

Final Report

**SUMMARY OF PUBLIC SCOPING COMMENTS FOR THE
PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT AND POSSIBLE
LAND USE PLAN AMENDMENTS FOR ALLOCATION OF OIL SHALE AND TAR
SANDS RESOURCES ON LANDS ADMINISTERED BY THE BUREAU OF LAND
MANAGEMENT IN COLORADO, UTAH, AND WYOMING.**

**Prepared by
Argonne National Laboratory**

**Prepared for
Solid Minerals Group
Bureau of Land Management
Washington, D.C.**

October 2011

This page intentionally blank.

CONTENTS

NOTATION iv

1 INTRODUCTION 1

2 SCOPING PROCESS 4

 2.1 Approach..... 4

 2.2 Scoping Statistics 4

3 SUMMARY OF SCOPING COMMENTS 5

 3.1 Environmental Issues 6

 3.2 Socioeconomics 20

 3.3 Resource and Technology Concerns..... 21

 3.4 Stakeholder Involvement 23

 3.5 Cumulative Impacts 24

 3.6 Mitigation and Reclamation..... 24

 3.7 Land Use Planning and Leasing 25

 3.8 Policy 26

 3.9 Alternatives 29

 3.10 Other Issues..... 31

4 INTERAGENCY COOPERATION AND GOVERNMENT-TO-GOVERNMENT
CONSULTATION..... 32

5 FUTURE OPPORTUNITIES FOR PUBLIC INVOLVEMENT 32

6 REFERENCES 32

FIGURES

1 Most Geologically Prospective Oil Shale Resources within the Green River Formation
Basins in Colorado, Utah, and Wyoming 2

2 Special Tar Sand Areas in Utah. 3

NOTATION

ACEC	Area of Critical Environmental Concern
AQRV	Air quality related value
BLM	Bureau of Land Management
BOR	Bureau of Reclamation
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CO	Colorado
CO ₂	carbon dioxide
CPW	Citizen Proposed Wilderness
CWA	Clean Water Act
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FLPMA	Federal Land Policy and Management Act
FO	Field Office
FS	Forest Service
FWS	Fish and Wildlife Service
GAO	Government Accountability Office
GHG	greenhouse gas
HIA	Health Impact Assessment
ICP	In-situ Conversion Process
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act of 1969
NLCS	National Landscape Conservation System
NOI	Notice of Intent
NPS	National Park Service
NSO	no surface occupancy
NSS1	Native Species Status 1
NSS2	Native Species Status 2
NWR	National Wildlife Refuge
ONA	Outstanding Natural Areas
OSTS	oil shale and tar sands
PEIS	programmatic environmental impact statement
PSD	Prevention of Significant Deterioration

NOTATION (*cont'd.*)

RD&D	research, development, and demonstration
RFD	reasonable foreseeable development
RMP	Resource Management Plan
RNA	Research Natural Areas
ROD	Record of Decision
ROI	return on investment
SGCN	Species of Greatest Conservation Need
SMA	Special Management Area
SO	Secretarial Order
SWA	State Wildlife Areas
UNCCC	United Nations Framework Convention on Climate Change
U.S.	United States
USGS	U.S. Geological Survey
UT	Utah
WY	Wyoming
WSA	Wilderness Study Areas

**SUMMARY OF PUBLIC SCOPING COMMENTS FOR THE
PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT AND POSSIBLE
LAND USE PLAN AMENDMENTS FOR ALLOCATION OF OIL SHALE AND TAR
SANDS RESOURCES ON LANDS ADMINISTERED BY THE BUREAU OF LAND
MANAGEMENT IN COLORADO, UTAH, AND WYOMING.**

1 INTRODUCTION

In 2008, the U.S. Department of the Interior, Bureau of Land Management (BLM) amended eight Resource Management Plans (RMPs) in Colorado, Utah, and Wyoming to make public lands available for the potential leasing and development of oil shale resources, and two land use plans to expand the acreage available for potential tar sands leasing in Utah, where these resources are located. Figures 1 and 2 show the locations of oil shale and tar sands resources. The amendments, supported by the preparation of a programmatic environmental impact statement (PEIS) required under Section 369(d)(1) of the Energy Policy Act of 2005, Public Law 109-58 (H.R. 6), made approximately 2 million acres available for potential leasing and development. The *Proposed Oil Shale and Tar Sands Resources Management Plan Amendments to Address Land Use Allocations in Colorado, Utah, and Wyoming and Final Programmatic Environmental Impact Statement* (BLM 2008a) and resulting Record of Decision (ROD) (BLM 2008b) provide detailed maps and more specific information about the geographic area studied in 2008.

In April, 2011, the BLM initiated new efforts to prepare a PEIS that will reexamine the allocation of land best suited for oil shale and tar sands leasing and development. These new efforts, which may lead the BLM to consider amending the 10 RMPs previously amended, will take into consideration the nascent character of technology for developing oil shale and tar sands resources and new information made available since the 2008 ROD, including, but not limited to, the U.S. Geological Survey (USGS) reassessment of oil shale resource estimates and U.S. Fish and Wildlife Service's (FWS) announcement that the greater sage-grouse, *Centrocercus urophasianus*, was warranted for listing as a threatened or endangered species under the Endangered Species Act (ESA), though the listing was precluded by higher priority listing actions). The new PEIS will analyze and document the environmental, social-cultural, and economic considerations associated with alternative approaches for allocation of oil shale and tar sands resources, in order to consider whether it is appropriate for approximately 2,000,000 acres of public lands to remain available for potential leasing and development of oil shale, and approximately 431,000 acres of public lands to remain available for potential leasing and development of tar sands resources.

A Notice of Intent (NOI) to prepare a PEIS and possible land use plan amendments for allocation of oil shale and tar sands resources on lands administered by the Bureau of Land Management in Colorado, Utah, and Wyoming was published in the *Federal Register* on April 14, 2011 (BLM 2011). The NOI articulated a preliminary purpose and need for the proposed action of amending land use plans, 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, including identification of issues and alternatives that should be

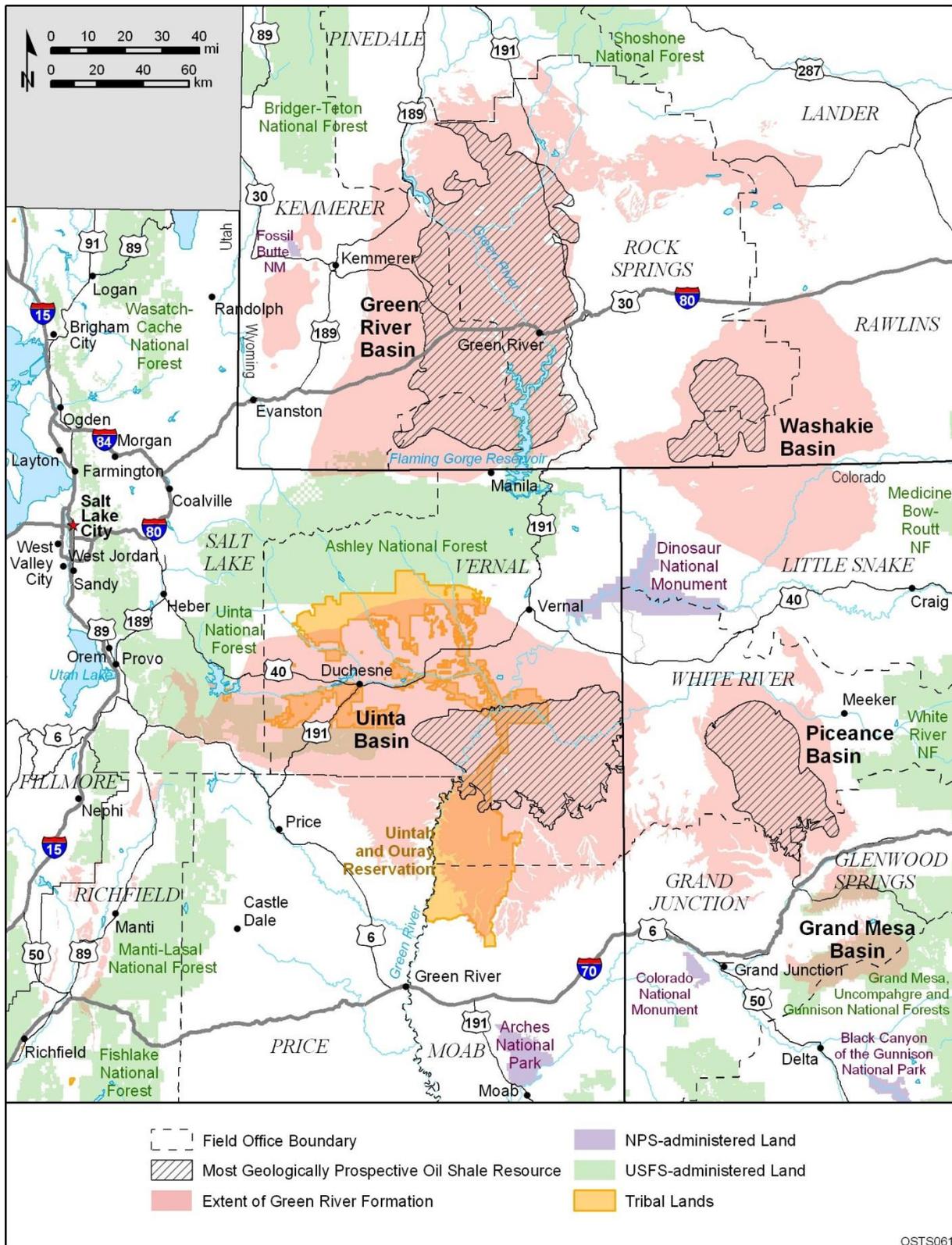


FIGURE 1. Most Geologically Prospective Oil Shale Resources within the Green River Formation Basins in Colorado, Utah, and Wyoming. Source: BLM (2008a).

