APPENDIX C:

PROPOSED LAND USE PLAN AMENDMENTS ASSOCIATED WITH ALTERNATIVES B AND C FOR OIL SHALE AND TAR SANDS

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APPENDIX C:

PROPOSED LAND USE PLAN AMENDMENTS ASSOCIATED WITH ALTERNATIVES B AND C FOR OIL SHALE AND TAR SANDS

The U.S. Department of the Interior, Bureau of Land Management (BLM), develops land use plans to guide activities, establish management goals and approaches, and establish land use allocations within a planning area. Current land use plans are called resource management plans (RMPs); in the past, such plans were called management framework plans (MFPs), and some MFPs are still in use. Analyses conducted in this programmatic environmental impact statement (PEIS) support the amendment of specific land use plans in those field offices where oil shale and tar sands resources are located, as discussed in Chapters 2 and 6 of the PEIS. For oil shale, nine land use plans would be amended:

- Colorado
  - Glenwood Springs RMP (BLM 1988, as amended by the 2006 Roan Plateau Plan Amendment [BLM 2006a, 2007, 2008])
  - Grand Junction RMP (BLM 1987)
  - White River RMP (BLM 1997a, as amended by the 2006 Roan Plateau Plan Amendment [BLM 2006a, 2007, 2008])

- Utah
  - Book Cliffs RMP (BLM 1985)
  - Diamond Mountain RMP (BLM 1994)
  - Price River Resource Area MFP, as amended (BLM 1989)

- Wyoming
  - Great Divide RMP (BLM 1990)
  - Green River RMP (BLM 1997b, as amended by the Jack Morrow Hills Coordinated Activity Plan [BLM 2006b])
  - Kemmerer RMP (BLM 1986).

For tar sands, six land use plans would be amended:

- Utah
  - Book Cliffs RMP
  - Diamond Mountain RMP
  - Henry Mountain MFP (BLM 1982)
  - Price River Resource Area MFP, as amended
  - San Rafael Resource Area RMP (BLM 1991a)
  - San Juan Resource Area RMP (BLM 1991b).

Table C-1 presents specific information regarding the proposed amendments for each land use plan that would be associated with Alternatives B and C for oil shale, and Table C-2

presents the same information for amendments associated with Alternatives B and C for tar sands. These tables describe the individual amendments for each plan, along with the rationale for the amendment. Some of the proposed amendments are common to all land use plans; these amendments are presented first in each table. Amendments specific to individual plans are presented in the latter section of each table.

TABLE C-1 Proposed Changes and Rationales for Land Use Plan Amendments Associated with Alternatives B and C for Oil Shale[a,b]

Proposed Change and Rationale	
Alternative B	Alternative C
Amendments Common to All Land Use Plans	
Identify the most geologically prospective oil shale areas within the planning unit. *Rationale:* In accordance with the requirements of Section 369(d)(1) of the Energy Policy Act of 2005, the BLM has identified the most geologically prospective oil shale resources in Colorado and Utah as those deposits on public lands (including federal split estate) that yield 25 gal of shale oil per ton of rock (gal/ton) or more and are 25 ft thick or greater. The most geologically prospective oil shale resources in Wyoming are defined as those deposits that yield 15 gal/ton of shale oil or more and are 15 ft thick or greater.[c]	Same as Alternative B.
Specify that while the PEIS refers to "application for leasing for commercial oil shale development," the BLM could publish in the *Federal Register* one or more additional requests for expressions of interest in RD&D leasing within one or more of the states of Colorado, Utah, and Wyoming. Any new RD&D lease would have to be consistent with the applicable BLM land use plans. *Rationale:* In Section 369(c) of the Energy Policy Act of 2005, Congress expressly authorized the Secretary to make land available for leasing to conduct R&D activities with respect to technologies for the recovery of liquid fuels from oil shale. The impacts of new RD&D leasing are anticipated to be qualitatively similar to those of commercial oil shale leasing as analyzed in this PEIS. The RD&D impacts, however, are anticipated to be smaller in scale than those of commercial projects, at least until any RD&D lease might	Same as Alternative B.

TABLE C-1 (Cont.)

Proposed Change and Rationale	
Alternative B	Alternative C
Amendments Common to All Land Use Plans (Cont.)	
be converted to a commercial oil shale lease and expanded to include preference right acreage. Therefore, the analysis in the PEIS for commercial oil shale projects also provides sufficient analysis of RD&D projects for purposes of amending land use plans. New RD&D leases would be issued, if at all, only after site-specific analysis under NEPA. Conversion to commercial leases would also require an individualized NEPA document.	
Specify that commercial leasing will occur utilizing a lease by application process described in Section 2.3.3. The process will require that additional NEPA analysis be conducted prior to lease issuance. Information collected as part of the lease application process will be incorporated into the NEPA analysis.	Same as Alternative B.
Rationale: The BLM has concluded that, at this time, it does not have adequate information on the (1) potential magnitude and pace of commercial development, (2) potential locations for commercial leases, (3) technologies that will be employed, (4) size or production level of individual commercial projects, and (5) development time lines for individual projects to support decisions about lease issuance. As a result, the BLM is deferring decisions regarding lease issuance into the future and specifying that prior to processing applications for commercial leases for oil shale development, applicants will be required to identify key information regarding aspects of the proposed development needed to support a complete NEPA review (e.g., technologies to be employed, level of planned development, anticipated off-site impacts, strategies to comply with regulatory requirements, and so forth). During this NEPA review, the BLM will identify and establish appropriate lease stipulations to mitigate anticipated impacts.	

