August 6, 2010

Helen Hankins, Director
Colorado State Office
Bureau of Land Management
2850 Youngfield Street
Lakewood, CO 80215

Catherine Robertson, Field Manager
BLM Grand Junction Field Office
2815 H Road
Grand Junction, CO 81506

Dear Ms. Hankins and Ms. Robertson:

Attached please find a recommendation for the Bureau of Land Management State Office and Grand Junction Field Office to prepare a "Master Leasing Plan" for BLM lands managed by the Grand Junction Field Office. This recommendation is submitted on behalf of The Wilderness Society and Center for Native Ecosystems. We are aware that under the terms of IM No. 2010-117, each BLM State Office is directed to submit an implementation plan and timeline to the Director for fulfilling the terms of the IM by August 16, 2010.

We have taken the opportunity to prepare the enclosed recommendation to assist you in fulfilling this mandate, and look forward to working with the BLM in the preparation of a "Shale Ridges and Canyons Master Leasing Plan." Please contact us if you have any questions or would like additional information or data.

Sincerely,

Nada Culver, Director and Senior Counsel
The Wilderness Society BLM Action Center
1660 Wynkoop St. Ste. 850
Denver, CO 80202
(303) 650-5818

Josh Pollock, Conservation Director
Center for Native Ecosystems
1536 Wynkoop St. Ste. 303
Denver, CO 80202
(303) 546-0214

Enclosure – MLP Proposal for Shale Ridges and Canyons and associated maps
Cc: Assistant Secretary Wilma Lewis
Deputy Assistant Secretary Sylvia Baca
Deputy Assistant Secretary Ned Farquhar
Director Bob Abbey
Deputy Director Mike Pool
Deputy Director Marcilynn Burke

Master Leasing Plan Recommendation:
Shale Ridges and Canyons, Colorado

Prepared by
The Wilderness Society and Center for Native Ecosystems

Summary:
Central western Colorado hosts numerous complexes of fragile and globally valuable ecological systems, ranging from wooded ridges, to fragile desert shrublands, to massive shale cliffs. The area also embodies unique scenery and recreation opportunities highly valued by tourists and locals alike, which is increasingly important to the economy of Colorado's western slope. An MLP for this area would allow for careful and detailed planning to direct leasing to areas more suitable for energy development, while preserving other areas that harbor globally unique ecological values and important scenic and recreation resources. An MLP would promote proactive approaches to manage energy development in an area that supports other federal and local priorities, including Greater Sage Grouse (an ESA candidate species), White-Tailed Prairie Dog, the federally threatened Colorado Hookless Cactus, and multiple Citizen Wilderness Proposal areas.

I. <u>Area Name and Location</u>:
Shale Ridges and Canyons, central western Colorado, north of Grand Junction

II. <u>Summary Data</u>:

- **BLM Field office and counties =** Grand Junction Field Office; Mesa and Garfield Counties
- **Relevant RMP** = Grand Junction RMP, dated 1987; draft revision due June 2011
- **Map** = see attached
- **Total acres** = 958,610
- **% Federal lands** = 72% of the proposed MLP area is BLM land and 79% of the MLP area is federal minerals
- **% leased** = approximately 50% of the MLP area is leased, with half of the leases in production. More than 60% of the non-producing leases expire within 5 years. Thus there are substantial federal mineral interests within the proposed MLP area, and significant portions of that area are either not currently leased or not currently producing.

III. <u>Indications of Industry Interest</u>

The Shale Ridges and Canyons area is significantly leased, with approximately 47% of the leased area in production. Industry continues to nominate parcels which are regularly included in BLM's quarterly lease sales. Several parcels offered for the August, 2010 lease sale are within this proposed MLP area. In 2005, BLM released an oil and gas leasing EA for South Shale Ridge which opened the entire area to leasing. That November, BLM leased almost all of South Shale Ridge for oil and gas drilling, a decision which was challenged by conservation groups. The leasing EA and FONSI was overturned by federal court in 2007. BLM is now reassessing leasing

in South Shale Ridge, and the entirety of the proposed MLP, as part of the Grand Junction RMP revision.

IV. Potential Resource Conflicts

Background on Values for the Proposed Area:
The area encompasses highly scenic and varied topography, ranging from expanses of desert shrublands to rugged wooded ridges. This combination of steep cliffs and specialized Mancos Shale soils gives rise to highly unique habitats that support globally imperiled plants and important wildlife species. The extensive series of ridges and valleys, with some east-west trending ridges, along with impervious shale layers, gives rise to areas of complex hydrology, including seeps. Winding canyons offer considerable recreation opportunities, significant given the area's proximity to the recreation hubs of Grand Junction and Fruita.

The significance of the area is reflected in the number and range of special conservation designations encompassed: six Citizen Wilderness Proposal areas (Demaree Canyon, South Shale Ridge, Cow Ridge, Little Bookcliffs, Hunter Canyon, and Prairie Canyon); nearly two dozen Colorado Natural Heritage Program Potential Conservation Areas, with a half dozen of those having top-ranked "Outstanding" or "Very High" biodiversity (see appendix for details); two Wilderness Study Areas (Demeree and Little Bookcliffs); and two Areas of Critical Environmental Concern (Badger Wash and Pyramid Rock).

Landownership:
A majority of the surface ownership in the area is held by the BLM. 72% of the surface is BLM; approximately 27% is private. Some of the private surface ownership comprises large holdings by a small number of owners, including some acreage under conservation easement, providing opportunities for cooperative management and planning.

Recreation and Tourism:
Given the area's proximity to the City of Grand Junction and major hubs for backcountry recreation such as mountain biking, hiking, hunting and fishing, the area has particular relevance for tourism and low-impact recreation. Much of the appeal of an area for tourism rests on natural, unbroken vistas, so it is especially important to preserve the scenic characteristics that draw travelers and local residents alike to enjoy these provocative landscapes. The economic benefits of attractive, undisturbed hunting and fishing locales are equally valuable to the region.

Impacts to Values from Leasing:

Greater Sage Grouse:
The northern portion of the Shale Ridges and Canyons area includes mapped greater sage grouse production habitat (see attached map). The northeastern portion of the area overlaps a Doherty greater sage grouse core area, and is within several four-mile boundary areas for greater sage grouse leks. This species is the subject of focused attention – in March 2010, the greater sage grouse was placed on the candidate list for Endangered Species Act protection. This announcement was issued simultaneously with new guidance from BLM for protecting the species from energy development.

