, potential impacts on specific 303(d) streams due to oil shale development, therefore, could not be evaluated. Such evaluation would be provided in project-specific NEPA documents. Similarly, impacts on future (303)d river segments would be addressed in the NEPA documents.

52837-092: Colorado, Utah, and Wyoming have been granted NPDES implementation authorization. The states' NPDES programs must be at least as stringent as the federal program. Text has been added to the PEIS to reflect this.

The nonpoint source runoff and sedimentation impacts are described qualitatively in Section 4.5. At this time, such impacts cannot be quantified, because the locations, scope, and scale of future oil shale and tar sands development are highly speculative. However, because the decisions to be made on the basis of this PEIS are limited in character, consisting as they do only of allocation of lands where applications to lease can be considered, and because there will be additional NEPA analyses prior to leasing, a quantitative analysis of the cumulative impacts of nonpoint source runoff and sedimentation is not required at this time. These points have been clarified in the introduction to the cumulative impacts sections (Sections 6.1.5 and 6.2.5).

52837-093: The bullets in Section 4.5.1 have been clarified.

The surface disturbances in the two bullets are referring to disturbances associated with access roads and rights-of-way.

Airborne dust from various disturbed areas and vehicle traffic could be nonpoint sources of sediment and dissolved salt to surface water bodies.

52837-094: If commercial development were to take place, groundwater withdrawals would take place for various purposes to support the various oil shale technologies. The cumulative effect of this pumping on the hydrologic cycle would depend on a combination of the site-specific conditions across all commercial lease areas and the choice of technology at each lease area, as well as other past, present and reasonably foreseeable use of the groundwater. Because the level of development is unknown and highly speculative, only a generic analysis can be provided on the effects of groundwater pumping (see Sections 4.5.1.4 and 5.5.1.4).

52837-095: Colorado has been delegated permit authority for the NPDES permit program including stormwater permits for all areas except Indian lands and federal facilities. Therefore, the State of Colorado has the permitting authority for point sources on BLM lands. The state has also been delegated authority for the §404 dredge and fill program. However, in the 1987 amendments to the CWA, Congress explicitly excluded stormwater runoff from the definition of a point source. Runoff from mining operations or oil and gas exploration, production, or treatment operations is exempt from the NPDES permit program if that runoff is composed entirely of flows from conveyances or conveyance systems used for collecting and transporting precipitation runoff. To qualify for the exemption, however, the runoff must not be contaminated by contact with any overburden, raw material, intermediate product, finished product, by-product, or waste product

located on the site of operation. (Source: BLM, Western States Water Laws, available at: <http://www.blm.gov/nstc/WaterLaws/Chap2.html>, accessed 4/11/08.)

In the text, it has been clarified that Colorado, Utah, and Wyoming have been granted NPDES authorization. The states' NPDES programs must be at least as stringent as the federal program.

- 52837-096:** The text in Section 4.5.1.3 has been modified to reflect the differing UIC approach in the three states. Regarding the concern about Colorado's groundwater contaminant list, each state has its own limits on particular contaminant concentrations, and these details would be appropriate for a project-level NEPA analysis rather than this PEIS.
- 52837-097:** In Section 4.5.1, the PEIS describes the commentor's concerns about increased permeability and the potential for groundwater contamination. It is expected that the monitoring of results from RD&D projects would be useful in future, site-specific NEPA decisions regarding any developments.
- 52837-098:** The extent of mine dewatering necessary would be subject to site-specific factors (e.g., the location of saturated zones relative to mine access shafts and adits (and how well they are sealed) and the portion of the formation being actively mined) and, while it is safe to assume that dewatering would occur throughout the period of active mining, it is highly speculative to attempt to identify the extent to which it would take place or the associated power requirements. At the leasing or plan of development stage, when site-specific information is available and when the scope of the proposed action is determined, the appropriate level of additional analysis will be performed, including assumptions on power use for mine dewatering, if applicable.
- 52837-099:** Please see Comment 52837-081 regarding the level of information required for this PEIS.

The decisions analyzed in the PEIS include no commitment by the BLM to offer for lease public lands within Colorado without additional site-specific NEPA analysis. This additional analysis will consider any new or site-specific information regarding proposed oil shale technology and any anticipated environmental consequences. New information on technologies may be a consequence of research on the RD&D leases or result from research or studies from other sources. Specific mitigation measures, management prescriptions, and the best available practices to minimize impacts will be applied as a result of site-specific NEPA evaluations. In addition, the BLM will involve the state, local communities, and the public throughout the NEPA processes. The Energy Policy Act of 2005 requires BLM to finalize this PEIS, knowing that results from the RD&D program would probably not be available for inclusion in this document. It is not necessary to await the results from the RD&D program prior to amending the land use plans under analysis in this PEIS.

- 52837-100:** This section of the PEIS is designed to provide a summary level discussion of the categories of possibly applicable legal requirements. The suggested addition provides detailed information, which would be more appropriate during a site-specific NEPA analysis.
- 52837-101:** See response to Comment 52837-100.
- 52837-102:** Thank you for your comment. Section A.3.2.2 discusses the advantages and disadvantages of in situ retorting. Contamination of groundwater aquifers by heavy metals leaching from spent shales and residual organic pyrolysis products not recovered from the retort zone is noted as a potential problem. Using solvents to recover the retort products could introduce additional contamination potential. Section 4.5 provides additional discussions on possible impacts to groundwater resources. Future applications for oil shale processing must include detailed plans for avoiding or mitigating groundwater contamination, irrespective of the aquifer's proximity to drinking water supplies; such plans must specifically address protection of drinking water supplies that lie within or proximate to the potential area of impact.
- 52837-103:** Thank you for your comment. Compliance with drinking water standards is implicit for "potable" water being delivered to an oil shale facility for consumption.
- 52837-104:** As noted in the introductory material of Appendix D, the citations in the tables are only those of general statutory authority; they do not convey which states have primacy.
- 52837-105:** As noted in the introductory material of Appendix D, the citations in the tables are only those of general statutory authority. The tables do not list any state or federal regulations.
- 52837-106:** Thank you for your comment. Section 2.2 provides, in very general terms, an overview of existing federal, state, and local laws and regulatory requirements for, as well as established BLM policies that would be associated with, oil shale and tar sands development. Additional information on some of the statutes and regulatory requirements was provided in Appendix D for a limited number of resources. It was not meant to be all inclusive.
- 52837-107:** Although examples of potential types of mitigation measures to protect water resources are provided for consideration (see Sections 4.5.3 and 5.5.3), this discussion is fairly general in nature, because the appropriate place to develop specific BMPs to protect environmentally sensitive areas is at the time that site-specific NEPA evaluations are performed, whether that is at the lease or plan of development stage as a result of those evaluations. In all such cases, the BLM will involve the state, local communities, and the public throughout the NEPA processes. The comment also raises regulatory issues that may be answered in

final regulations governing oil shale leasing and operations but are not within the scope of this PEIS.

52837-108: Please see the response to Comment 52837-097 regarding contamination of groundwater.

Groundwater contamination resulting from oil shale and tar sands development is a key concern identified in the PEIS. Section 4.5.1.2 includes a discussion of changes in permeability and leaching potential, and Section 4.5.1.3 contains a discussion of the organic contaminants that are possible from in situ processes based on field and lab studies. It is expected that groundwater monitoring at the RD&D sites will provide information at a pilot scale on the degree of impact from in situ technologies, and that this information would be used to determine mitigation measures and also decisions regarding possible future developments.

Coordination on water issues would take place in at least two ways. First, the BLM's NEPA process is an open process that encourages participation by stakeholders, similar to the current process with the PEIS. These formal processes are initiated whenever there is a new proposed action requiring NEPA analysis, such as any future commercial lease applications. Second, the BLM encourages ongoing, informal coordination between the various levels of government in the normal day-to-day implementation of our respective responsibilities.

52837-109: The BLM has specific policies and guidelines for the establishment and management of ACECs (BLM 1600 Planning Handbook and 1612 Manual). Local BLM offices, during the land use planning process, designate areas as ACECs, as well as develop specific management prescriptions to protect the relevant and important values of the ACECs. The specific management prescriptions in the local RMP guide the day-to-day management of the areas.

52837-110: The format of the PEIS allows readers to easily find information about the purpose and need for the action (Chapter 1), the alternatives (Chapter 2), the study area (Chapter 3), and the potential impacts (Chapters 4, 5, and 6). All elements required under NEPA are included (e.g., cumulative impact analysis, presentation of alternatives, and addressing irreversible and irretrievable commitment of resources, if any). The .pdf format of the electronic versions is searchable by key terms, allowing readers to quickly locate topics of interest.

52837-111: As stated in Section 1.1 of the Draft PEIS, the BLM proposes to amend 12 land use plans in Colorado, Utah, and Wyoming to describe the most geologically prospective areas administered by the BLM in these states where oil shale and tar sands resources are present, and to decide which of those areas will be open to application for commercial leasing, exploration, and development. Additionally, the analysis conducted in preparation of this PEIS was based on available and credible scientific data. As a programmatic evaluation, conducted in support of land use plan amendments, this PEIS does not address site-specific issues

associated with individual oil shale or tar sands development projects. A variety of location-specific factors (e.g., soil type, watershed, habitat, vegetation, viewshed, public sentiment, the presence of threatened or endangered species, and the presence of cultural resources) will vary considerably from site to site. In addition, the variations in extraction and processing technologies and project size will greatly determine the magnitude of the impacts from given projects. The combined effects of these location-specific and project-specific factors cannot be fully anticipated or addressed in a programmatic analysis. As a result, additional, site-specific NEPA analyses will be conducted prior to the issuance of commercial leases and the approval of specific plans of development. The BLM would invite other federal, state, local, and Tribal agencies to participate as cooperating agencies on these site-specific project-level NEPA documents.

The proposal (describing where oil shale and tar sands resources are present, and to decide which of those areas will be open to application for commercial leasing, exploration, and development) would not result in the emissions of any climate change-related (or other) air pollutants. Speculation about project locations and how development might occur would require many assumptions that are premature at this stage in the process. If a decision is made to make oil shale and/or tar sands available for future leasing, detailed potential air quality and climate impacts will be appropriately evaluated in detailed, site-specific NEPA analyses (including potential direct, indirect, and cumulative impacts) before issuing leases and approving plans of development.

52837-112: See response to Comment 52837-111.

52837-113: See response to Comment 52837-111.

Speculation regarding the quantity and potential impacts from “Community Exposure to Hazardous Air Pollutants” is premature at this stage in the process.

52837-114: The discussion of additional power requirements is consistent with the needs of the PEIS to identify lands as available for application for leasing. Chapter 4 of the PEIS in Section 4.1.6 contains information on the size of a power facility needed to support an assumed 100,000 bbl/day in situ oil shale operation. This information and information on expected water needs, employment, and land needed for plant construction are included to disclose the general magnitude of the impacts of this size plant on the resources listed.

Please see Comment 52837-008 regarding the extent of future NEPA analysis that would be required to consider such a development.

52837-115: See response to Comment 52837-111.

52837-116: It would be useful to conduct additional background meteorology and air quality related values monitoring throughout the study area. The BLM would like to meet

with the states of Colorado, Utah, and Wyoming (along with other federal land management agencies) to pursue how such monitoring could be financed and conducted. All air quality and climate data gathered by the BLM is made available to the public upon request.