TABLE C-1 (Cont.)

Proposed Change and Rationale	
Alternative B	Alternative C
Amendments Common to All Land Use Plans (Cont.)	
Specify that approval of the project-specific plan of operation will require NEPA review to consider site-specific and project-specific factors. The NEPA review for the plan of operations may be incorporated into NEPA for the lease application if adequate operational data are provided by the applicant(s). *Rationale:* Conducting additional NEPA review prior to approval of project-specific plans of operation will allow the BLM to identify and require appropriate mitigation measures as needed to control impacts beyond those established in the lease stipulations.	Same as Alternative B.
Specify that the BLM will consider and give priority to the use of land exchanges, where appropriate and feasible, to consolidate land ownership and mineral interests within the oil shale basins. *Rationale:* Section 369(n) of the Energy Policy Act of 2005 requires the Secretary of the Interior (the "Secretary") to consider and give priority to the use of land exchanges to facilitate the recovery of unconventional fuels. The Act states "…to facilitate the recovery of oil shale and tar sands, especially in areas where Federal, State, and private lands are intermingled, the Secretary shall consider the use of land exchanges where appropriate and feasible to consolidate land ownership and mineral interests into manageable areas." The Act also dictates that any land exchange undertaken shall be implemented in accordance with Section 206 of FLPMA.	Same as Alternative B.

TABLE C-1 (Cont.)

Proposed Change and Rationale	
Alternative B	Alternative C
Amendments Specific to Individual Plans	
Colorado	
Glenwood Springs RMP, Glenwood Springs Field Office	
Designate 12,424 acres of land within the most geologically prospective oil shale area as available for application for leasing for commercial oil shale development in accordance with applicable federal and state regulations and BLM policies.	Designate 3,532 acres of land within the most geologically prospective oil shale area as available for application for leasing for commercial oil shale development in accordance with applicable federal and state regulations and BLM policies.
Rationale: As described in Section 2.3.3, all lands within the most geologically prospective oil shale area that are not excluded from commercial leasing by existing laws and regulations, Executive Orders, or administrative land use plan designation, or have not been specifically excluded by the BLM for other reasons, will be available for application for commercial leasing. The acreage estimate presented here represents those lands not excluded from commercial leasing under Alternative B.	*Rationale:* As described in Section 2.3.3.2, all lands within the most geologically prospective oil shale area that are excluded from commercial leasing under Alternative B also will be excluded under Alternative C. In addition, lands that are identified as requiring special management or resource protection in existing land use plans also will be excluded in order to provide maximum protection to the resources present in those areas. The acreage estimate presented here represents those lands not excluded from commercial leasing under Alternative C.
Specify that applications for commercial leases using surface mining technologies will not be accepted in the planning area.	Same as Alternative B.
Rationale: As described in Section 2.3.1, surface mining will only be allowed in areas where the overburden is 0 to 500 ft thick because 500 ft is assumed to be the maximum amount of overburden where surface mining can occur economically, using today's technologies. Within the most geologically prospective oil shale area defined in the Piceance Basin in Colorado, the areas where the overburden is 0 to 500 ft thick are very limited, and it would be difficult to assemble a logical mining unit (see Figure 2.3-1).[d]	

TABLE C-1 (Cont.)

Proposed Change and Rationale	
Alternative B	Alternative C
Amendments Specific to Individual Plans (Colorado Cont.)	
Grand Junction RMP, Grand Junction Field Office Designate 4,024 acres of land within the most geologically prospective oil shale area as available for application for leasing for commercial oil shale development in accordance with applicable federal and state regulations and BLM policies.	Designate 4,014 acres of land within the most geologically prospective oil shale area as available for application for leasing for commercial oil shale development in accordance with applicable federal and state regulations and BLM policies.
Rationale: As described in Section 2.3.3, all lands within the most geologically prospective oil shale area that are not excluded from commercial leasing by existing laws and regulations, Executive Orders, or administrative land use plan designation, or have not been specifically excluded by the BLM for other reasons, will be available for application for commercial leasing. The acreage estimate presented here represents those lands not excluded from commercial leasing under Alternative B.	*Rationale:* As described in Section 2.3.3.2, all lands within the most geologically prospective oil shale area that are excluded from commercial leasing under Alternative B also will be excluded under Alternative C. In addition, lands that are identified as requiring special management or resource protection in existing land use plans also will be excluded in order to provide maximum protection to the resources present in those areas. The acreage estimate presented here represents those lands not excluded from commercial leasing under Alternative C.
Specify that applications for commercial leases using surface mining technologies will not be accepted in the planning area.	Same as Alternative B.
Rationale: As discussed in Section 2.3.1, surface mining will only be allowed in areas where the overburden is 0 to 500 ft thick, because 500 ft is assumed to be the maximum amount of overburden where surface mining can occur economically, using today's technologies. Within the most geologically prospective oil shale area defined in the Piceance Basin in Colorado, the areas where the overburden is 0 to 500 ft thick are very limited, and it would be difficult to assemble a logical mining unit (see Figure 2.3-1).[c]	

TABLE C-1 (Cont.)

