

Rick Basagotia, Colorado Parks and Wildlife

Thursday, May 14' 2015

Presentation at the Colorado Solar Regional Mitigation Strategy Public Workshop, Monte Vista, CO

Colorado Parks and Wildlife supervises game and wardens all wildlife activity in the Valley in private and public lands. Works with private landowners and public agency personnel.

Once solar development goes in it is essentially moonscape- no habitat at all for wildlife. Now those areas serve as winter range. The CPW method is to look at keystone species, because if those species are good the other species will be ok. The mitigation effort should be applied back to the populations that are being impacted. The mitigation should improve the condition of the additional acres. Supplying new water, acquiring easements near impacted areas, fencing (replacement or making them wildlife friendly), providing public access, are all ideas on mitigation measures.

Species besides deer and antelope that would be affected include prairie dogs, rabbits. Easements at large ranches that provide habitat may be good mitigation.

CPW came up with its mitigation polygons by layering GIS info. For example, considered elk use of the area, highway crossings, calving areas, and other important areas for that species. Then overlaid data for several species to find the most important places. Including private lands was uncertain.



Colorado Solar Regional Mitigation Strategy: Mitigation Goals, Objectives, and Candidate Sites

Jon Belak, Defenders of Wildlife

Existing Compensatory Mitigation Tools Were Developed for Wetlands

CEQ: compensating for an impact by replacement or providing substitute resources or environments

USACOE:

1. Creation of function in new areas
2. Restoration to return natural or historic function to an existing area
3. Preservation of existing function or area
4. Enhancement of existing function

40 CFR 230.93: Restoration should generally be the first option; success is more likely, impacts to existing habitat are lower vs. establishment, and the potential gains in function are greater vs. enhancement and preservation

Landscape Level Arid Lands Mitigation Requires New Tools



Effects of habitat degradation on shrub-steppe:

- Vegetation structure changes
- Reduced native species as non-natives increase
- Changes in soil density and nutrient status
- Removal of biological soil crusts
- Altered disturbance regimes

“The nature and extent of this degradation varies considerably across the landscape, depending on both the causes and duration of factors that stressed the ecosystems. This variability creates a diverse range of starting states that confront the land manager contemplating restoring a site.”



Enhancement of Degraded Shrub-Steppe Habitats with an Emphasis on Potential Applicability in Eastern Washington



Existing Compensatory Mitigation Tools Were Developed for Wetlands

CEQ: compensating for an impact by replacement or providing substitute resources or environments

USACOE: *Not possible in Shrub Steppe habitat?*

1. *Preservation* of existing function or area
2. *Enhancement* of existing function
3. *Restoration* to return natural or historic function to an existing area
4. *Creation* of function in new areas

40 CFR 230.93: *Restoration should generally be the first option; success is more likely, impacts to existing habitat are lower vs. establishment, and the potential gains in function are greater vs. enhancement and preservation*

Should this apply to Shrub Steppe habitat?



Required Elements for Successful Shrub Steppe Mitigation

“restore X% cover winterfat”

Quantitative biological goals and objectives

Measurement systems for impacts and uplift



** To Be Determined*



Viable mitigation actions

** BUT...we are now here!*

Mitigation sites that maximize conservation value



Adaptive management to ensure success

Documented uplift leading to net benefit





Completing mitigation site selection will require specific and quantitative goals and objectives, actions to achieve them, and a measurement system to document change in biological terms



Mitigation Site Selection Methods



Step 1: Select shrub steppe greasewood

Identify impacted SEZ habitat types

Select same habitat in assessment area

Step 2: Define wildlife habitat value

Rank habitat value using

- Landscape Permeability
- Vegetation Departure
- BLM Sensitive Species occurrences
- Big game connectivity/wintering
- CO Nat. Heritage Potential Cons. Areas
- Gunnison's prairie dog colonies

Step 3: Exclude low & high risk areas, non-BLM, small parcels

Remove lowest development potential & highest existing protections

Remove highest future threat for invasives, insects, disease & climate change

Remove non-BLM

Remove areas < 2500 acres

Step 4: Define candidate sites

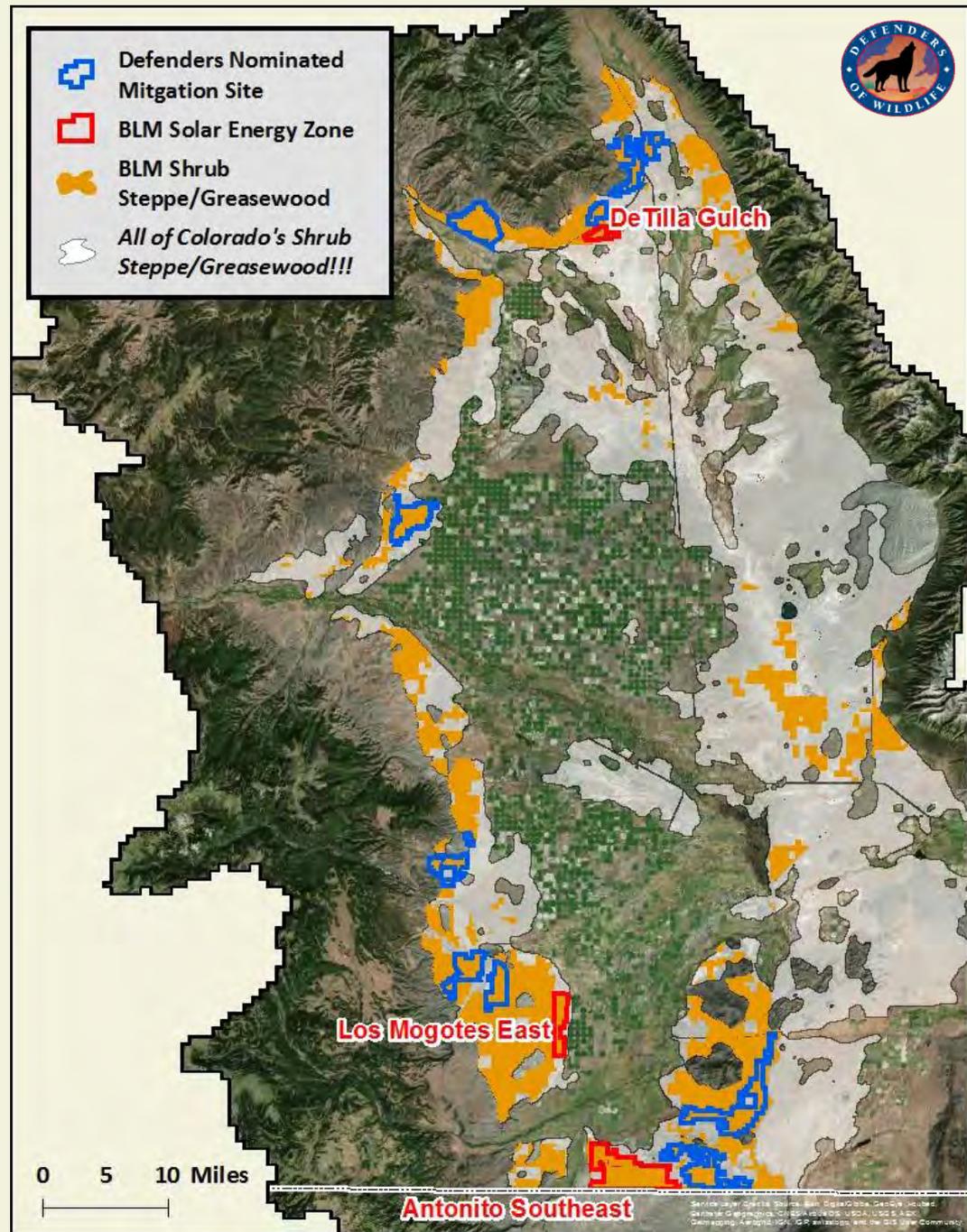
Suitable wildlife mitigation habitat; could decline without intervention, but not at highest risk of change

Medium value, high uplift potential

High value, use protective designation

Step 1: Select Shrub Steppe/Greasewood

- In Colorado, *only* in the San Luis Valley
- Land conversion in center, pinyon-juniper on edges curtail natural community distribution
- 24% BLM ownership in this veg. type
- **Limited BLM mitigation lands**
- Of this area, SEZs cover 5.6% and Defenders of Wildlife candidate mitigation sites cover 15.6%
- ***We restricted our analysis to BLM lands only, but encourage the BLM to investigate adjacent land ownerships and define final areas based on maximizing conservation value.***



Step 2: Define Wildlife Habitat Value

Impacts to most wildlife species from SEZ development are unclear and/or data unavailable, so within Shrub Steppe/Greasewood

Assign the highest rank to all

- **CNHP Potential Conservation Areas**
- **CPW pronghorn and elk Winter Concentration Areas & pronghorn Severe Winter Range**
- **BLM Landscape Assessment big game connectivity**
- **CPW Gunnison's prairie dog colonies**

Rank remaining areas using

- **Theobald (2013) Landscape Permeability**
- **LANDFIRE Vegetation Departure**
- **# BLM Sensitive Species (CNHP)**