Table 3.5.3-2 in Section 3.5.3 provides a detailed list of representative criteria air pollutant concentrations. All values are cleaner than the ambient air quality standards applicable when the analysis was prepared, although as indicated in Table 3.5.3-2, certain ozone and particulate matter values were greater than 50% of the applicable standard (up to 93% of the 8-hour ozone standard based on CASNET monitoring at the Mesa Verde, Canyonlands, and Gothic stations). EPA has recently lowered the ambient ozone standards and will make formal determinations as to whether or not the study area continues to achieve the applicable National Ambient Air Quality Standards. The BLM will not conduct activities that would be in violation of the air quality standards, and will require lessees to obtain and to abide by all necessary permits and to abide by all other applicable laws and regulations. Speculation about project locations and how development might occur would require many assumptions that are premature at this stage in the process.

52837-117: When applications to lease are received and additional information regarding technologies and impacts becomes available, the BLM will conduct further NEPA analysis, including consideration of direct, indirect, and cumulative effects; reasonable alternatives; and mitigation measures, as well as what level of development may be anticipated.

The BLM's NEPA process is an open process that encourages participation by stakeholders, similar to the current process with the PEIS. These formal processes are initiated whenever there is a new proposed action requiring NEPA analysis, such as any future commercial lease applications. Additionally, the BLM encourages ongoing, informal coordination between the various levels of government in the normal day-to-day implementation of our respective responsibilities.

52837-118: See response to Comment 52837-008.

52837-119: Permitting for future oil shale and tar sands projects would require compliance with state and federal regulations and programs, including any mandatory Renewable Portfolio Standard Programs in effect at that time. Currently, estimating the impacts of power requirements is very speculative because the amount of power required varies with the technology to be implemented, and also because the source of the power (and therefore the impacts) is unknown. Required power could come from coal-fired plants, nuclear plants, natural gas, or renewable energy sources. The commentor should note also that there are limits to the BLM's authority to impose requirements on activities taking place off federal

lands. An example would be that the BLM has no regulatory authority over electric generating facilities located outside of the BLM's lands.

- 52837-120:** Figure 3.5.1-1, Section 3.5.1.1, provides both prevailing wind information at several monitoring locations throughout the study area, and a citation for where the information was obtained. Speculation about project locations and how development might occur would require many assumptions that are premature at this stage in the process.
- 52837-121:** Thank you for your comment.
- 52837-122:** The future NEPA analysis described in Comment 52837-001 will consider the relative resource values present in any proposed lease area and will be used by the BLM to support a decision on whether to offer specific parcels of land for lease. As the specific alternatives associated with the lease sale NEPA document are formulated, areas identified to be offered for leases would be overlaid with other existing program decisions in the RMP. Inconsistencies or conflicts would be identified and alternatives formulated so that ultimately a balanced mix of areas to be offered for leases and protection of natural resource values or uses result. While there are many possible management options, the BLM will use the scoping process to determine a reasonable range of alternatives that best address the issues, concerns, and alternatives identified by the public.
- 52837-123:** See responses to Comments 00007-002 and 00036-013.
- 52837-124:** The potential emissions of any air pollutant (including mercury) would not result from the alternatives examined for making BLM-administered lands available for potential future commercial leasing of either oil shale or and tar sands resources. Site-specific NEPA review would be the appropriate stage for analysis of mercury emissions.
- 52837-125:** The statement in Section 6.1.1.5 is an accurate summation of the EAs for the RD&D projects. The summaries of the EAs are provided for information. The BLM will not conduct or authorize activities that would not comply with applicable local, state, Tribal, or federal air quality laws, statutes, regulations, standards, or implementation plans. Speculation about project locations and how development might occur would require many assumptions that are premature at this stage in the process. Site-specific NEPA analysis will address air quality impacts of particular proposals.
- 52837-126:** Thank you for your comment. Revisions of the RD&D leases is outside the scope of this PEIS. The state offices of the BLM are always willing to work with operators and other regulating agencies to promote improvement of environmental performance on BLM leases.

- 52837-127:** Speculation regarding the quantity and potential impacts from “Community Exposure to Hazardous Air Pollutants” is premature at this stage in the process. The commentor is invited to submit estimates and data in the NEPA process for specific proposals.
- 52837-128:** Although the commentor concludes that Alternative A is environmentally preferable, the PEIS adequately supports a decision in the Record of Decision to allow future consideration of certain federal lands for leasing oil shale or tar sands. The NEPA analysis for proposals that can be analyzed as to location and technologies will address regional air quality impacts.
- 52837-129:** Project-specific NEPA will be done before any leases are issued. The NEPA process will be open pursuant to applicable regulations. The BLM state offices will be willing to meet with state, local, and federal government agencies to discuss concerns and to share information. If the State of Colorado is seeking establishment of a Federal Advisory Board, that is beyond the scope of this PEIS.
- 52837-130:** One of the major reasons that the decision to offer specific parcels for lease was dropped from consideration in the PEIS is the uncertainty related to future power requirements needed to supply the industry. The allocation decisions now being made in the PEIS do not approve immediate leasing and consequently do not have any indirect effects associated with power generation. At the time commercial lease or development applications are considered in subsequent NEPA analysis, information regarding power sources, including their type, location, and size, will be considered. Renewable energy sources could also be considered at that time.
- 52837-131:** Thank you for your comment. All future analysis will be performed in full compliance with NEPA, CEQ’s regulations implementing NEPA, and the BLM’s land use planning regulations and policies. Also note that the proposed leasing regulations would not require the BLM to accept applications for leasing that were not responsive to a call for nominations.
- 52837-132:** See response to Comment 52837-118.
- 52837-133:** Table 3.5.3-2 in Section 3.5.3 provides a detailed list of representative criteria air pollutant concentrations. All values are cleaner than the ambient air quality standards applicable when the analysis was prepared, although as indicated in Table 3.5.3-2, certain ozone and particulate matter values were greater than 50% of the applicable standard (up to 93% of the 8-hour ozone standard based on CASNET monitoring at the Mesa Verde, Canyonlands, and Gothic stations). EPA has recently lowered the ambient ozone standards, and will make formal determinations as to whether or not the study area continues to achieve the applicable National Ambient Air Quality Standards. The BLM will not conduct or authorize activities that would not comply with applicable local, state, Tribal, or federal air quality laws, statutes, regulations, standards, or implementation plans.

Speculation about project locations and how development might occur would require many assumptions that are premature at this stage in the process.

It would be useful to conduct additional background meteorology and air quality related values monitoring throughout the study area. The BLM would like to meet with the states of Colorado, Utah, and Wyoming (along with other federal land management agencies) to pursue how such monitoring could be financed and conducted. All air quality and climate data gathered by the BLM is made available to the public upon request.

52837-134: Section 3.5.1.2 describes the existing state of knowledge regarding climate change. However, no climate change-related pollutant emissions would result from the alternatives examined for making BLM-administered lands available for potential future commercial leasing of either oil shale or tar sands resources. Also, no conclusions regarding the potential significance of climate change air pollutants as compared to local or regional emissions were made.

52837-135: Thank you for your comment. The PEIS is analyzing the environmental consequences of an allocation decision. As a result, the ROD will not commit any resources or grant any lease rights. This process provides an opportunity for a subsequent level of NEPA analysis of specific parcels that may be offered for lease and to develop specific mitigation measures to protect the resources and resource values present.

Only those ACECs that are open to mineral entry can be considered for leasing; however, management prescriptions are crafted to protect the relevant and important values. The site-specific NEPA analysis would consider any impact on ACECs before any leases would be issued. If, as part of this NEPA analysis, the BLM determines that leasing and subsequent development of the oil shale or tar sands resources would cause significant impacts to ACECs, the BLM can require the applicant to: (1) mitigate the impact so that it is no longer significant, (2) move the proposed lease location, or if neither of these options resolves the anticipated conflicts, (3) the BLM can decide that development of the oil shale or tar sands resources outweighs protection of the on site resources and approve the application. This NEPA analysis would include opportunities for public involvement and comment that are part of the NEPA process.

52837-136: In the Energy Policy Act of 2005, Congress directed the Secretary of the Interior to make lands available to conduct research and development activities with respect to technologies for the recovery of liquid fuels from oil shale and tar sands resources. This provision of the Energy Policy Act is specifically referring to a research and development program and not the establishment of commercial oil shale or tar sands leasing program. The CEQ regulations (40 CFR 1502.1) require the BLM to consider reasonable alternatives, including the No Action Alternative. Each alternative in the PEIS will be given equal consideration by the decision maker.

- 52837-137:** The BLM acknowledges the commentor's policy preference, but critique of the policy choices embodied in the Energy Policy Act of 2005 is beyond the scope of this PEIS.
- 52837-138:** The description of the existing RD&D leases and their relationship to each of the alternatives has been clarified in the Final PEIS (see Sections 1.2, 1.4.1, and 2.3). The RD&D leases are valid existing rights and will be administered under the terms and conditions of the existing leases. The obligations of both parties are spelled out in those leases. As stated previously, approval of conversion of any RD&D lease to a commercial lease with preference right acreage would be subject to review under NEPA.
- 52837-139:** Permitting for future oil shale and tar sands projects would require compliance with state and federal regulations in effect at that time.
- 52837-140:** The BLM notes the preference of the State of Colorado for Alternative A, the No Action Alternative. The BLM is amending the land use plans in compliance with the provisions of the Energy Policy Act and the intent of Congress as clarified in the responses to Comment 52837-011. As explained in the PEIS itself, the proposed amendment of the land use plans only effectuates an allocation—opening or closing lands to further consideration of the possibility of leasing for commercial development of these resources. As set forth in this PEIS, the BLM concludes that the available information is sufficient for amending the land use planning decisions. As required by the NEPA regulations, the BLM will analyze no action alternatives in subsequent NEPA documents for actual proposed developments.
- 52837-141:** The BLM does recognize that additional NEPA analysis will be required, and is committed to preparing the appropriate level of analysis prior to the issuance of any oil shale lease. (See page 2-19 of the Draft PEIS for the description of additional NEPA requirements.) A supplemental EIS as defined under the CEQ regulations, 40 CFR 1502.9, however, would not be appropriate for such additional NEPA analysis. This is because the nature and scope of the proposed action (i.e., leasing) will be different from the plan amendment action analyzed in the PEIS. Supplemental EISs are prepared when the agency makes substantial changes to a proposed action analyzed in an EIS or when there are significant new circumstances or information bearing on a proposed action analyzed in an EIS. Supplemental analyses focus on only those parts of the EIS that require updating before a decision on that proposed action is actually made. Since leasing will be an entirely different decision, a new NEPA analysis will be required. It is inappropriate to speculate at this stage whether such NEPA analysis will be programmatic in nature.
- 52837-142:** The BLM agrees that a piecemeal or segmented approach to analysis of the environmental effects resulting from several projects without consideration of other past, present, or reasonable foreseeable future projects that may

cumulatively affect the quality of the human environment should be avoided to the extent possible. At the leasing or development stage, however, the scope of a cumulative effects analysis will be determined by the location and number of potential leases/projects and the specific resources that may be affected by those leases/projects. As a result, the BLM believes that “piecemealing” or “segmenting” is unlikely to occur.