Proposed Change and Rationale	
Alternative B	Alternative C
Amendments Specific to Individual Plans (Colorado Cont.)	
White River RMP, White River Field Office Designate 343,358 acres of land within the most geologically prospective oil shale area as available for application for leasing for commercial oil shale development in accordance with applicable federal and state regulations and BLM policies.	Designate 32,780 acres of land within the most geologically prospective oil shale area as available for application for leasing for commercial oil shale development in accordance with applicable federal and state regulations and BLM policies.
In addition, the existing decision in the White River RMP regarding the prohibition of oil shale leasing within the Piceance Creek Dome area would be eliminated.	In addition, the existing decision in the White River RMP regarding the prohibition of oil shale leasing within the Piceance Creek Dome area would be eliminated.
Rationale: As described in Section 2.3.3, all lands within the most geologically prospective oil shale area that are not excluded from commercial leasing by existing laws and regulations, Executive Orders, or administrative land use plan designation, or have not been specifically excluded by the BLM for other reasons, will be available for application for commercial leasing (i.e., commercial and/or RD&D). The acreage estimate presented here represents those lands not excluded from commercial leasing under Alternative B.	Rationale: As described in Section 2.3.3.2, all lands within the most geologically prospective oil shale area that are excluded from commercial leasing under Alternative B also will be excluded under Alternative C. In addition, lands that are identified as requiring special management or resource protection in existing land use plans also will be excluded in order to provide maximum protection to the resources present in those areas. The acreage estimate presented here represents those lands not excluded from commercial leasing under Alternative C.
Specify that applications for commercial leases using surface mining technologies will not be accepted in the planning area.	Same as Alternative B.
Rationale: As described in Section 2.3.1, surface mining will only be allowed in areas where the overburden is 0 to 500 ft thick, because 500 ft is assumed to be the maximum amount of overburden where surface mining can occur economically using today's technologies. Within the most geologically prospective oil shale area defined in the Piceance Basin in Colorado, the areas where the overburden is 0 to 500 ft thick are very limited, and it would be difficult to assemble a logical mining unit (see Figure 2.3-1).[d]	

TABLE C-1 (Cont.)

Proposed Change and Rationale	
Alternative B	Alternative C
Amendments Specific to Individual Plans (Colorado Cont.)	
Specify that certain decisions regarding oil shale leasing and development contained in the current RMP will be removed from the RMP. Specifically, the decisions that will be removed include those designating (1) that 294,680 acres of land are available for oil shale leases, of which 39,140 acres are available for surface mining, and (2) that lands within the "Piceance dome area" are currently closed to leasing for oil shale development. The RMP amendments will retain the existing decision regarding the 70,820-acre (which is included in total acres available for oil shale lease) Multimineral Zone (see Figure 3.1.1-3) that requires that the commercial development of oil shale, nahcolite, and dawsonite will only be allowed in this area if recovery technologies are implemented to ensure that each of these minerals can be recovered without preventing recovery of the others. *Rationale:* The BLM has determined that it will make all lands within the most geologically prospective oil shale area available for application for leasing, except that surface mining lease applications will not be accepted (see above). The BLM also has determined that it will not preclude commercial oil shale leasing in areas, such as the Piceance dome area, where extensive oil and gas leases exist. Decisions about commercial mineral development will be driven by primary lease holders. The decision to maintain the restrictions associated with the Multimineral Zone will continue protection of the potential commercial value of all mineral resources within this area.	Same as Alternative B.

TABLE C-1 (Cont.)

Proposed Change and Rationale	
Alternative B	Alternative C
Amendments Specific to Individual Plans (Colorado Cont.)	
Utah	
Book Cliffs RMP, Vernal Field Office Designate 531,593 acres of land within the most geologically prospective oil shale area as available for application for leasing for commercial oil shale development in accordance with applicable federal and state regulations and BLM policies.	Designate 423,434 acres of land within the most geologically prospective oil shale area as available for application for leasing for commercial oil shale development in accordance with applicable federal and state regulations and BLM policies.
Rationale: As described in Section 2.3.3, all lands within the most geologically prospective oil shale area that are not excluded from commercial leasing by existing laws and regulations, Executive Orders, or administrative land use plan designation, or have not been specifically excluded by the BLM for other reasons, will be available for application for commercial leasing. The acreage estimate presented here represents those lands not excluded from commercial leasing under Alternative B.	*Rationale:* As described in Section 2.3.3.2, all lands within the most geologically prospective oil shale area that are excluded from commercial leasing under Alternative B, also will be excluded under Alternative C. In addition, lands that are identified as requiring special management or resource protection in existing land use plans also will be excluded in order to provide maximum protection to the resources present in those areas. The acreage estimate presented here represents those lands not excluded from commercial leasing under Alternative C.
Specify that applications for commercial leases using surface mining technologies will only be accepted within an area of 85,640 acres within the most geologically prospective oil shale area where the overburden is 0 to 500 ft thick (see Figure 2.3-1). Applications for commercial leasing using surface mining technologies will not be accepted in any other areas.	Same as Alternative B.
Rationale: As described in Section 2.3.1, surface mining will only be allowed in areas where the overburden is 0 to 500 ft thick, because 500 ft is assumed to be the maximum amount of overburden where surface mining can occur economically using today's technologies.	

