



**Gunnison County, CO**  
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**To:** Gunnison Basin Sage-grouse Strategic Committee Members

**From:** Misty Castillo

**Date:** September 16, 2024

**Included in your packet for the Wildlife Conservation Strategic Committee Meeting:**

November, 20 Agenda
September, 18 Draft Minutes
Habitat Prioritization Tool
GUSG Newsletter Issue 6

**GUNNISON BASIN SAGE-GROUSE STRATEGIC COMMITTEE**  
**REGULAR MEETING AGENDA**

**DATE: Wednesday, November 20, 2024**

**PLACE: Planning Commission Meeting Room, Blackstock Government Center OR via Zoom meeting, Meeting ID: 859 9849 7601 (see Teleconference Information below)**

1. 10:00am
  - Call Regular Meeting to Order; Determination of Quorum; Verify Public Notice of Meeting
  - Approval of September 18, 2024 Meeting Minutes
  - Agenda Approval for November 20, 2024 agenda
2. 10:10am
  - Committee Member Reports/Updates
  - BLM GUSG Resource Management Plan Amendment
3. 10:30am
  - Habitat Prioritization Tool Presentation/Discussion
4. 12:00pm
  - Public Comments
5. 12:05
  - Future Meeting
6. 12:10
  - Adjourn

NOTE: This agenda is subject to change, including the addition of items up to 24 hours in advance or the deletion of items at any time. All times are approximate. Regular Meetings, Public Hearings, and Special Meetings are recorded and **ACTION MAY BE TAKEN ON ANY ITEM**. Work Sessions are not recorded and formal action cannot be taken. Two or more Gunnison County Commissioners may attend this meeting. For further information, contact the County Administration at 641-0248. If special accommodations are necessary per ADA, contact 641-0248 or TTY 641-3061 prior to the meeting.

**Gunnison Com Dev is inviting you to a scheduled Zoom meeting.**

**Topic: Sage-Grouse Strategic Committee Meeting**

**Time: Nov 20, 2024 10:00 AM Mountain Time (US and Canada)**

**Every month on the Third Wed, until Dec 18, 2024, 2 occurrence(s)**

**Please download and import the following iCalendar (.ics) files to your calendar system.**

**Monthly: <https://gunnisoncounty->**

**[org.zoom.us/meeting/tZEKfuGspzwsGtVg7l5atEHosry4yUBJ\\_HPY/ics?icsToken=98tyKuGtpzliHt2SthmGRpwMHYr4WejxmGZdjbdrm0jpViFHRyv5JfBbZqtKMvLv](https://gunnisoncounty-)**

**Join Zoom Meeting**

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**[org.zoom.us/j/85998497601?pwd=ZUxSVE1zY1lPV2wwYXFXaGZvaFo3Zz09](https://gunnisoncounty-)**

**Meeting ID: 859 9849 7601**

**Passcode: 754099**

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**One tap mobile**

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- +1 309 205 3325 US
- +1 312 626 6799 US (Chicago)
- +1 360 209 5623 US
- +1 386 347 5053 US

Meeting ID: 859 9849 7601

Passcode: 754099

Find your local number: <https://gunnisoncounty-org.zoom.us/j/k6ak7n8ZE>

**GUNNISON BASIN SAGE-GROUSE STRATEGIC COMMITTEE  
MEETING MINUTES  
September 18, 2024**

The September 18, 2024 Gunnison Basin Sage-grouse Strategic Committee meeting was conducted in the Gunnison County Blackstock Government Center, 2<sup>nd</sup> floor meeting room, located at 221 N. Wisconsin #D, Gunnison, CO, 81230. The meeting was also available on Zoom.

**Committee Members Present:**

**Voting Members:**

Nathan Seward, Chairperson, Colorado Parks and Wildlife (CPW)  
Liz Smith, Vice-Chairperson, Gunnison County Board of County Commissioners (BOCC)  
Sue Navy, High County Conservation Advocates (HCCA)  
Peter Caloger, Public At-Large  
Paul Mowery, Gunnison County Stockgrowers  
Matthew Vasquez, U.S. Forest Service (USFS)  
Tim Kugler, Recreation At-Large (Gunnison Trails)  
Dayle Funka, USFS

**Non-Voting Members**

Jessica Frey, NPS  
Liam Duggan, USFS  
Aleisha Rummel, NPS  
Marcella Tarantino, Bird Conservancy of the Rockies  
Angela Trnka, U.S. Fish and Wildlife Service

**Others in the Audience:**

Pat Magee, Western Colorado University (WCU)

**Staff Members Present:**

Misty Castillo, Gunnison County Community and Economic Development Department

Others present as listed in text.