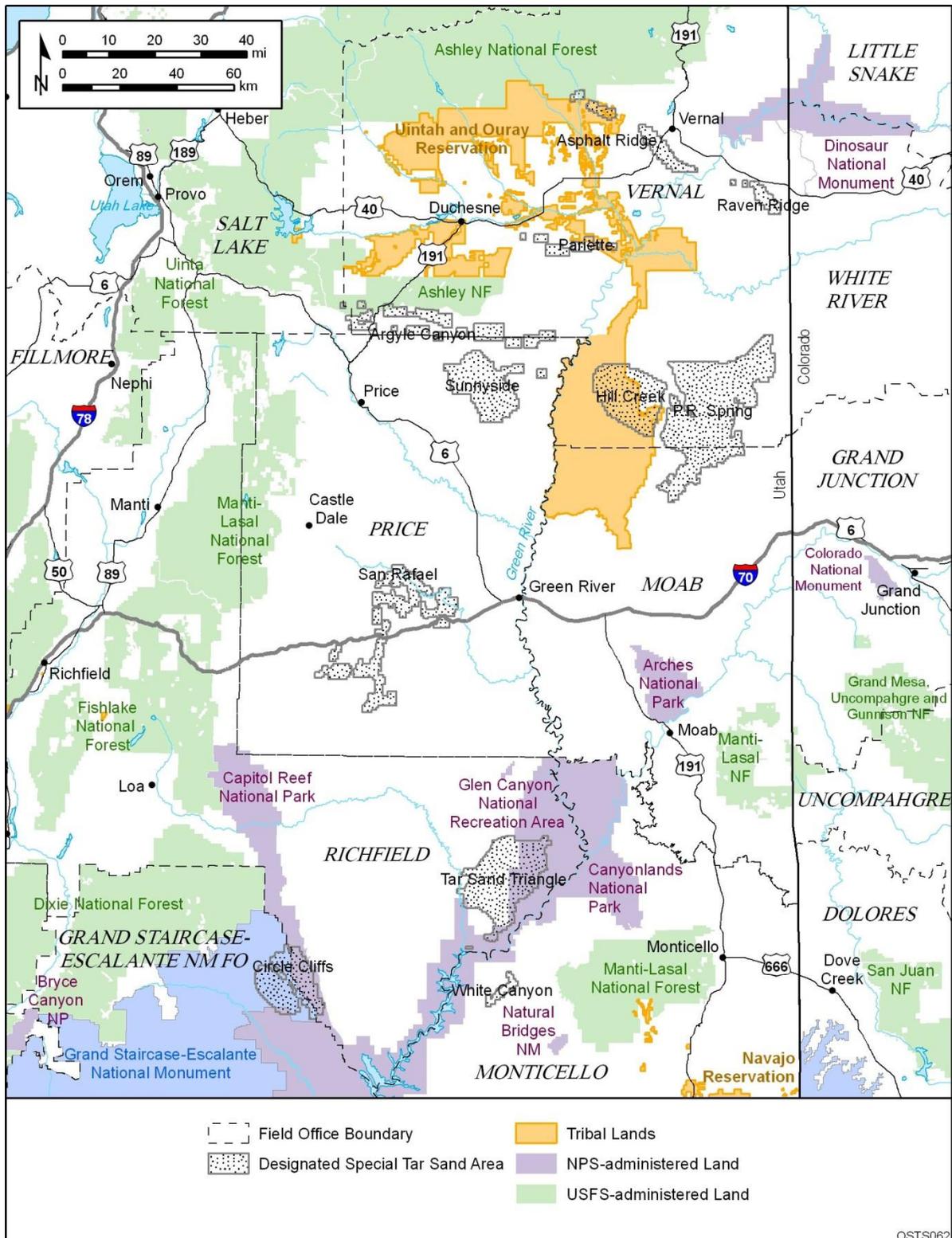


FIGURE 2. Special Tar Sand Areas in Utah. Source: BLM (2008a).

considered in the PEIS analyses. The NOI also sought information about historic and cultural resources within the areas potentially affected by the proposed land use plan amendments to assist in analyzing the potential impacts of the planning decisionmaking under consideration in the context of both NEPA and section 106 of the NHPA. The BLM conducted 14 public scoping meetings for the PEIS within the three states region covered by the PEIS from April 26, 2011, through May 5, 2011.

This report presents a summary of the comments received during the scoping process and is intended to assist the BLM in developing the scope of the analyses to be considered in preparing the PEIS. Specific comments and their context are not presented; instead, the relevant issues raised in the comments as they apply to preparation of the PEIS are presented. All comments, regardless of how they were submitted, will receive equal consideration in the development and conduct of the PEIS. This report is available on the OSTIS PEIS website (<http://ostseis.anl.gov>).

2 SCOPING PROCESS

2.1 APPROACH

The public was provided with three methods for submitting scoping comments or suggestions on potential resource issues that should be discussed in the OSTIS PEIS and used to inform consultation activities:

- Via a public website,
- By mail, and
- In person at public scoping meetings.

Public scoping meetings were held at seven locations in April and May of 2011: Salt Lake City, Utah (April 26); Price, Utah (April 27); Vernal, Utah (April 28); Rock Springs, Wyoming (April 29); Rifle, Colorado (May 3); Denver, Colorado (May 4); and Cheyenne, Wyoming (May 5). Meetings were held at 1:00 p.m. and 7:00 p.m. at each location, and a court reporter recorded a transcript for each meeting. At each meeting, the BLM presented background information about the OSTIS PEIS and related activities. Presentation materials from these meetings, including slides, are available on the project website (<http://ostseis.anl.gov>).

2.2 SCOPING STATISTICS

Approximately 4,663 individuals, organizations, and governmental agencies provided comments or suggestions on the scope of the PEIS. Three of these comments were part of major campaigns, each campaign involving an email attachment containing essentially the same letter for each individual submittal. In total, these campaigns represented an additional 23,860 commenters. Approximately 3,061 comment letters were submitted online, 133 were submitted orally at scoping meetings, and 37 comment letters were submitted by mail. Comments were received from 5 state agency divisions (1 from Utah, 2 from Colorado, and 2 from Wyoming), 4

federal agency offices (1 from the National Park Service (NPS), 1 from the U.S. Fish and Wildlife Service, 1 from the U.S. Environmental Protection Agency (EPA), and 1 from the U.S. Congressional Task Force on Unconventional Fuels), 14 local government organizations (Colorado: Garfield, Mesa, Pitkin, and Rio Blanco Counties; City of Rifle; Towns of New Castle, Rangely, and Silt; Utah: Carbon and Uintah Counties; Wyoming: Board of Lincoln County Commissioners; Coalition of Local Governments; Rock Springs City Council; and Sweetwater County Board of Commissioners), and more than 80 other organizations (including environmental groups, interest groups, consulting firms, and industry).

More than 392 people registered their attendance at the public meetings in April and May 2011; 133 individuals in attendance provided oral or written comments, or both, during the meetings. Of the remaining scoping comments that were submitted, about 0.1% were submitted by mail and 99% were submitted online.

Comments received by mail originated from 5 states, and the District of Columbia. Approximately 4% of the comments originated from states outside the three-state study area. The comments that originated within the study area were distributed as follows: 81 comments from Colorado, 80 comments from Utah, and 14 comments from Wyoming.

3 SUMMARY OF SCOPING COMMENTS

Comments received during public scoping covered a wide range of topics and issues and represented a variety of points of view. Comments addressed various aspects of the proposed action, from environmental and socioeconomic impacts, to technologies, to mitigation and reclamation, to land use conflicts, planning, and leasing. Many of the comments did not directly address the scope of the PEIS to be prepared, but fell into general categories that will influence the scope of issues covered in the PEIS.

Issues discussed in comments received during the public scoping period for the OSTs PEIS will be divided into three major categories in the preparation of the PEIS: (1) issues within the scope of the PEIS; (2) issues outside the scope of the PEIS, but which may present related policy considerations; and (3) issues outside the scope of the PEIS as defined in the April 14, 2011 NOI (BLM 2011). A preliminary disposition of these issues is presented below; this disposition may change as the purpose and need for the proposed action is refined, and the alternatives further developed. The Draft PEIS will present the final outcome of this classification process within a discussion of the scope of the PEIS analysis.

Issues within the scope of the PEIS would include questions and concerns regarding the environmental and socioeconomic impacts of oil shale and tar sands (OSTs) development, resource assessments, sources and impacts of power production required for development, technologies to be used, stakeholder participation NEPA process, cumulative impacts, mitigation and reclamation, leasing, land use planning, access to public lands for additional research and development outside the ongoing oil shale RD&D program; and development of alternatives to be analyzed.

Issues outside the scope of the PEIS, but which may present related policy considerations: reasons for revisiting the PEIS; deferment of decisions until research, development, and demonstration project (RD&D) results are available; oil shale regulations and national policy; deferment of analysis on environmental consequences to project level NEPA evaluations; consistency of the PEIS with state and local plans; multiple use conflicts; bonding requirements for leasing companies to ensure availability of funds for future reclamation; and determining commercial royalty rates.

Issues that would fall outside the scope of the PEIS are those issues that are not pertinent to the purpose and need for the proposed land use planning decision as described in the April 14, 2011 NOI. These include issues relating to: evaluations and support of other energy sources (e.g., renewable energy resources, clean technologies, biofuels, geothermal, nuclear power, and conventional oil and gas resources); energy conservation measures; price of fossil fuels; sale of resulting oil on the international market; support for development on private lands; development and use of all fossil fuels and climate change; foreign oil as a national security issue; political motivation behind governmental policy; political unrest and instability in oil producing countries; denial/approval of mining permits; OSTs development impact on oil and gas prices; and establishment of federal subsidies, incentives, or taxes.

A summary of issues raised in comments is presented in the following sections under the following main topics: environmental issues, socioeconomic, resource and technology concerns, stakeholder involvement, cumulative impacts, mitigation and reclamation, policy, land use planning, alternatives, and other issues. All of the scoping comments, both oral and written, are represented in Sections 3.1 through 3.10, although individual comments are not identified explicitly.

3.1 ENVIRONMENTAL ISSUES

The following text describes the main categories encompassing environmental concerns identified by commenters. Several commenters requested that the PEIS analyses perform a baseline study of the various resource areas (e.g., water, air, ecology and wildlife, cultural resources, etc.) to document a starting point for measuring impacts of commercial development of oil shale and tar sands resources and the significance of such impacts.

It was requested by some commenters that the BLM not defer the analysis of environmental consequences and impacts of commercial OSTs development to site-specific NEPA evaluations; while acknowledging that there are many unknowns with OSTs technology and development, commenters request that the BLM not defer analysis of consequences to later NEPA documents. In addition, it was mentioned that site-specific NEPA review will likely not provide an adequate region wide analysis of the relationships and impacts to resources (e.g., water use) across the three state regions. On the other hand, different commenters stated that it is not up to the BLM to determine what technologies are appropriate or will succeed, but to simply insure the resource is available on a fair basis. In this context, it bears noting that appropriate and applicable environmental laws will be addressed, regulations complied with, and

environmental evaluations assessed at the project level when specific development plans are submitted and before a project can proceed.

Commenters expressed concerns over the amount of significant disturbance to the surface and subsurface environment resulting from the development of OSTs resources. Specifically mentioned were the potential for permanent changes to water quantity and quality, air quality, topography, natural landscapes, wildlife habitat and populations, aquatic habitats, vegetation and habitat dynamics, cultural and historical resources, human health, and climate, many of which have been observed as a result of this type of energy development elsewhere (e.g., Canada). The following sections summarize the specific comments related to the various environmental resource areas.

Water Quantity and Quality. Commenters requested that the PEIS provide a thorough characterization of existing groundwater and surface water resources within the project area, including all waters that may be impacted by OSTs development, the nature of potential impacts, and specific pollutants likely to impact those waters. Commenters further recommended that the PEIS identify within each alternative all source water protection areas and any water bodies that appear on a state impaired waters list (i.e., section 303(d) of the Clean Water Act), along with the constituents for which those water bodies are listed. In addition, it was requested that hydrologic monitoring be performed prior to, during, and after operations. Consultation with federal, state, and local water authorities and experts was recommended.

Many commenters recommended that perennial waters, headwaters, and aquifers should be conserved and receive protection from OSTs development. Concerns were expressed over the potential declines in overall water quality within the project area, specifically noting sources of drinking water, areas with cold water fish resources, wilderness areas, and locations of intensive recreational use. It was suggested that the PEIS assess the impacts to the health and livelihood of those downstream, including effects on fisheries, wildlife, riparian zones, and wetland areas. It was also suggested that there be a buffer beneath and on either side of all perennial water courses in which no development can occur to safeguard these water ways, ensure the safety of wildlife, and protect underlying geologic groundwater formations.