The PEIS is a programmatic-level document that analyzes allocation decisions. It is important to note that these allocations do not authorize the immediate leasing of the lands for commercial development. As stated in Sections 6.1.5 and 6.2.5 of the PEIS, for the purposes of analysis the cumulative impacts assessment looks at the incremental impacts of a single oil shale facility and a single tar sands facility, recognizing that there may be more than one of each type of these facilities brought into operation during the study period. This cumulative analysis was conducted to the extent appropriate, as dictated by the limited scope and narrow allocation decision and the uncertainty of oil shale and tar sands development on private lands.

A more specific analysis of cumulative impacts of oil shale and tar sands facilities in the study area may be conducted at a future step in the assessment process, when an RFDS for oil shale and/or tar sands development would be included. An RFDS was not developed for this PEIS because most of the information necessary for producing an RFDS is unknown and not reasonably available at the present experimental stage of the oil shale and tar sands industries. Assumptions based on the limited available information would be too speculative to support a meaningful scenario. An RFDS at a future step in the assessment process would be based on a clear set of supportable assumptions associated with a leasing or development proposed action. Information pertinent to developing an RFDS will be gained from RD&D projects.

- 52837-143:** The promulgation of regulations on environmental protection standards (i.e., setting royalty rates and addressing bonding, establishing standards for diligent development, and determining the allowable size of leases) is outside the scope of the PEIS.

The BLM published a proposed rule for the management of a commercial oil shale leasing program in the *Federal Register* on July 23, 2008. This process has its own public comment period.

- 52837-144:** The BLM acknowledges the commentor’s preference for Alternative A.

- 52837-145:** Thank you for your comments. You are correct that characterization of wastes and estimations of their volumes will be critical to their proper management. At this point in time, the experiences of ongoing research efforts give some general indications of the types of wastes that can be expected. However, a much more detailed analysis of waste types and volumes will be required as part of a detailed

plan of operation for commercial-scale operations that applicants will be required to provide. On-site waste management strategies, as well as identification of final treatment and disposal facilities to be used, will all need to be specified, and all necessary permits will need to be secured. As for concerns related to the original RD&D projects, it is important to remember that the RD&D projects are outside the scope of this PEIS and were analyzed in separate NEPA documents. However, those same waste management issues have relevance in those instances where the RD&D efforts evolve to commercial scale operations and will be addressed by separate NEPA analyses when and if those transitions occur for any of the RD&D projects.

52837-146: Thank you for bringing this error to our attention. Yes, regulatory constraints are applicable to RD&D projects and thus are applicable under Alternative A (No Action). Table 2.3.2-1 has been revised to show how Alternative A varies compared to the other alternatives.

52837-147: The BLM is evaluating the amendment of land use plans in parts of Colorado, Utah, and Wyoming to identify public lands that would be available for future application for leasing for oil shale or tar sands development. The proposed action is primarily a land use allocation and does not commit any resources or authorize any BLM action that would have a direct, indirect, or cumulative impact on public or worker health.

When actual exposure doses due to a process are known or can be estimated, it is possible to conduct quantitative health risk assessments that estimate the probability of health effects such as cancer, or provide an indicator of the likelihood of other types of health effects. Because the locations of residences and populations with respect to future oil shale and tar sands development are unknown, and the type and quantity of emissions to air and water from future facilities are also unknown, such a quantitative risk assessment is not possible as a part of this PEIS, which supports amending land use plans to allow certain lands to be considered for future leasing. Quantitative risk assessment would likely be possible as a part of NEPA analyses conducted for site- and technology-specific plans of development.

52837-148: The BLM is conducting a phased decision making process—proceeding from land use planning, to leasing, to operational permitting—as the BLM does for other resources such as oil and gas. This first step—RMP amendment to allow the BLM to consider applications for leasing—may be followed by the subsequent steps of leasing and plans of development. As explained in the PEIS, the proposed amendment of the land use plans is a land allocation decision—opening or closing lands to further consideration of the possibility of leasing for commercial development. Development of lease stipulations will occur in the subsequent NEPA analyses that are evaluating proposed commercial leases or plans of operations.

52837-149: The BLM is evaluating the amendment of land use plans in parts of Colorado, Utah, and Wyoming to identify public lands that would be available for future application for leasing for oil shale or tar sands development. The proposed action is primarily a land use allocation and does not commit any resources or authorize any BLM action that would have a direct, indirect, or cumulative impact on public or worker health.

When actual exposure doses due to a process are known or can be estimated, it is possible to conduct quantitative health risk assessments that estimate the probability of health effects, such as cancer, or provide an indicator of the likelihood of other types of health effects. Because the locations of residences and populations with respect to future oil shale and tar sands development are unknown, and the type and quantity of emissions to air and water from future facilities are also unknown, such a quantitative risk assessment is not possible as a part of this PEIS, which supports amending land use plans to allow certain lands to be considered for future leasing. Quantitative risk assessment would likely be possible as a part of NEPA analyses conducted for site- and technology-specific plans of development.

52837-150: The assessment of potential health and safety impacts of oil shale and tar sands development provided in the PEIS is a preliminary discussion of the types of health effects associated with likely types of contaminants, and general safety issues associated with mining and in situ production. This is appropriate for the proposed action, which is primarily a land use allocation and does not commit any resources or authorize any BLM action that would have a direct, indirect, or cumulative impact on public or worker health. The technology-specific type of health effects data analysis requested in the comment would be included as a part of NEPA analyses conducted for site- and technology-specific plans of development.

52837-151: The BLM is evaluating the amendment of land use plans in parts of Colorado, Utah, and Wyoming to identify public lands that would be available for future application for leasing for oil shale or tar sands development. The proposed action is a land use allocation and does not commit any resources or authorize any BLM action that would have a direct, indirect, or cumulative impact on public or worker health. Operators would be subject to all applicable worker safety and health regulations.

When actual exposure doses due to a process are known or can be estimated, it is possible to conduct quantitative health risk assessments that estimate the probability of health effects such as cancer, or provide an indicator of the likelihood of other types of health effects (i.e., systemic effects). Because the locations of residences and populations with respect to future oil shale and tar sands development are unknown, and the type and quantity of emissions to air and water from future facilities are also unknown, such a quantitative risk assessment is not possible as a part of this PEIS, which supports amending land use plans to

allow certain lands to be considered for future leasing. Quantitative risk assessment would likely be possible as a part of NEPA analyses conducted for site- and technology-specific plans of development.

- 52837-152:** The BLM is evaluating the amendment of land use plans in parts of Colorado, Utah, and Wyoming to identify public lands that would be available for future application for leasing for oil shale or tar sands development. The proposed action is a land use allocation and does not commit any resources or authorize any BLM action that would have a direct, indirect, or cumulative impact on public or worker health.

When actual exposure doses due to a process are known or can be estimated, it is possible to conduct quantitative health risk assessments that estimate the probability of health effects, such as cancer, or provide an indicator of the likelihood of other types of health effects. Because the locations of residences and populations with respect to future oil shale and tar sands development are unknown, and the type and quantity of emissions to air and water from future facilities are also unknown, such a quantitative risk assessment is not possible as a part of this PEIS, which supports amending land use plans to allow certain lands to be considered for future leasing. Quantitative risk assessment would likely be possible as a part of NEPA analyses conducted for site- and technology-specific plans of development.

- 52837-153:** The items the reviewer cites as not being addressed in the document are not addressed because the BLM has no statutory or regulatory oversight relative to the licensing, inspection, and enforcement specific to labor camps (man camps), retail food establishments, wholesale food firms, schools, childcare, mobile home parks, public accommodations (hotels/motels), and campgrounds. The document does state in Section 2.2 that, “Commercial development of oil shale or tar sands resources on public lands will be subject to existing Federal, state, and local laws and regulatory requirements as well as established BLM policies.”

- 52837-154:** To reiterate the response from previous comments, the BLM is analyzing the effects of amending land use plans to identify public lands available for application for future commercial oil shale development, and this land allocation decision does not authorize the immediate leasing of lands for commercial development nor does it create any development rights. The PEIS analyzes the environmental consequences of this allocation decision and has determined that with the possible exception of an effect upon property values, there are no adverse environmental effects of this decision, including other socioeconomic effects. If and when applications to lease are received and additional information becomes available, the BLM will conduct further site-specific NEPA analysis, including consideration of direct, indirect, and cumulative effects; reasonable alternatives; and possible mitigation measures, as well as what level of development may be anticipated. Potential socioeconomic impacts will be an important part of this future analysis.

52837-155: Uncertainty over the amount and timing of future commercial leasing has prevented development of an RFDS for oil shale and tar sands development which would project the level of activity over the life of the RMP based on estimates of the amount of resources that might be developed. Therefore, a reasonable assumption was made to analyze one hypothetical project of specified size for all three primary technologies considered in the PEIS. This analysis provides the decision maker with the requisite level of detail associated with the environmental consequences with a likely commercial development to make an informed decision.

52837-156: Text has been added to the PEIS describing in more detail the nature of temporary housing. It should be noted that the analysis of impacts of construction of temporary housing in each ROI is not dependent on its location, and assumes a generic housing construction type.

When commercial-scale oil shale and tar sands resource development occurs, additional NEPA analyses would be undertaken to analyze in detail the extent of regional economic impacts, including impacts on housing markets and applicable mitigation measures. Site-specific reviews would take into account actual worker residential locations by county, the extent of wage and salary spending, and equipment material and service procurement patterns in each county by housing developers when these details are known. If it is determined that additional impacts may occur in other counties outside each ROI, particularly with regard to workforce commuting patterns and the impacts on local housing markets, these counties would be included in any future site-specific assessment.

52837-157: The text in the PEIS has been changed to address the issues raised in the comment.

52837-158: Given the programmatic nature of the PEIS, the purpose of the analysis of socioeconomic impacts is to provide an overview of the type and magnitude of impacts that would likely occur with the construction and operation of oil shale and tar sands facilities. As the scale of development and project locations associated with oil shale and tar sands resource and ancillary development are not known, the analysis described in the PEIS was limited to estimating impacts for a region-of-influence in each state, based on the likely residential location of project workers. As described in Section 4.11.1.1 of the PEIS, the in-migrating population assumed with each facility was assigned to local communities in each ROI based on a facility's direct workforce, community population, and intervening distances. Expenditure levels to support the in-migrating population at existing levels of service are then estimated for each community and aggregated for each ROI.

If commercial-scale oil shale and tar sands resource development occurs, additional NEPA analyses would be undertaken, where project locations, employment levels, and the number of in-migrating workers in each phase of

development would be known, enabling a detailed analysis of oil shale and tar sands and ancillary facility impacts on local tax revenues, facility and infrastructure capacity and expansion costs, and on the local government expenditures required to maintain different levels of service.

52837-159: Please see response to Comment 52837-085.

52837-160: The PEIS is a programmatic-level document that analyzes allocation decisions. It is important to note that these allocations do not authorize the immediate leasing of the lands for commercial development. Therefore, it is justifiable that the evaluation of specific occurrences of resources and supporting facilities, analyses of the environmental and socioeconomic consequences of oil shale or tar sands development, and the assessment of the cumulative effects of oil shale and tar sands development be included in subsequent project- or site-specific NEPA documents rather than in this PEIS.

As stated in Sections 6.1.5 and 6.2.5 of the PEIS, for the purposes of analysis the cumulative impacts assessment looks at the incremental impacts of a single oil shale facility and a single tar sands facility, recognizing that there may be more than one of each type of these facilities brought into operation during the study period. This cumulative analysis was conducted to the extent appropriate, as dictated by the limited scope and narrow allocation decision and the uncertainty of oil shale and tar sands development on private lands.