Sage grouse is vulnerable to a wide range of disturbances associated with oil and gas development, as reflected in BLM Instruction Memorandum 2010-071, issued March 5, 2010 and effective immediately. The IM provides substantial guidance on energy development in greater sage grouse habitats. Under "Actions Available for Protection of Sage Grouse Populations" it states in part:

Oil and Gas/Geothermal:

a.. Withhold from sale or defer the sale of parcels, in whole or in part, that industry has proposed for oil and gas or geothermal leasing in priority habitat as supported by analysis under the National Environmental Policy Act (NEPA) of the impacts of leasing on sage-grouse.

Thus securing a federal mineral withdrawal as part of preparation of an MLP for all mapped priority sage grouse habitats within the Shale Ridges and Canyons area appears fully consistent with IM 2010-071.

Additionally, an inter-disciplinary DOI review team released its final report and recommendations on the 77 contested leases issued in Utah BLM's December 2008 lease sale[1] ("Stiles Report") in October 2009. The Stiles Report recommended that lease parcels in all sage-grouse habitat have NSO stipulations year-round. The report further recommended that "BLM-Utah review the [recently-completed RMPs] in light of this new guidance and make necessary modifications." (pp. 32-33).

Impacts to sage grouse from oil and gas development are well-documented and recognized by BLM. The Shale Ridges and Canyons MLP would provide a good opportunity to protect this species in western Colorado and establish a model for a leasing program that protects sage grouse habitat. In order to do this, the MLP should fully protect greater sage grouse core areas as mapped by the Colorado Division of Wildlife and Doherty (2008).

<u>Aridlands Burrowing Mammal Communities:</u>

The southern portion of the Shale Ridges and Canyons area includes several complexes hosting burrowing mammal communities and sensitive bird species. In particular, active White-tailed Prairie Dog (*Cynomys leucurus*) complexes exist, along with recently surveyed occurrences of Burrowing Owls (*Athene cunicularia*), a state threatened species. The White-Tailed Prairie Dog was identified as a Species of Greatest Conservation Need, and further with a "most pressing" need, in the State of Colorado's Comprehensive Wildlife Conservation Strategy (page 50). The unimpeded functions of such ecological systems are extremely important to sustain, as these complexes with burrows typically support a highly interrelated community of mammals, avian species including raptors, reptiles, and vegetation. Given the number of interrelated species and natural communities in these complexes, and the sensitivity of some of the species such as Burrowing Owl, it is especially important to eliminate or minimize the many potential disturbances associated with oil and gas development. Such disturbances can include human or vehicular activity near or during breeding or nesting; vibrations and alternation of hydrology, erosional patterns and burrows;

[1] The report can be found at http://www.doi.gov/documents/BLM_Utah77LeaseParcelReport.pdf.

habitat fragmentation caused by roads; spread of nonnative vegetation causing changes in foraging patterns; and other indirect and cumulative impacts.

Big Game and Wide-ranging Mammals:
Given the elevational gradients encompassed by the Shale Ridges and Canyons area, ranging from canyons and lowlands to high ridges, the area includes important habitat for economically important big game and for other wide-ranging mammals. In particular, the north central portion of the Shale Ridges and Canyons area includes elk migration corridors; and most of the northern two-thirds of the area includes mule deer migration corridors. A considerable extent of mapped elk winter concentration area exists in the area, and a small extent of mapped elk production area is found near the northern boundary of the area. Mapped Mule Deer winter concentration area is found across the area, particularly at the eastern end. The far southwestern portion of the area includes mapped Pronghorn Winter Production area. In addition, significant mapped black bear fall concentration area is found in the central and northern portions of the area. Finally, mapped turkey production area is found in the far north central portion of the area.

Raptors:
A number of mapped Peregrine Falcon (*Falco peregrinus*, a state species of concern) nesting areas are found along the southeastern boundary of the Shale Ridges and Canyons area. In addition, several mapped Bald Eagle roost sites are found along the southern boundary of the area, and nesting and hunting grounds for ferruginous hawk and golden eagle also occur within the area. Although seasonal restrictions and other stipulations can moderate the impacts of oil and gas development on such raptors, they are still sensitive to human disturbance in nesting, and rely on functional natural habitats for prey. Impacts to waterways and prairie dog colonies can impede healthy forage patterns for various raptors. Based on ongoing concerns about these impacts to raptors of all kinds, the U.S. Fish and Wildlife Service has recently issued draft guidelines for managing activities such as oil and gas drilling in raptor habitat. These guidelines are being adhered to already by the BLM in other resource management decisions in several field offices in Utah and should be considered in the development of management prescriptions for this Master Leasing Plan area.

Fishing:
The Colorado Division of Wildlife has identified habitat for the Colorado River cutthroat trout in the north-central portion of the proposed MLP area. Recent research suggests that drainages previously thought to be occupied by Colorado River cutthroat trout may be occupied by greenback cutthroat trout, and vice versa. The greenback cutthroat trout is listed as threatened under the Endangered Species Act. Thus, the U.S. Fish and Wildlife Service is now requiring Section 7 consultation on impacts to all cutthroat populations of the greenback cutthroat trout lineage, including those on the Western Slope, previously thought to be of the Colorado River cutthroat trout lineage. In addition, the other Colorado River fish species protected under the Endangered Species Act (razorback sucker, humpback chub, roundtail chub, and Colorado pikeminnow) are found in stream segments within this MLP area or are directly affected by water quality and other conditions in tributaries found within the MLP area. This information should be considered in the development of an MLP that adequately protects aquatic habitats for these and other fish species.

Rare Plants:
The Shale Ridges and Canyons proposed MLP area contains some of the highest concentrations of globally rare plants in the state (see attached map from Colorado Rare Plant Conservation Strategy). The area encompasses both occurrences and habitat for a federally threatened species, the Colorado Hookless Cactus (*Schlerocactus glaucus)*, and two candidate species for federal listing, the Debeque phacelia (*Phacelia submutica*) and Parachute Penstemon (*Penstemon debilis)*.