TABLE C-1 (Cont.)

Proposed Change and Rationale	
Alternative B	Alternative C
Amendments Specific to Individual Plans (Utah Cont.)	
Specify that the Ute Indian Tribe will be consulted regarding potential leasing for commercial oil shale development on 57,657 acres of split estate lands located in the Hill Creek Extension of the Uintah and Ouray Reservation prior to considering any parcel for leasing; *Rationale:* During the tribal consultation process conducted in conjunction with this PEIS, the Ute Indian Tribe requested that such consultation be conducted.	No comparable amendment because the split estate lands in the Hill Creek Extension of the Uintah and Ouray Reservation are not available for application for leasing under Alternative C.
Specify that certain decisions designating five areas totaling 48,000 acres as priority management areas for oil shale leasing will be removed from the RMP. Specifically, the decisions to be removed include those designating (1) three areas totaling 42,000 acres as available for underground mining, and (2) two areas totaling 6,000 acres as available for in-situ development. *Rationale:* The BLM has determined that it will make all lands within the most geologically prospective oil shale area available for application for leasing.	Same as Alternative B.
<u>Diamond Mountain RMP, Vernal Field Office</u> Designate 100,556 acres of land within the most geologically prospective oil shale area as available for application for leasing for commercial oil shale development in accordance with applicable federal and state regulations and BLM policies.	Designate 74,359 acres of land within the most geologically prospective oil shale area as available for application for leasing for commercial oil shale development in accordance with applicable federal and state regulations and BLM policies.

TABLE C-1 (Cont.)

Proposed Change and Rationale	
Alternative B	Alternative C
Amendments Specific to Individual Plans (Utah Cont.)	
Rationale: As described in Section 2.3.3, all lands within the most geologically prospective oil shale area that are not excluded from commercial leasing by existing laws and regulations, Executive Orders, or administrative land use plan designation, or have not been specifically excluded by the BLM for other reasons, will be available for application for commercial leasing. The acreage estimate presented here represents those lands not excluded from commercial leasing under Alternative B.	*Rationale:* As described in Section 2.3.3.2, all lands within the most geologically prospective oil shale area that are excluded from commercial leasing under Alternative B also will be excluded under Alternative C. In addition, lands that are identified as requiring special management or resource protection in existing land use plans also will be excluded in order to provide maximum protection to the resources present in those areas. The acreage estimate presented here represents those lands not excluded from commercial leasing under Alternative C.
Specify that applications for commercial leases using surface mining technologies will not be accepted in the planning area. *Rationale:* As described in Section 2.3.1, surface mining will only be allowed in areas where the overburden is 0 to 500 ft thick, because 500 ft is assumed to be the maximum amount of overburden where surface mining can occur economically using today's technologies. Within the Diamond Mountain RMP planning area, there are no areas where the overburden is 0 to 500 ft thick (see Figure 2.3-1).[d]	Same as Alternative B.
<u>Price River Resource Area MFP, Price Field Office</u> Designate 107 acres of land within the most geologically prospective oil shale area as available for application for leasing for commercial oil shale development in accordance with applicable federal and state regulations and BLM policies.	Designate 87 acres of land within the most geologically prospective oil shale area as available for application for leasing for commercial oil shale development in accordance with applicable federal and state regulations and BLM policies.

TABLE C-1 (Cont.)

Proposed Change and Rationale	
Alternative B	Alternative C
Amendments Specific to Individual Plans (Utah Cont.)	
Rationale: As described in Section 2.3.3, all lands within the most geologically prospective oil shale area that are not excluded from commercial leasing by existing laws and regulations, Executive Orders, or administrative land use plan designation, or have not been specifically excluded by the BLM for other reasons, will be available for application for commercial leasing. The acreage estimate presented here represents those lands not excluded from commercial leasing under Alternative B.	*Rationale:* As described in Section 2.3.3.2, all lands within the most geologically prospective oil shale area that are excluded from commercial leasing under Alternative B also will be excluded under Alternative C. In addition, lands that are identified as requiring special management or resource protection in existing land use plans also will be excluded in order to provide maximum protection to the resources present in those areas. The acreage estimate presented here represents those lands not excluded from commercial leasing under Alternative C.
Specify that applications for commercial leases using surface mining technologies will not be accepted in the planning area.	Same as Alternative B.
Rationale: As described in Section 2.3.1, surface mining will only be allowed in areas where the overburden is 0 to 500 ft thick, because 500 ft is assumed to be the maximum amount of overburden where surface mining can occur economically using today's technologies. Within the Price River Resource Area MFP planning area, there are no areas where the overburden is 0 to 500 ft thick (see Figure 2.3-1).[d]	
Wyoming	
Great Divide RMP, Rawlins Field Office Designate 68,405 acres of land within the most geologically prospective oil shale area as available for application for leasing for commercial oil shale development in accordance with applicable federal and state regulations and BLM policies.	Designate 40,376 acres of land within the most geologically prospective oil shale area as available for application for leasing for commercial oil shale development in accordance with applicable federal and state regulations and BLM policies.