A more specific analysis of cumulative impacts of oil shale and tar sands facilities in the study area may be conducted at a future step in the assessment process, when an RFDS for oil shale and/or tar sands development would be included. An RFDS was not developed for this PEIS because most of the information necessary for producing an RFDS is unknown and not reasonably available at the present experimental stage of the oil shale and tar sands industries. Assumptions based on the limited available information would be too speculative to support a meaningful scenario. An RFDS at a future step in the assessment process would be based on a clear set of supportable assumptions associated with a leasing or development proposed action.

52837-161: As the scale of development and project locations associated with oil shale and tar sands resource and ancillary development are not known, the analysis described in the PEIS was limited to estimating impacts for a region-of-influence in each state, based on the likely residential location of project workers. As described in Section 4.11.1.1 of the PEIS, the in-migrating population assumed with each facility was assigned to local communities in each ROI based on a facility's direct workforce, community population, and intervening distances. Expenditure levels to support the in-migrating population at existing levels of service are then estimated for each community and aggregated for each ROI. Estimates of the impact of oil shale and tar sands development on local government expenditures are presented in Section 4.11.1.2 of the PEIS.

The comment that the localities have significantly different socioeconomic conditions is well taken. That is one reason why it would be speculative to assume precise socioeconomic impacts before there is a leasing of development proposal with locations, proposed technology, and scale of operation.

52837-162: As the technologies, scale of development, and project locations associated with oil shale and tar sands and ancillary development are not known, the analysis described in the PEIS was based on a series of assumptions regarding the retention of wages associated with housing construction, facility construction, and operation are presented in Section 4.11 of the PEIS. These assumptions were based on publicly available NEPA reviews, past experience with oil shale and tar sands and other energy-related projects, and industry data on power generation and coal mining. These assumptions are reasonable for a programmatic review of potential socioeconomic impacts.

If commercial-scale development occurs, additional NEPA analyses would be undertaken to analyze in detail the extent of regional economic impacts, including impacts on local wholesale and retail price inflation. Site-specific reviews would take into account actual worker residential locations by county, the extent of wage and salary spending, and equipment material and service procurement patterns in each county by oil shale and tar sands resource developers and operators when these details are known.

The BLM is also aware that changes in local wages and prices as a result of any oil shale and tar sands development projects will depend in part on the local supply of labor and materials, and that those supplies may change between the date of this PEIS and issuance of any commercial lease or approval of any plans of development.

52837-163: In the analysis reported in the PEIS, the “induced” effect resulting from household spending is included in the “indirect” effect.

Data on indirect employment losses resulting from the closure of the Colony Project were stated in Gulliford (1989) and were not estimated as part of the analysis undertaken for the PEIS. Multiplier estimates used in the PEIS for OSTIS developments reflect the assumptions regarding the ability of each ROI to retain procurement and wage and salary spending, and as a result may differ from the estimates stated in the comment.

52837-164: The role of tax revenues in attempts to diversify local economies and reduce dependency on natural resource extraction industries, thereby reducing the susceptibility of local communities to the boom-and-bust economic cycle associated with energy development in rural areas, is included in the Sections 4.11.2 and 5.11.2 covering potential mitigation measures.

As the analysis included in the PEIS is intended only to support land allocation decisions, not leasing decisions, additional analysis addressing the risk and impacts of a “bust” and the appropriate mitigation measures will occur as part of future NEPA assessments.

52837-165: Text has been added to Section 4.10 and 5.10 of the PEIS covering the impact of oil shale and tar sands developments on the diversification of local economies and their attempts to reduce dependency on natural resource extraction industries, thereby reducing the susceptibility of local communities to the boom-and-bust economic cycle associated with energy development in rural areas. The role of tax revenues in attempts to diversify local economies away from natural resource development is included in Sections 4.11.2 and 5.11.2 covering potential mitigation measures.

52837-166: As stated in Section 1.1 of the Draft PEIS, the BLM proposes to amend 12 land use plans in Colorado, Utah, and Wyoming to describe the most geologically prospective areas administered by the BLM in these states where oil shale and tar sands resources are present, and to decide which of those areas will be open to application for commercial leasing, exploration, and development. Additionally, the analysis conducted in preparation of this PEIS was based on available and credible scientific data. As a programmatic evaluation, conducted in support of land use plan amendments, this PEIS does not address site-specific issues associated with individual oil shale or tar sands development projects. A variety of location-specific factors (e.g., soil type, watershed, habitat, vegetation, viewshed, public sentiment, the presence of threatened or endangered species, and the presence of cultural resources) will vary considerably from site to site. In addition, the variations in extraction and processing technologies and project size will greatly determine the magnitude of the impacts from given projects. The combined effects of these location-specific and project-specific factors cannot be fully anticipated or addressed in a programmatic analysis. As a result, additional site-specific NEPA analyses will be conducted prior to the issuance of commercial leases and the approval of specific plans of development. The BLM would invite other federal, state, local, and Tribal agencies to participate as cooperating agencies on these site-specific project-level NEPA documents.

The proposal (describing where oil shale and tar sands resources are present, and to decide which of those areas will be open to application for commercial leasing, exploration, and development) would not result in the emissions of any climate change-related (or other) air pollutants. Speculation about project locations and how development might occur would require many assumptions that are premature at this stage in the process. If a decision is made to make oil shale and/or tar sands available for future leasing, detailed potential air quality and climate impacts will be appropriately evaluated in detailed, site-specific NEPA analyses (including potential direct, indirect, and cumulative impacts) before issuing leases and approving plans of development.

Section 3.5.1.2 in the Draft PEIS describes the existing state of knowledge regarding climate change. However, no climate change-related pollutant emissions would result from the alternatives examined for making BLM-administered lands available for potential future commercial leasing of either oil shale or tar sands resources.

References:

CWCB (Colorado Conservation Board), 2004, *Statewide Water Supply Initiative*, Colorado Department of Natural Resources, Denver, Colo., Nov.

CWCB (Colorado Conservation Board), 2007, *Statewide Water Supply Initiative—Phase 2*, Colorado Department of Natural Resources, Denver, Colo., Nov.

Kuhn, E., 2005. “Science and the Future of Colorado River Policy and Compact Issues.” Powerpoint slideshow presented at the 2005 USGS Drought Workshop. Available at co.water.usgs.gov/drought/workshop200501/pdf/Eric_Kuhn.pdf.

Smerdon, E.T., 2007, *Colorado River Basin Water Management: Evaluating and Adjusting to Hydroclimatic Variability*, The National Academies, Feb.

Thank you for your comment, Michael Braaten.

The comment tracking number that has been assigned to your comment is OSTSD52850.

Comment Date: March 20, 2008 14:57:05PM
Oil Shale and Tar Sands
Comment ID: OSTSD52850

First Name: Michael
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Attachment:

Comment Submitted:

March 20, 2008

BLM Oil Shale and Tar Sands PEIS Argonne National Laboratory EVS/900 9700 S. Cass Avenue
Argonne, IL 60439

Submitted electronically at osts.anl.gov.

As a participating coordinating agency, the City of Rifle maintains its position of recommending No Action on oil shale leasing and recommends Alternative A of the Draft Oil Shale Programmatic Environmental Impact Statement. The City's preferred alternative allows activities on the existing research, development and demonstration leases to continue, but precludes industry expansion at this time.

52850-001

The City's reasons for continued opposition of oil shale leasing at this time is that there remains a lack of understanding of proposed extraction technology or true environmental and social impact data because of the unknowns associated with oil shale development.

Federal mandate or not, the preparation of this Programmatic Environmental Impact Statement for the sake of letting oil shale leases at this time makes no sense, especially as the RD&D projects are on-going and far from completion. Until the City can reasonably understand how it will be impacted by the development of oil shale, it cannot support an alternative that allows leasing. Comments specific to the Draft PEIS document's contents from the City will not be submitted.

52850-002

As noted above, this position is consistent with past recommendations made as a coordinating agency and the City continues to believe that it is necessary to wait for the outcomes of the RD&D projects before making additional oil shale resources available for commercial lease applications.

Respectfully submitted on behalf of the City Council of the City of Rifle,
Keith Lambert, Mayor City of Rifle

Responses for 52850

52850-001: The BLM acknowledges the commentor's preference for Alternative A.

52850-002: The BLM believes that the RD&D program will be a source of additional useful information regarding commercially viable oil shale technologies and their impacts. In the Energy Policy Act of 2005, however, Congress did not authorize the BLM to wait for additional information from the RD&D program before completing this PEIS. The BLM will analyze all available, relevant information in an appropriate NEPA document before issuing leases for oil shale or tar sands. That analysis will include any new information from research or lessons learned on the RD&D leases or from studies or operations on nonfederal lands.

As explained in the document itself, this PEIS analyzes the environmental consequences of allocating certain lands for the possible commercial exploration and development of these resources. The allocation decisions to be made do not commit any resources or grant any lease rights. Therefore, in addition to the analysis of direct and indirect effects of these land allocation decisions, including consideration of alternative ways of making these decisions, the PEIS presents a cumulative impact assessment based on the nature and scope of this proposed action and on available nonspeculative information. Programmatic EISs such as this one are considered adequate without site-specific analysis when the federal action proposed, as here, does not involve a site-specific or critical decision. As explained in the document itself, as well as in responses to other comments (see, e.g., response to Comment 52837-018), prior to any commercial leasing, additional NEPA analysis will take place. Because it is still a matter of speculation as to whether leasing and development will ever take place, and because there will be additional environmental analysis prior to leasing, a cumulative analysis associated with the effects of the land use allocation decision contemplated here need not analyze the impacts of leasing and development.

Since the alternatives in the PEIS do not authorize the immediate leasing of lands for commercial development, any future leasing will require subsequent NEPA analysis, as described in Section 1.1.1. The BLM's analysis in the PEIS provides the decision maker with information to make an informed decision on which lands are suitable for future consideration for commercial oil shale leasing. Currently, there is sufficient information on a programmatic level to rigorously explore and objectively evaluate all reasonable alternatives associated with an allocation decision. As required by CEQ regulations (40 CFR 1508.7 and 1508.8), this document, and all subsequent NEPA documents, will analyze the direct, indirect, and cumulative effects of the proposed action. That analysis will also help to form the basis for the development of mitigation measures, such as BMPs to avoid or mitigate short-term and long-term adverse impacts.

Thank you for your comment, Maurice Dechant.

The comment tracking number that has been assigned to your comment is OSTSD52870.

Comment Date: March 20, 2008 17:14:40PM

Oil Shale and Tar Sands

Comment ID: OSTSD52870

First Name: Maurice

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Attachment: Mesa County Comments - Draft PEIS.pdf

Comment Submitted:

Please see the attached comments. [See Attachment.](#)



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March 20, 2008

DELIVERY BY WEB, E-MAIL, AND US MAIL

BLM Oil Shale and Tar Sands PEIS
Argonne National Laboratory EVS/900
9700 S. Cass Avenue
Argonne, IL 60439

Re: Comments of Mesa County, Colorado Regarding the BLM Oil Shale and Tar Sands PEIS.