The evocative sculptured slopes and harsh soil conditions of the Shale Ridges area comprise a unique range of conditions that must be preserved in order to sustain populations of several of these extremely rare and fragile plant species. Although management prescriptions aid to some degree in preservation, some species and habitats simply operate within too narrow a range of conditions to jeopardize these ecological elements with the range of potential disturbances associated with oil and gas development. These disturbances include the indirect and cumulative impacts associated with roads, vehicle activity, dust, changing erosional patterns, spread of nonnative plants and related changes in pollinator activity, and increased human access facilitated by roads.

The rare plants of the Shale Ridges and Canyons proposed MLP area include:

- Parachute Beardtongue (*Penstemon debilis*) (G1S1), a candidate species
- De Beque Milkvetch (*Astragalus debequaeus*) (G2S2)
- Pieance Bladderpod (*Lesquerella parviflora*) (S2)
- De Beque Phacelia (*Phacelia submutica*) (G4S2), a candidate species
- Naturita Milkvetch (*Astragulus naturitensis*) (G2G3S2S3)
- Grand buckwheat (*Eriogonum contortum*) (G3S2)
- Colorado Hookless Cactus *(Schlerocactus glaucus)* (federal threatened species)

Two of these species, the Parachute beardtongue (also called the Parachute penstemon) and the DeBeque phacelia, have recently been proposed for Endangered Species Act protection by the U.S. Fish and Wildlife Service. If these two species become formally protected ("listed") in the coming year, this will require protections, including increased scrutiny of oil and gas leasing and drilling proposals affecting the species, from BLM and others. Therefore, BLM should adequately protect habitat for these species in the MLP from the outset, so as to avoid having to make adjustments later to meet federal requirements.

One other species, Colorado hookless cactus (formerly known as Uinta Basin hookless cactus) is already listed as threatened under the Endangered Species Act. The BLM already received an unfavorable ruling from a district court regarding the agency's failure to consult with the Fish and Wildlife Service about indirect and cumulative impacts to this species from leasing on South Shale Ridge (see below for further discussion of this case). Thus, a Master Leasing Plan for this area that adequately addresses the potential direct, indirect and cumulative impacts on this and other sensitive plant species may solve or prevent conflicts over management of sensitive natural resources.

Other Important Native Species of the Shale Ridge area include:

Northern leopard frog	Gray vireo
Large-flower globemallow	Razorback sucker
Eastwood evening primrose	Colorado pikeminnow
Adobe thistle	Humpback chub
Utah fescue	Roundtail chub
Wetherill's milkvetch	Sage sparrow
Narrowstem gilia	Long-flower catseye

Citizen Wilderness Proposals (CWPs):

Hunter Canyon

Hunter Canyon is an area of striking contrasts, ranging from narrow serpentine canyons snaking their way out onto the plains of the Grand Valley to lofty, chalk-colored cliffs that form a magnificent escarpment at the headwaters of the area. Hunter Canyon offers perhaps the best opportunity for protection of a complete, continuous range of ecosystems running from the arid areas of the Grand Valley to relatively lush Douglas fir forests in adjacent upland mesas.

The canyon breaks abruptly through the sheer, cliff-forming Mesa Verde Formation and out onto the Grand Valley. The stream undercuts the rock walls, creating narrow defiles in the canyon's upper reaches, one of which can be waded to a point beneath a towering waterfall. Large, isolated ponderosa pines line the canyon bottom. The deep canyon gives way to high mesas covered by sage, mountain mahogany, and pinyon-juniper forest. As one goes higher, nearing the 8,400-foot mark, the rolling forests and gentle canyons ultimately culminate in an escarpment of chalk-white cliffs of the Green River Formation which create a dramatic backdrop to Hunter Canyon. These wetter, higher elevations provide evidence of increased vegetative vigor in the form of Douglas fir, aspen, and flowering shrubs.

As one of the least developed regions of the Bookcliffs, Hunter Canyon offers a haven for abundant wildlife. Black bear are common, as are mountain lions and their prey, mule deer. Hunter Canyon serves as a winter concentration area for these deer, and elk grace the higher elevations of the area. Because of their inaccessibility by vehicle, the far reaches of Hunter Canyon offer some of the best hunting in the Grand Valley.

South Shale Ridge

The south face of South Shale Ridge is a steep, multicolored escarpment of vivid purples, oranges, and reds. Towering Douglas firs grace the landscape at the west end of the area, providing a refreshing highlight to the stark terrain of the ridge itself. South Shale Ridge is a highly eroded feature of the Wasatch Formation, ranging in elevation from 5,000 feet at its eastern base to 8,076 feet on the summit of Corcoran Peak. Over 40 miles of twisting arroyos carve through this rugged and colorful landscape, often opening into secluded parks at their sources.

A number of outstanding special features complement the area's rugged beauty. "Goblin Valley" is a ghostly collection of white and gray hoodoos guarding the western flank of the ridge. Several rare and endangered plants grow in or near South Shale Ridge. The threatened

cactus *Sclerocactus glaucus* and the rare *Phacelia submutica* grow within the unit. In addition, Pyramid Rock Research Natural Area, just across the road from South Shale Ridge, was designated to protect the threatened Colorado Hookless cactus, DeBeque phacelia, a candidate species recently proposed for ESA listing, and DeBeque milkvetch. Pyramid Rock is a local landmark formed of colorful clays and sandstones of the Wasatch Formation.

This area supports large populations of three rare plant species: *Sclerocactus glaucus* (Colorado Hookless cactus), *Phacelia submutica* (Debeque phacelia), and *Astragalus debequaeus* (Debeque milkvetch). Raptors soar on the air currents above the ridge, and deer frequent the slopes and valleys of the area. The primary recreational use of the area is hunting. South Shale Ridge provides critical winter range for deer and elk.

Cow Ridge
Cow Ridge looms precipitously above the wide floor of the Roan Creek valley, rising almost 3,000 feet to an elevation of 8,200 feet. Verdant, heavily forested glades slope down to stands of thick-trunked sage. A creek turns through meadows flecked with wildflowers and supports communities of bittercress, willow, and box-elder.