TABLE C-1 (Cont.)

Proposed Change and Rationale	
Alternative B	Alternative C
Amendments Specific to Individual Plans (Wyoming Cont.)	
Rationale: As described in Section 2.3.3, all lands within the most geologically prospective oil shale area that are not excluded from commercial leasing by existing laws and regulations, Executive Orders, or administrative land use plan designation, or have not been specifically excluded by BLM for other reasons, will be available for application for commercial leasing. The acreage estimate presented here represents those lands not excluded from commercial leasing under Alternative B.	*Rationale:* As described in Section 2.3.3.2, all lands within the most geologically prospective oil shale area that are excluded from commercial leasing under Alternative B also will be excluded under Alternative C. In addition, lands that are identified as requiring special management or resource protection in existing land use plans also will be excluded in order to provide maximum protection to the resources present in those areas. The acreage estimate presented here represents those lands not excluded from commercial leasing under Alternative C.
Specify that applications for commercial leases using surface mining technologies will not be accepted in the planning area. *Rationale:* As described in Section 2.3.1, surface mining will only be allowed in areas where the overburden is 0 to 500 ft thick, because 500 ft is assumed to be the maximum amount of overburden where surface mining can occur economically using today's technologies. Within the Great Divide RMP planning area, there are no areas where the overburden is 0 to 500 ft thick (see Figure 2.3-1).[d]	Same as Alternative B.
<u>Green River RMP, Rock Springs Field Office</u> Designate 788,230 acres of land within the most geologically prospective oil shale area as available for application for leasing for commercial oil shale development in accordance with applicable federal and state regulations and BLM policies.	Designate 209,616 acres of land within the most geologically prospective oil shale area as available for application for leasing for commercial oil shale development in accordance with applicable federal and state regulations and BLM policies.

TABLE C-1 (Cont.)

Proposed Change and Rationale	
Alternative B	Alternative C
Amendments Specific to Individual Plans (Wyoming Cont.)	
Rationale: As described in Section 2.3.3, all lands within the most geologically prospective oil shale area that are not excluded from commercial leasing by existing laws and regulations, Executive Orders, or administrative land use plan designation, or have not been specifically excluded by the BLM for other reasons, will be available for application for commercial leasing. The acreage estimate presented here represents those lands not excluded from commercial leasing under Alternative B.	*Rationale:* As described in Section 2.3.3.2, all lands within the most geologically prospective oil shale area that are excluded from commercial leasing under Alternative B also will be excluded under Alternative C. In addition, lands that are identified as requiring special management or resource protection in existing land use plans also will be excluded in order to provide maximum protection to the resources present in those areas. The acreage estimate presented here represents those lands not excluded from commercial leasing under Alternative C.
Specify that applications for commercial leases using surface mining technologies will only be accepted within an area of 248,000 acres within the most geologically prospective oil shale area where the overburden is 0 to 500 ft thick (see Figure 2.3-1). Applications for commercial leasing using surface mining technologies will not be accepted in any other areas.	Specify that applications for commercial leases using surface mining technologies will only be accepted within an area of 68,200 acres within the most geologically prospective oil shale area where the overburden is 0 to 500 ft thick (see Figure 2.3-1). Applications for commercial leasing using surface mining technologies will not be accepted in any other areas.
Rationale: As described in Section 2.3.1, surface mining will only be allowed in areas where the overburden is 0 to 500 ft thick, because 500 ft is assumed to be the maximum amount of overburden where surface mining can occur economically using today's technologies.	Same as Alternative B.
Kemmerer RMP, Kemmerer Field Office Designate 143,987 acres of land within the most geologically prospective oil shale area as available for application for leasing for commercial oil shale development in accordance with applicable federal and state regulations and BLM policies.	Designate 49,544 acres of land within the most geologically prospective oil shale area as available for application for leasing for commercial oil shale development in accordance with applicable federal and state regulations and BLM policies.

TABLE C-1 (Cont.)

Proposed Change and Rationale	
Alternative B	Alternative C
Amendments Specific to Individual Plans (Wyoming Cont.)	
Rationale: As described in Section 2.3.3, all lands within the most geologically prospective oil shale area that are not excluded from commercial leasing by existing laws and regulations, Executive Orders, or administrative land use plan designation, or have not been specifically excluded by the BLM for other reasons, will be available for application for commercial leasing. The acreage estimate presented here represents those lands not excluded from commercial leasing under Alternative B.	*Rationale:* As described in Section 2.3.3.2, all lands within the most geologically prospective oil shale area that are excluded from commercial leasing under Alternative B also will be excluded under Alternative C. In addition, lands that are identified as requiring special management or resource protection in existing land use plans also will be excluded in order to provide maximum protection to the resources present in those areas. The acreage estimate presented here represents those lands not excluded from commercial leasing under Alternative C.
Specify that applications for commercial leases using surface mining technologies will not be accepted in the planning area. *Rationale:* As described in Section 2.3.1, surface mining will only be allowed in areas where the overburden is 0 to 500 ft thick, because 500 ft is assumed to be the maximum amount of overburden where surface mining can occur economically using today's technologies. Within the Kemmerer RMP planning area, there are no areas where the overburden is 0 to 500 ft thick (see Figure 2.3-1).[d]	Same as Alternative B.