To The Bureau of Land Management:

Mesa County appreciates the opportunity to submit comments on the Draft PEIS. The Mesa County Board of County Commissioners has requested that I prepare and submit our comments. We have followed the preparation of the PEIS as a Cooperating Agency. Although the areas being considered for commercial leasing of oil shale resources are not necessarily located within the boundaries of Mesa County, experience with the previous development of the Colony Project in the late 1970's and early 1980's confirms that the impacts of oil shale development will fall heavily on Mesa County and its municipalities. We remember the impacts and difficulties of the "boom" era and we remember even more clearly the impacts and difficulties of the "bust" era following Black Sunday. Our comments are as follows:

We are concerned with the change in scope of the PEIS. The original intent of the PEIS was to provide analysis not only for amendment of land use plans (RMP's) but also for the issuance of leases for the commercial development of oil shale and tar sands resources. That scope has now been changed to utilize the PEIS only for amendment of the RMP's. We realize that during the development of the Draft PEIS, concerns were raised that there was a lack of information about specific technologies and that much of the information about specific technologies and the resulting impacts was historic and based on technologies that are now over thirty years old. However, typically, a PEIS is completed to modify the RMP's and leases are then issued on nominations. Site specific NEPA analyses are completed after the leases are issued and are based on company-specific development technology and plans, which will reflect current technologies and impacts. Conditions are placed on a lease as an outcome of the site specific NEPA analysis. In this regard, we strongly support the RD&D approach and program currently being undertaken. To the extent it can be expanded with the issuance of additional leases and the evaluation of additional technologies, we would support such expansion.

52870-001

Information and techniques presently being developed on the RD&D leases will be valuable in the site-specific process.

52870-001
(cont.)

We strongly support the use of site-specific NEPA analysis, where the PEIS is used to amend the RMP's and issue the leases and the NEPA analysis is conducted after the lease is issued. Under the current Draft PEIS, only the RMP's would be amended. Leasing would follow another NEPA analysis and development would follow a third NEPA analysis. We are concerned that no applicant will be willing to conduct a very expensive NEPA analysis prior to leasing, with no guarantee that the applicant will be the successful bidder on the lease, and then conduct a subsequent expensive NEPA analysis if they win the lease based on the first NEPA analysis. We believe this process will be economically onerous on the applicants, the Cooperating Agencies, and the impacted local governments. As previously stated, we support thorough and specific NEPA analyses at the appropriate time. However, we urge BLM to consider the capacity of the Industry, the Cooperating Agencies, and the impacted local governments to effectively and economically participate in the process as presently contemplated.

52870-002

We note at various sections of the Draft PEIS the consideration of Regulatory and operational constraints. With regard to Alternatives B and C, Table ES-1 states "All commercial development would be conducted in compliance with federal, state, and local regulatory requirements and established BLM policies." Paragraph 4.1 states "A key assumption is that all applicable federal, state, and local regulatory requirements will be met (see Section 2.2 and Appendix D)." It is respectfully suggested that this should not only be an assumption, but a commitment by the BLM. This commitment should extend not only to the regulations of counties which are the physical site of the lease and the project, but to the regulations of counties such as Mesa County which will be impacted by the lease and project. Specifically, without limitation, roads, pipeline ROW's, air and water quality, wildlife, tourism, housing, sanitation, social and economic impacts and, in fact, the entire lists of impacts and concerns set out in Chapters 4, 5, and 6, are of concern to Mesa County in the issuance of leases and the development of projects, even if the physical site of the lease and project is in a neighboring county.

52870-003

On occasion, we run into and consider the concept of Federal Preemption of local regulations. As a specific note regarding honoring local regulatory requirements, Mesa County has a long history of cooperation with the Forest Service and BLM through a variety of methods, including agreements for joint planning, etc. We very much appreciate the efforts and cooperation of the Forest Service and BLM in this regard.

Specifically regarding the three oil shale alternatives, we believe that Alternative A, No Action Alternative, is not in the best interest of the United States, the State of Colorado, and/or Mesa County. The thoughtful and carefully regulated exploration and development of oil shale reserves is a vital component of energy development for our country and our local area. Regarding Alternatives B and C, we note that many of the impacts are of the same nature in Alternative C as in Alternative B, they are simply more

52870-004

limited in extent in Alternative C because of its significantly smaller size. We note that the lands available for leasing in Alternative C appear to be smaller and more scattered and we question whether Alternative C would result in a situation in which development of the oil shale reserves becomes economically impossible. With this in mind, and with the basic assumption that the NEPA process will result in leases and projects which minimize and mitigate their negative impacts, we concur that Alternative B should be the Preferred Alternative.

52870-004
(cont.)

Mesa County's experience with the impacts of the Colony Project and with other energy related development is that the negative impacts of the development occur significantly in advance of the tax revenues and other revenues that assist to mitigate the negative impacts. Our economy in Mesa County and in this general region is significantly different than it was in the late 1970's and early 1980's. However, although the energy industry has attempted to assist in many ways, impacts from the current exploration and development of natural gas have stretched local resources. We strongly believe that government and industry need to make significant, early, up-front investments in and contributions to the infrastructures of local entities which will be impacted by oil shale development. These investments and contributions can be later credited against severance and/or other taxes and impact fees as they come due. We believe that these investments and contributions should be considered in and required by the NEPA process. In this regard, we join in, and respectfully refer the BLM to, the March 20, 2008 comments submitted by Club 20.

52870-005

We appreciate the opportunity to participate in the PEIS process and we look forward to cooperating with the BLM and participating in the site specific NEPA project analyses as oil shale development proceeds.

Sincerely,



Maurice Lyle Dechant
Mesa County Attorney

Responses for Document 52870

- 52870-001:** The experimental state of the oil shale and tar sands industries prevents the BLM from completing a NEPA analysis of the amendments to the RMPs that would be sufficiently detailed to allow oil shale or tar sands leasing to proceed without additional NEPA analysis. The BLM acknowledges the commentor's support for the RD&D program and the recommendation for additional RD&D leases. Although future rounds of RD&D leasing are possible, no decision has been made whether there will be additional opportunities to compete for RD&D leases on federal lands.
- 52870-002:** Thank you for your comment. Site-specific impacts of potential development will be identified in future NEPA analysis prior to leasing, which will be used to make decisions regarding lease stipulations. Unlike oil and gas, and both surface and underground mining, the nature of oil shale and tar sands development is still not understood well enough to support lease issuance.
- 52870-003:** The BLM's intent is that future development would be conducted in compliance with federal, state, and local regulatory requirements, and established BLM policies, as is stated in the PEIS. The particular reference cited in Chapters 4 and 5 has been changed to clarify this intention.
- 52870-004:** The BLM acknowledges the commentor's preference for Alternative B.
- 52870-005:** Given the programmatic nature of the PEIS, the purpose of the analysis of socioeconomic impacts is to provide an overview of the type and magnitude of impacts that would likely occur with the construction and operation of oil shale and tar sands facilities. As the scale of development and project locations associated with oil shale and tar sands resource development are not known, the analysis described in the PEIS is limited to estimating impacts for an ROI in each state, based on the likely residential location of project workers. As described in Section 4.11.1.1 of the PEIS, the in-migrating population assumed with each facility was assigned to local communities in each ROI based on facility direct workforce, community population, and intervening distances. Expenditure levels to support the in-migrating population at existing levels of service are then estimated for each community and aggregated for each ROI.

If commercial-scale resource development occurs, additional NEPA analyses would be undertaken, where project locations, employment levels, and the number of in-migrating workers in each phase of development would be known, enabling a detailed analysis of oil shale, tar sands, and ancillary facility impacts on local tax revenues, facility and infrastructure capacity, and expansion costs, and on the local government expenditures required to maintain different levels of service.

Text has been added to the PEIS indicating that the BLM cannot direct that government funds be paid to state and local governments to mitigate impacts from oil shale development. The BLM can only show those impacts in NEPA documents and address how those impacts were mitigated in the past by direction from Congress to use the bonus bids from the federal leases.

Thank you for your comment, John Harja.

The comment tracking number that has been assigned to your comment is OSTSD53001.

Comment Date: April 21, 2008 17:58:51PM

Oil Shale and Tar Sands

Comment ID: OSTSD53001

First Name: John

Middle Initial:

Last Name: Harja

Organization: Utah Public Lands Policy Coordination Office

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Country: USA

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Privacy Preference: Don't withhold name or address from public record

Attachment: 20080421 OSTs PEIS.pdf

Comment Submitted:

[See Attachment.](#)



State of Utah

JON M. HUNTSMAN, JR.
Governor

GARY R. HERBERT
Lieutenant Governor

Office of the Governor
PUBLIC LANDS POLICY COORDINATION

JOHN HARJA
Director

April 21, 2008

BLM Oil Shale and Tar Sands Programmatic EIS
Argonne National Laboratory
9700 S. Cass Avenue
Argonne, Illinois 60439

SUBJECT: Oil Shale and Tar Sand Programmatic EIS

To Whom It May Concern:

The State of Utah appreciates the opportunity to work with the Department of Energy (DOE) and Bureau of Land Management (BLM) as a formal cooperating agency in the preparation of this Programmatic Oil Shale and Tar Sands Environmental Impact Statement (PEIS). The state also appreciates the DOE and BLM's extension of similar status to local governmental entities that have a stake in the planning area under consideration. The state firmly believes that cooperative discussions among the various landowners and regulatory agencies will lead to the best possible final product.

The state, local governments, DOE and BLM have invested considerable time and effort working together in this impact analysis. The state's expectation is that this process will continue and lead to a well-reasoned and well-formulated oil shale and tar sands leasing plan. Further, while the state considered local governments' input during preparation of its comments, the BLM should also fully consider the comments submitted directly by local governments.

The comments and concerns raised below are offered in the spirit of cooperation through disclosure, analysis and adherence to the provisions of law, regulation, good governance and common sense. The state recognizes impact analyses as a dynamic process that will continue into the future, and reserves the right to supplement these comments as necessary. The state looks forward to resolution of these issues as a cooperating agency through the preparation of the Final Programmatic EIS

53001-001

Air Quality

The state appreciates the thorough and comprehensive evaluation of the impacts on various aspects of the environment in the Oil Shale and Tar Sands PEIS. Notably, the PEIS provides a fairly comprehensive description of some of the long term impacts on air quality that could be anticipated. (page 4-46).¹ The PEIS further provides a summary of cumulative impacts across the various effected areas of the environment including air quality. (page 6-154).² However, the PEIS states that prior to the development of oil shale, “additional project-specific NEPA analyses would be performed, subject to public and agency review and comment.” (page 4-47). Despite this additional level of review, there is some concern that these project-specific NEPA analyses may not appropriately address the cumulative impacts that occur when regional and sub-regional transport of precursor emissions is involved.