The view south looks out on Horse Mountain and South Shale Ridge, with the Roan Cliffs and Grand Mesa flanking to the southeast; to the north, Kimball Mountain displays fluted columns of pale sandstone that buttress sheer cliffs and an ancient pinyon-juniper woodland. Just over the Cow Ridge boundary stands Castle Rock, a yellow sandstone spire that rises prominently above the surrounding fir forest.

With its proximity to the quickly developing Grand Valley and its outstanding opportunities for solitude and unconfined hiking, backpacking, and hunting, the value of Cow Ridge as a designated wilderness area is incalculable. Bald eagles frequent Cow Ridge. River otter may occur in nearby Kimball Creek and Dry Fork. Cow Ridge provides suitable habitat for burrowing owls, which have been observed in the vicinity of the CWP unit. Four globally rare plants are found in Cow Ridge. Colorado hookless cactus (*Sclerocactus glaucus*) is a federally-listed plant species along with Debeque phacelia (*Phacelia scopulina var. submutica*), also a candidate for listing. They are all regional endemics and, with the exception of S. glaucus, they are all also Colorado endemics.

Demaree Canyon and *Little Bookcliffs* WSAs are also included in the MLP and overlap with CWPs.

<u>MLP Criteria Attainment:</u>
The Shale Ridges and Canyons MLP clearly meets three key criteria set out in IM 2010-117 for when preparation of an MLP is required:

- The oil and gas industry has expressed a specific interest in leasing, and there is a moderate or high potential for oil and gas confirmed by the discovery of oil and gas in the general area.
- Additional analysis or information is needed to address likely resource or cumulative impacts if oil and gas development were to occur where there are:
    - Multiple-use or natural/cultural resource conflicts;

- Impacts to air quality.
- There is a majority Federal mineral interest.

As discussed previously, there is demonstrated industry interest and resource potential in the Shale Ridges and Canyons. However, the area also harbors important habitat for key species and treasured wilderness-quality lands. Additionally, the Grand Junction Field Office is currently completing an RMP revision which includes all of the lands within the MLP, and a draft is expected summer 2011. The RMP will require updated analysis of likely resource and cumulative impacts of oil and gas leasing and development in this area. The RMP revision provides an excellent opportunity to prepare an MLP for this area, as BLM is analyzing resource values and making oil and gas leasing decisions at the landscape level.

V. Potential Master Leasing Plan Decision – Opportunity to Solve or Prevent Conflicts

At the urging of citizens, in 2001 BLM reexamined the assumptions that guided the management decisions in the 1987 Grand Junction Resource Area RMP regarding South Shale Ridge. BLM's reassessment found that South Shale Ridge did in fact have wilderness characteristics and that these characteristics were neither considered nor adequately protected in the 1987 RMP. In response to this finding, BLM committed to undertaking analysis, including an amendment of the existing RMP, prior to exposing South Shale Ridge to the potential destruction of oil and gas leasing.

However, in 2005 BLM released an oil and gas leasing EA and FONSI for the area which presented only two alternatives: leasing and not leasing. BLM acknowledged the likely damage to the wilderness values that were documented through extensive agency and public effort, and which are unavoidable under the leasing alternative described. Still, BLM planned to proceed with the leasing alternative. A 2006 federal court decision[2] (The Wilderness Society v. Sally Wisely) overturned the agency's efforts to lease South Shale Ridge, citing failures to comply with the Endangered Species Act and consider an alternative that would have been more protective of wilderness characteristics. The BLM has yet to fully incorporate the significant new information regarding the wilderness character of South Shale Ridge into its management decisions.

An MLP for this area could resolve the conflict over South Shale Ridge and allow for leasing and development to move forward in other parts of the Shale Ridges and Canyons in a timely and responsible manner. The Shale Ridges and Canyons MLP could prevent conflicts from arising in the Grand Junction RMP revision which might jeopardize leasing decisions made in the RMP.

To solve current conflicts and prevent future ones, the Shale Ridges and Canyons MLP must fully protect citizen proposed wilderness areas and habitat for sensitive species and big game. The MLP should prevent renewal of expired leases in these sensitive areas, such as the Cow Ridge, South Shale Ridge, Demeree Canyon and Hunter Canyon citizen wilderness proposals, as depicted on the attached map. Almost all of the non-producing leases in these CWPs expire within 5 years. In both citizen-proposed wilderness and important species habitat, the MLP

[2] Wilderness Society v. Wisely, 524 F.Supp.2d 1285 (D.Colo. 2006).

should also provide that once leases expire, they will not be reoffered and the lands will be closed to leasing. Leasing and development should proceed in other areas with appropriate best management practices and stipulations. The Wilderness Society and Center for Native Ecosystems would be pleased to provide more detailed information regarding particular habitat sensitivity and the need for no-leasing and leasing-with-stipulations considerations.

Leasing closures and stipulations for greater sage-grouse should be based on the most recent research from the Western Association of Fish and Wildlife Agencies (WAFWA)[3] and Doherty[4]. The Stiles Report recommended that lease parcels in all sage grouse habitat have NSO stipulations year-round. In light of the ESA listing decision and BLM's guidance, the Shale Ridges and Canyons MLP should fully protect greater sage grouse core areas, as mapped by the Colorado Division of Wildlife.

During the preparation of the MLP, it is vital that no new leases be issued and all applications for permits to drill incorporate new conditions of approval to alert operators to the possibility of new protective stipulations to be incorporated in the ongoing MLP.

VI. <u>Stakeholders</u>

In addition to industry and municipalities, conservation, sportsmen, and recreation groups and local communities are important stakeholders in this area. Many of these organizations and individuals are participating in the Grand Junction RMP revision and have a vested interest in how the Shale Ridges and Canyons are managed in the new plan.