**CALL TO ORDER:** Chairperson Seward called the September 18, 2024 meeting of the Gunnison Basin Sage-grouse Strategic Committee to order at 10:05 AM.

**DETERMINATION OF QUORUM:** Seward confirmed that a quorum was present.

**AGENDA APPROVAL:** Nothing to change. **Moved:** by Navy and seconded by Smith to approve the June 12, 2024 and July 17, 2024 agendas. **Moved:** by Kugler and seconded by Smith to approve the September 18, 2024 agenda as amended. Motion carried unanimously.

**APPROVAL OF July 17, 2024 MEETING MINUTES:** **Moved:** by Navy and seconded Smith by to approve the June 12, 2024 meeting minutes as amended. Motion carried unanimously. Changes for July 17, 2024 meeting minutes: Pg. one, name change for Aleisha Rummel and Whit Blair, change "BLM" to "USFS". **Moved:** by Smith and seconded by Navy to approve the July 17, 2024 meeting minutes as amended. Motion carried unanimously.

**SUBMITTEE MEMBERSHIP APPROVAL**

Marcela Tarantino, Sarah Lowe, and Liam Duggan are approved for the Technical Subcommittee. The Technical Subcommittee reviews and works on projects such as the Habitat Prioritization Tool and the Gunnison Basin prioritization sage grouse document. This subcommittee typically meets quarterly. The

Subcommittees are the Executive Subcommittee, Technical Subcommittee, Information and Education Subcommittee. Funka, would be good to have more BLM representation on some of the subcommittees.

Waunita Watchable Wildlife Site Subcommittee membership, Greg Peterson no longer wants to serve. Seward, this subcommittee might not be needed anymore. This subcommittee helped determine closure dates for the Waunita Watchable Wildlife Site. Take Whit Blair off and possibly replace with Angela Trnka. Trnka, is open to joining subcommittee.

Cheatgrass Subcommittee, Petar Simic and Whit Blair are no longer able to be on this subcommittee. Trnka, is open to joining this subcommittee. Smith and Duggan will both be on this subcommittee.

Raven Subcommittee, Angela Trnka will replace Whit Blair. Andrew Stokes from BLM is added to this subcommittee. Recently, this subcommittee has been focusing on raven research in the Gunnison Basin, rolling out bear proof trash cans within Gunnison, and disposal of agricultural (i.e. cattle) and roadkill carcasses. Vasquez is interested in being on this subcommittee. Funka, supports Vasquez joining this subcommittee. Frey will ask other NPS staff if anyone is interested in joining the Raven Subcommittee. Mowery would like to be on the Raven Subcommittee since this subcommittee discusses carcass removal. Smith, Gunnison County trying to renew contract with CDOT for moving roadkill to landfill. CDOT is not committing currently since CPW guidance is to remove roadkill off road and allow to decompose naturally. Seward, CPW covering carcass removal costs in the Gunnison Basin for agriculture producers on CCAA enrolled properties. Seward is hoping to extend this service to all agriculture producers. Caloger asked about CDOT's current protocol for roadkill. Smith said the county was trying to renew their contract with CDOT for bringing roadkill to the landfill. CDOT decided to not renew their contract with the county last year, citing CPW guidance on managing roadkill. Seward, have CPW support at the local level to take roadkill to the landfill.

Smith, motion to approve standing subcommittee members and project based ad hoc subcommittees. **Moved:** by Seward and seconded by Navy to approve standing subcommittee members and project based ad hoc subcommittees. Motion carried unanimously.

## **COMMITTEE MEMBER COMMENTS / REPORTS**

Smith, the job listing for the Cheatgrass and Habitat Restoration Coordinator position is up, and applications are coming in. Smith went out to the Red Creek area to observe cheatgrass treatment sites. A film crew from the 2023 Imagine workshop was filming footage of the cheatgrass treatments occurring at Red Creek. This film crew is producing a mini documentary about cheatgrass treatment across different communities. This crew stated that the Gunnison community was the most aggressive community in terms of cheatgrass treatments. Smith, much more work to be done regarding cheatgrass in the Gunnison Basin. The film crew interviewed Smith, Brian Stevens, Kathy Brodhead, and Jessica Young. Smith, documentary should be completed around April 2025. Possible job for the I and E subcommittee is to put on a watch party for this documentary.