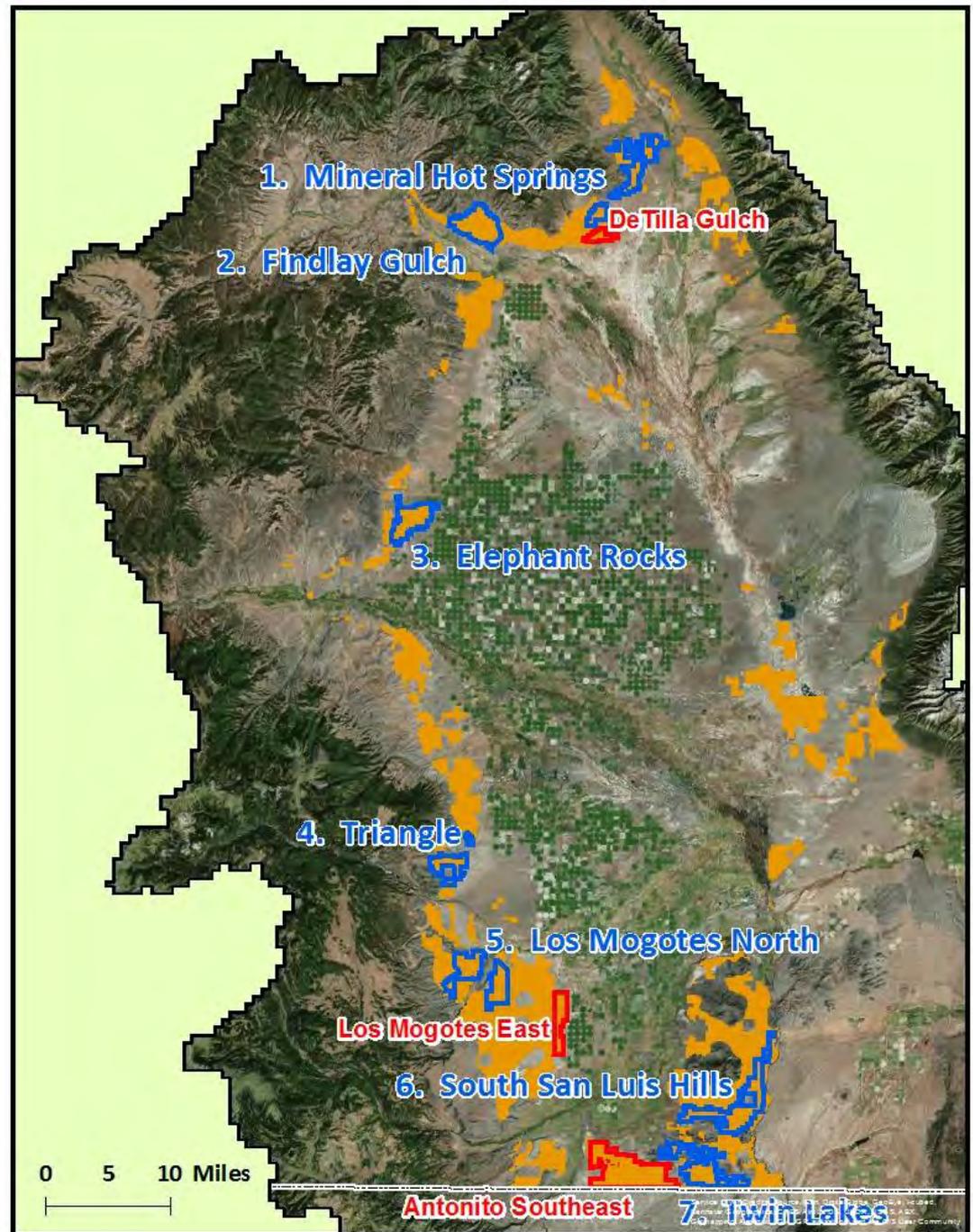
Step 3: Exclude Low and High Risk Areas

- Highest risk areas for invasive species, insects, disease, & climate change (BLM LA)
- Lowest risk areas for development, areas with existing wildlife protection (BLM LA)
- ACECs designated for wildlife
- Areas > 2,500 acres
- ✓ Remaining areas contain same habitat type as SEZs, have wildlife habitat value, need protection or management but are not at highest risk of change, are completely on BLM lands but could be expanded, & are > 2,500 acres



Candidate Mitigation Sites

1. Mineral Hot Springs
2. Findlay Gulch
3. Elephant Rocks
4. Triangle
5. South San Luis Hills
6. Los Mogotes North
7. Twin Lakes



Candidate Mitigation Actions

	Mineral Hot Springs	Findlay Gulch	Elephant Rocks	Triangle	South San Luis Hills	Los Mogotes North	Twin Lakes
Wildlife connectivity	x	x	x	x	x	x	x
Winterfat seeding	x	x	x	x	x	x	x
Perennial bunchgrass seeding	x	x	x	x	x	x	x
Invasive annual weed eradication	x	x	x	x	x	x	x
Pinyon juniper eradication	x	?	?	?	?	?	?
Changes in grazing intensity/timing	x	?	?	x	?	?	x
Fence removal	?	?	?	?	?	?	?
Wild horse removal	?	?	?	?	?	?	x
Playas	?	?	?	?	?	?	x
Development of permanent water	x	?	?	?	?	?	?
Plague eradication	?	?	?	?	?	?	x
Road removal/travel management	?	?	?	?	?	?	?
Protective designation?	?	?	?	?	?	?	?



Candidate Mitigation Outcomes

Mitigation outcomes must be expressed as verifiable, quantitative values that can be objectively verified through a data-driven, quantitative process, as in BLM Technical Note 443. In addition to vegetative parameters, habitat use of key wildlife species should also be considered.



Conclusion



Chris Canaly, San Luis Valley Ecosystem Council

Thursday, May 14' 2015

Presentation at the Colorado Solar Regional Mitigation Strategy Public Workshop, Monte Vista, CO

We are the organization that is on the ground dealing with all the agencies in the Valley. Recently Tri-State published that they are not going to pursue any transmission going south. But Excel is upgrading two transmission lines, so De Tilla Gulch SEZ is probably the most likely to be developed. Therefore we are considering impacts at Poncha Pass with the transmission upgrades coming to the Valley.

SLV Ecosystem Council would like to see creation of as much connectivity as possible (wildlife corridors), with connectivity between BLM and Forest lands in protected areas, including in New Mexico near the Antonito Southeast SEZ. The areas that were also recommended were the wetlands. We would like to see the extension of Taos National Monument into Colorado. On the Western side of Valley SLV Ecosystem Council suggests Penitente and Elephant Rocks as mitigation locations because recreation is becoming very aggressive.

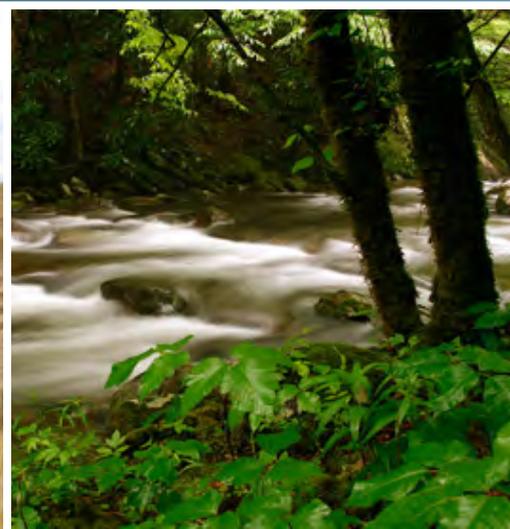


Mitigation Site Nominations

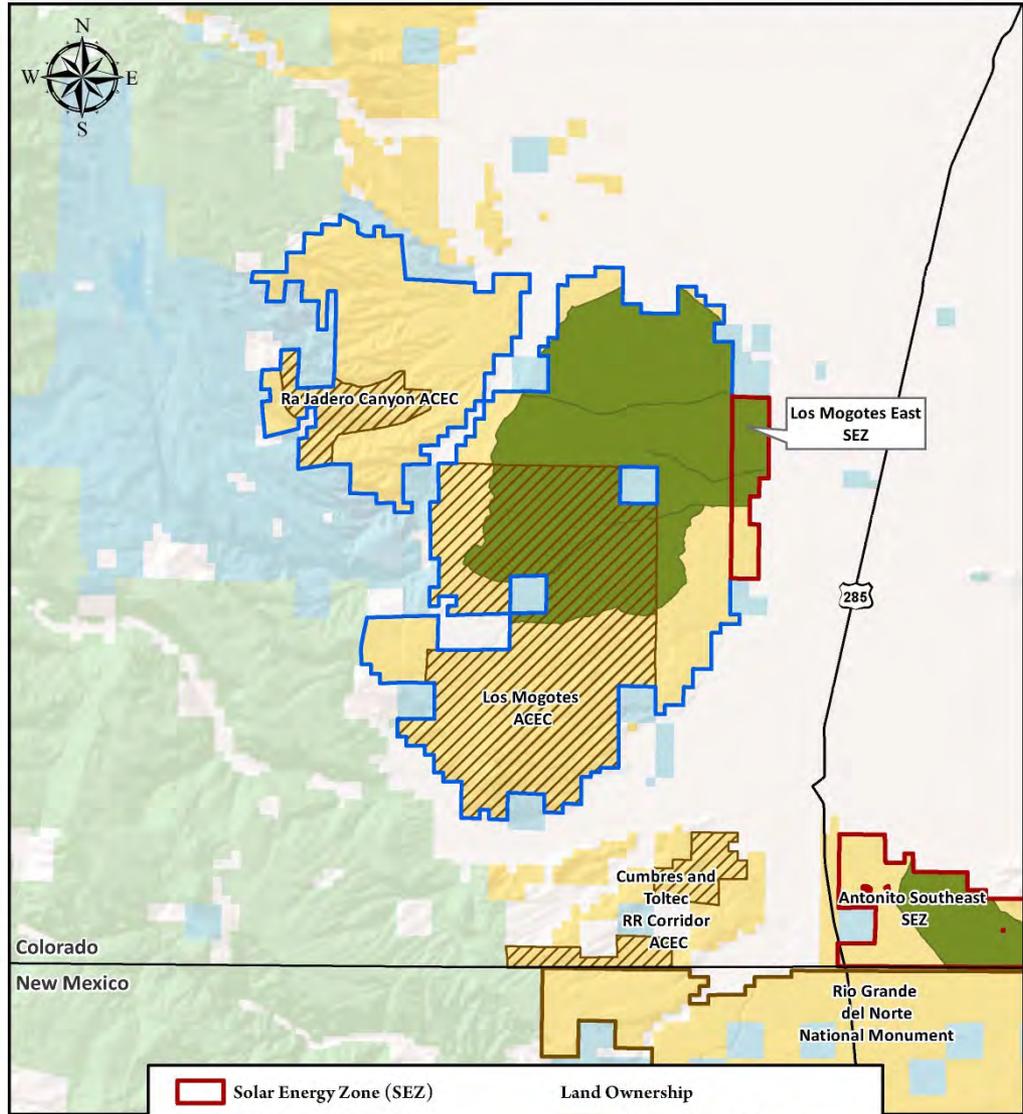
Colorado SRMS Workshop – May 14, 2015

Alex Daue

The Wilderness Society



Los Mogotes East SEZ: Proposed Los Mogotes Mitigation Site



	Solar Energy Zone (SEZ)		Bureau of Land Management
	Los Mogotes East SEZ - Proposed Los Mogotes Mitigation Site		Private
	Area of Critical Environmental Concern (ACEC)		State / Local
	Citizen Inventoried Lands with Wilderness Characteristics		US Forest Service

0 2 4 6 8 Miles



Photo: Soren Jespersen, TWS



Photo: Soren Jespersen, TWS

Los Mogotes E SEZ – Los Mogotes Mitigation Site: Site Description



- Ra Jadero Canyon and Los Mogotes Areas of Critical Environmental Concern (ACECs)
- Lands with Wilderness Characteristics
- Important habitat for pronghorn and other big game
- Regionally endemic and sensitive plant species
- Outdoor recreation opportunities
- One of the largest parcels of natural and roadless public lands in the San Luis Valley
- Other resources and values that would face residual impacts from development in the SEZ

Los Mogotes E SEZ – Los Mogotes Mitigation Site: Taos Plateau REA



Resource and Values present in the Los Mogotes East SEZ and Los Mogotes Mitigation Site

Data Source: REA Data provided by BLM and Argonne National Laboratory

Key: Decrease in Resource Value, Increase in Resource Value, Resource's Value(s) present in SEZ