VII. Appendix

a. Potential Conservation Areas within the MLP
b. Concentrations of Imperiled Plants in Colorado
c. Maps:
    1. Land Ownership
    2. Federal Minerals by Surface Ownership
    3. Gas Density
    4. Leases by Year to Expiration
    5. Sage Grouse Leks and White-tailed Prairie Dog Colonies

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[3] A compilation of studies released by the Western Association of Fish and Wildlife Agencies (WAFWA) in 2004 confirmed that oil and gas development exceeding approximately one well per section (640 acres) results in calculable impacts on Greater Sage-Grouse populations, with negative impacts to leks detectable out to a minimum of 4 miles away. (*Greater Sage-Grouse Conservation Assessment* (Connelly *et al.*, 2004)). The more recent recommendations and conservation plan released by WAFWA also confirm the need to identify and protect "core habitat" areas; the signatory agencies, which includes the BLM, committed to "provide for non-renewable resource development and utilization with the assurance of 'no net loss' of sagebrush habitat or Greater Sage-Grouse populations at appropriate spatial and temporal scales" (*Greater Sage-Grouse Comprehensive Conservation Strategy (Striver, et al. 2006, p. 2-10*), as well.

[4] Doherty, K.E. 2008. Sage-grouse and Energy Development: Integrating Science with Conservation Planning to Reduce Impacts, doctoral dissertation, University of Montana, Missoula, Montana

COLORADO NATURAL HERITAGE PROGRAM POTENTIAL CONSERVATION AREAS WITHIN SHALE RIDGES AND CANYONS PROPOSED MASTER LEASING PLAN AREA

CNHP PCA	Biodiversity Rank
Pyramid Ridge et al.	1
Bar X Wash	2
Badger Wash	2
4A Ridge	2
Cow Ridge	2
Barrel Spring Point	2
Mountain Haven	3
Conn Creek	3
Horse Mountain	3
Mitchell Road	3
Middle Dry Fork	3
East Salt Creek Headwaters	3
Douglas Pass	3
Clear Creek	3
Highline Lake	3
Calf Canyon	3
Brush Creek at Skinner Ridge	4
Chimney Rock at Long Point	4
Prairie and South Canyons	5
Persigo Wash	5
Skinner Ridge	5

CONCENTRATIONS OF IMPERILLED PLANTS IN COLORADO
Source: Colorado Rare Plant Conservation Strategy, page 16, found at:
http://www.cnhp.colostate.edu/teams/botany.asp#initiative