[a] Abbreviations: BLM = Bureau of Land Management; FLPMA = Federal Land Policy and Management Act; MFP = management framework plan; NEPA = National Environmental Policy Act; PEIS = programmatic environmental impact statement; RD&D = research, development, and demonstration; RMP = resource management plan.

[b] Commercial leasing as used herein includes both commercial and RD&D leasing.

[c] The most geologically prospective oil shale resources in Colorado were defined on the basis of digital data provided by the U.S. Geological Survey taken from Pitman and Johnson (1978), Pitman (1979), and Pitman et al. (1989). In Utah, the most geologically prospective oil shale resources were defined by digital data provided by the BLM Utah State Office. In Wyoming, the most geologically prospective oil shale resources were defined on the basis of detailed analyses of available oil shale assay data (Wiig 2006a,b). As discussed in Section 1.2, the oil shale resource is not of as high a quality in Wyoming as it is in Colorado and Utah; therefore, the most geologically prospective oil shale resources were defined on the basis of a lower yield and thickness.

[d] The areas within the most geologically prospective oil shale areas where the overburden is 0 to 500 ft thick were mapped on the basis of a variety of sources of information. In Colorado, the area was defined on the basis of data published in Donnell (1987). In Utah, the area was mapped on the basis of data provided by the Utah Geological Survey (Tabet 2007). In Wyoming, the area was mapped on the basis of data provided by Wiig (2006a,b).

TABLE C-2 Proposed Changes and Rationales for Land Use Plan Amendments Associated with Alternatives B and C for Tar Sands[a,b]

Proposed Change and Rationale	
Alternative B	Alternative C
Amendments Common to All Land Use Plans	
Identify the most geologically prospective tar sand areas within the planning unit. *Rationale:* In accordance with the requirements of Section 369(d)(1) of the Energy Policy Act of 2005, the BLM has identified the most geologically prospective tar sand resources in Utah as those deposits on public lands (including federal split estate) within the boundaries of the Special Tar Sand Areas.[c]	Same as Alternative B.
Specify that while the PEIS refers to "application for leasing for commercial oil shale and tars sands development," the BLM could publish in *the Federal Register* one or more additional requests for expressions of interest in RD&D leasing within the state of Utah. Any new RD&D lease would have to be consistent with the applicable BLM land use plans. *Rationale:* In Section 369(c) of the Energy Policy Act of 2005, Congress expressly authorized the Secretary to make land available for leasing to conduct R&D activities with respect to technologies for the recovery of liquid fuels from oil shale and tar sands. The impacts of new RD&D leasing are anticipated to be qualitatively similar to those of commercial tar sands leasing as analyzed in this PEIS. The RD&D impacts, however, are anticipated to be smaller in scale than those of commercial projects, at least until any RD&D lease might be converted to a commercial tar sands lease and expanded to include preference right acreage. Therefore, the analysis in the PEIS for commercial tar sands projects also provides sufficient analysis of RD&D projects for purposes of amending land use plans. New RD&D leases would be issued, if at all, only after site-specific analysis under NEPA. Conversion to commercial leases would also require an individualized NEPA document.	

TABLE C-2 (Cont.)

Proposed Change and Rationale	
Alternative B	Alternative C
Amendments Common to All Land Use Plans (Cont.)	
Specify that commercial leasing will require that additional NEPA analysis be conducted prior to lease issuance. Information collected as part of the lease application process will be incorporated into the NEPA analysis. *Rationale:* The BLM has concluded that, at this time, it does not have adequate information on the (1) potential magnitude and pace of commercial development, (2) potential locations for commercial leases, (3) technologies that will be employed, (4) size or production level of individual commercial projects, and (5) development time lines for individual projects to support decisions about lease issuance. As a result, the BLM is deferring decisions regarding lease issuance into the future and specifying that prior to processing applications for commercial leases for tar sands development, applicants will be required to identify key information regarding aspects of the proposed development needed to support a complete NEPA review (e.g., technologies to be employed, level of planned development, anticipated off-site impacts, strategies to comply with regulatory requirements, etc.). During this NEPA review, the BLM will identify and establish appropriate lease stipulations to mitigate anticipated impacts.	Same as Alternative B.
Specify that approval of the project-specific plans of operation will require NEPA review to consider site-specific and project-specific factors. The NEPA review for the plan of operations may be incorporated into NEPA for the lease application if adequate operational data are provided by the applicant(s). *Rationale:* Conducting additional NEPA review prior to approval of project-specific plans of operation will allow the BLM to identify and require appropriate mitigation measures as needed to control impacts beyond those established in the lease stipulations.	Same as Alternative B.

TABLE C-2 (Cont.)