Commenters expressed concerns related to the potential impacts of OSTs development on regional water sources and the insufficiency of analysis, recommendations, and conclusions in the 2008 PEIS. It was specifically emphasized that the new PEIS identify and evaluate the sources of water to be used and both the direct and indirect impacts of use, as well as cumulative effects. Commenters highlighted the importance of understanding the water implications, specifically as they relate to Colorado River entitlements, of the OSTs industry prior to decisions regarding leasing or commercialization. Commenters also stated that alternative options for water supply should be explicitly addressed and the RMPs be modified to ensure access to water. One commenter suggested the importation of water by train tanker cars. In addition, a few commenters stated the importance of addressing and evaluating the beneficial and deleterious impacts of water transfers. For example, shifting from current agricultural uses to industrial uses (i.e. OSTs related activities), as they can lead to dislocations and environmental alterations (e.g., soil erosion or sediment loading) in the affected regions.

Concerns were raised regarding regional and state water demand and use for the development and production of OSTs resources, along with related impacts on availability, existing water uses, reliability of supply, and consequences for users in the affected region. Commenters recommend the PEIS identify all currently available information regarding ongoing water demands and expected projections, including amounts required, location of draws, and source identification (agricultural, domestic, and public water supply wells or intakes), to consider whether there is sufficient surface and groundwater to support OSTs development in the region without detrimentally affecting existing development and water use. Specifically, commenters observed that the processes would consume large amounts of water in a region where water resources are very limited. Many commenters questioned where the water would be obtained from, who would lose water in order to provide needed water to OSTs development, and what the resulting effects would be (e.g., rancher's water rights and their ability to sustain crops and livestock). They also noted that the holding of water rights by OSTs developers introduces enormous uncertainty on the system and regional water planning. Some commenters noted that less water than most estimates predicted will be needed for OSTs development based on technologies currently being pursued and the fact that existing groundwater resources contained within the oil shale strata may be sufficient to produce nearly all of the oil shale in the basin without directly drawing from the Colorado River. In addition, some technologies do not use tailing ponds (e.g., bitumen extraction from oil sands) and that 95% of the water used in the process can be recycled. It was also suggested that the BLM take into account the potential changes in water demand from other social, commercial, and economic developments in the region, as well as the impacts of climate change. In addition, it was mentioned that the PEIS must consider and evaluate water use and related activities from OSTs development in context of existing agreements (e.g., protection of endangered species), prior obligations (e.g., 1922 Colorado River Compact), and potential future commitments (e.g., Lower Colorado River Protection Act, Grand Canyon Watersheds Protection Act).

Commenters stated that the impact of water derived from the development and production of OSTs resources must also be addressed in the PEIS. It was suggested that the PEIS assess the entire water use cycle and consider what will ultimately happen to the water (e.g., potential reuse options). Other topics identified include descriptions and assessments of the facilities, technologies, and processes associated with the exploitation of OSTs resources, leachate and surface runoff, wastewater treatment techniques, wastewater quantity and quality, discharge methods, potential for pipeline corrosion and leaks, and prevention and mitigation measures. Specifically noted were concerns about creation of acid drainage, increased loadings of current pollutants (e.g., thiocyanates, tetrathionates, fluoride, cyanide, arsenic selenium, and other heavy metals), leaching of spent shale, introduction of new contaminants, alteration of flow patterns, changes in temperature, and increased salinity in regional surface water and groundwater resources. Assessment of the impacts of these issues on fisheries, riparian zones, and wetland areas was requested. It was also recommended that the PEIS include available and updated information since 2008, including information from development activities at RD&D lease sites on expected contaminants and a reference study (Bartis 2005) that found the burden of spent shale had significantly higher salt levels than raw shale and may yield other toxic substances.

Commenters stated that the PEIS should specifically analyze the impacts of ground disturbing activities, such as extraction mining and in-situ processing. Concerns were expressed related to the alteration of geological formations, aquifer hydraulic characteristics, groundwater flow patterns, subsurface water quality and contamination, and impacts to recharge of deep-water aquifers. Specifically, hydraulic fracturing practices in the development of shale oil and gas reserves were identified as causing contamination to drinking water supplies, which is currently being studied by the EPA. Commenters stated, whether true or not, that because OSTs development involves such practices, the BLM has an obligation to review and analyze new and relevant data for inclusion in the environmental analysis. In addition, one commenter noted that the subsurface rock that remained after the oil shale was depleted would become a new aquifer and questioned how it would be cleaned to prevent left over contaminants from leaching out into the ground water.

Finally, a few commenters made note of the U.S. Government Accountability Office (GAO) Water Report (GAO 2010), which reported on water usage and risks associated with the ultimate development of this resource. In general, commenters agreed with the importance of the research and the need to establish baseline conditions for water resources in oil shale regions, to model groundwater movement, and to coordinate with DOE and state agencies involved in water regulation. However, one commenter asserted that the report was not objective in terms of examination of water usage from oil shale technologies and costs, and that it offered improbable, theoretical operational scenarios for water demand. The commenter added that responsible, low-impact, and sustainable water usage is both technically and economically feasible for the industry, and thus suggested that the BLM perform its own objective examination of available technologies and costs.

Waste Generation and Disposal. Concerns were voiced that the mining, extraction, and processing of OSTs resources will create toxic waste materials, including: heavy metals (e.g., mercury, lead, and arsenic); naphthenic acids; polycyclic aromatic hydrocarbons (e.g., pyrene and naphthalene), and volatile organic compounds (e.g., terpenes). These materials have the potential to leach into the environment, migrate from the OSTs facilities, produce dust and contaminate nearby water resources and ecosystems (see the Water Quantity and Quality discussion above). The importance of measuring ore product and waste stream mass flows was noted.

Air Quality, Noise, and Visual Impacts. Comments were received regarding concern over the unknown, yet potentially significant and far-reaching, impacts to local and regional air quality associated with oil shale and tar sands exploration, development, and associated activities (e.g., power generation, construction, transportation). Potential impacts identified by commenters covered all stages of development (i.e., mining and processing through transportation of product) and included: deterioration of overall air quality; higher levels of pollutants from emissions (e.g., ozone, sulfur dioxide, particulate matter, fugitive dust, volatile organic compounds, hazardous air pollutants, carbon dioxide [CO₂], and other greenhouse gases); deleterious effect on humans, wildlife, and the environment; increased nitrogen deposition; impaired regional visibility; and impact of dust on mountain snow causing early snowpack melt and decreased tourism. Issues explicitly mentioned for ozone were wintertime conditions and projected oil shale and tar sands-related sources of ozone precursors and other emissions. One commenter

requested that leasing not proceed until more is specifically known about the amount of energy and resulting pollution output required to extract oil shale and tar sands, so these can be taken into consideration in the impact analysis. Another commenter suggested utilizing data requirements, resource needs, constraints, and known impacts from technologies being utilized as part of existing applications and RD&D efforts (e.g., Shell's oil shale research facility and American Shale Oil's downhole burning process).

In general, commenters also asserted that both regional and local air quality concerns were not adequately addressed in the 2008 PEIS. Baseline air quality monitoring and on-site meteorological data collection in the planning areas were requested for all criteria pollutants. Commenters stated that analyses should include data and discussions on the sources, magnitudes, and emission factors associated with criteria and other pollutants of concern (including precursors) from conventional aspects of and preferred future processes for oil shale and tar sands development; that the data should also be of sufficient quality to be used in a full-scale quantitative assessment of direct, indirect, and cumulative impacts within both the study area and all surrounding affected areas; and that the analysis should include air dispersion modeling, regional and long-range transport evaluations, local effects, ozone analysis (including to Class I areas), emission predictions, and airborne dust emissions estimates for each alternative to provide the level of information necessary to support any future leasing decisions and ensure that OSTs development does not degrade air quality. Commenters further stated that where possible, evaluations should be performed based on real studies and data, instead of modeling and that projected pollutant levels should be compared with levels projected using alternate oil production sources, and using efficiency alternatives. This comparison would also entail estimating levels of development and changes in development depending on which land tracts are leased. One commenter recommended utilizing the Utah BLM Air Resource Management Strategy in the analysis.

It was requested that the PEIS address the air quality impacts of the estimated emissions for all criteria pollutants and compare them with the National Ambient Air Quality Standards (NAAQS) and Prevention of Significant Deterioration (PSD) incremental limitations. Commenters requested that air quality related values (AQRVs) be discussed and that sensitive receptor locations, including Class I air sheds, national parks, wilderness areas, and other sensitive sites be identified.

With respect to air quality mitigation and in light of current technological uncertainties related to OSTs development and operations, it was recommended that the BLM discuss potential control technologies, abatement measures, best management practices, and other design considerations that may minimize air pollutant emissions.

For noise impacts, commenters requested that background noise levels be established and recommended the use of audibility based metrics for noise sensitive areas instead of threshold standards for community annoyance. A widely voiced concern was that OSTs development would degrade the visual landscape and topography of beautiful country.

In addition to the air quality effects on visibility, many commenters stated opposition to adverse impacts to the beauty and integrity of the visual landscape from OSTs development

processes. Commenters specifically noted that OSTs development should not allow surface disturbance on areas eligible for Wild and Scenic designation or lands of Visual Resource Management Class I, II, or III.

Ecology and Wildlife. Many comments stated that OSTs development will have significant impacts to wildlife and wildlife habitat and emphasized the need to protect not only threatened and endangered species, but special status species and priority habitat areas as well. Coordination with FWS agencies and related foundations on all wildlife matters and conservation measures was recommended. Commenters also requested that the PEIS not defer biological diversity preservation to the project level.

In addition to identification of species, requests were made for baseline data on populations, ecological research plans to evaluate the impacts of development on those populations, and measures to avoid, protect, and/or mitigate their habitat areas. It was noted that seasonal restrictions for wildlife are ineffective mitigation measures because surface disturbance is anticipated to be 100 percent. One commenter specifically suggested pursuing underground mining, as opposed to open-pit, which would have less effect on surface habitats. Commenters also requested evaluation of potential effect of OSTs development on riparian areas, endemic wildflowers, and meadow grasses.

Commenters supported the inclusion of updated information and consideration for removal of additional areas, such as lands containing sage-grouse, *Centrocercus urophasianus*, habitats and/or wilderness characteristics, within potential oil shale and tar sands development areas. However, due to the size of potential development areas, commenters expressed additional concerns related to ecology and wildlife, summarized as follows.

Commenters asserted that fragmentation, destruction, and removal of sagebrush habitats would negatively impact sagebrush dependent and sensitive species within these areas, including: sage-grouse; sage thrasher, *Oreoscoptes montanus*; sage sparrow, *Amphispiza belli*; and brewer's sparrow, *Spizella breweri*. Consideration of sage-grouse habitat was specifically emphasized by many commenters, as seasonal habitats exist throughout the area identified for potential leasing. Noted was the opinion that any type of development would have the potential to impact sage-grouse habitat by further fragmenting the remaining population, leaving it vulnerable to extinction, and increasing its potential for listing and federal protection under the ESA. As a result, it was requested that the PEIS thoroughly analyze habitat loss, destruction, and fragmentation; evaluate the consequences of development; adequately disclose all impacts of industrial activities, and identify measures to minimize potential effects. In addition, commenters recommended that the PEIS and RMP amendments include a no surface occupancy (NSO) and no surface disturbance/vegetation treatment buffer, suggesting a 3 mile minimum (preferably 5 miles) for sage-grouse leks, nesting habitats that surrounds the leks, winter habitat, and other vital sage-grouse habitats. In addition, it was suggested that human activity during the production phase be limited near leks during breeding season. Conversely, some other commenters believed that the new information related to sage grouse should not change the status quo.