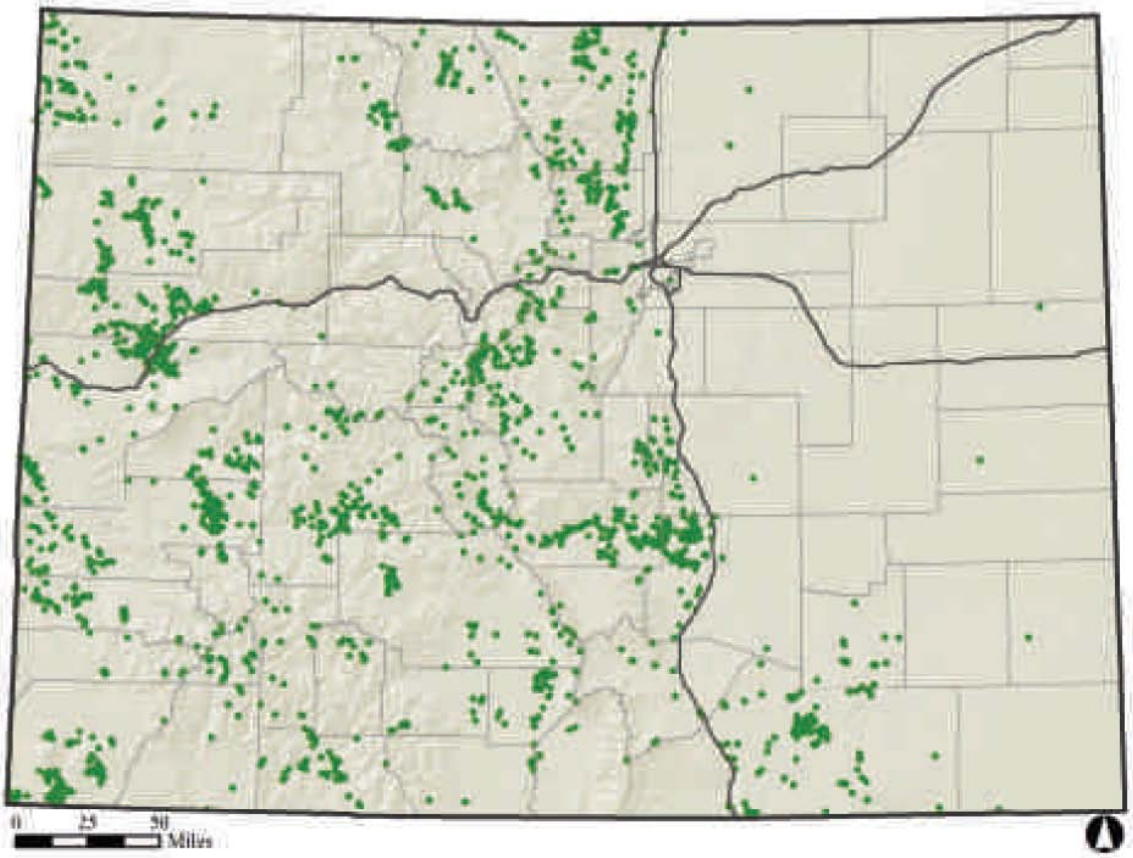
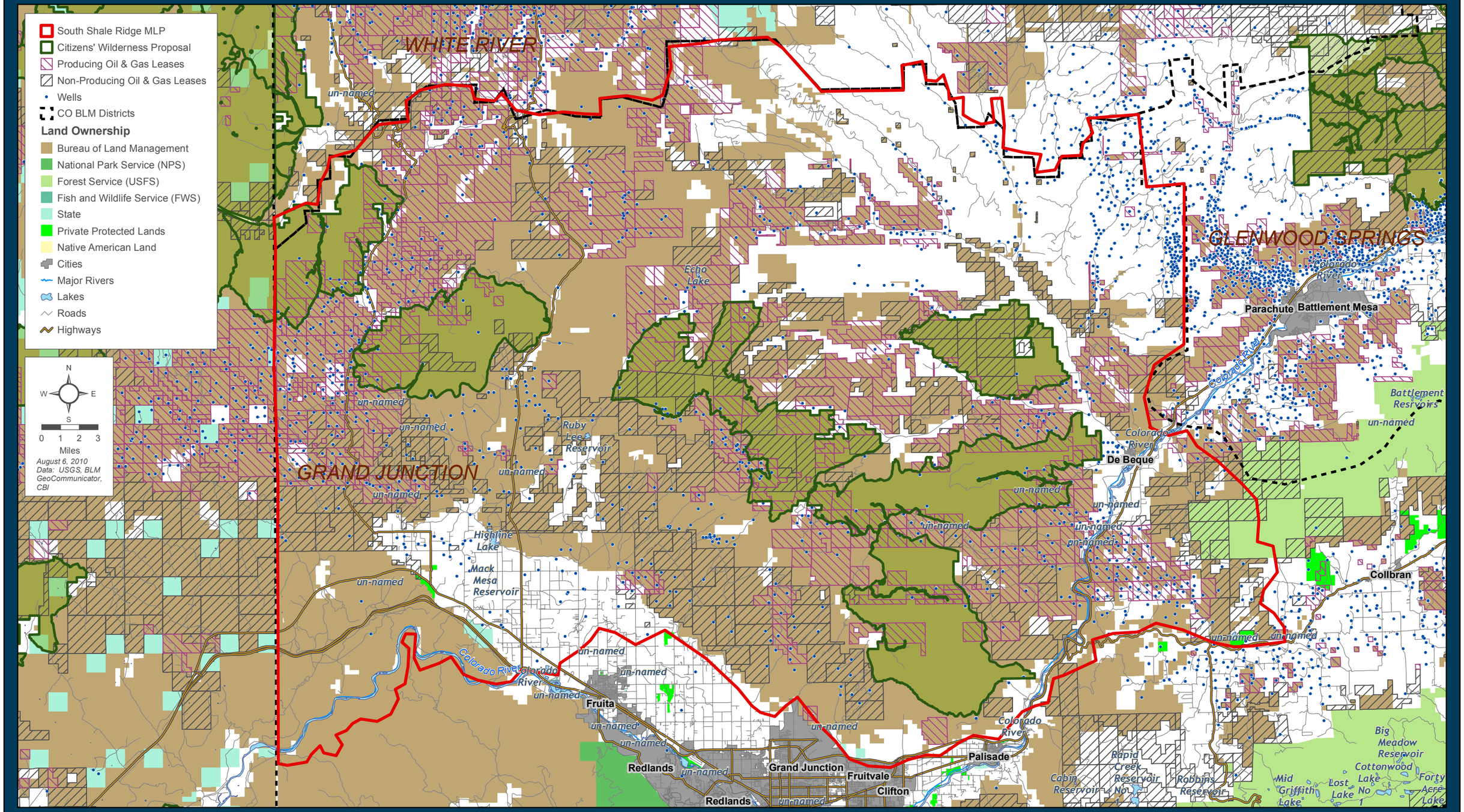
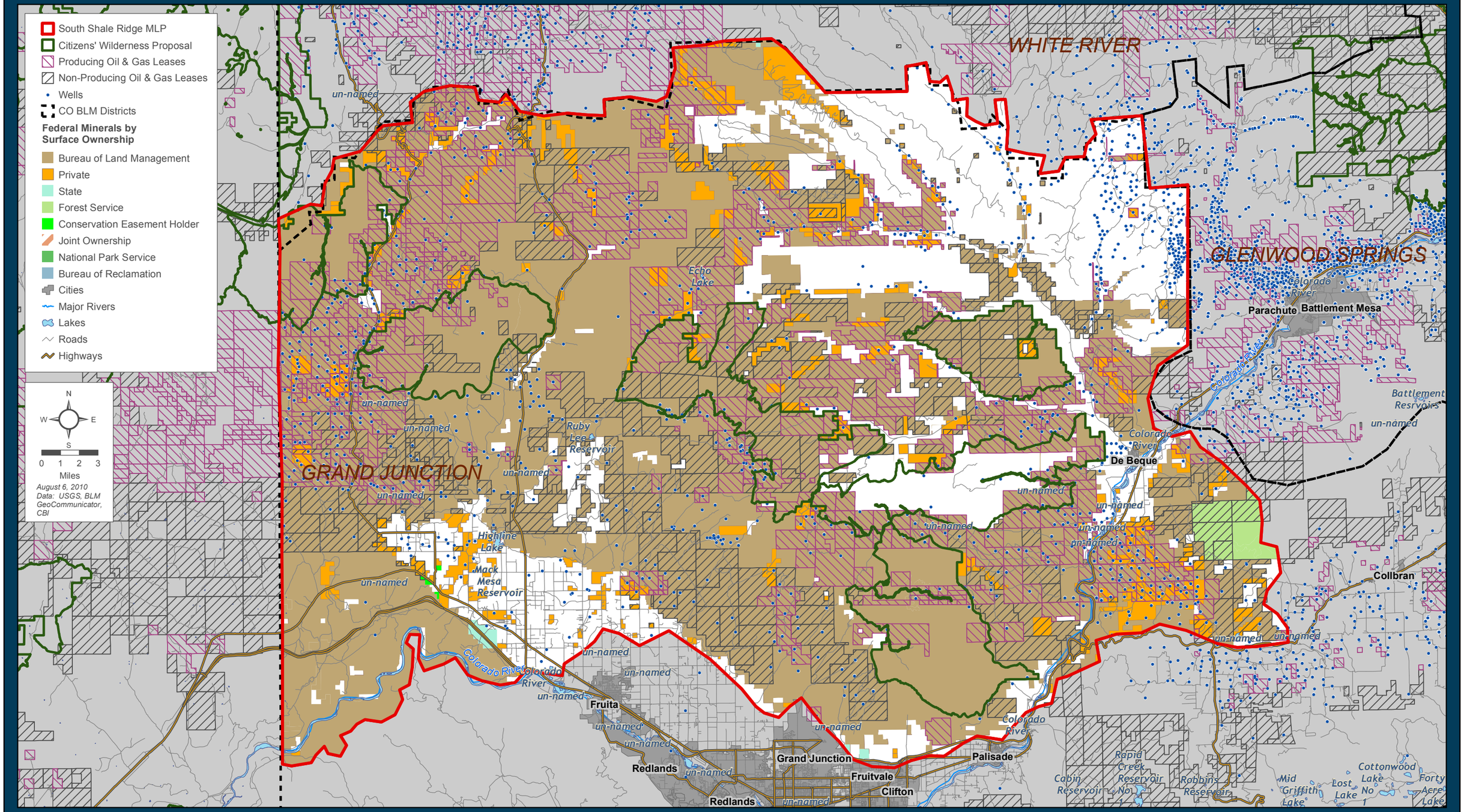


Figure 4. Locations of Colorado's most imperiled plants. Source: Colorado Natural Heritage Program. Note: Locations are enlarged for greater visibility.