Proposed Change and Rationale	
Alternative B	Alternative C
Amendments Common to All Land Use Plans (Cont.)	
Specify that the BLM will consider and give priority to the use of land exchanges, where appropriate and feasible, to consolidate land ownership and mineral interests within the STSAs. *Rationale:* Section 369(n) of the Energy Policy Act of 2005 requires the Secretary of the Interior (the "Secretary") to consider and give priority to the use of land exchanges to facilitate the recovery of unconventional fuels. The Act states "…to facilitate the recovery of oil shale and tar sands, especially in areas where Federal, State, and private lands are intermingled, the Secretary shall consider the use of land exchanges where appropriate and feasible to consolidate land ownership and mineral interests into manageable areas." The Act also dictates that any land exchange undertaken shall be implemented in accordance with Section 206 of FLPMA.	Same as Alternative B.
Amendments Specific to Individual Plans	
Book Cliffs RMP, Vernal Field Office Designate the following amounts of land within the specific STSAs as available for application for leasing for commercial tar sands development in accordance with applicable federal and state regulations and BLM policies: Hill Creek STSA: 56,506 acres P.R. Spring STSA: 153,003 acres[d] Raven Ridge STSA: 14,364 acres	Designate the following amounts of land within the specific STSAs as available for application for leasing for commercial tar sands development in accordance with applicable federal and state regulations and BLM policies: Hill Creek STSA: 19,934 acres P.R. Spring STSA: 56,728 acres[d] Raven Ridge STSA: 9,950 acres

TABLE C-2 (Cont.)

Proposed Change and Rationale	
Alternative B	Alternative C
Amendments Specific to Individual Plans (Cont.)	
Rationale: As described in Section 2.4.3, all lands within the designated STSAs that are not excluded from commercial leasing by existing laws and regulations, Executive Orders, or administrative land use plan designation, or have not been specifically excluded by the BLM for other reasons, will be available for application for commercial leasing. The acreage estimates presented here represent those lands not excluded from commercial leasing under Alternative B.	*Rationale:* As described in Section 2.4.3.2, all lands within the designated STSAs that are excluded from commercial leasing under Alternative B also will be excluded under Alternative C. In addition, lands that are identified as requiring special management or resource protection in existing land use plans also will be excluded in order to provide maximum protection to the resources present in those areas. The acreage estimates presented here represent those lands not excluded from commercial leasing under Alternative C.
Specify that the Ute Indian Tribe will be consulted regarding potential leasing for commercial tar sands development on split estate lands located in the Hill Creek Extension of the Uintah and Ouray Reservation prior to considering any parcel for leasing. These lands fall entirely within the Hill Creek STSA.	No comparable amendment because the split estate lands in the Hill Creek Extension of the Uintah and Ouray Reservation are not available for application for leasing under Alternative C.
Rationale: During the tribal consultation process conducted in conjunction with this PEIS, the Ute Indian Tribe requested that such consultation be conducted.	
Diamond Mountain RMP, Vernal Field Office Designate the following amounts of land within the specific STSAs as available for application for leasing for commercial tar sands development in accordance with applicable federal and state regulations and BLM policies:	Designate the following amounts of land within the specific STSAs as available for application for leasing for commercial tar sands development in accordance with applicable federal and state regulations and BLM policies:
Argyle Canyon STSA: 11,226 acres Asphalt Ridge STSA: 5,435 acres Sunnyside STSA: 16,101 acres	Argyle Canyon STSA: 0 acres Asphalt Ridge STSA: 1,464 acres Sunnyside STSA: 1,199 acres

TABLE C-2 (Cont.)

Proposed Change and Rationale	
Alternative B	Alternative C
Amendments Specific to Individual Plans (Cont.)	
Rationale: As described in Section 2.4.3, all lands within the designated STSAs that are not excluded from commercial leasing by existing laws and regulations, Executive Orders, or administrative land use plan designation, or have not been specifically excluded by the BLM for other reasons, will be available for application for commercial leasing. The acreage estimates presented here represent those lands not excluded from commercial leasing under Alternative B.	*Rationale:* As described in Section 2.4.3.2, all lands within the designated STSAs that are excluded from commercial leasing under Alternative B, also will be excluded under Alternative C. In addition, lands that are identified as requiring special management or resource protection in existing land use plans also will be excluded in order to provide maximum protection to the resources present in those areas. The acreage estimates presented here represent those lands not excluded from commercial leasing under Alternative C.
Henry Mountain MFP, Richfield Field Office Designate 24,938 acres of land within the Tar Sand Triangle STSA as available for application for leasing for commercial tar sands development in accordance with applicable federal and state regulations and BLM policies.	Designate 22,511 acres of land within the Tar Sand Triangle STSA as available for application for leasing for commercial tar sands development in accordance with applicable federal and state regulations and BLM policies.
Rationale: As described in Section 2.4.3, all lands within the designated STSAs that are not excluded from commercial leasing by existing laws and regulations, Executive Orders, or administrative land use plan designation, or have not been specifically excluded by the BLM for other reasons, will be available for application for commercial leasing. The acreage estimate presented here represents those lands not excluded from commercial leasing under Alternative B.	*Rationale:* As described in Section 2.4.3.2, all lands within the designated STSAs that are excluded from commercial leasing under Alternative B, also will be excluded under Alternative C. In addition, lands that are identified as requiring special management or resource protection in existing land use plans also will be excluded in order to provide maximum protection to the resources present in those areas. The acreage estimate presented here represents those lands not excluded from commercial leasing under Alternative C.
Price River Resource Area MFP, Price Field Office Designate the following amounts of land within the specific STSAs as available for application for leasing for commercial tar sands development in accordance with applicable federal and state regulations and BLM policies:	Designate the following amounts of land within the specific STSAs as available for application for leasing for commercial tar sands development in accordance with applicable federal and state regulations and BLM policies:
San Rafael STSA: 125 acres Sunnyside STSA: 62,076 acres	San Rafael STSA: 30 acres Sunnyside STSA: 61,602 acres

TABLE C-2 (Cont.)