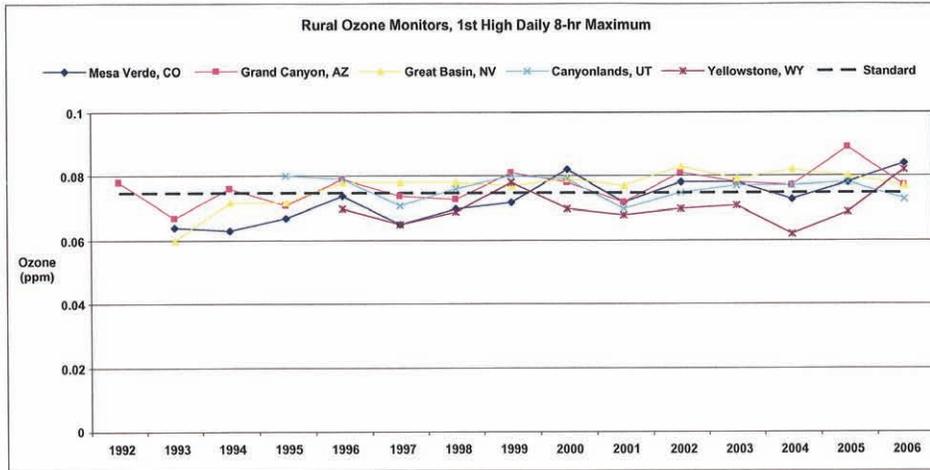
The National Ambient Air Quality Standard (NAAQS) for PM_{2.5} and Ozone are of concern for the State of Utah. The Ozone standard was lowered earlier this month and the PM_{2.5} NAAQS was lowered in September of 2006. With these revisions, the potential for violating standards increases over a wider geographic area. More specifically, high elevation valleys in the Intermountain West, even those with relatively small population centers, can be susceptible to elevated PM_{2.5} levels during strong, cold inversions.

Ozone, which is usually a summer time problem, has become a puzzling winter time problem in the Pinedale area of Wyoming where large natural gas fields exist. The Wyoming Department of Environmental Quality issued an air pollution advisory during the last week of February, 2008 for the Upper Green River Basin, in Sublette County after monitoring very high 8-hour average ozone concentrations. During summer months, regional ozone levels, as measured by the CASTNET monitors show an increasing trend in what might be considered background levels of ozone throughout the Intermountain West (see Rural Ozone Monitors graph).

53001-002

¹ Long-term, regional impacts (primarily CO and NOx, with lesser amounts of PM, SO₂, and VOCs) would result from oil shale processing, upgrading, and transport (pipelines). Depending on site-specific locations, meteorology, and topography, NOx and SO₂ emissions could cause regional visibility impacts (through the formation of secondary aerosols) and contribute to regional nitrogen and sulfur deposition. In turn, atmospheric deposition could cause changes in sensitive (especially alpine) lake chemistry. In addition, depending on the amounts and locations of NOx and VOC emissions, photochemical production of O₃ (a very reactive oxidant) is possible, with potential impacts on human health and vegetation. Similar impacts could also occur from the additional coal-fired power plants that would be needed to supply electricity for in situ oil shale extraction. (Section 4.6 Air Quality and Climate, page 4-46.)

² “Oil and gas development, other minerals development, and other activities (e.g., agricultural development and residential development) would all involve impacts on local air quality during land clearing and construction because of increased PM emissions and exhaust emission from construction equipment. There could also be regional air quality impacts if these activities involve long-term emissions of criteria pollutants or hazardous air pollutants at substantial levels. The incremental impact of oil shale development activities on total cumulative impacts would be assessed during future site-specific NEPA analyses.” Section 6.1.5.3.5 Air Quality, page 6-154. 6.1.5, beginning on page 6-126.



Ultimately, a comprehensive analysis of the cumulative impacts on air quality—specifically the effects of secondary photochemistry and the ability to maintain the NAAQS for PM_{2.5} and Ozone—is outside the scope of this Programmatic EIS. Moreover, the state recognizes the limitations on defining and quantitatively analyzing the scope of potential impacts when the scale, location, and method of development are uncertain. Nonetheless, in light of the foregoing issues, we request the BLM work with the state on a combined analysis of the effects of all emission sources upon completion of the pending baseline study.

53001-002
(cont.)

Relationship of PEIS to RMPs

Under the Programmatic EIS's preferred alternative "B" and alternative "C," seven land use plans in Utah would be amended. (page 1-11). Many of these land use plans are currently undergoing revision and Final RMPs are anticipated within the year. Management decisions made in each of the RMP revisions may directly affect the availability of lands within the analysis area. The State of Utah seeks clarification as to the relationship of the PEIS to the draft RMPs. Specifically, how will decisions made in each RMP amendment affect the analysis and disclosures made in the oil shale and tar sands EIS?

53001-003

Appendix C of the PEIS identifies proposed land use plan amendments associated with alternatives B and C for oil shale and tar sands. (page C-3). Appendix C indicates that under PEIS alternatives B and C, "all lands within the most geologically prospective oil shale areas that are not excluded from commercial leasing by existing law and regulation, Executive Orders, or administrative land use designation, or have not been specifically excluded by the BLM for other reasons, will be available for application for commercial leasing." (page C-11). The state appreciates this statement. However, the PEIS states lands that would be excluded from leasing under both programmatic alternatives include the following:

- Wilderness Areas
- WSAs
- Areas within the NLCS
- existing ACECs that are currently closed to mineral development
- segments of rivers determined to be eligible for WSR status by virtue of a WSR inventory. (page 2-17).

Wild and Scenic Rivers

The PEIS proposes to exclude segments of rivers administratively determined to be an eligible river segment. The state acknowledges the completion of the eligibility phase of the WSR studies as part of the RMP process. The state is also committed to exploring segments of rivers which may make a suitable inclusion in the Wild and Scenic River System. However, protections do not arise until segments are congressionally designated. The state is concerned that the proposed management of “eligible” segments is equivalent to agency designation that impermissibly shortcuts the statutory process. The state believes that exclusion of lands from leasing is not warranted by the eligibility finding, and requests a consistency review of this issue. Further, the Utah BLM is proposing to make suitability findings as part of the record of decision for the RMPs. The state requests clarification regarding treatment of segments found ineligible or unsuitable as part of the RMP revision process and their leasing availability.

53001-004

Areas of Critical Environmental Concern

The PEIS excludes ACECs that are **currently** closed to mineral development. The state requests clarification regarding treatment of potential ACECs that may be designated as part of ongoing RMP revisions. Would newly created ACEC that are closed to mineral development be available for leasing? Also, it is not clear whether “closed to mineral development” encompasses ACECs that are withdrawn for mineral development. To that end, the state requests a distinction be made between ACECs that have been withdrawn from mineral development and ACECs that are closed to mineral development , as well as clarification of how these designations may impact potential leases for oil shale and tar sands development.

53001-005

National Landscape Conservation System (“NLCS”)

The PEIS excludes from leasing areas that are part of the NLCS. Please clarify BLM’s authority to create a management category and subsequent basis for exclusion of lands for leasing based solely on the designation under the NLCS.

53001-006

Ongoing RMP Revisions

Appendix C designates oil shale acreage estimates for each RMP representing “those lands not excluded from commercial leasing under Alternative “B.” (page C-11). The same is done for tar sands. (pages C-20—C-22). The state requests clarification as to whether the RMPs will reflect the acreage made available for oil shale and tar sands leasing as provided for

53001-007

in the PEIS. If Final RMPs include special designations that differ from those anticipated and discussed in the PEIS, what process will be used to revise the PEIS in light of new information and changed conditions?

53001-007
(cont.)

Adaptation to Technological Innovation

Please clarify whether additional lands may be considered for leasing notwithstanding their lack of inclusion in the PEIS. The state asks the BLM to consider defining how additional lands might be made available for leasing in the event new data supports the feasibility of developing additional land not considered in the PEIS.

53001-008

Leasing

The state wishes to clarify the BLM’s approach to issuing leases. Regarding oil shale leasing, the PEIS states:

[I]f and when applications to lease are received and additional information becomes available, the BLM will conduct NEPA analyses, including consideration of direct, indirect, and cumulative effects, reasonable alternatives, and possible mitigation measures, as well as what level of development may be anticipated. On the basis of this NEPA analysis to be conducted at the lease stage, the BLM will consider further amendment of one or more plans, including, but not limited to, the establishment of general lease stipulations and BMPs. (page 2-16).

With respect to tar sands, the PEIS provides that leasing would occur on a lease-by-application process. More specifically:

The BLM would issue a call for applications for commercial leases. In response, companies would be required to identify the specific lands that they are interested in as part of their lease application package. It is also possible that the BLM would identify specific tracts to be leased in the call for applications. This process would require that NEPA analyses be conducted prior to lease issuance. Information collected as part of the lease application process would be incorporated into the NEPA analysis. Applicants would be required to identify key information regarding aspects of the proposed development needed to support a complete NEPA review. . . During this NEPA review, the BLM would identify and establish appropriate lease stipulations to mitigate anticipated impacts. (page 2-42).

53001-009

The state requests clarification as to how the leases will be awarded to applicants. Under the current PEIS, it appears that all potential applicants would be required to submit and/or conduct NEPA analyses prior to being awarded a lease. Please clarify the timing, content, and scope of NEPA analysis associated with lease issuance. Please also clarify whether the BLM follow the coal, fluid mineral, or a hybrid leasing model?

Water Issues

The effects of water utilization for tar sands and oil shale development have been skirted in this PEIS. The state recommends an analysis of the impacts of water withdrawal for this development. The state is concerned that the degree of industrial water use may diminish flows in the Colorado River, further harming sensitive and endangered fishes inhabiting the river. We do not understand if there is sufficient physical water, let alone water rights, available to support the scale of development contemplated in the PEIS and the effects this level of water demand might have on agriculture, wildlife (especially endangered fish), or wildlife inhabiting lands and waters in the area.

The state believes it is possible to demonstrate varying scenarios of potential wildlife and environmental impacts from water utilization for tar sands and oil shale development. If, under a set of “high hydrocarbon production/high water demand” assumptions, the public might expect to encounter a 43% reduction throughout the Uinta Basin on farm irrigation, then we may expect to see a commensurate reduction in associated wildlife habitat on private lands. If, in another scenario, the forecast is for “*in situ* development only/moderate water demand” leading to a 9% reduction in lower Colorado River flows as a result of the development, then state biologists would begin to develop an understanding of the potential impacts to endangered fishes on a small reduction in river flows. There might be different ways to package the description of a quantified range of impacts, either among alternatives or within an effects matrix later in the document. This PEIS should attempt to predict precisely how much water will be needed to develop oil shale and tar sands resources under a suite of different development thresholds. An appropriate impact analysis of the loss of water on wildlife and their habitats should follow each development scenario.

53001-010

Visual Impacts

To assess the development impacts involving tar sands in Utah, the PEIS based many of its assumptions on published information for a proposed 20,000 bbl/day- capacity plant designed for recovery of oil from a diatomaceous earth tar sands deposit in California. (page 5-2). For purposes of analysis and to provide a range of impact, the PEIS scaled bitumen production in Utah to 100,000 bbl/day. (page 5-2). As part of its visual impact analysis, the PEIS shows photos of Canadian tar sands operations. (pages 5-97 – 5-99). However, the Canadian operations depicted are likely an order of magnitude larger than those operations contemplated for development in the United States. Operations in Utah are not likely to include upgraders because Utah projects will probably be too small to support an integrated upgrader. In contrast, the Canadian operations tend to have an integrated upgrader. Given the major differences between the operations likely to occur in Utah and those currently underway in Canada, the state requests additional clarification regarding the use of the large scale Canadian operations in its assessment of visual impacts in the PEIS.