Commenters reported that the proposed development area contains all or a significant portion of the distribution of six mammalian Species of Greatest Conservation Need (SGCN) in Wyoming: canyon mouse, *Peromyscus crinitus*; cliff chipmunk, *Tamias dorsalis*; Great Basin pocket mouse, *Perognathus parvus*; piñon mouse, *Peromyscus truei*; pygmy rabbit, *Brachylagus idahoensis* (petitioned for listing under the ESA in 2003), and Wyoming pocket gopher, *Thomomys clusius* (petitioned for listing under the ESA in 2007) (FWS 2006). An additional 14 SGCN were also noted to have distributions overlapped by the project area, including: Uinta chipmunk, *Eutamias umbrinus*; Idaho pocket gopher, *Thomomys idahoensis*; olive-backed (or Wyoming) pocket mouse, *Perognathus fasciatus*; pallid bat, *Antrozous pallidus*; spotted bat, *Euderma maculatum*; water vole, *Arvicola amphibius*; little brown myotis, *Myotis lucifugus*; long-eared myotis, *Myotis evotis*; western small-footed myotis, *Myotis ciliolabrum*; long-legged myotis, *Myotis volans*; northern flying squirrel, *Glaucomys sabrinus*; northern river otter, *Lontra canadensis*; vagrant shrew, *Sorex vagrans*; and Preble's shrew, *Sorex preblei*. The majority of these species are limited by available habitat and dispersal ability; therefore, commenters recommended that the BLM work cooperatively with the Wyoming Game and Fish Department to delineate and maintain important habitats within the proposed project area. Other mammalian species identified as sensitive were: dwarf shrew, *Sorex nanus*; ringtail cat, *Bassariscus astutus*; big free-tailed bat, *Nyctinomops macrotis*; Townsend's big-eared bat, *Corynorhinus townsendii*; white-tailed prairie dog, *Cynomys leucurus*; and black-footed ferret, *Mustela nigripes*. Various reptile and amphibian species were also noted by commenters as being within the study area, including the Utah milk snake, *Lampropeltis triangulum taylori*, and Great Basin gopher snake, *Pituophis catenifer deserticola*.

Commenters requested evaluation of the direct, indirect and cumulative effects to migratory birds, raptors, their habitats, and nesting sites, specifically noting the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. Migratory and other bird species specifically identified were: ferruginous hawk, *Buteo regalis*; peregrine falcon, *Falco peregrinus*; golden eagle, *Aquila chrysaetos*; bald eagle, *Haliaeetus leucocephalus*; burrowing owl, *Athene cunicularia*; short-eared owl, *Asio flammeus*; Mexican spotted owl, *Strix occidentalis lucida*; willow flycatcher, *Empidonax traillii*; northern goshawk, *Accipiter gentilis*; Williamson's sapsucker, *Sphyrapicus thyroideus*; Lewis' woodpecker, *Melanerpes lewis*; grasshopper sparrow, *Ammodramus savannarum*; bobolink, *Dolichonyx oryzivorus*; long-billed curlew, *Numenius americanus*; and yellow-billed cuckoo, *Coccyzus americanus*. It was suggested that the BLM refer to the large datasets on nesting available from each BLM Field Office (FO) within the area under consideration. Commenters also stated that current BLM nest buffers for oil and gas, which are 0.25 mile for NSO and 2 miles for seasonal stipulations, are inadequate and recommended 3-mile buffers.

Commenters also highlighted the fragmentation of crucial habitat for large mammal and big game species that is occurring as a result of current energy development (i.e., oil, gas, and wind). Species specifically identified by commenters included: black bear, *Ursus americanus*; cougar, *Puma concolor*; bobcat, *Lynx rufus*; bighorn sheep, *Ovis canadensis*; mule deer, *Odocoileus hemionus*; pronghorn, *Antilocapra Americana*; and elk, *Cervus Canadensis*. Commenters asserted that BLM should include these wildlife populations, habitat (regular and seasonal), and migration routes as part of the impact analysis on the areas identified for potential leasing and future surface disturbing activities. Commenters also requested that BLM exclude

big game areas ranges and corridors from OSTs development; or, at the very least, allow no surface disturbance in these areas. For Wyoming, specific range areas mentioned include Powder Mountain, Powder Rim, Cherokee Basin, Cherokee Rim, Haystacks, and surrounding areas. Commenters also expressed concern about the potential impacts of OSTs development on wild horses and natural viewing opportunities for them.

Commenters noted that Colorado State Wildlife Areas (SWAs) provide important habitat for wildlife as well as recreational opportunities and an economic draw for local communities. SWAs are managed by the Colorado Division of Wildlife and serve to provide wildlife-related recreation opportunities. Six areas were identified as bordering BLM lands or overlapping with BLM managed subsurface resources opened for OSTs development according to the 2008 PEIS and ROD: the Shell Oil SWA - hunting lease, the Yellow Creek Unit, the Square S Summer Range Unit, the Square S Ranch Unit, the Little Hills Unit, and the North Ridge Unit of the Piceance SWA.

Fish and Fisheries. Noting that the Colorado River system and its tributaries provide a home for the many endangered, threatened, and sensitive fish species, as well as other native nongame and game fish, commenters voiced concerns over the impacts of oil shale and tar sands development on fish populations and fisheries. Concern was expressed for habitat disturbance, sedimentation, water pollution, water supply reductions, and downstream conditions. Further concern was expressed over the impacts of alterations in river water quality on native fish species, with particular concern related to the Endangered Fish Recovery Implementation Program, for which major efforts and expenses have already been incurred in the Colorado River Basin. It was recommended that the PEIS specifically include distribution and habitat data for endangered, threatened, and sensitive species, including: Colorado pikeminnow, *Ptychocheilus lucius*; Colorado River cutthroat trout, *Oncorhynchus clarkii pleuriticus*; flannelmouth sucker, *Catostomus latipinnis*; and bluehead sucker, *Catostomus discobolus*; razorback sucker, *Xyrauchen texanus*; mountain sucker, *Catostomus platyrhynchus*; and roundtail chub, *Gila robusta*. It was further recommended that measures be taken to identify monitoring plans that could be used to develop mitigation techniques necessary to lessen impacts to water quality and related impacts to aquatic species.

Specifically, multiple commenters stated that there is a need to protect the last remaining Colorado River cutthroat trout, which have habitats and native population strongholds located with the Upper Colorado River system, particularly the Green River basin where proposed oil shale lease areas are located. In 2009, the U.S. FWS reviewed this species listing under the ESA and determined that listing was not warranted at that time. However, the Colorado River cutthroat trout is categorized by the Wyoming Game and Fish Department as Native Species Status 2 (NSS2) species, which means they are physically isolated and/or exist at extremely low densities throughout their range, while habitat conditions appear to be stable. Thus, commenters noted that habitat degradation and loss of populations within their distribution range could result in new petitions to list Colorado River cutthroat trout, or petitions to list other species of concern. A further review and impact analysis of the Colorado River cutthroat trout was recommended to be included in the new PEIS. In addition, stronger mitigation or conservation measures were recommended to meet the management objectives of the Conservation Agreement for Colorado River cutthroat trout (2010), including all three states in the study area. The commenters

specifically requested a more substantial analysis than was completed in the 2008 PEIS and ROD and identification of appropriate mitigation measures.

Commenters noted that both the flannelmouth and bluehead sucker, are categorized by the Wyoming Game and Fish Department as Native Species Status 1 (NSS1) species, which are physically isolated and/or exist at extremely low densities throughout their range, while habitat conditions are declining or vulnerable. Therefore, it was recommended by commenters that no loss of habitat function occur as a result of the BLM's actions. However, it was noted that some modification of the habitat could occur, provided that habitat function is maintained (i.e., the location, essential features, and species supported are unchanged).

Commenters reported that the Upper Colorado River system supports important sport fisheries based on wild populations of rainbow trout (*Oncorhynchus mykiss*), brown trout (*Salmo trutta*), and brook trout (*Salvelinus fontinalis*) and introduced populations of cutthroat trout (*Oncorhynchus clarkia*). The commenters noted the maintenance and enhancement of in-stream habitat is important to the long-term sustainability of fisheries and that the condition of in-stream habitat is directly related to the overall condition and health of the surrounding watershed. It was further recommended that the analysis of impacts and development of mitigation measures specifically address recreational and economic issues related to local fishing activities, native fisheries, and/or related businesses.

Soil and Vegetation Impacts. Commenters expressed concern that land disturbance and mining will create a landscape that does not ecologically function as equivalent to the pre-mining conditions. They also asserted that mining increases erosion and creates a temporary loss of ecosystem functions that is not mitigated even by successful reclamation and re-vegetation. Some commenters noted that portions of the proposed mining areas have unique soil properties (cryptobiotic crust) that should be preserved. Other commenters were concerned about desertification.

Special status, sensitive, and/or rare and plant species and habitats noted by commenters include: federally threatened Uinta Basin hookless cactus, *Sclerocactus wetlandicus*; Graham's beardtongue (ESA candidate), *Penstemon grahamii*; Garrett's beardtongue, *Penstemon scariosus garrettii*; Barneby's columbine, *Aquilegia barneybi*; Caespitose catseye, *Oreocarya caespitosa*; Mancos columbine, *Aquilegia micrantha* var. *mancosana*; Eastwood's monkeyflower, *Mimulus eastwoodiae*; Colorado blue spruce, *Picea pungens*; red osier dogwood, *Cornus sericea*; boxelder, *Acer negundo*; narrowleaf cottonwood, *Populus angustifolia*; narrowleaf evening primrose, *Oenothera fruticosa*; Indian ricegrass, *Achnatherum hymenoides*; hanging garden sullivantia, *Sullivantia hapemanii* var. *purpusii*; southwest stickleaf, *Mentzelia argillosa*; Dudley Bluffs bladderpod, *Lesquerella congesta*; Dudley Bluffs (or Piceance) twinpod, *Physaria obcordata*; Ute-lady's tresses orchid, *Spiranthes diluvialis*; White River beardtongue, *Penstemon scariosus* var. *albifluvis*; and narrow-stem gilia, *Gilia stenothyrsa*.

For many of these plant species, requests were made to have a buffer ranging anywhere from a 300-foot to 0.5-mile around all known occurrences. Concerns were also noted that strip mining and/or some in situ methods (if used) and the associated infrastructure (e.g. road

development) would require that vegetation be stripped from much of the land, resulting in destruction of habitats and long recovery periods.

Wilderness Areas, Other Specially Designated Areas, and Lands with Wilderness Characteristics. Commenters stated that BLM must perform an updated inventory of lands for wilderness character, as well as preserve and protect areas with wilderness characteristics in management decisions. Commenters also proposed that some areas be excluded from development, including designated and proposed Wilderness Areas, Wilderness Study Areas (WSAs), citizen-identified inventories, and areas of critical environmental concern (ACECs) that were nominated or considered for potential designation in a resource management plan.