Determination: Sufficient mitigation opportunities for all residual impacts in proposed Los Mogotes Mitigation Site

Value	Los Mogotes East SEZ						Los Mogotes Mitigation Site						Mitigated Residual Impact identified by BLM
	Percent Coverage						Percent Coverage						
	Very Low	Low	Moderately Low	Moderately High	High	Very High	Very Low	Low	Moderately Low	Moderately High	High	Very High	
Current Ecological Landscape Condition	0.00	0.00	10.23	71.61	19.44	0.00	0.04	0.77	3.09	8.93	83.34	3.93	Acoustics/SS Plant/Visual Vegetation
Basin Grassland and Shrubland	0.00	0.00	8.70	71.61	19.44	0.00	0.00	0.48	2.48	6.43	64.38	1.54	
Montane and Subalpine Conifer Forest	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.41	0.70	2.47	0.15	
Pinyon-Juniper Woodland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.47	3.09	0.93	
Riparian and Wetland System	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.28	0.00	
Bighorn Sheep	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.41	1.95	14.70	3.14	
Brewer's Sparrow	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.28	0.21	0.60	6.05	0.00	
Elk-Mule Deer	0.00	0.00	10.23	71.61	19.44	0.00	0.04	0.72	3.10	8.93	83.34	3.93	Terrestrial Wildlife
Ferruginous Hawk	0.00	0.00	1.02	0.00	0.00	0.00	0.04	0.00	0.03	0.00	0.60	0.00	Migratory Birds, Eagles, Raptors
Grassland Fauna	0.00	0.00	10.23	71.61	19.44	0.00	0.04	0.72	2.69	7.89	79.90	3.78	Terrestrial Wildlife
Mexican Free-Tailed Bat	0.00	0.00	10.23	71.61	19.44	0.00	0.04	0.69	3.07	8.93	83.34	3.93	Migratory Birds, Eagles, Raptors
Mountain Lion	0.00	0.00	9.21	71.61	19.44	0.00	0.00	0.69	3.07	8.93	83.34	3.93	Terrestrial Wildlife
Native Fish	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.47	0.15	0.00	
Northern Goshawk	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.27	0.87	7.48	0.38	
Pronghorn	0.00	0.00	10.23	71.61	19.44	0.00	0.04	0.62	3.10	7.86	75.11	1.59	Terrestrial Wildlife
Shorebird / Waterfowl	0.00	0.00	2.56	3.58	0.00	0.00	0.04	0.27	1.93	4.77	23.85	0.65	Migratory Birds, Eagles, Raptors
Big Game Migration Corridors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.40	0.45	1.54	1.68	0.00	
Big Game Seasonal Ranges	0.00	0.00	10.23	71.61	19.44	0.00	0.04	0.73	3.13	8.93	83.34	3.93	Terrestrial Wildlife
WGA CHAT Current	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.43	1.34	6.72	54.05	0.09	SS Plants/SS Wildlife
Sites of Conservation Concern	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.72	2.72	7.68	60.47	3.93	SS Plants/SS Wildlife/Visual
Soils with Potential for Erosion	0.00	0.00	10.23	39.90	0.00	0.00	0.04	0.45	2.47	4.21	33.24	0.82	Erosion
Runoff Potential	0.00	NA	100.42	0.85	NA	0.85	0.01	NA	89.98	10.09	NA	10.09	Hydrology
Wind Erodibility Potential	0.00	NA	27.62	0.00	NA	73.66	0.00	NA	29.40	14.66	NA	56.04	Erosion
	Very Low	Low	Moderate	High	Very High		Low	Moderate	High	Very High			
LANFIRE Vegetation Departure	22.68	0.00	0.00	78.60	0.00		2.64	9.76	76.05	3.52			Vegetation

Los Mogotes E SEZ – Los Mogotes Mitigation Site: Mitigation Actions



- BLM administrative designation of a protected area, such as an ACEC, an area managed to protect wilderness characteristics, and/or a “mitigation site” with appropriate protective management prescriptions
- Improve protective management prescriptions for existing ACECs
- Target investment of per-acre mitigation fee for restoration and management activities

Los Mogotes E SEZ – Los Mogotes Mitigation Site: Mitigation Outcomes



- Administrative protection of resources and values impacted by development on the SEZ
- Improvement of resources and values through investment of mitigation funds in restoration and management activities in the mitigation site

- Creation of a network of protected areas, increasing connectivity and providing broader regional benefits to migrating species
- Helping achieve goals and objectives for resources and values in the San Luis Valley RMP and Solar Regional Mitigation Strategy – e.g. protecting and enhancing big game habitat and special status plant values

Los Mogotes E SEZ – Los Mogotes Mitigation Site: Feasibility, Durability



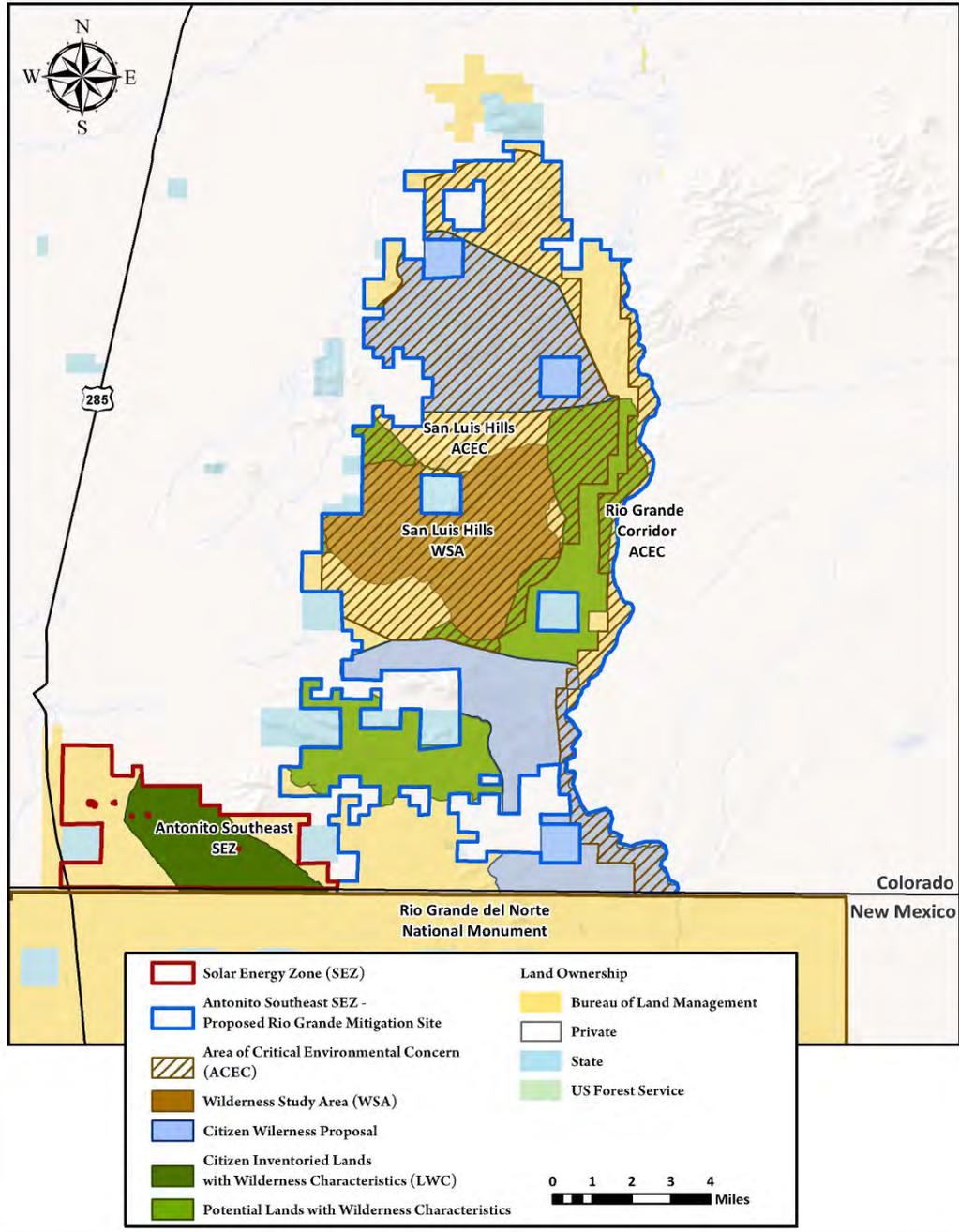
- **Feasibility:** BLM has the authority to protectively manage BLM lands as a means of compensatory mitigation, and to permit restoration projects and management through NEPA review; upcoming RMP revision is one opportunity
- **Durability:** BLM has a variety of special designations and management actions it can use to create durability; can add durability by creating overlapping protective designations

Los Mogotes E SEZ – Los Mogotes Mitigation Site: Additionality

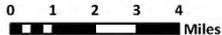


- **Additionality:** Though BLM has funding for RMP revisions and amendments which could be used to support protection of the proposed mitigation sites, mitigation funds would provide a sure means of achieving protection of the mitigation sites and a means for investing in restoration and management of the protected mitigation sites

Antonito Southeast SEZ - Proposed Rio Grande Mitigation Site



Solar Energy Zone (SEZ)	Land Ownership
Antonito Southeast SEZ - Proposed Rio Grande Mitigation Site	Bureau of Land Management
Area of Critical Environmental Concern (ACEC)	Private
Wilderness Study Area (WSA)	State
Citizen Wilderness Proposal	US Forest Service
Citizen Inventoried Lands with Wilderness Characteristics (LWC)	
Potential Lands with Wilderness Characteristics	







Antonito SE SEZ – Rio Grande Mitigation Site: Site Description



- Relatively pristine semi-desert shrub and grasslands
- Rio Grande River system and ACEC
- San Luis Hills ACEC and WSA
- Lands with Wilderness Characteristics
- Big game habitat, including elk, pronghorn and mule deer
- Outdoor recreation opportunities
- Other resources and values that would face residual impacts from development in the SEZ, such as visual resources and avian species

Antonito SE SEZ – Rio Grande Mitigation Site: Taos Plateau REA



Resource and Values present in the Antonito East SEZ and Rio Grande Mitigation Site

Data Source: REA Data provided by BLM and Argonne National Laboratory

Key: Decrease in Resource Value, *Similar Resource Value*, Increase in Resource Value, Resource Value not present in SEZ

Determination: Sufficient mitigation opportunities for all residual impacts in the proposed Rio Grande Mitigation Site