53001-011

Socioeconomic Impacts

The employment data relied on in the PEIS is extrapolated from a number of NEPA documents covering impacts of large energy resource development projects. It appears the

53001-012

estimated employment numbers for a hypothetical tar sands project may be overstated by a factor of at least two. (page 6-202). Workforce estimates are also based on operations much larger than those anticipated in the project area. As such, the state requests the BLM consider this possibility in evaluating the socioeconomic impacts of hypothetical tar sands projects and to consider modifying dependent analyses to reflect the impacts of a smaller operation.

53000-012
(cont.)

The state also asks the BLM to consider the additional jobs that would be created through oil shale and tar sands development in its assessment of the impacts on recreational employment. Studies containing information on the economics of Utah's oil and gas exploration and production industry are provided for the BLM's review.

53001-013

Energy and Mineral Developments Within Utah

The state noted the following factual or typographical errors in the section of Chapter 6 discussing energy and mineral developments for Utah.

Oil and Gas Development

For the past four years (2004 through 2007), Utah's Division of Oil, Gas and Mining reported an average of 811 well spuds per year within Uintah and Duchesne counties. Projecting only 580 wells per year for the Vernal PA may be conservative for the area long term. Necessary revisions should be reflected in section 6.2.5.2.1 as well.

53001-014

Coal Mining

The largest undeveloped coal resources are in the Henry Mountain Planning Area, with smaller amounts in the San Rafael Planning Area. (see Table 6.1.5-5). Predicted production for all field offices combined is about 30 to 34 million tons/yr. About 13% of this production would be from surface mines, and 87% would be from underground mines. These changes should be reflected in section 6.2.5.2.2.

53001-015

In Table 6.1.5-5 under the section entitled Coal, in the columns for the Henry Mountain and San Rafael PAs, the description refers to coal reserves in the Wasatch Formation, but should say the Wasatch Plateau coal field. The Henry Mountains column also needs to include coal in the Sevier County portion of the Emery coal field. The section on predicted production for the Henry Mountains also needs to change from Wasatch Formation to Wasatch Plateau coal field and include the Emery coal field as well. Similar errors are repeated in Table 6.2.5-4.

53001-016

Other Minerals Development

Metals produced in Utah include copper (one mine), iron (two mines), phosphate (one mine), molybdenum (one mines), potash (three mines), silver (four mines), and uranium (one mine). (EPA 1997). In the ROI counties (Carbon, Duchesne, Emery, Garfield, Grand, San Juan, Uintah, and Wayne), only sand and gravel, gilsonite, clay, gypsum, dimension sandstone, lime, helium, and gold are produced. (USGS 2004b). Phosphate production occurs in the Diamond Mountain area, and gilsonite in the Book Cliffs area. Uranium/vanadium has a high potential for

53001-017

development in the Henry Mountain and San Juan Planning Areas; it would result in at least 30 acres/yr of surface disturbance. A limited amount of other minerals development is expected. (see Table 6.1.5-5). These changes need to be reflected in section 6.2.5.2.3.

53001-017
(cont.)

Water Quality

A significant, long-term threat for water pollution could arise from poorly managed oil shale mining. As the oil shale exists right now, it is a sedimentary layer of low permeability (aquitard) that is located either in the unsaturated (vadose) zone or within the relatively shallow saturated zone. To extract kerogen from the rock, it must either be mined using conventional techniques, or new in-situ techniques may be used. Either process will increase the permeability of the formation, and allow infiltrating precipitation to leach salts and possibly other contaminants from the rock at a much greater rate than the undisturbed materials would.

The spent shale from mining has a greater volume than the original rock and backfilling the mine workings would not dispose of all of it. Underground mine workings may change the ground water flow regime within the oil shale by causing fractures in the overlying rock. This by itself could cause increased leaching of salts from the surrounding rock. If the workings are backfilled with spent shale, the increased permeability of the surrounding rock will allow infiltrating water to create a long-term source of salts leaching into ground water that will eventually discharge to surface water. Mine pits backfilled with spent shale would also allow precipitation to react with spent shale in the subsurface, and eventually result in discharge of salts to ground water and eventually surface water. The spent shale will be very dry upon disposal and large bodies of it will require a long time to get saturated in the dry climate, but there may eventually be a breakout of ground water that has been in contact with the shale waste.

53001-018

The Ground Water Protection Regulations specifically exempt operations that have "natural ground water seeping or flowing into conventional mine workings which re-enters the ground by natural gravity flow prior to pumping or transporting out of the mine and without being used in any mining or metallurgical process" from having to apply for a ground water discharge permit. However, the regulations do allow permitting of waste piles, which could possibly apply to backfilled spent shale.

In situ extraction operations will necessarily involve fracturing the rock to extract the formerly solid hydrocarbons that have been liquefied by the process. Because the rock has a high content of hydrocarbons, removing it will also increase its permeability. After extraction, precipitation will infiltrate the mined area and cause increased leaching of salts to ground water, eventually discharging to surface water. A risk assessment should be conducted that quantifies the effects of increased salinity to the Colorado River watershed or any potentially affected surface waters of this state that may result from the proposed project.

Utah Division of Oil Gas and Mining has jurisdiction over surface effects of in situ recovery activity, requiring certain plugging techniques for drill holes. For mines over 5 acres, operators are required to show what effects the operations will have on surface and ground water systems and the actions to be taken to mitigate those effects. Therefore, the Utah Division of

Water Quality will not issue UIC permits for reinjection wells for in situ mining of shale oil or tar sands at this time.

53001-018
(cont.)

It is also important to note that Region 8 directly implements the UIC Program on tribal lands so it is critical to have an accurate map of land ownership. The land ownership data layer in the State Geographic Information Database (SGID) is the best general surface ownership layer.

UIC Oil Shale Permitting Related to Injection Wells

Well Activity	Well Class	Permitted or Rule Authorized?
Hydraulic fracturing test (convert to injection well after test)	Class I	P
Air injection	Class V - exp	P or RA
Aquifer Remediation	Class V	P or RA
Tracer Testing	Class V	P or RA
Storm water trenches	Class V	P or RA
Closed-loop heat (not likely injection)		
Post-retorting water disposal	Class I or Class V	P
Aquifer Recharge / Drainage	Class V	P or RA
Nahcolite mining (solution mining) (then convert to de-watering wells, then convert to oil production wells)	Class III	P
Closed-loop freeze wall (not likely injection)		
Steam Stripping Hydrocarbons	Class V	P or RA

53001-019

Type of Analysis

A mechanism should be employed to allow the public to gain a better sense of the scale and potential variability among discernible environmental impacts. Deferring meaningful, quantified analysis of environmental impacts to the leasing-by-application determination does not answer the question of possible environmental outcomes. A response to difficult quantification challenges is to make explicit assumptions and lay out a range of realistically foreseeable outcomes; the final answer may fall between projected outcomes, but the public would have the opportunity to consider the scale of environmental effects associated with the alternatives. We recommend developing such a quantified range of outcomes, with assumptions inherent, as the only viable mechanism we can envision for allowing the public to understand the scale of the potential impacts to the environment. The Draft Oil Shale and Tar Sands PEIS provides the groundwork, but in repeated instances, does not lay out realistic impact scenarios with a quantification of impacts. The quantified analysis should not be left out of the PEIS because of its programmatic orientation. The present document is the public's only opportunity to provide input to the decision, programmatically and cumulatively. Therefore, BLM should provide the public with sufficiently quantified scenarios in tar sands and oil shale production.

53001-020

Issues of water availability, water quality, air quality, climate change, loss of wildlife habitat, are all worthy of quantification.

53001-020
(cont.)

Wildlife Concerns

The open-pit mining contemplated for major portions of the Book Cliffs area within Utah, coincides with crucial winter ranges for mule deer, and is also used by elk. Open-pit mining would impact mule deer populations in a herd recognized by many entities as “world class.” Given the effects of open pit mining, and given the high degree of coincidence of the Book Cliffs oil shale deposits occurring less than 500 feet below ground surface with the mapped crucial winter habitat for mule deer, and to a lesser extent elk and pronghorn, mining must be accompanied by a strong reclamation program. The state asks that the PEIS require coordination of mining plans and reclamation with Utah's Division of Wildlife Resources.

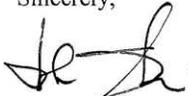
53001-021

Cumulative Impacts

Evaluating the development impacts for oil shale and tar sands resources with those of other oil and natural gas development impacts will require a future, more exhaustive cumulative impacts analysis. Oil and natural gas development in the Book Cliffs of Utah has been fairly extensive, and there are clear indications of present intentions documented in recent BLM and U.S. Forest Service NEPA documents for companies to further develop these resources. Such impacts must be considered cumulatively in association with oil shale development.

53001-022

The State of Utah appreciates the opportunity to review this proposal. Please direct any other written questions regarding this correspondence to the address listed above, or call me at (801) 537-9801. Thank you.

Sincerely,

John Harja
Director

Response for Document 53001

53001-001: Thank you for your comment. The BLM looks forward to the partnership.

53001-002: The BLM is interested in pursuing these issues with the States of Colorado, Utah, and Wyoming.

It would be useful to conduct additional background meteorology and air quality-related values monitoring throughout the study area. The BLM would like to meet with the States of Colorado, Utah, and Wyoming (along with other federal land management agencies) to pursue how such monitoring could be financed and conducted. All air quality and climate data gathered by the BLM are made available to the public upon request.

53001-003: All decisions related to land use planning for oil shale and tar sands resources in the ongoing RMPs will be made in the ROD for the PEIS. The ROD will amend the existing plans (MFP or RMP or ongoing RMP if completed first) by making land use planning decisions on whether or not lands will be available for application for future leasing and development of oil shale or tar sands on public lands for those areas where the resource is present. Additional site-specific NEPA analysis will be completed on any future lease applications before leases would be issued. If, as part of this NEPA analysis, the BLM determines that leasing and subsequent development of the oil shale or tar sands resources would cause significant impacts, the BLM can require the applicant to: 1) mitigate the impact so that it is no longer significant or 2) move the proposed lease location, or if neither of these options resolves the anticipated conflicts 3) the BLM can decide that development of the oil shale or tar sands resources outweighs protection of the on-site resources and approve the application. This NEPA analysis would include opportunities for public involvement and comment that are part of the NEPA process.

53001-004: As described in the PEIS in Section 2.2.3, a river or river section may be designated as a WSR by Congress or the Secretary of the Interior under the authority of the Wild and Scenic Rivers Act of 1968. Land management agencies conduct inventories of rivers and streams within their jurisdictions and make recommendations to Congress regarding the potential inclusion of suitable rivers into the WSR system as part of their land use planning process. These special areas are managed to protect outstanding scenic, recreational, geologic, fish and wildlife, historic, cultural, or other values, and to preserve the river or river section in its free-flowing condition. WSR boundaries are established to include a corridor of land along either side of the river as determined to be appropriate for protection of the river's values. The law recognizes three classes of rivers: wild, scenic, and recreational. It is the BLM's policy to manage potentially eligible and suitable WSRs in a manner to prevent impairment of the river's suitability for WSR designation until Congress or the Secretary makes a final determination

regarding the river's status. During this interim period, a corridor extending at least 0.25 mi from the "high water" mark on each bank of the river is established.

Segments of rivers that have been found to be unsuitable as part of the RMP process will no longer receive the interim protections afforded them during the period of their consideration for suitability. After the unsuitability decision, the lands adjoining the river segment may be managed, just as are other public lands, consistent with whatever management prescription is adopted through the land use planning process.