Other areas specifically identified within Colorado include the Bitter Creek proposed wilderness unit (straddles the CO-UT state lines in the Eastern Book Cliffs) and South Shale Ridge Citizen Proposed Wilderness (CPW), in addition to core and linkage areas within Heart of the West Wildland Network Design (also covering areas within UT and WY).

In Utah, areas identified include: Fiddler Butte WSA, Glen Canyon Recreation Area, Rat Hole Canyon, Book Cliffs (includes Turtle, Desbrough, and Desolation Canyon, along with extensive wetlands), Dirty Devil CPW, Sids Mountain CPW area (encompasses a large portion of the San Rafael Swell), White Canyon proposed wilderness complex (including White Canyon, Fort Knocker Canyon and Tuwa Canyon), Bitter Creek proposed wilderness unit, Lower Bitter Creek proposed wilderness unit, Dragon Canyon proposed wilderness unit (includes Davis, Side, Atchee, and Dragon Canyons in Utah, and Little Whiskey Creek in Colorado), Sunday School Canyon proposed wilderness unit (adjacent to Winter Ridge WSA and bounded Wood Canyon, Buck Canyon, Willow Creek drainage, and Seep Ridge), and Seep Canyon proposed wilderness unit (includes Park Canyon, Park Ridge, Crooked Canyon).

The State of Wyoming designated in 2008 the Adobe Town area as Very Rare or Uncommon under the state Environmental Quality Act, part of which is a SWA. It was recommended that this entire area be protected from OSTs development to preserve its ecological, environmental, geological, cultural, historical, archaeological, scenic, and recreation value. Other Wyoming areas proposed by commenters for wilderness protection include: Kinney Rim (North and South), Red Creek Badlands, Devils Playground, Buffalo Hump, and Sand Dunes. In addition, commenters requested that citizens' proposed additions to existing WSAs also be excluded from OSTs development.

Cultural Resources. It was commented that all potential OSTs development areas, especially those where the entire surface area may be affected, need to receive the highest priority to ensure adequate tribal review, physical archaeological surveys, and paleontological baseline assessments prior to any leasing or development in these areas. It was recommended that the PEIS identify areas with cultural, historic, archaeological, or paleontological properties and/or resources that are at risk from oil shale and tar sands development, employ one or more administrative measures to protect the resources, and ultimately consider closing these areas to OSTs leasing and development.

The Dirty Devil and Fiddler Butte CPWs in UT were identified to contain an abundance of archeological resources, including rock shelters, campsites, lithic scatters, stone tool quarries, and petroglyph sites. Commenters noted that studies by the NPS and BLM in this area have suggested that this region contains an average density of twenty-four archeological sites per square mile. The Glen Canyon and San Juan River area was also stated to contain significant cultural resources, including more than 26,000 documented archaeological sites, the majority on BLM-administered lands, making the region among the most significant concentrations of archaeological sites in the western United States. It was further noted that Bitter Creek WSA has a number of pictograph and petroglyph sites, as well as graves, historic homesteads, an old growth forest, and inspiring scenery. Main Canyon in UT contains sites of the historical Northern Ute migration route.

Commenters noted that significant cultural resources are found within the Colorado portion of Dragon Canyon, including forty-three sites registered with the Colorado Office of Archaeology and Historic Preservation. A Wickiup Village, which is listed on the National Register of Historic Places, was also identified in and around the Duck Creek Areas of Critical Environmental Concern (ACEC). It was added that the BLM White River Field Office in CO has identified cultural resources through its cultural resource interpretation program, which should also be included and preserved. In addition, it was recommended that an archeologist be used to help assess the impacts to historical archeological sites.

Recreation. Commenters expressed concern over the impacts to recreational users of national parks and other public lands, specifically noting hikers, rafters, hunters, sport fishers, skiers, and photographers. A few commenters also voiced concerns related to impacts on tourism within the study area. One commenter stated that most people do not have time to explore all the lands set aside for recreation, so more lands should be opened up for other purposes (such as productivity, industry, trade, and the ability to live off the land).

Special Areas of Concern. Commenters identified many areas of special concern or interest to them, in addition to the aforementioned wilderness areas and areas with cultural and archaeological significance. Commenters expressed concern over the protection of these areas and suggested their exclusion from leasing areas. Some of these additional areas included existing and potential ACECs; Research Natural Areas (RNAs); Outstanding Natural Areas (ONAs); recreation areas; NPS lands; FWS administered lands (e.g., National Wildlife Refuge System lands); National Monuments; National Conservation Areas; Wild and Scenic River segments; National Historic and Scenic Trails (e.g., the Pony Express, Oregon/California Mormon Trail, Overland Stage Trail, and Cherokee Trail); areas with high recreational value; and other areas that are part of the National Landscape Conservation System (NLCS). In general, commenters requested that these areas be excluded from OSTs development. Commenters also requested maps illustrating special areas of concern with respect to exposed OSTs formations and indicating how these areas may be altered as a result of projected surface mining activities.

Specific rivers, gulches, creeks, and watersheds identified by commenters that may or may not have special designations included the Colorado River, Green River, New Fork River, Henrys Fork River, Blacks Fork River, Hams Fork River, San Juan River, White River, Big Sandy River, Corral Gulch, Ryan Gulch, Piceance Creek and Basin, Range Creek, Horse Creek,

Cottonwood Creek, Muddy Creek, Bitter Creek, Whiskey Creek, Little Whiskey Creek, Clear Creek, Spring Creek, Black Sulphur Creek, Fawn Creek, Hunter Creek, West Fork Parachute Creek, Parachute Creek, Dry Fork Piceance Creek, Tent Creek, Davis Creek West Evacuation Creek, and Willow Creek along with their tributaries, watersheds, and side drainages.

Colorado special areas of concern designated as ACECs for their visual, wildlife, botanical, fisheries, and ecological values include the East Fork Parachute Creek ACEC, Trapper/Northwater Creek ACEC, Duck Creek ACEC, Ryan Gulch ACEC, and Dudley Bluffs ACEC. Also identified were potential Colorado ACECs that encompass Snake John Subcomplex of the Coyote Basin Complex (important habitat for the sensitive white-tailed prairie dogs and endangered black-footed ferret), Dudley Bluffs bladderpod and twinpod habitat outside of existing ACECs, Graham's Penstemon habitat outside the Raven Ridge ACEC, Narrow-stem gilia habitat outside the existing Lower Greasewood ACEC, Narrowleaf evening primrose habitat outside existing ACECs, and White-tailed prairie dog complexes outside of the Snake John Subcomplex of the Coyote Basin Complex.

Special areas of concern for Utah identified by commenters as having scenic value, wildlife, crucial habitats, special status species, watersheds, cultural resources, historical features, and paleontological resources include: Colorado River Basin (including by extension Lake Mead and Lake Powell), Big Pack Mountain, Sids Mountain, Uintah (or Uinta) Basin and Mountains, Book Cliffs, Bates Knolls, Tavaputs Plateau, McCook Ridge, Winter Ridge, Seep Ridge, Greater Canyonlands, Seep Canyon, Sweet Water Canyon, Desolation Canyon, Sunnyside STSAs, White Canyon, Happy Canyon, Wood Canyon, Buck Canyon, Fort Knocker Canyon, Tuwa Canyon, Rat Hole Canyon, Turtle Canyon, Desbrough Canyon, Davis Canyon, Side Canyon, Atchee Canyon, Dragon Canyon, Sunday School Canyon, Park Canyon, Park Ridge, Crooked Canyon, Red Rocks, Natural Bridges National Monument, areas adjacent to Capitol Reef, and parts of the Heart of the West Wildland Network. Also noted were potential Utah ACECs that encompass Bitter Creek and Bitter Creek-P.R. Springs, Nine Mile Canyon, Main Canyon, Devil Canyon-North Wash, White River Canyon, Coyote Basin Complex (includes Kennedy Wash, Myton Bench, and Snake John), Four Mile Wash, Sids Mountain, and Tar Sands Triangle. Also specifically noted for Utah were lands included for wilderness designation in the proposed America's Red Rock Wilderness Act (originally introduced in 1989, not enacted).

In Wyoming, the following ACECs were noted: Cedar Canyon ACEC; Greater Red Creek ACEC (originally Red Creek ACEC, expanded to include relevant and important values in the Currant Creek and Sage Creek Drainages); Greater Sand Dunes ACEC; Natural Corrals ACEC; Oregon Buttes ACEC; Pine Springs ACEC; White Mountain Petroglyphs ACEC; South Pass ACEC; Special Status (Candidate) Plants ACEC; and Steamboat Mountain ACEC. The potential ACECs include: sage-grouse potential ACECs in the South Pass and Salt Wells areas as identified in the Sage-Grouse Plan Amendment process; Monument Valley Management Area as identified in the Green River RMP; and Powder Rim the migration corridor for the Grand Teton pronghorn herd (extending southward from Trapper's Point to Seedska-dee National Wildlife Refuge [NWR]). In addition, Sugarloaf Basin Special Management Area (SMA), Jack Morrow Hills Planning Area, and the Seedska-dee NWR itself were recommended for protection and exclusion from OSTs leasing.

Also in Wyoming, the Little Mountain ecosystem in the Green River Basin and the Vermillion Creek drainage in the Washakie Basin was identified as critical habitat to a host of big game, game bird, sport fish, and non-game species. The headwaters of Bitter Creek (in the Washakie Basin), Henrys Fork River (from the WY/UT state line to Flaming Gorge Reservoir), Big and Little Sandy drainages (from their confluence near Farson to the head of the Green River Basin), along with parts of the Blacks Fork (from Flaming Gorge Reservoir upstream to Interstate 80) and Hams Fork (from its confluence upstream to Kemmerer) Rivers were identified to support viable populations of Colorado River cutthroat trout (NSS2), flannelmouth suckers (NSS1), bluehead suckers (NSS1), and/or roundtail chub (NSS1), and important trout fisheries. In addition, the Fontenelle Reservoir, Flaming Gorge Reservoir, and Green River corridor between the two reservoirs were specifically identified as waters supporting economically important sport fisheries, in addition to providing domestic water to the communities of Green River, Rock Springs, and the surrounding communities. The Red Desert, Horseshoe Bend, The Haystacks, Willow Creek Rim, and Skull Creek Rim in Wyoming were also identified by commenters.

The proposed project area was also reported to overlap a number of mammalian SGCN (listed under the Ecology and Wildlife section above) habitats, including the piñon-juniper woodlands (of the Colorado Plateau), sagebrush steppe, gardner's saltbush, and barren areas within the Washakie Basin. It was recommended that the PEIS take into account and avoid disturbance of these ecosystems and sensitive habitats.

The issue of buffer zones, which includes additional areas surrounding areas of concern (e.g., water resources, sensitive habitats, National Historic and Scenic Trails) where development would be excluded was brought up by several commenters. It was noted that current buffer zones (typically 0.25 miles) were inadequate to protect and prevent degradation of these resources.

Environmental Justice. Commenters requested that the PEIS thoroughly analyze environmental justice impacts, given that there are numerous small communities within the planning area.

Monitoring. Several commenters emphasized the importance of obtaining baseline conditions for meteorology, water, air, and soil quality, and wildlife populations (as noted above), in order to allow accurate measurement of impacts that may result from commercial oil shale and tar sands development activities. In addition, concerns were expressed over monitoring and responsibility for impacts after the development sites have been closed and abandoned. It was suggested that required monitoring for any OSTs leasing program be at least as thorough as the Prototype Oil Shale Leasing Program.