Value	Antonito East SEZ Percent Coverage						Rio Grande Mitigation Site Percent Coverage						Mitigated Residual Impact identified by BLM
	Very Low	Low	Moderately Low	Moderately High	High	Very High	Very Low	Low	Moderately Low	Moderately High	High	Very High	
Current Ecological Landscape Condition	0.00	1.72	5.07	16.70	77.49	0.00	0.00	2.52	5.43	24.21	66.63	1.22	Acoustics/SS Plant/Visual
Basin Grassland and Shrubland	0.00	1.72	4.70	16.70	77.49	0.00	0.00	2.52	3.87	20.36	49.88	0.11	Vegetation
Montane and Subalpine Conifer Forest	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.37	0.00	
Pinyon-Juniper Woodland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.47	10.83	1.11	
Riparian and Wetland System	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.05	0.43	0.61	0.00	
Bighorn Sheep	0.00	0.00	0.00	2.60	0.00	0.00	0.00	0.00	0.64	4.21	14.53	0.11	Terrestrial Wildlife
Brewer's Sparrow	0.00	1.30	0.00	0.98	2.60	0.00	0.00	0.00	1.05	2.51	13.75	0.79	Migratory Birds, Eagles,Raptors
Elk-Mule Deer	0.00	1.72	5.07	16.70	77.49	0.00	0.00	2.52	5.43	24.21	66.63	1.22	Terrestrial Wildlife
Ferruginous Hawk	0.00	0.00	0.33	0.00	0.00	0.00	0.00	0.00	2.06	4.52	11.81	1.11	Migratory Birds, Eagles,Raptors
Grassland Fauna	0.00	1.72	5.07	16.70	77.49	0.00	0.00	2.52	5.43	24.21	65.73	1.22	Terrestrial Wildlife
Mexican Free-Tailed Bad	0.00	1.72	5.07	16.70	77.49	0.00	0.00	2.52	5.43	24.21	66.63	1.22	Migratory Birds, Eagles,Raptors
Mountain Lion	0.00	1.72	4.74	16.70	77.49	0.00	0.00	2.52	4.65	22.68	66.50	1.22	
Native Fish	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Northern Goshawk	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.06	9.98	0.00	
Pronghorn	0.00	1.72	5.07	16.70	77.49	0.00	0.00	2.52	5.11	24.21	61.85	1.22	Terrestrial Wildlife
Shorebird / Waterfowl	0.00	0.00	0.00	0.00	11.40	0.00	0.00	0.69	2.49	7.65	20.75	0.11	Migratory Birds, Eagles,Raptors
Big Game Migration Corridors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Big Game Seasonal Ranges	0.00	1.72	5.07	16.70	77.49	0.00	0.00	2.52	5.43	24.21	66.63	1.22	Terrestrial Wildlife
WGA CHAT Current	0.00	0.00	0.00	0.00	1.02	0.00	0.00	0.00	0.00	0.14	0.73	0.00	SS Plants/SS Wildlife
Sites of Conservation Concern	0.00	1.72	5.07	16.70	77.49	0.00	0.00	2.52	5.30	24.09	66.63	1.22	SS Plants/SS Wildlife/Visual
Soils with Potential for Erosion	0.00	1.30	1.49	11.63	47.12	0.00	0.00	2.52	4.79	20.69	43.49	0.80	Erosion
Runoff Potential	0.00	NA	100.85	0.00	NA	0.00	1.89	NA	94.99	1.87	NA	1.87	Hydrology
Wind Erodibility Potential	0.00	NA	42.98	0.00	NA	58.00	2.10	NA	45.93	0.26	NA	51.74	Erosion
	Very Low	Low	Moderate	High	Very High		Very Low	Low	Moderate	High	Very High		
LANDFIRE Vegetation Departure	0.00	0.00	10.23	90.75	0.00		10.78	9.85	13.85	53.94	6.36		

Antonito SE SEZ – Rio Grande Mitigation Site: Mitigation Actions



- BLM administrative designation of a protected area, such as an ACEC, an area managed to protect wilderness characteristics, and/or a “mitigation site” with appropriate protective management prescriptions
- Improve protective management prescriptions for existing ACECs
- Target investment of per-acre mitigation fee for restoration and management activities

Antonito SE SEZ – Rio Grande

Mitigation Site: Mitigation Outcomes



- Administrative protection of resources and values impacted by development on the SEZ
- Improvement of resources and values through investment of mitigation funds in restoration and management activities in the mitigation site

Mitigation Site: Mitigation Outcomes - 2

- Creation of a network of protected areas, increasing connectivity and providing broader regional benefits to migrating species
- Helping achieve goals and objectives for resources and values in the San Luis Valley RMP and Solar Regional Mitigation Strategy – e.g. maintain and, if possible, improve condition on the existing acres of Flat Top Mountain wetlands, big game habitat, and special status plant values

Antonito SE SEZ – Rio Grande Mitigation Site: Feasibility, Durability



- **Feasibility:** BLM has the authority to protectively manage BLM lands as a means of compensatory mitigation, and to permit restoration projects and management through NEPA review; upcoming RMP revision is one opportunity
- **Durability:** BLM has a variety of special designations and management actions it can use to create durability; can add durability by creating overlapping protective designations

Antonito SE SEZ – Rio Grande Mitigation Site: Additionality



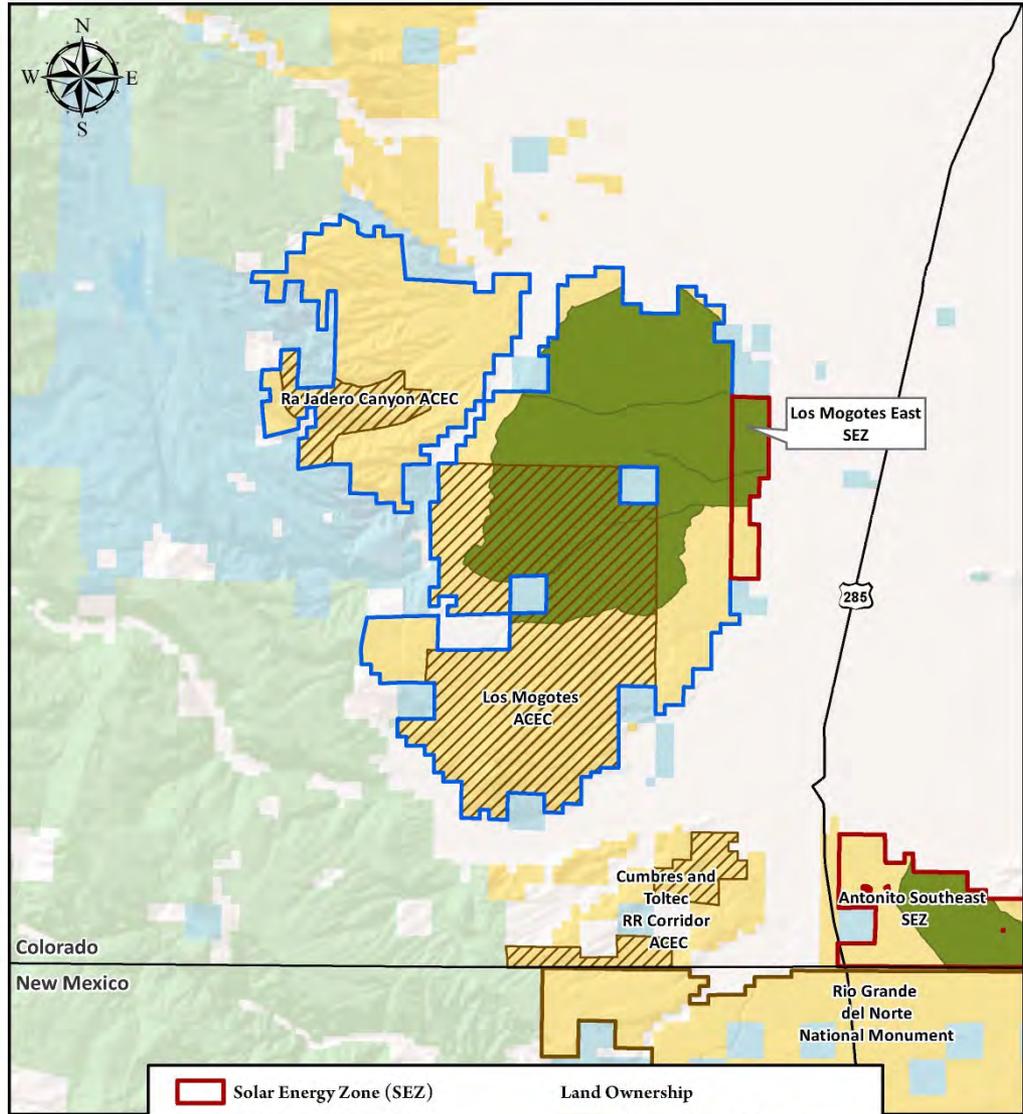
- **Additionality:** Though BLM has funding for RMP revisions and amendments which could be used to support protection of the proposed mitigation sites, mitigation funds would provide a sure means of achieving protection of the mitigation sites and a means for investing in restoration and management of the protected mitigation sites

Interim Management Recommendations



- Interim protection necessary to maintain investment in SRMS and viability of mitigation sites
- A number of tools are available to BLM, including providing public notice of potential actions with impacts on mitigation sites and deferring oil and gas leasing and projects that could impact mitigation sites until they can be administratively protected through NEPA

Los Mogotes East SEZ: Proposed Los Mogotes Mitigation Site



	Solar Energy Zone (SEZ)		Bureau of Land Management
	Los Mogotes East SEZ - Proposed Los Mogotes Mitigation Site		Private
	Area of Critical Environmental Concern (ACEC)		State / Local
	Citizen Inventoried Lands with Wilderness Characteristics		US Forest Service