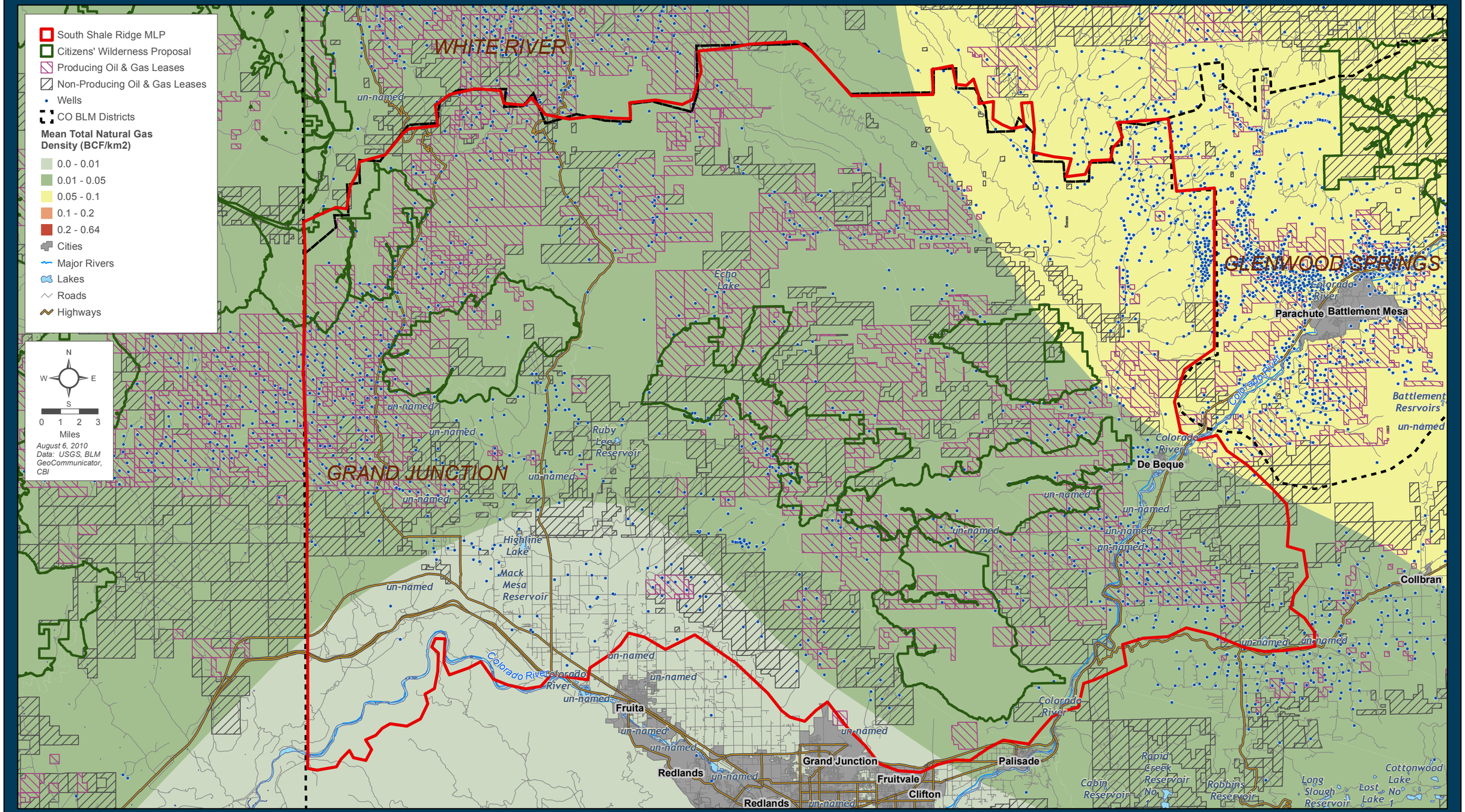
Shale Ridges and Canyons Proposed MLP--Land Ownership