Climate Change. Commenters stated that climate change discussion and analysis must be considered more thoroughly in the new PEIS. This section should include a description and summary of ongoing and projected climate change impacts (regional and local) relevant to the action, potential impacts that could be exacerbated by climate change (e.g., water resources, air quality), and reasonable mitigation measures, protocols, or policies to guide OSTs leasing and development considerations. Also noted were recent advancements made since 2008 in both the study and science of climate change, which have specifically made analysis of localized impacts

more viable. In addition, it was remarked that the PEIS review and incorporate relevant federal, regional, state, and tribal climate change plans or goals to help BLM to reconcile its proposed action for OSTs leasing and development with such plans.

Climate change issues and topics specifically cited in the scoping comments are increased greenhouse gas (GHG) emissions (i.e., CO₂), rise of summer temperatures, warmer water, changes in stream flows, alterations in water levels, reduction in water availability, and increasing frequency and intensity of disturbances such as floods and wild fire. These were all identified by commenters as likely having deleterious ecological effects resulting in the degradation of existing habitats, as well as the potential for adverse economic ramifications. By contrast, other commenters stated that CO₂ emissions should not be a significant consideration within the scope of the PEIS and that climate change is mitigated through the absorption of CO₂ by green plants.

A qualitative discussion of the link between GHGs, climate change, and potential impacts of climate change was requested. One commenter specifically suggested the PEIS describe the potential range of GHG emissions that may be associated with lifecycle commercial OSTs development under each alternative. The commenter asserted that this analysis would help illustrate how GHG emissions scenarios may vary according to the amount of public lands BLM ultimately decides to make available to potential commercial-scale leasing and development. It was asserted that the development of oil shale emits more GHGs than conventional liquid fuels from crude oil.

Commenters suggested that the BLM reference such climate change-related studies on supply and demand aspects of Colorado River management as: USGS's National Climate Change and Wildlife Science Center, the Regional Climate Science Centers, Western Water Assessment, and the Bureau of Reclamation (BOR).

Human Health. Commenters requested that the PEIS include qualitative and quantitative discussions of the known health risks associated with the proposed action and populations at risk. In addition, commenters recommended that the PEIS incorporate a formal methodology to evaluate all health issues and potential mitigations, such as a Health Impact Assessment (HIA) or cost/benefit analysis, and that agencies with relevant health expertise in developing HIAs be consulted. Areas noted of specific concern to human health for analysis in detail include air pollution, water pollution, and climate change.

Commenters voiced the opinion that development of OSTs resources should not be permitted until data are available on health consequences. It was mentioned by commenters that the deleterious effects and public health consequences have been occurring in the areas in which OSTs techniques are used. Commenters associated these effects with increased levels of highly toxic chemicals and heavy metals, deteriorating air quality, and changes in climate. Examples given include longer allergy/asthma seasons and increased injuries from snowstorms. One commenter also mentioned solastalgia, which is the emotional distress caused by environmental change. Another commenter questioned if the OSTs development companies would put up a bond to cover health impacts.

3.2 SOCIOECONOMICS

Commenters asked that the PEIS take a hard look at the socioeconomic impacts from OSTs development on communities in the area and consider utilizing community planning to mitigate socioeconomic impacts. Commenters recommended that the analysis include baseline data for community infrastructure and capacity to be used to assess what additional needs will be required to support OSTs development, a thorough housing analysis incorporating local constraints including buildable land, and an assessment of how capital costs will be covered. Specifically, it was requested that the PEIS analyze impacts and develop mitigation measures addressing economic effects on local fishing activities, native fisheries, hunting, ranching and grazing, retirement communities, tourism, and related businesses. It was further recommended that the broader economic impacts to the region be analyzed, should BLM close areas to energy development. It was suggested that the BLM consider using a total economic value approach for this analysis that includes estimation of non-market values for the planning area and define an opportunity cost of keeping lands available. The concept of assessing the carrying capacity thresholds of the regional and local economies was also mentioned by several commenters.

The “boom and bust” cycle that the region has experienced over past decades as a result of OSTs development was also referred to numerous times. Commenters noted that these cycles, in addition to seasonal restrictions that concentrate development during seven months of the year, make it particularly difficult to attract and keep permanent workers. The adverse tradeoff between short-term jobs and long-term sustainable employment, along with increase profits for energy companies, was pointed out by commenters, noting that the temporary work force that has positive impacts on local economy via the creation of jobs may also causes adverse local impacts in terms of inconsistent and unpredictable housing availability, motor vehicle traffic, demands on infrastructure, tax bases, and revenue flow. In addition, local governments would have to provide law enforcement, medical care, and other social services on a year-round basis, even when the peak needs fluctuate, which often results in shortages and straining of resources. Transportation issues noted by commenters related to the effects of transport of the OSTs product on roads, including access roads, and county roads, citing road wear, and related required road maintenance, reconstruction and upgrades. It was noted that investment in community services, facilities, and infrastructure would ideally be needed years in advance of commercial production. Commenters requested that the aforementioned regional and local economic impacts be weighed against economic benefits from industry over the long term in the PEIS.

Concern was expressed over the transparency of the companies developing oil shale and tar sands, whether or not they pay taxes, and where that tax money goes. Further concern was expressed over taxpayers having to foot the bill for any cleanup that may result from OSTs activities. Commenters also suggested that the companies who develop this resource be taxed or have bond requirement with the money set aside to either cover restoration costs, or directed towards sustainable and renewable energy development, or granted in another way that would be beneficial to the taxpayers. Other commenters requested that federal funding be provided to impacted local communities to assist with infrastructure improvements and service expansions, or that federal incentives be established for companies to promote up-front and on-going

investment in and contributions to state agencies and local governments directly affected by oil shale development and production.

One commenter noted that about half of the royalties, by law, return to state and local governments and are intended to help mitigate the impacts of development and that reduced royalty rates would directly diminish their ability to deal with the impacts of that development. Another commenter asked the BLM to consider the ancillary benefits to the American public from a robust oil shale industry when considering a fair return to the taxpayer, noting that rates should be established in a way that would be beneficial to the taxpayers, yet not deter investment in OSTs development.

3.3 RESOURCE AND TECHNOLOGY CONCERNS

Resource Assessments. A number of commenters invoked the recent USGS oil shale resource assessment. It was noted that the assessment identifies the PEIS study area as the largest oil shale resource in the world and containing more oil resources than the total of all the known proved conventional onshore and offshore reserves of the U.S. Some commenters supported OSTs development stating that we need to take advantage of all available domestic energy resources, including unconventional ones, for our national security and strategic interests. Others noted that simply identifying a vast resource does not prove it to be productive, especially if it cannot be accessed or developed. In Wyoming for example, one commenter mentioned that the land available for leasing is checkerboard, thus a very small percentage is considered commercially attractive.

Several requested that the resource assessment include a comparison of these resources with other OSTs resources worldwide (e.g., Canada).

Power and Energy. The amount of energy required to power the OSTs development and extraction was a concern expressed by many commenters, as was the ratio of energy expended to actual oil produced. Commenters mentioned that power from the existing grid might not be adequate for OSTs development; thus, the PEIS should detail how electricity needs will be met. Commenters further recommended that this analysis document existing power generation facilities and disclose any new facilities that would need to be constructed, including an analysis of the location of plants, stack parameters, plant fuel sources, along with an assessment of the air quality impacts of such plants. One commenter suggested that the environmental costs of electricity generation should be factored into lease rates. Commenters also specifically requested that the PEIS include an analysis of options for meeting power demands for oil shale development in a manner consistent with Colorado's renewable energy standard. In addition, commenters also noted that the extraction of OSTs resources will require substantial consumption of natural gas and water.

Technology. Several commenters suggested that the PEIS include a realistic assessment of the industry's current technologies, quantifying their associated environmental impacts and the general ability to commercially develop OSTs. It was noted that a lack of detailed information regarding development technologies will make it difficult for BLM to adequately assess potential

impacts. Commenters voiced concern that a specialist in OSTs technology or mining was not part of the BLM PEIS team. In addition, commenters requested that the PEIS show potential locations of facilities, wells, pipelines, extraction sites, and transport facilities. Additional concerns were expressed regarding which OSTs technologies would be considered within the scope of the PEIS. One commenter suggested the PEIS address the need and readiness for a commercial program; another suggested that the BLM set an environmental basis for commercial processes that meet the final requirements.

Broad comments related to technology included statements that no methodologies have proved to be commercially viable and all options create environmental damage. One commenter specifically noted that even in-situ technologies pose post recovery problems (e.g., land subsidence and water contamination). Another mentioned that U.S. refineries are not equipped to handle the sulfur levels in the oil that result from the tar sands and the removal of sulfur requires a lot of hydrogen, typically derived from water and natural gas. Conversely, other commenters noted that underground mining options or directional drilling technologies can minimize, or even possibly eliminate, any measurable impact on wildlife. In addition, they noted that some emerging technologies do not use any solvents that would put groundwater at risk of contamination, are carbon neutral (produce oil from oil shale without CO₂), and have rapid real-time reclamation that can mitigate as they go. Commenters also expressed concerns that technologies were too new and unproven to open up land for commercial leasing and development, or they objected to making assessments using information about technology that existed 40 to 70 years ago. Still others believed it should be left up to industry to decide what technology to use.

Many commenters discussed BLM's ongoing oil shale RD&D, and expressed concern that data from the project would not be available in time for use in the PEIS. Many stated that development efforts should proceed slowly or not at all, with research and development facilities on small plots to demonstrate feasibility. In addition, commenters emphasized that these projects should be used to help assess not only the viability of technologies, but also to understand effects of OSTs development (e.g., air quality or displacement of wildlife) and determine sources for required water and energy.

Other commenters stated that the BLM made an incorrect assumption in the NOI by stating 'there are no economically viable ways yet known to extract and process oil shale for commercial purposes.' Commenters asserted that the viability of commercial technologies has been proven in Brazil, China, and Estonia. Shell Oil was identified as having invested in the technical and commercial development of the In-situ Conversion Process (ICP) for oil shale since the early 1980s as a means to economically develop oil shale in an environmentally responsible and socially sustainable manner. Other commenters noted that technologies currently exist that minimize water consumption (and even possibly eliminate or produce in situ water), reduce CO₂ emissions, require few workers, abate ground disturbing footprints, and utilize natural gas produced in the production process. It was further emphasized that the commercial viability of OSTs resource development and whether certain lands should be made available in the future are two separate issues, and thus the failure to make federal land available for leasing will only slow technological growth.

Commenters further suggested that BLM could exclude processes which are not environmentally clean by limiting lease bids to those who can meet acceptable environmental standards, which would be defined as whether or not the process is worse than the exploration and production of crude oil.

Economic Feasibility. Commenters requested that BLM perform a cost benefit analysis for OSTs development and provide the ratio of energy in/out for each technology evaluated. In general, it was requested that leasing and the development of OSTs resources not proceed unless it can be demonstrated that available commercial technologies are economically feasible. Commenters mentioned that low resource recovery (about 10-40 percent) and small return on investment (ROI) from in-situ technologies is not in the public interest. One commenter asserted that in order for oil shale to be economically feasible, a deposit would need to be 50 feet thick and provide 50 gallons per ton, which is at least double what was considered in the 2008 PEIS for leasing requirements. Commenters stated that the BLM must further evaluate the potential development and viability of these resources, including a technological readiness assessment that looks at cost projections and comparisons to other energy sources.