0 2 4 6 8 Miles

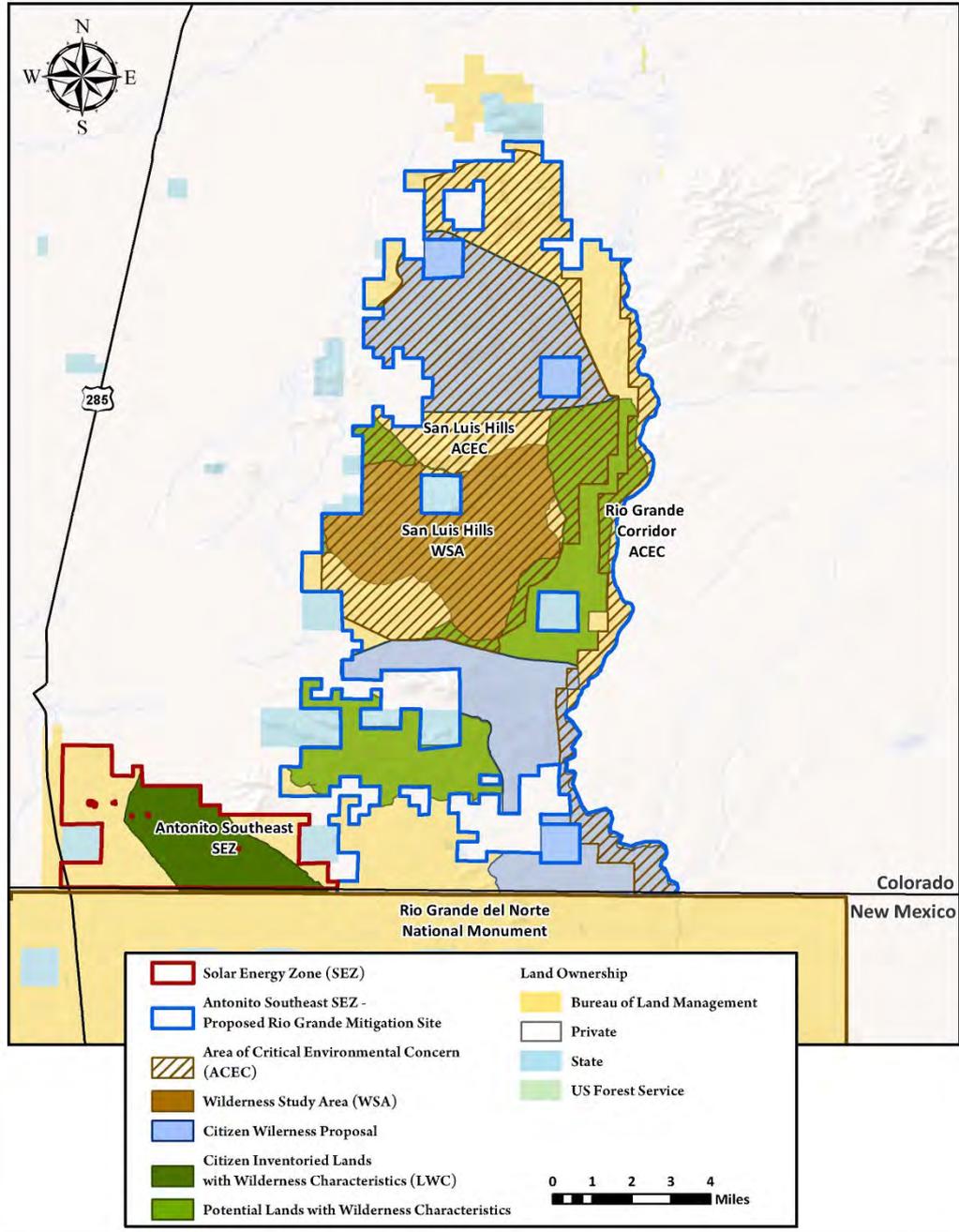


Photo: Soren Jespersen, TWS



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Citizen Wilderness Proposal	
Citizen Inventoried Lands with Wilderness Characteristics (LWC)	
Potential Lands with Wilderness Characteristics	

0 1 2 3 4 Miles

Colorado
New Mexico





Contact information

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The Wilderness Society – BLM Action Center

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Colorado Solar Energy Zone Solar Regional Mitigation Strategies BLM Public Workshop

Monte Vista, Colorado May 13-14, 2015

BLM Candidate Sites Presented by:

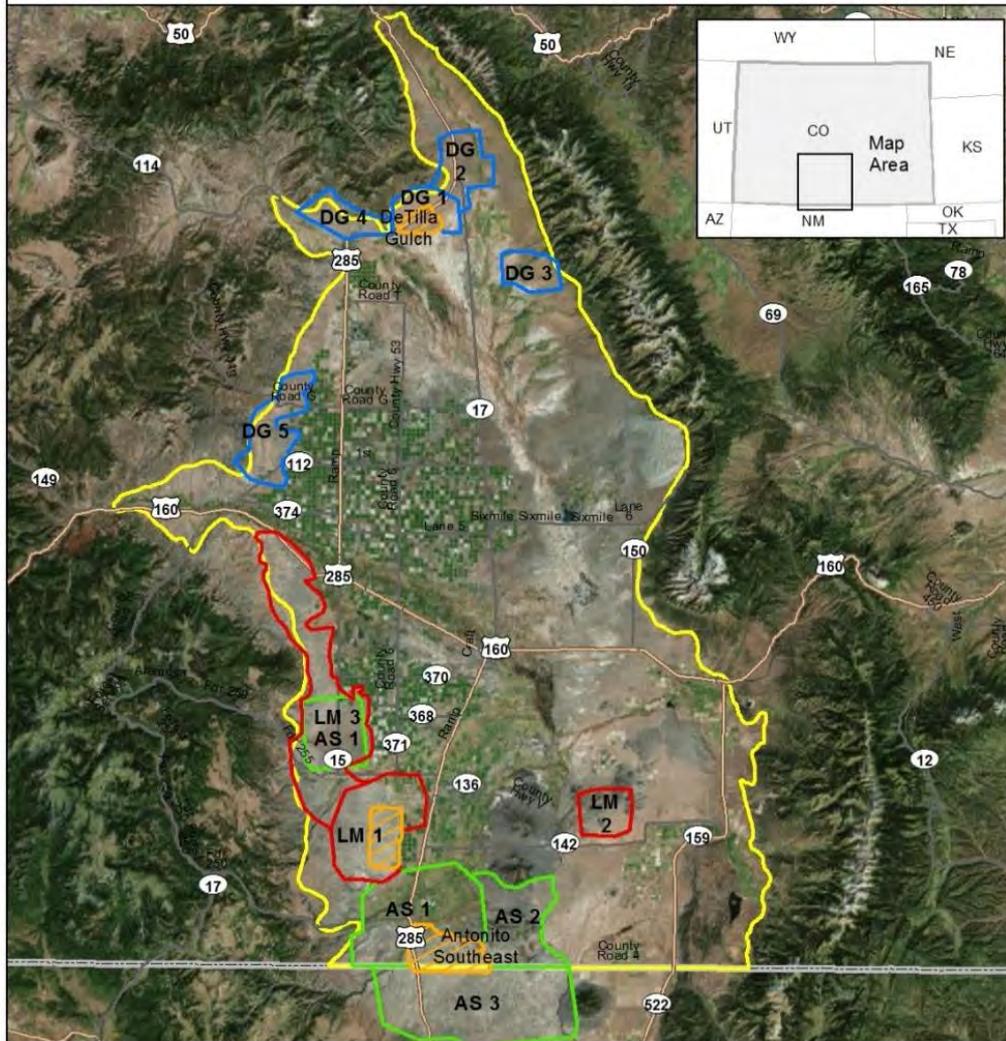
- Megan Kram, Energy Projects Director
- Teresa Chapman, GIS Manager

Topics

- Overview
- Methods & Results
- Key points



OVERVIEW



Offset areas

11 offset areas

- DG: 5
- LM: 3
- AS: 3

13-93K acres each

Locate offset actions
within these areas

Functional equivalency

Offset acreage needed varies by mitigation action

Example: Restoration

- 25% success rate = 4x acreage needed



Selection criteria

Required

- Same ecological subregion
- Compensate for BLM resource objectives
- Provide “enough room” to implement durable mitigation actions

Desired

- Same state
- Lie as close as possible to the SEZ
- Greatest return on investment

Strengths

D efensible
A daptable
Q uantifiable
O bjective
R eplicable
S cience-based
S calable

Strengths

D efensible
A daptable
Q uantifiable
O bjective
R eplicable
S cience-based
S calable



METHODS & RESULTS

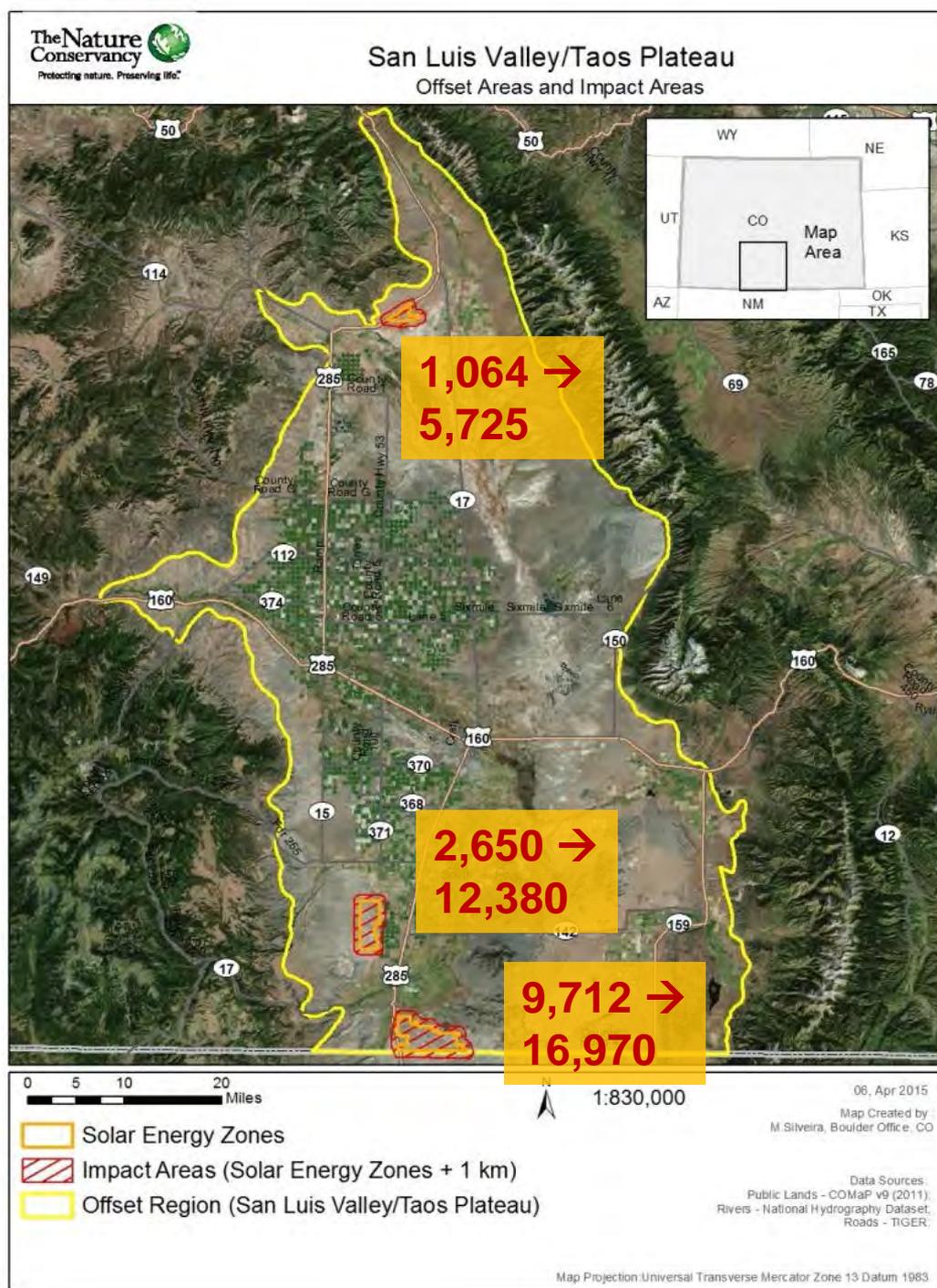
1. Map boundaries

Impact area

- Direct & indirect impacts
- SEZ + 1 km buffer

Offset region

- Area where offsets were identified
- Ecoregion Level IV
- Colorado only now



2. Map priority species and vegetation

Goal 1: Terrestrial veg.