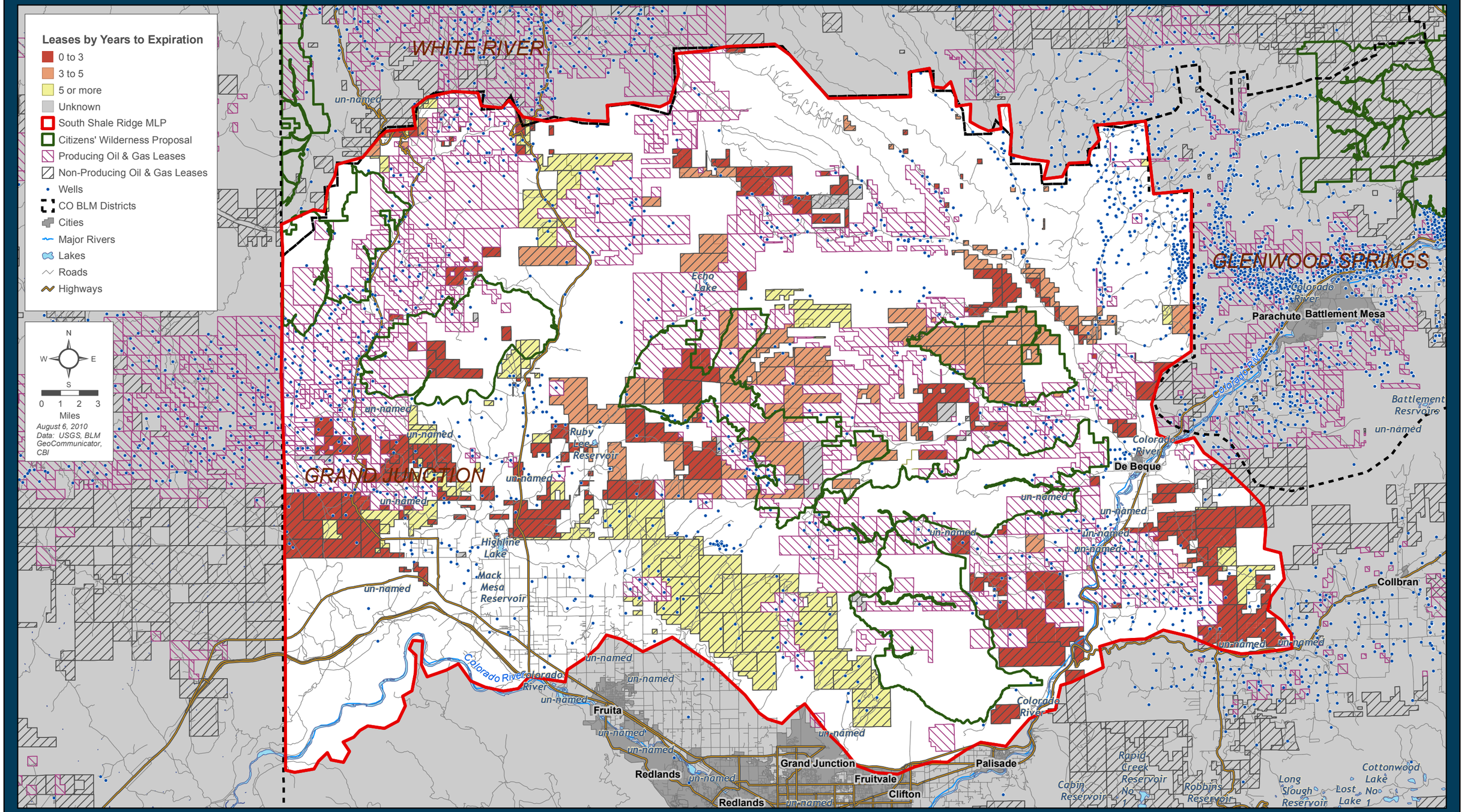
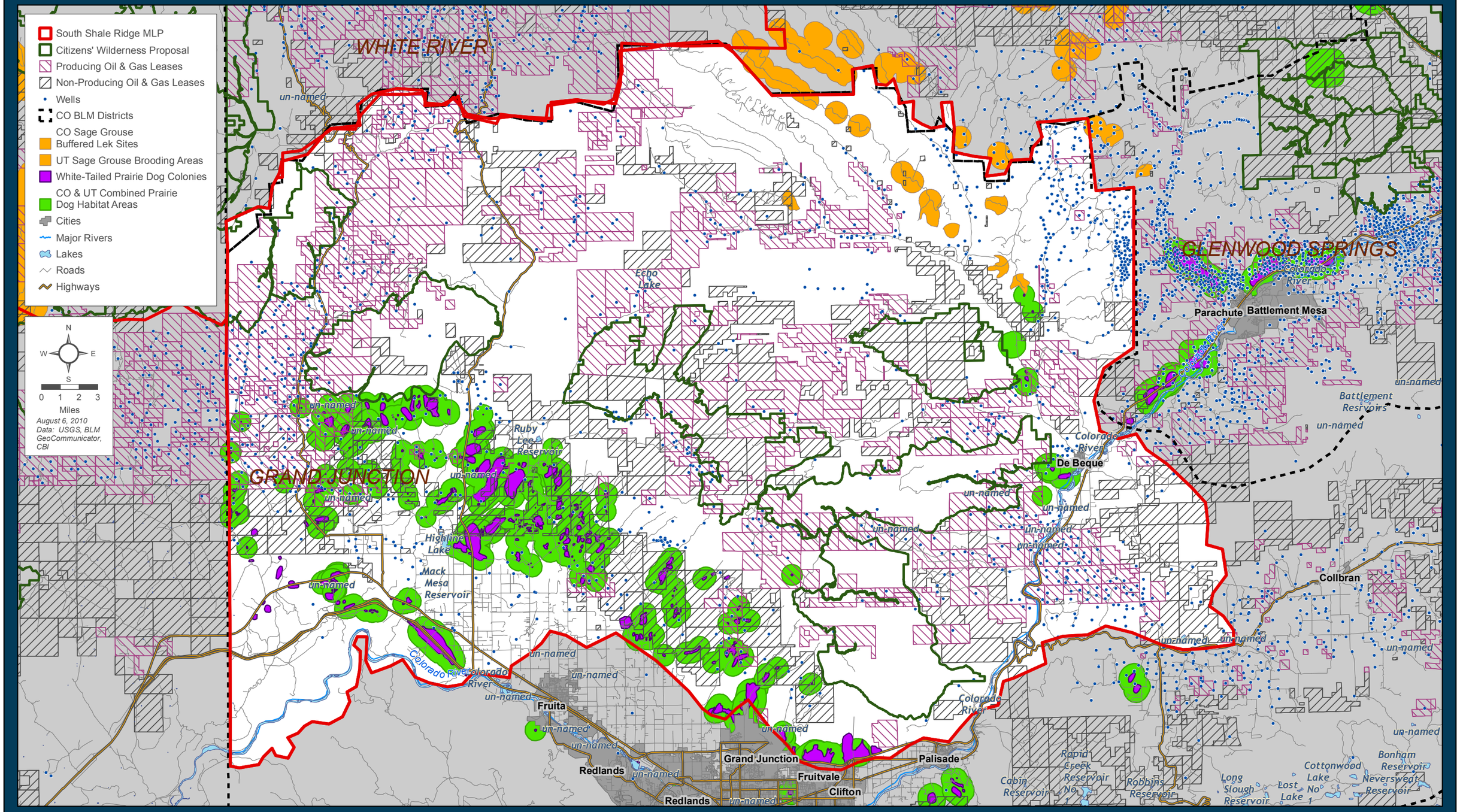
Shale Ridges and Canyons Proposed MLP--Federal Minerals by Surface Ownership



Shale Ridges and Canyons Proposed MLP--Gas Density



Shale Ridges and Canyons Proposed MLP--Leases by Years to Expiration



Shale Ridges and Canyons Proposed MLP--Sage Grouse Leks and White-Tailed Prairie Dog Colonies