On the other hand, other commenters expressed support for the 2008 RMP amendments and stated that coherent national policy and long-term regulatory stability are necessary to promote the research, development, and capital investment needed to explore environmentally responsible oil shale production options. Commenters also remarked that based on current practices and technology, oil shale has been proved around the globe to be economical, commercially viable, and environmentally acceptable. Commenters specifically mentioned the high input to output energy ratio. For example, one commenter asserted that an average grade of shale oil containing 25 gallons per ton raw shale will have about 80 percent of the energy in the original resource found in products for sale. In addition, commenters noted that technologies exist that can extract certain impurities (e.g., pyridine) naturally found in OSTs deposits, such that companies can sell it separately to make their projects more economically feasible.

Finally, some commenters requested that the BLM evaluate the impacts of OSTs developments on oil and gas prices.

3.4 STAKEHOLDER INVOLVEMENT

Issues identified in comments include recommendations for intergovernmental collaboration (at the local, county, state, and federal level), community and stakeholder input, and the formation of an federal government-industry alliance. Commenters also suggested consideration of political agendas, local area fiscal impacts, Native American concerns, consultation with subject matter experts (e.g., climate change, human health assessment), and interactions specifically with federal, state, and local departments and organizations (e.g., environmental, water). Many comments from state and local governmental agencies requested active involvement and inclusion in the PEIS process, as well as in discussing policy matters. Several individuals expressed general concerns that their input, comments, and opinions as stakeholders will not be considered or respected and that OSTs development will eventually

proceed despite their objections, thus diminishing the value of their efforts to participate the process.

Some commenters asserted that the BLM has not done an adequate job of informing the public on the ramifications of extracting oil from these resources. Other commenters encouraged BLM to disclose all efforts taken to ensure effective public participation and involvement. However, there was also concern that the NOI was deficient because notification by publication in public media with respect to the Salt Lake City, Utah public meeting did not occur on a timely basis (before the 15 day period preceding the meeting). In addition, it was noted that the meetings in Price and Vernal, Utah conflicted with other BLM meetings.

3.5 CUMULATIVE IMPACTS

Commenters recommended that the PEIS cumulative impacts analysis address a reasonable foreseeable development (RFD) scenario and account for the impacts from all past, present, and future energy development projects in the region. Such actions would include oil and gas, coal, shale gas, and renewable energy (e.g., solar, wind, geothermal) development, as well as future transmission corridor development, refining projects, and any other mineral development that competes for surface use on public lands. It was requested that these impacts be analyzed on multiple scales, including for example local, regional, and basin-wide. It was specifically requested that a full and comprehensive analysis be included for water contamination, water quality, waste water disposal, aquatic life, fishery resources, and downstream environments. Other cumulative factors identified for consideration included: water contamination issues; activities leading to soil and vegetation disturbance, disturbance of habitat structure, habitat fragmentation; air quality and pollution; contributions to global warming; population growth; growth in other sectors (e.g., such as recreation and tourism); and infrastructure factors (e.g., transmission lines, pipelines, roads, fire management, and secondary impacts from required power generation associated with large scale OSTs development).

Commenters expressed concerns that the cumulative impact analysis in the previous PEIS was inconsistent with NEPA, which deferred analysis to future analyses to be conducted on a lease-to-lease basis. In addition, it was noted that the assessment should not be performed based on a single oil shale facility scaled up to regional development projections.

3.6 MITIGATION AND RECLAMATION

Commenters suggested that the PEIS link cumulative impacts with mitigation measures, adopt enforceable mitigation measures, and link mitigation measures with specific steps that should be taken in specific resource areas or over the larger landscape. Commenters further recommend that the PEIS specifically identify all relevant and reasonable mitigation measures to protect water sources, including: technology selection to decrease potential contamination, water consumption and groundwater flow effects; engineering practices to include water treatment and recycling, minimizing disturbed areas and hastening reclamation; and the preparation of erosion and sedimentation control plans). In addition, commenters recommended that mitigation address impacts on the demand for services and infrastructure in affected communities. One commenter

believes that, as a programmatic document, the BLM should refrain from adopting any mitigation measures, allowing such measures to be addressed in the more site-specific NEPA analysis. Another commenter opposes mitigation measures that include private land purchases.

Commenters recommend that the PEIS describe reclamation options and processes for the various oil shale technologies (e.g., open pit, subsurface mining) and development phases (e.g., construction, decommissioning). Commenters believe it is important to define the metrics used to measure success, such as “successful re-vegetation,” and to define reclamation by comparison to pre-development conditions. Commenters voiced support for a reclamation plan that is based on actual soil types, precipitation, and altitude, while also taking into account use by wildlife, livestock, and wild horses. Some commenters noted that land has been and can be reclaimed after the resources are mined, while others stated that reclamation does not always work, has a poor track record, and sometimes cannot return systems to their original levels of ecological performance. It was further noted by one commenter that formations like Uintah and Green River may not be able to be reclaimed due to unique geology and soil chemistry. Commenters want the BLM to acknowledge and coordinate with BOR and the U.S. Forest Service (FS) on active and on-going projects. In addition, they requested that BLM try to minimize irreversible impacts.

The responsibility for long-term stewardship and responsibility for the areas impacted by OSTs development was emphasized by some of these commenters.

3.7 LAND USE PLANNING AND LEASING

Some comments raised issues associated with the land use planning process. One commenter noted that the BLM needs to explicitly address potential conflicts, for example with oil and gas resources. It was suggested that the PEIS analyze the applicability of the Interim Final Rule on the Leasing in Special Tar Sand Areas (October 2005) and how this specifically may affect NPS resources. One commenter asserted that the BLM should fully consider the impacts on or conflict with renewable energy development, suggesting coordination with the Solar Energy PEIS. Others raised concerns about how development of OSTs resources would be addressed in so called “checkerboard” areas where federal lands are interspersed with state and private lands.

Commenters voiced concern about the continued multiple use of the BLM lands. It was noted that OSTs development is generally inconsistent with multiple uses of land, for it displaces other land uses (e.g., recreation, mining, hunting, oil and gas production, livestock grazing, wild horse and burro herd management, communication sites, ROW corridors). In addition, it involves the permanent removal of soil, which the commenters asserted therefore precludes other uses. Other commenters suggested that the BLM needs to show that there are actually competing priorities for the land. It was also noted that OSTs development can be compatible with the development of other resources; commenters suggested that BLM develop leasing programs that accommodate multi-mineral leasing.

Commenters noted that BLM should avoid making irreversible commitments to OSTs development within areas where Master Leasing Plans are being developed in consideration of other land uses and protections encompassed in such plans. Explicitly noted were Dinosaur Lowlands, Shale Ridge, Eastern Book Cliffs/Piceance Basin, Little Mountain, and Adobe Town.

It was recommended that the most recent RD&D lease progress reports should be included in PEIS. Commenters reiterated the fact that developers receiving leases will still have to go through the permitting process. Commenters suggested that BLM assess results from the RD&D leases with respect to safe production, clean-up, and restoration before large areas are opened. Commenters suggested that only competitive leases be accepted, that leasing targets and schedules be set to avoid exceeding carrying capacities, and that leasing regulations provide for minimum bonuses. In addition, commenters suggested that allocation and leasing decisions be made that would support development of alternative recovery methods in areas where shale is shallow but has adequate thickness and grade.

One commenter also voiced concern over BLM's ability to successfully manage impacts on the land from additional OSTs leases, noting difficulties in managing impacts from off road vehicle use and oil and gas leasing. Other commenters expressed support for research and development on private lands.

3.8 POLICY

Commenters identified a number of policy-related issues. Some of these issues will be addressed in the PEIS; others fall outside the scope of the PEIS. The identified policy issues include the following:

- Questions and concerns were raised about whether a revision of the original 2008 PEIS is warranted or necessary. Specifically noted was the time and cost associated with the PEIS process. Commenters noted that the 2008 OSTs PEIS and RMP amendments (in addition to the 2008 Oil Shale Rule) were the result of a robust and valid public process which allows for resource development while protecting the environment and recreational uses of public lands. One commenter stated that by revisiting the PEIS, the BLM was in violation of the Federal Land Policy and Management Act of 1976 (FLPMA); another asserted the reduction of acreage sends a negative message to investment companies and the international community. Also mentioned was the fact that the areas proposed for removal from development are either already off limits or may be precluded under BLM authority without redoing the entire PEIS.
- Concerns were raised over what new or different information and analysis should be expected from the EIS process and what guarantees BLM can offer that this process will not be repeated in another 2 years.
- Deferment was recommended of the PEIS and leasing decisions for development of public lands and further amendments to the RMP's until research, technology constraints and potential, resource demands and impacts, environmental harms, and infrastructure challenges have been significantly and completely analyzed.

Specifically waiting until the RD&D results are available before promulgating regulations as to not render the regulations obsolete was recommended.

- Support was expressed for BLM to move forward with the leasing process and to develop the BLM OSTs resources in an environmentally correct manner.
- A suggestion was made for the immediate release of 5 percent of federal lands in the study area to fast-track OSTs development, with an additional 10 percent released per year if success is shown.
- A need was identified for consistent and stable regulation and a reliable national policy from BLM considering the needs of the entire country. The abandonment of federal research and development in the 1980s when oil prices decreased and the resulting uncertainty for industry was a noted concern.
- Confirmation of PEIS scope to the legal mandates, requirements, and the intent of Section 369(d)(1) of the Energy Policy Act of 2005 was a specifically noted concern.
- Legality of OSTs development and use was questioned under International and domestic climate change law, specifically Article 2 and 3 of the United Nations Framework Convention on Climate Change (UNCCC).
- Limiting the scope of the new PEIS to only those characteristics that differ from the originally known characteristics and which are relevant to the decisions in the 2008 ROD was recommended.
- Limitations associated with the PEIS only addressing the allocation of potentially suitable public lands for OSTs development, and not the actual leases were noted; it was suggested that the role of subsequent NEPA analyses in informing future decisions regarding leasing be addressed in the PEIS.
- Initiation of a process was recommended that will draft the regulations governing commercial leasing, mining, and development for this energy development scenario, prior to any commitment of land or commercial leasing approval.
- Commenters stated that site-specific NEPA review will likely not provide an adequate region wide analysis of the relationships and impacts to resources (e.g., water use) across the three state regions, while others noted that it is not up to the BLM to determine what technologies are appropriate or will succeed, but to simply insure the resource is available on a fair basis. In any case, appropriate and applicable environmental laws and regulations will be complied with and new information reviewed when specific development plans are submitted and before a project can proceed.
- One commenter stated that the PEIS must not incorporate any policy of “precautionary” bias or “worst case” scenarios, particularly any assumptions regarding impacts of extraction and mitigation technologies still undergoing development and testing.
- Concerns were expressed that a specialist in OSTs technology or mining was not specifically included as part of the BLM PEIS team. It was stated that such expertise

would be essential in analyzing environmental impacts associated with the resource development and extraction processes and developing a sound PEIS.