- $\geq 10\%$ of impact area

Goal 2: Species

- Federally-listed (T,E,C)
- BLM Special Status
- Globally rare & imperiled (new!)



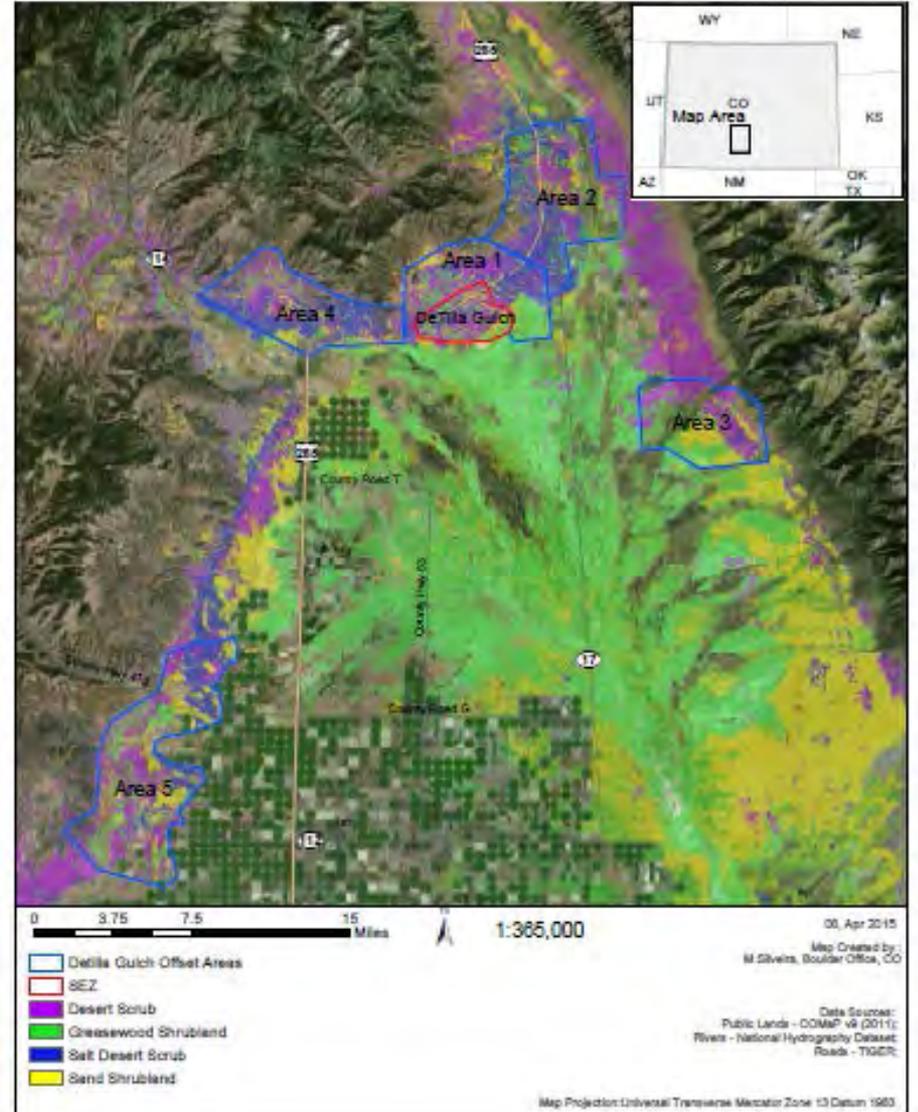
Goal 3: Aquatic systems

Goal 1 – Terrestrial vegetation

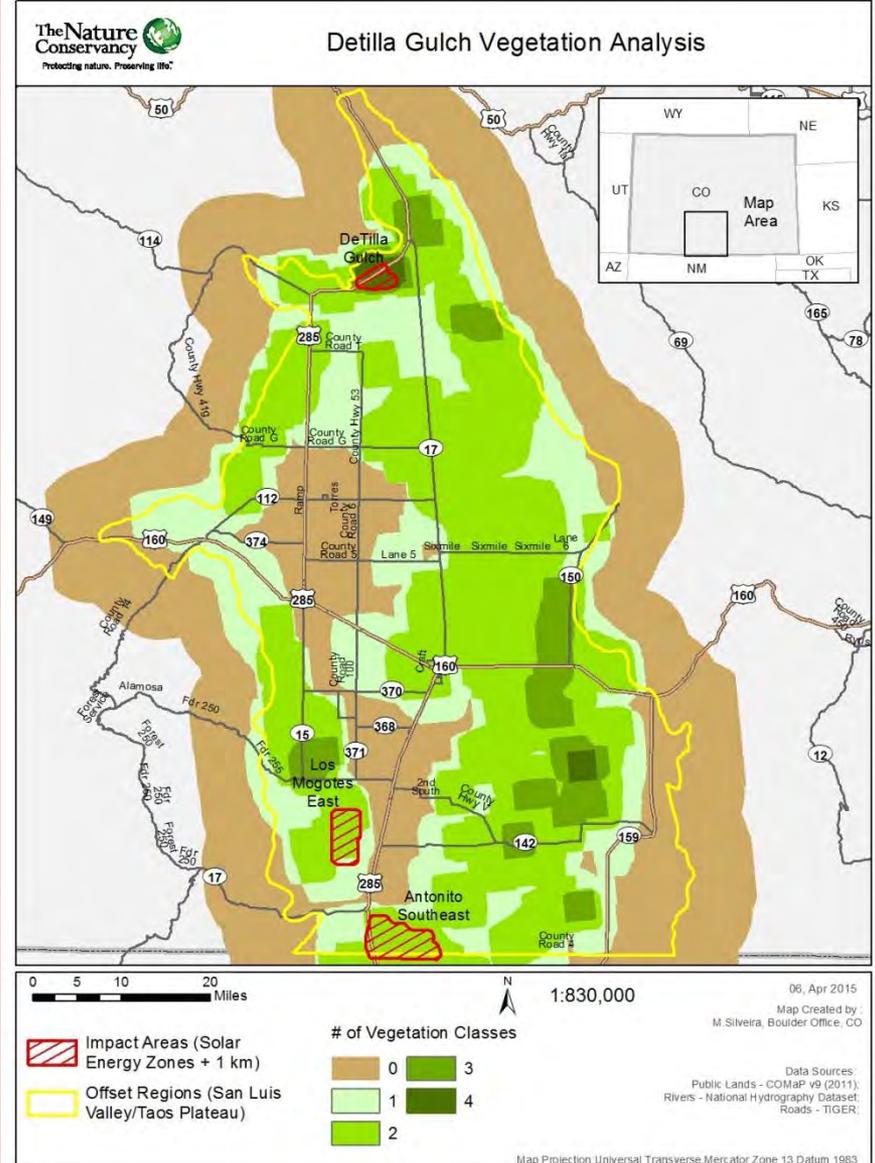
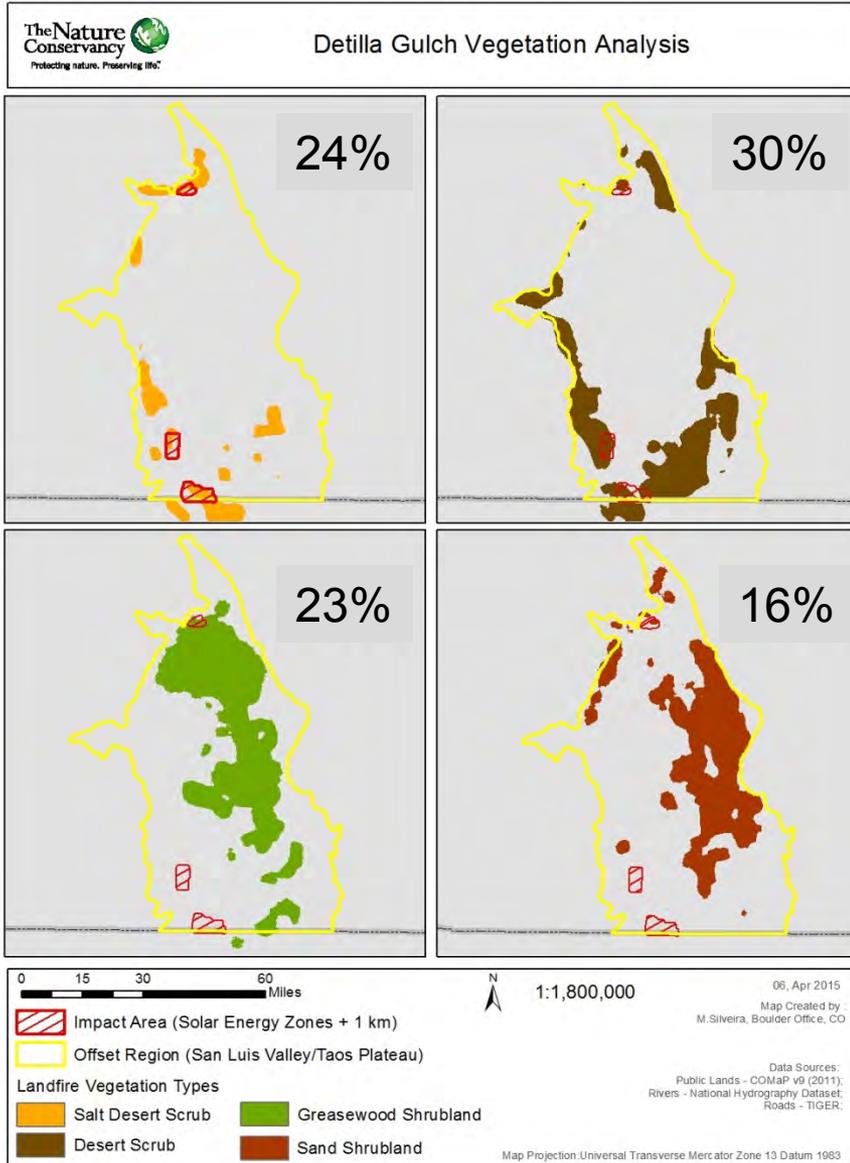
- **57** native & nonnative landcover types;
- **4** native chosen

Species	DG (5,725)	LM (12,380)	AS (16,970)
Desert scrub	1,716 (30%)	7,279 (59%)	9,921 (58%)
Salt desert scrub	1,369 (24%)	2,697 (22%)	6,004 (35%)
Greasewood shrubland	1,318 (23%)	633 (5%)	1,296 (8%)
Sand shrubland	910 (16%)	77 (1%)	42 (0%)