53001-005: Under the provisions of FLPMA, the BLM has designated ACECs where special management attention is required to protect and prevent irreparable damage to important cultural, historic, scenic values, fish and wildlife resources, or other natural systems or processes, or to protect life and safety from natural hazards. In ACECs not closed to mineral entry, the BLM has specific management prescriptions outlined in the local land-use planning document to protect the relevant and important values. However, the ACEC Manual (BLM Manual 1613) states: "Normally, the relevance and importance of resource or hazards associated with an existing ACEC are reevaluated only when new information or changed circumstances or the results of monitoring establish a need." Therefore, if there is new information or changed circumstances associated with the leasing of lands within ACECs open to mineral development (for example, if the RMP that designates an ACEC is amended by the PEIS to open the area including the ACEC to consideration for application for commercial lease), the ACEC will be reevaluated to consider whether to retain the ACEC designation or to develop additional management prescriptions in the NEPA analysis associated with the proposed leasing decision. This also applies to newly designated ACECs in the Utah RMPs.

Closed to "mineral development" and closed to "mineral entry" could mean the same thing. It depends upon the context in the document where it is found. However, unless an area has been officially designated on the public land records as "withdrawn from mineral entry," the area would fall into the category described in the first paragraph of this response.

53001-006: Congress granted the President authority to designate national monuments in the Antiquities Act of 1906, which specifies that the law's purpose is to protect "objects of historic or scientific interest." In addition to the presidentially created national monuments, Congress has established national monuments by passing laws to create individual monuments with their own purposes (generally to protect natural or historic features). For example, the Grand Staircase–Escalante National Monument was established by Presidential Proclamation on September 18, 1996, under the authority of Section 2 of the Act of June 8, 1906 (34 Stat. 225, 16 U.S.C. 431). In part, the proclamation said, "All Federal lands and interests in lands within the boundaries of this monument are hereby appropriated and

withdrawn from entry, location, selection, sale, leasing, or other disposition under the public land laws...”

- 53001-007:** Please see response to Comment 53001-003 regarding RMP revisions.
- 53001-008:** Should industry come forward with an economically and environmentally sound proposal for commercial oil shale or tar sands leasing, the BLM and the Secretary of the Interior have the authority to undertake another EIS that would consider additional modification of land use plans to allow leasing for such a proposal. Excluded lands under each alternative can only be made available for leasing after the appropriate RMP is amended to consider the excluded area for potential leasing.
- 53001-009:** The excerpt from the PEIS quoted in the comment is an accurate statement of the general process that will be used to accept applications for lease. The BLM, through its rulemaking process, is drafting a proposed set of regulations to outline the policies and procedures to implement a commercial oil shale leasing program. The BLM published a proposed rule for the management of a commercial oil shale leasing program in the *Federal Register* on July 23, 2008. The regulations for tar sands resources are already promulgated at 43 CFR, Part 3140. The BLM rulemaking process is separate and apart from the drafting of the PEIS. The PEIS analyzes the environmental consequences of an allocation decision and, therefore, questions concerning the regulatory process are outside the scope of the PEIS.
- 53001-010:** This PEIS is a programmatic-level document that analyzes allocation decisions. It is important to note that these allocations do not authorize the immediate leasing of lands for commercial development. Subsequent NEPA documents will be prepared to analyze the environmental consequences of leasing and future exploration and development, including consideration of direct, indirect, and cumulative effects; reasonable alternatives; and mitigation measures to protect resources and resource values, as well as what level of development may be anticipated. The PEIS provides an effective analytical foundation for subsequent project-specific NEPA documents.

The amount of water needed would be better understood at the future project-specific level when the scale of development, the technologies used in the development, the national agricultural economy, and the locations and hydrologic conditions of project sites are known.

The source of water needed for any oil shale and/or tar sands development projects would be specified in the project-specific NEPA documents and not in this PEIS. The water is unlikely to be diverted from public use water. Agricultural water might be a candidate for sources of water rights. Impacts on water resources caused by transfers of water from agricultural uses to oil shale and tar sands development on water resources have been added to Sections 4.5 and 5.5 of the PEIS. It would be a lessee's responsibility to obtain and maintain water rights

necessary for its operations in accordance with state law. Thus, it would be conjecture to attempt an analysis of impacts from water demands for operations that might not obtain water rights.

Using different scenarios to project water utilization is a useful tool in evaluating impacts. However, there are many controlling factors in determining water uses. This approach could produce many highly speculative scenarios and unreliable results. Instead, it is more appropriate to evaluate the impacts of water resources on wildlife and their habitats at the project level. The BLM does not have a forecast “scale of development” for oil shale or tar sands. The BLM agrees with the cooperating agencies that there is not enough information at the experimental stage of the industries to support a development scenario that would be better than speculative.

- 53001-011:** Canadian oil sands operations did not form the basis for the visual impact assessment in the Draft PEIS and were not considered in the visual impact analysis conducted for the Draft PEIS.

The photos of Canadian oil sands operations included in the Draft PEIS were intended to illustrate at a general level the types of visual impacts associated with tar sands development. They show visual impacts typical of surface mining operations and visual impacts associated with tar sands processing facilities. They illustrate the strong contrasts in form, line, color, and texture associated with mining operations and the built structures’ rectilinear geometry, symmetry, and surface characteristics. The scale of tar sands facilities that might be built in the future is not known precisely at this time; the photos in the PEIS include a range of scales, including a pilot-scale facility near Vernal, Utah.

The basis of the visual impact analysis for the Draft PEIS is a determination, based solely on distance from the STSA, of sensitive visual resources that might be affected by tar sands development, if the development and/or associated project components or activities, such as lighting, dust, or smoke, were visible from the locations of the sensitive visual resources. The analysis did not account for topography, which in some cases might obscure some or all views of the tar sands development and associated activities. Because precise information about the location of the development, its size, the technologies employed, and other site-specific information is not known at this point, this level of analysis is appropriate for this PEIS. When a specific tar sands development project is proposed for a specific location, a site-specific NEPA analysis would be conducted that would incorporate information about the size and nature of the development that was proposed, the precise location of the project components, and local topography to determine the visual impacts associated with the proposed development.

- 53001-012:** Given the programmatic nature of the PEIS, the purpose of the analysis of socioeconomic impacts is to provide an overview of the type and magnitude of

impacts that would likely occur with the construction and operation of representative oil shale and tar sands facilities. As the technologies, scale of development, and project locations associated with tar sands development are not known, the analysis described in the PEIS was based on a series of assumptions regarding project production levels and direct project employment during both construction and operations phases. These assumptions, described for both oil shale and tar sands development in Section 4.11 of the PEIS, were based on publicly available NEPA reviews of oil shale and tar sands projects. These assumptions are reasonable for a programmatic review of potential socioeconomic impacts. The BLM does, however, acknowledge the possibility that the estimate in this PEIS might be higher than actual impacts to employment or other socioeconomic values.

As the commentor suggests, the facility direct employment estimates are based on larger projects, in this case those analyzed in the Combined Hydrocarbon Leasing EIS. Direct construction and operations employment associated with two facilities, a surface mine (190,000 bbl/day, 9,600 construction employment and 6,566 operations employment) and an in situ facility (175,000 bbl/day, 12,060 construction employment, 2,235 operations), was averaged, and then scaled for the 20,000 bbl/day facility analyzed in the PEIS.

53001-013: Potential employment created by oil shale and tar sands facilities in each state ROI is presented in Sections 4.11 and 5.11 of the PEIS. The potential impacts of oil shale and tar sands developments on recreation, and the consequent loss of employment in each ROI, are presented in Section 4.11.1.5 and 5.11.1.4.

53001-014: The cumulative impacts assessment in the PEIS relied on the RFDSs for oil and gas development as presented in draft and final RMPs for each BLM Field Office. In the case of Vernal, the information was published in 2005. The total number of producing wells estimated in the Vernal RMP is still valid, although the anticipated life of the projected development scenario has been scaled back to 4 years, instead of the standard 15–20 years. The BLM does, however, acknowledge the possibility that the estimated oil and gas development presented in this PEIS might be less than the actual number of oil and gas wells developed in the future.

In general, the RFDS is an estimate based on past and present development projected into the future. The RFDS uses variables or factors to make an informed estimate of the number of oil and gas wells needed to produce the resource. These variables include the price of oil and gas, the success or failure of exploration in unproven areas, availability of exploration and development equipment, availability of infrastructure including the pipeline transportation network, technology, economics and the willingness of investors to invest in exploration for oil and gas, and the advancement of primary, secondary and tertiary recovery methods. After considering all information, the number of wells actually drilled could fluctuate, especially when determining activities over the life of an RMP.

However, variances in the number of wells, either up or down, does not alter the RFDS's usefulness as an analytical tool for NEPA analysis associated with planning-level decisions. It is the level of impacts disclosed, individually and cumulatively, that determines the validity of the NEPA analysis associated with specific planning decisions.

Given the limited scope and narrow allocation decisions being proposed in this PEIS (i.e., amending land use plans to allow certain lands to be considered for future leasing), the estimate of extensive oil and gas development given in the PEIS is considered a sufficient indicator of the magnitude of potential cumulative impacts. At the leasing or plan of development stage when the scope of the proposed action is determined, the appropriate level of additional analysis will be performed, including updated estimates of other activities occurring in the study area.

- 53001-015:** The information presented in Sections 6.1.5.2.2 and 6.2.5.2.2 seems to agree with the information provided by the commentor. For example, in Table 6.1.5-5, the predicted coal production for all field offices given is 30 to 34 million tons/yr, as stated in the comment (most occurring in the Henry Mountain Planning Area). The information that about 13% of the production would be from surface mines and 87% from underground mining has been added to Tables 6.1.5-5 and 6.2.5-4.
- 53001-016:** Thank you for your comment. The suggested changes have been made in the tables.
- 53001-017:** The commentor is correct. The statements in Sections 6.1.6.2.2 and 6.2.5.2.4 have been changed to state that gilsonite is produced in the Book Cliffs area.
- 53001-018:** The concerns above are discussed in Section 4.5 of the PEIS. Any proposed commercial development would have site-specific NEPA analyses, including determination of salinity impact, and would address state and local regulations on waste streams.
- 53001-019:** The text in Sections 4.5.1.3 and 5.5.1.3 has been modified to account for the EPA administration of UIC on tribal land and the potential for UIC self-enforcement by Tribes.
- 53001-020:** The PEIS is a programmatic-level document that analyzes allocation decisions. It is important to note that these allocations do not authorize the immediate leasing of the lands for commercial development. A more specific analysis of cumulative impacts of multiple oil shale and tar sands facilities in the study area may be conducted at a future step in the assessment process, when an RFDS for oil shale and/or tar sands development would be included. An RFDS was not developed for this PEIS because most of the information necessary for producing an RFDS is unknown and not reasonably available at the present experimental stage of the oil shale and tar sands industries. Assumptions based on the limited available

information would be too speculative to support a meaningful scenario. An RFDS at a future step in the assessment process would be based on a clear set of supportable assumptions associated with a leasing or development proposed action, and would address the issues of water availability and quality, air quality, climate change, and loss of wildlife habitat.

- 53001-021:** The BLM has a long history of cooperation with the Division of Wildlife Resources and it is our intent that this will continue when considering any future applications to lease or plans of development in the Book Cliffs area.
- 53001-022:** See response to Comment 53001-014.