Proposed Change and Rationale	
Alternative B	Alternative C
Amendments Specific to Individual Plans (Cont.)	
Rationale: As described in Section 2.4.3, all lands within the designated STSAs that are not excluded from commercial leasing by existing laws and regulations, Executive Orders, or administrative land use plan designation, or have not been specifically excluded by the BLM for other reasons, will be available for application for commercial leasing. The acreage estimates presented here represent those lands not excluded from commercial leasing under Alternative B.	*Rationale:* As described in Section 2.4.3.2, all lands within the designated STSAs that are excluded from commercial leasing under Alternative B also will be excluded under Alternative C. In addition, lands that are identified as requiring special management or resource protection in existing land use plans also will be excluded in order to provide maximum protection to the resources present in those areas. The acreage estimates presented here represent those lands not excluded from commercial leasing under Alternative C.
San Rafael Resource Area RMP, Price Field Office Designate 70,348 acres of land within the San Rafael STSA as available for application for leasing for commercial tar sands development in accordance with applicable federal and state regulations and BLM policies.	Designate 54,460 acres of land within the San Rafael STSA as available for application for leasing for commercial tar sands development in accordance with applicable federal and state regulations and BLM policies.
Rationale: As described in Section 2.4.3, all lands within the designated STSAs that are not excluded from commercial leasing by existing laws and regulations, Executive Orders, or administrative land use plan designation, or have not been specifically excluded by the BLM for other reasons, will be available for application for commercial leasing. The acreage estimate presented here represents those lands not excluded from commercial leasing under Alternative B.	*Rationale:* As described in Section 2.4.3.2, all lands within the designated STSAs that are excluded from commercial leasing under Alternative B also will be excluded under Alternative C. In addition, lands that are identified as requiring special management or resource protection in existing land use plans also will be excluded in order to provide maximum protection to the resources present in those areas. The acreage estimate presented here represents those lands not excluded from commercial leasing under Alternative C.
San Juan Resource Area RMP, Monticello Field Office Designate 7,001 acres of land within the White Canyon STSA as available for application for leasing for commercial tar sands development in accordance with applicable federal and state regulations and BLM policies.	Designate 386 acres of land within the White Canyon STSA as available for application for leasing for commercial tar sands development in accordance with applicable federal and state regulations and BLM policies.

TABLE C-2 (Cont.)

Proposed Change and Rationale	
Alternative B	Alternative C
Amendments Specific to Individual Plans (Cont.)	
Rationale: As described in Section 2.4.3, all lands within the designated STSAs that are not excluded from commercial leasing by existing laws and regulations, Executive Orders, or administrative land use plan designation, or have not been specifically excluded by the BLM for other reasons, will be available for application for commercial leasing. The acreage estimate presented here represents those lands not excluded from commercial leasing under Alternative B.	*Rationale:* As described in Section 2.4.3.2, all lands within the designated STSAs that are excluded from commercial leasing under Alternative B also will be excluded under Alternative C. In addition, lands that are identified as requiring special management or resource protection in existing land use plans also will be excluded in order to provide maximum protection to the resources present in those areas. The acreage estimate presented here represents those lands not excluded from commercial leasing under Alternative C.

[a] Abbreviations: BLM = Bureau of Land Management; FLPMA = Federal Land Policy and Management Act; MFP = management framework plan; NEPA = National Environmental Policy Act; PEIS = programmatic environmental impact statement; RD&D = research, development, and demonstration; RMP = resource management plan; STSA = Special Tar Sand Area.

[b] Commercial leasing as used herein includes both commercial and RD&D leasing.

[c] The tar sands resources available for application for leasing under Alternatives B and C include deposits located in the designated STSAs described in the geologic reports (minutes) prepared by the U.S. Geological Survey (USGS) in 1980 (USGS 1980a–k) and formalized by Congress in the Combined Hydrocarbon Leasing Act of 1981 (Public Law 97-78). The boundaries of the designated STSAs were determined by the Secretary of the Interior's orders of November 20, 1980 (Volume 45, pages 76800–76801 [45 FR 76800–76801]), and January 21, 1981 (46 FR 6077–6078).

[d] A portion of the P.R. Spring STSA extends south from the Vernal Field Office boundary into the Moab Field Office boundary; however, this area is administered by the Vernal Field Office under a Memorandum of Understanding with the Moab Field Office. Under this agreement, the Vernal Field Office administers all resources and programs, including land use planning, for the entire P.R. Spring STSA. Therefore, the Moab Field Office plan is not impacted by this PEIS. Under Alternative B, the acreage in the P.R. Spring STSA includes 14,406 acres of land within the Moab Field Office boundary. Under Alternative C, the acreage in the P.R. Spring STSA includes 1,874 acres of land within the Moab Field Office boundary.

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Note to Reader: This list of references identifies Web pages and associated URLs where reference data were obtained. It is likely that at the time of publication of this PEIS, some of these Web pages may no longer be available or their URL addresses may have changed.

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