DeTilla Gulch Vegetation



DeTilla Gulch Vegetation



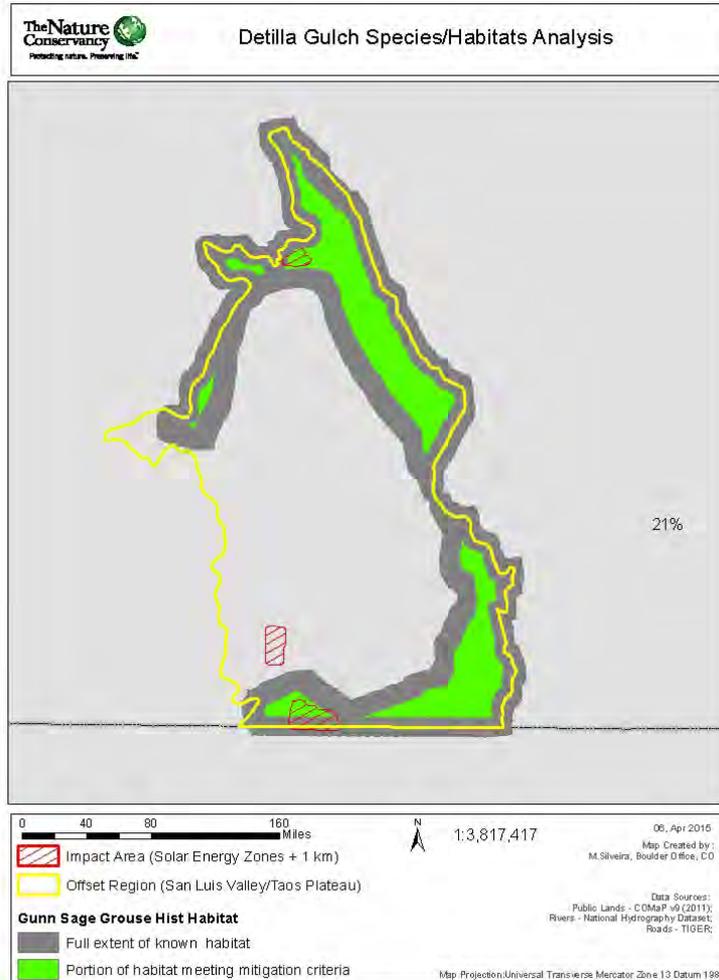
Goal 2 - Species

204 data layers collected; **94** “in” analysis; **5** in DG

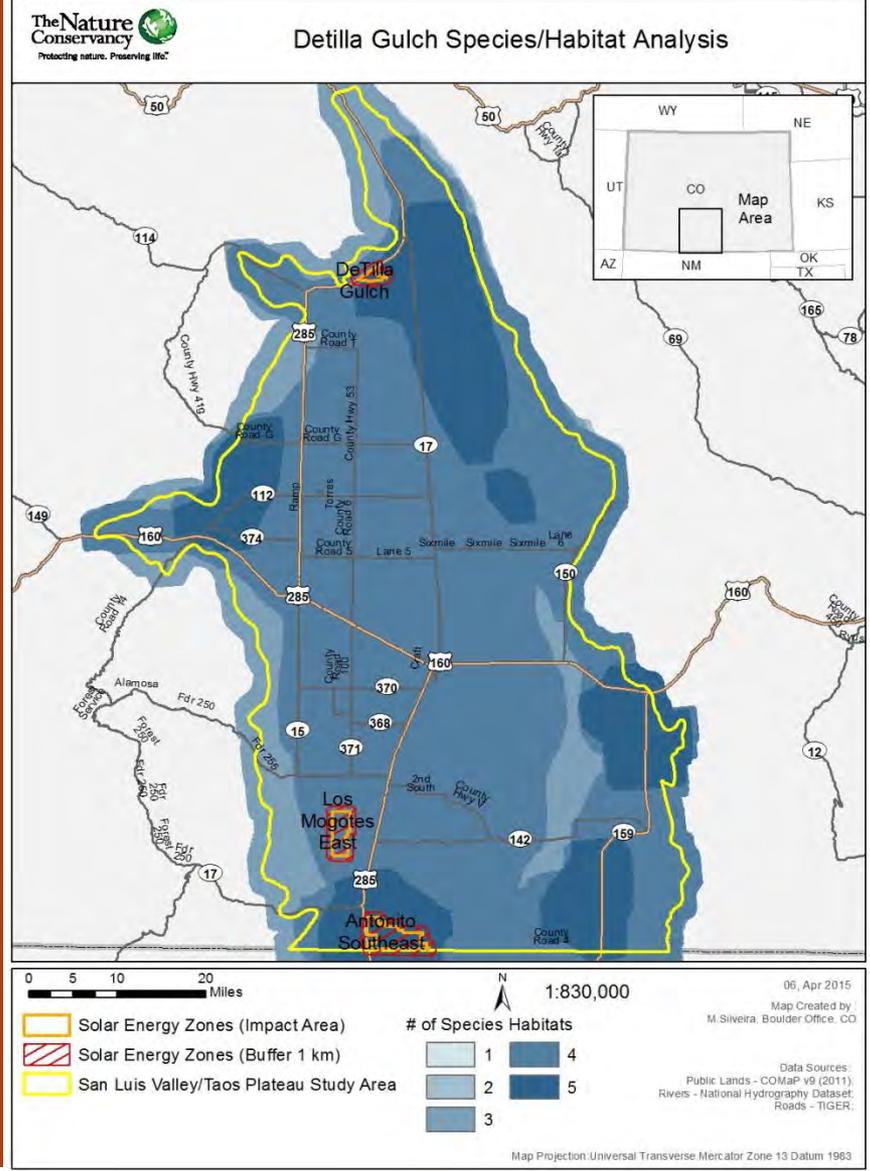
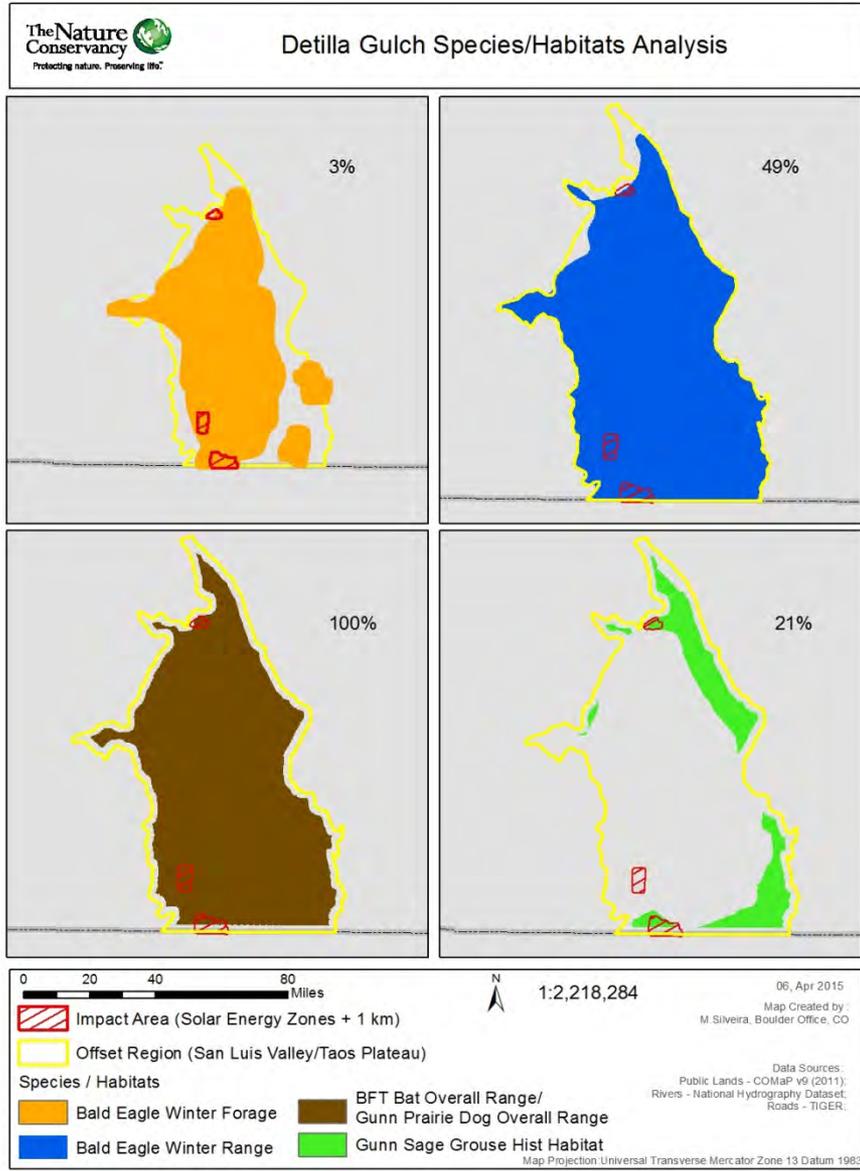
Species	DG (5,725)
Bald eagle winter forage	172
Bald eagle winter range	2,805
Big freetail bat overall range	5,725
Gunnison’s prairie dog overall range	5,725
Gunnison sage-grouse historic habitat	1,202