- The need for consistency of any land use plan amendments with state and local plans and those of Tribes to the extent provided by law, regulation, and policy was noted.
- The need for identification and evaluation of key regulations, statutes, and agreements that will influence OSTTS development and support environmentally friendly practices was noted.
- Concerns were expressed that the state legislatures are too distant and do not have the authority to regulate tar sands and oil shale extraction, which will result in little or no oversight, emissions control, and protection against unanticipated construction. A bill passed by the Utah State legislature restricting the ability of a local town, city, or county to regulate any development for mining on any state or federally owned land was cited in support of this concern.
- The need for consistency with the ban on use of federal funds to implement Secretarial Order (SO) 3310, *Protecting Wilderness Characteristics on Lands Managed By the Bureau of Land Management* was noted. It was further stated that any attempt to implement, administer, or enforce SO 3310 is a violation of Section 1769 of the April 21, 2011 Continuing Resolution, and thus the BLM should immediately cease all activities related to the OSTTS PEIS.
- Commenters urged acknowledgment and consideration of the Colorado River Storage Project Act and conservation programs, such as those in the Bear River Watershed of Idaho, Utah, and Wyoming.
- Coordination and alignment of the OSTTS PEIS with other energy EISs (such as the 6-state Solar PEIS), turning these efforts into a National Energy Policy which addresses national needs more systematically was suggested.
- A need for the development of OSTTS resources for national security, independence from foreign sources of fossil fuels, and the diversification of domestic energy resources was observed. Almost all commenters who stated strong support for OSTTS development stated that their support was based on the nation's need to end dependence on import of foreign fuels and desire to utilize this large domestic resource.
- Inclusion of a discussion on the unique legislative history and purpose of Naval Oil Shale Reserves was recommended. It was stated that the reserves were meant for research and development, not large-scale development unless deemed essential to national security.
- Concerns were expressed that taxes, royalties, and/or subsidies would be established or granted in a way that would be beneficial to the taxpayers, yet not deter investment in OSTTS development. One commenter suggested that royalty rates for commercial leases be at least equal to oil and gas rates. Another specifically mentioned that the NOI for the PEIS was deficient and gave no notice that the royalty rate (43 CFR 3903.52) was to be reconsidered or removed.

- Establishment of an adequate bond fund to finance future mitigation efforts and/or a trust fund providing financial support to local communities early in the development process was recommended by several commenters.
- A need for BLM to consult with other Federal agencies, including EPA and CEQ was observed.
- Conflicts with respect to multiple use of the public lands, particularly where OSTs leasing and development could be in conflict with existing grazing, recreation, fishing, oil and gas development, and other resource objectives was a noted concern.
- Conflicting resource values (e.g., assessment of socioeconomic impacts of loss of recreational lands to OSTs development uses) were observed by several commenters.
- Providing access to public lands for additional research and development outside the ongoing oil shale RD&D program was suggested.
- Establishment of a technical advisory council with members from the OSTs industry and representing the region where findings from research could be shared with stakeholders was recommended.
- Importance of recognizing and considering preexisting contractual rights, in accordance with applicable law was noted.

3.9 ALTERNATIVES

The following considerations related to alternatives were submitted by one or more commenters:

- Support for the no action alternative that would leave in place the current commercial leasing land allocation decisions from 2008 ROD was expressed by several commenters. They observed that attempts to reverse the ROD subverts the public process, contradicts the spirit of the 2008 ROD negotiations, would be in direct contravention of the Energy Policy Act of 2005 and would be conducted without Congressional authorization.
- Addition of a no action alternative that would provide a baseline of environmental conditions in the area against which leasing alternatives could be assessed was recommended.
- Inclusion of the No Action Alternative A from the 2008 PEIS, under which no amendments to existing land use plans to identify lands available for application for commercial oil shale leasing would be completed, and there would be no commercial leasing or development of tar sands on public lands was recommended.
- Inclusion of a no development alternative that would include no OSTs leasing or development at all on public lands was recommended.
- Inclusion of an alternative that allows an increase in the amount of acreage under consideration for leasing and development was recommended.

- Inclusion of Alternative C from the 2008 PEIS, with no modifications was recommended, with supporters stating that the BLM's reason for rejecting this alternative was flawed and that oil shale development was inappropriately prioritized over all other uses of public land.
- Opposition for Alternative C from the 2008 PEIS was expressed, stating that the available acreage is trivial and would not facilitate development of the resources.
- Support for a conservation alternative was expressed, which expands beyond the list of lands to be excluded in Alternative C from the 2008 PEIS. This alternative would remove from OSTs development land that contains: (1) identified and/or potential wilderness characteristics; (2) CPW areas; (3) all ACECs; (4) core sage-grouse and/or other priority habitat areas; (5) migration routes of big game herds; (6) the Adobe Town Very Rare or Uncommon Area (WY); (7) designated and proposed areas of critical environmental concern; (8) suitable Wild and Scenic River segments; and (9) lands identified as excluded from commercial OSTs leasing in Alternative C of the 2008 PEIS.
- Consideration of a multiple use alternative was proposed that would not remove several kinds of areas from OSTs development. The proponent stated that it is possible to recover minerals without adversely impacting protected surface uses on lands that currently have restrictions for no surface disturbance through careful planning, management, mitigation and reclamation.
- Addition of a deferred leasing and development alternative was recommended that would delay the decision on whether to make available certain lands for commercial leasing and development until a number of conditions are met, including (1) ongoing RD&D projects are significantly complete and results analyzed; (2) OSTs development is demonstrated to be a viable industry; (3) BLM's regulations are finalized; and (4) appropriate environmental quality standards are designed.
- A suggestion was made for a limited leasing alternative that significantly limits the number of areas made available for commercial leasing until the extraction process and its effects on the environment are better understood.
- Support was expressed for an alternative that limits leasing of public land to existing RD&D leases.
- Opposition was expressed to inclusion of an alternative that emphasizes natural resource protection.
- A suggestion was made that BLM consider the incorporation of a phased development alternative.
- Consideration of an alternative was suggested that opens all BLM OSTs lands to development, while specifically defining in each solicitation the environmental standards which must be met.
- Inclusion of an alternative was proposed that limits development to deposits which are at least 25 feet thick and yield 25 gallons/ton yield or more; different standards for

different states would not be considered, and thus the poor resource deposits in Wyoming would be excluded.

- A suggestion was made that the alternatives have varying production scenarios to allow for better comparison among the presented alternatives. Also suggested was setting regional production targets to minimize effects on parks and other conservation levels.
- Concern was expressed related to alternatives that would remove any lands from leasing, citing that restricting available lands would choke off new technologies, impede progress being made, and hinder the ability to prove feasibility on federal land. It was further stated that such an alternative would create mostly noncontiguous parcels that would not allow for the efficient and economic development of the underlying oil shale resources.
- Concern was expressed regarding preexisting contractual rights that could be affected by any alternative that could remove significant areas from oil shale leasing. Maintaining the ability of RD&D leaseholders to exercise their Commercial Conversion Rights (on the preference area identified in their lease) and other contractual rights contained in their Leases was specifically noted.
- A suggestion was made that BLM prepare a Statement of Energy Effects detailing the adverse effects on energy supply, distribution, and/or use (including a shortfall in supply, price increases, and increased use of foreign supplies) for all alternatives that reduce the original 2 million acres of OSTs resources previously made available.
- A suggestion was made for consideration of the development of alternate energy sources and an inclusion of an alternative that compares renewable energy sources with OSTs.
- A suggestion was made for the inclusion of an alternative involving displacing the nation's dependence on foreign oil through efficiency improvements.

3.10 OTHER ISSUES

Several other issues were raised in comments. Some of the following will be considered during the preparation of the PEIS, others are more appropriately addressed in the NEPA documentation for the RD&D project, the actual RD&D leases, or directly by application to the appropriate BLM Field Office: the relationship between the PEIS and the ongoing oil shale RD&D program, their schedules, and data sharing concerns; consideration of the mineral value of the shale itself (i.e., lithium, aluminum, magnesium); consideration of natural seepage of oil into the ecosystem; and specifications on how success of the technologies would be measured.

4 INTERAGENCY COOPERATION AND GOVERNMENT-TO-GOVERNMENT CONSULTATION

The BLM initially invited about 55 federal, Tribal, state, and local government agencies to participate in preparation of the OSTs PEIS as cooperating agencies. To date, 15 agencies have expressed an interest in participating as cooperating agencies and efforts are underway to establish Memoranda of Understanding. These 15 agencies are: Grand County, Utah; Garfield County, CO; the State of Colorado; the State of Utah; the State of Wyoming; USFWS; NPS; Carbon County, UT; Lincoln County, WY; Uinta County, WY; Coalition of Local Governments; Duchesne County, UT; City of Rifle, Colorado; Sweetwater County, WY; Shoshone Business Council (Eastern Shoshone Tribe).

In accordance with the requirements of Executive Order 13175, "Consultation and Coordination with Indian Tribal Governments," the BLM will coordinate and consult with Tribal governments, Native American communities, and Tribal individuals whose interests might be directly and substantially affected by activities being considered in the *Oil Shale and Tar Sands Resources to Address Land Use Allocations in Colorado, Utah, and Wyoming PEIS*.

5 FUTURE OPPORTUNITIES FOR PUBLIC INVOLVEMENT

Scoping is only the first phase of public involvement provided under the NEPA process. The next phase of public involvement will consist of public review and comment on the Draft OSTs PEIS. At this time, the BLM anticipates releasing the Draft PEIS for public review in early 2012; a 90-day comment period will be provided.

The public also will have an opportunity to review the Final PEIS when it is published. The BLM will provide a 30-day review period on the Final PEIS. In addition, the BLM will provide a protest period related to proposed RMP amendments. In accordance with Title 43, Part 1610.5-2, of the *Code of Federal Regulations*, any person who participates in the planning process and has an interest that is or may be adversely affected by the proposed amendment of a RMP may protest such amendment. A protest may raise only those issues that were submitted for the record during the planning process.

Information about all opportunities for public involvement in the OSTs PEIS, including announcements of public meetings and releases of documents for review, will be maintained on the project website (<http://ostseis.anl.gov>). Individuals seeking e-mail notification of such opportunities can sign up for e-mail announcements.

6 REFERENCES

Bartis, Jim. 2005. *Oil Shale Development in the United States; Prospects and Policy Issues*. RAND publication.

- BLM (Bureau of Land Management). 2008a. *Proposed Oil Shale and Tar Sands Resource Management Plan Amendments to Address Land Use Allocations in Colorado, Utah, and Wyoming and Final Programmatic Environmental Impact Statement*. FES-08-32.
- BLM. 2008b. *Approved Resource Management Plan Amendments/Record of Decision (ROD) for Oil Shale and Tar Sands Resources to Address Land Use Allocations in Colorado, Utah, and Wyoming and Final Programmatic Environmental Impact Statement*.
- BLM. 2011. "Notice of Intent To Prepare a Programmatic Environmental Impact Statement (EIS) and Possible Land Use Plan Amendments for Allocation of Oil Shale and Tar Sands Resources on Lands Administered by the Bureau of Land Management in Colorado, Utah, and Wyoming." *Federal Register* 76:21003-21005.
- GAO (Government Accountability Office). 2010. *Energy-Water Nexus: A Better and Coordinated Understanding of Water Resources Could Help Mitigate the Impacts of Potential Oil Shale Development*. GAO-11-35.
- FWS, 2006. Guidelines for the State Wildlife Grant (SWG) program. Available at: <http://wsfrprograms.fws.gov/Subpages/ToolkitFiles/SWG2007.pdf>