Species – DeTilla Gulch Gunnison's sage-grouse historic



DeTilla Gulch Species



3. Calculate offset goals

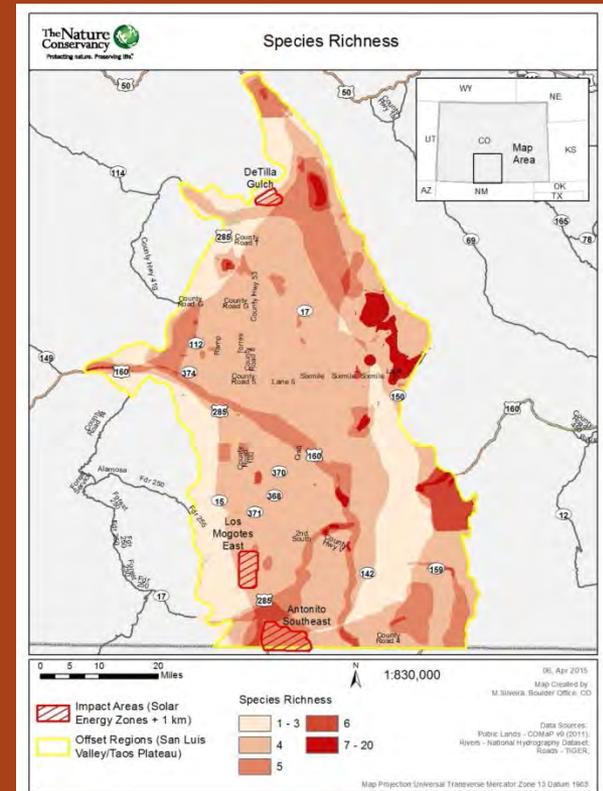
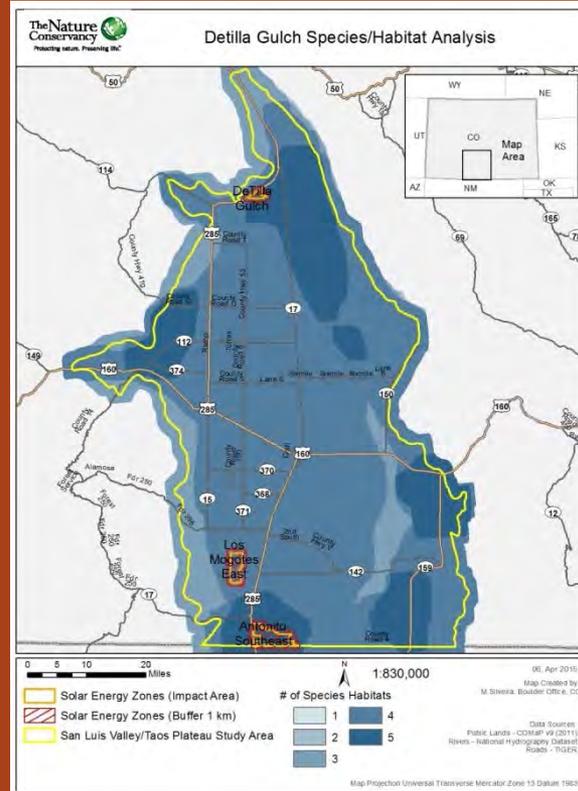
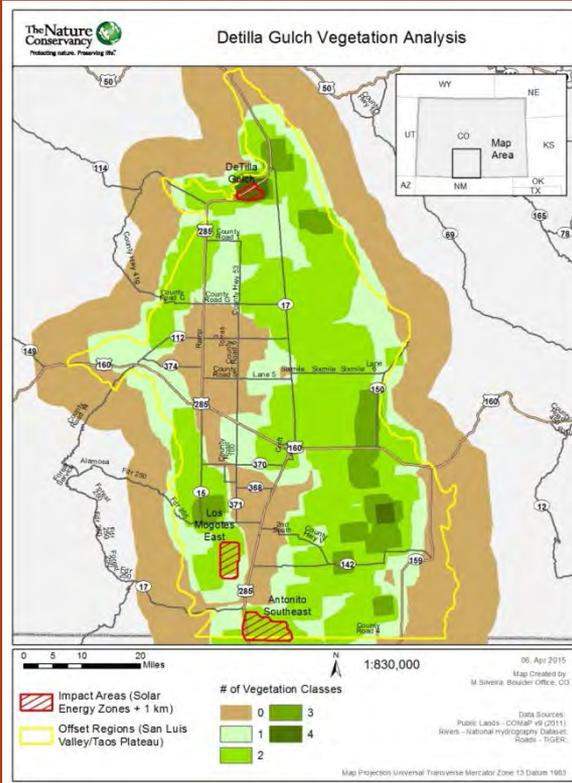
Acres for each impact area as a whole **x10**

SEZ	SEZ acres	Impact area acres	Offset acres
DeTilla Gulch	1,064	5,725	57,250

Acres for each species **x10**

Species	DG (5,725)	Offset acres
Bald eagle winter forage	172	1,720

4. Combine DeTilla Gulch maps



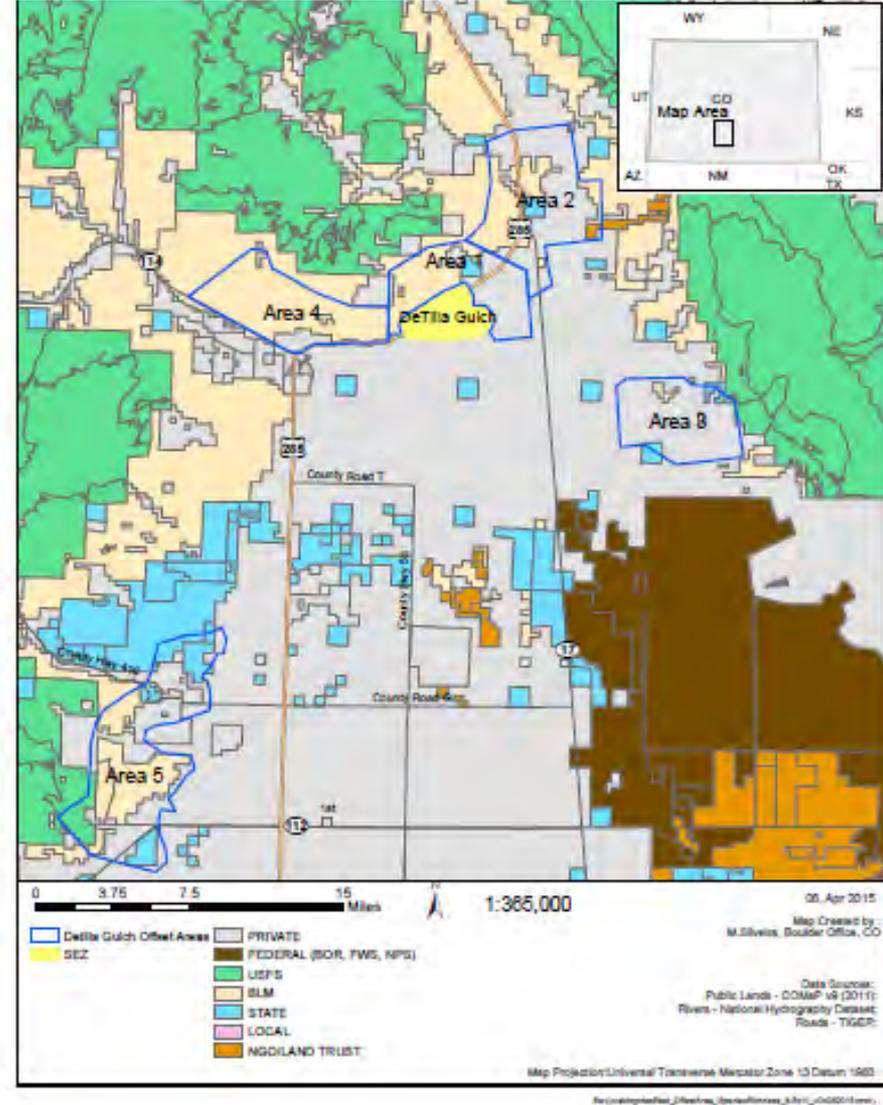
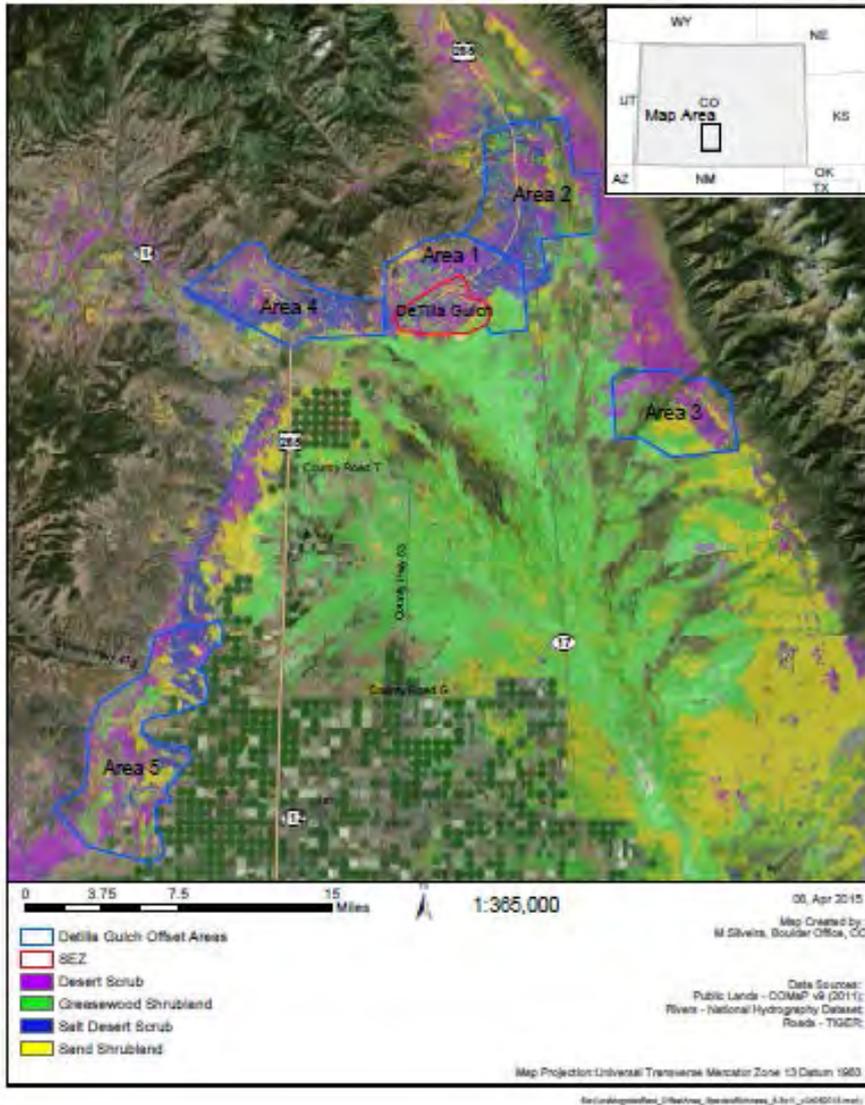
Vegetation:
Impact area

Species:
Impact area

Species:
Offset region

DeTilla Gulch Offset Areas

5 totaling 91K acres



Management Actions

Restoration

- Restore degraded native habitat
- Eradicate weeds
- Remove barriers to wildlife movement
- Close and restore unneeded/unauth. roads and trails

Protection

- Protect additional lands
 - Expand or add new special designations
 - Acquire or otherwise protect non-federal lands
- Reduce chance of future impacts on BLM
 - Modify land use allocations
 - (Strengthen protections on existing special designations)

KEY POINTS

Key points / Selection criteria

Required

- Same eco. subregion
- Compensate for BLM resource objectives
 - Maintain or increase acres
 - Functional equivalency
 - Direct & indirect impacts → buffer SEZs
 - BLM SSS *and* globally rare/imperiled
- Provide “enough room” to implement durable mitigation actions
 - Assume 100% impact
 - Mitigation goal = 10x impacts



Key points / Selection criteria



Desired

- Same state
 - Unless mitigation in other states is politically feasible
- Lie as close as possible to the SEZ
- Greatest return on investment
 - Consider overall species richness

Contacts

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