Mowery, several ranches back in June got an aggressive letter about cheatgrass on private property. This letter was signed by Petar. The letter offered free cheatgrass treatment to private landowners. Mowery signed up his ranch, Crossfire Ranch, for a cheatgrass treatment. Mowery is wondering about the status of these treatments. Smith, there is a delay in treatments due to Petar leaving. Bradely Wiggins is fulfilling cheatgrass treatment contracts for private landowners that were setup by Petar. Silhouette, an Oregon based company, has also done several cheatgrass treatments both on private and public land in the Gunnison Basin. Their focus is on larger treatments, spanning 100s of acres. Rummel/Magee, Petar was building/updating a database with landowners for treatments.

Magee, a 30-acre treatment was conducted in the Signal Peak area close to Western's campus. Rummel, this treatment was funded through a Colorado Department of Agriculture/USFS grant. Magee, banner year for cheatgrass. BLM has gotten approval for aerial treatments next year. The job posting for the Cheatgrass and Habitat Restoration Coordinator position is open until September 26. Applications will be reviewed by October 1<sup>st</sup> and all interviews conducted by the end of October. Magee, cheatgrass field trip was conducted to look at cheatgrass sites and bring more awareness. Looked at the Smokey Bear Rd area along HWY

135 and Taylor Canyon. Magee, we are overall losing the battle and must keep going after cheatgrass in the Gunnison Basin. Caloger asked about potential natural controls of cheatgrass. Mowery can be controlled with grazing and fire if timed correctly. Magee, on federal lands it is harder to conduct cheatgrass control with grazing due to regulations/timing. Some efforts using bacteria and fungus to combat cheatgrass. Chemicals is likely the best option for now. Smith, the Palisade Insectory are doing some experiments going with cheatgrass but have not found anything that is effective. Rummel, trials have been done in Crawford and Montrose using herbicide alternatives, but the dry climates make these treatments less effective. Mowery, asked about foxtail barley. Seward, it's a nuisance but not as bad as cheatgrass. Funka, best time to graze cheatgrass is in the spring when its soft and green. Foxtail barely is best controlled by drying it out.

Navy, Wildland Restoration Volunteers was in the valley doing wet meadow restoration work over Labor Day weekend. Volunteers completed 42 rock structures on Black Sage Pass and Gold Basin. Backcountry Hunters and Anglers also hosted a wet meadow restoration workday back in July. Red Lady from being mined was saved so no major industrial traffic going up/down Ohio Creek Rd, and no toxic waste will be dumped into Carbon Creek. Vasquez, USFS will acquire some sage grouse habitat with that deal too. Baby sage grouse seen off Monchego Creek. Navy took 47 years to save Red Lady. The Monchego Creek property acquired by the USFS in the Red Lady deal is 160 acres and was formerly used for ranching. Homestake (old uranium mine) closed out several reclamation requirements last year. Looks great, lots of work as been done to restore the associated area. Navy, Red Lady celebration on October 4<sup>th</sup> on Elk Ave.

Frey, NPS received funding in joint proposal with BLM for \$1.5 million for the Sagebrush Keystone Initiative. This funding will go towards wet meadow projects, road decommissioning, and cheatgrass treatments. Rummel, grazing management plan public scope ends on September 20<sup>th</sup> and the fire management plan public scope ends on October 2<sup>nd</sup>. Hoping to release the grazing management plan environment assessment (EA) for public comment in spring and the fire management plan environment assessment in December/January.

Kugler, Ben Prior and the Gunnison Conservation District treated roughly 30 acres in the Signal Peak area for cheatgrass. Was able to see the treatment area with the blue dye. Over 20 people on the treatment crew and treatment was done in 2.5 hours. The treatment area included Gunnison Rising property, allowed for spraying on their property. Great to work with on this project. The contractor used was Silhouette. HPP funding supplied the Panoramic 2SL and Seward supplied the Rejuvra for the treatment. Mowery, asked about the herbicide differences. Both herbicides are considered pre-emergent, but Rejuvra is more effective against cheatgrass and has a longer effect. Seward, four quarts of Rejuvra was \$2300, and 4 ozs covers an acre. Rejuvra is good at targeting the cheatgrass seedbank. Smith, BLM still must do a local EA on Rejuvra use for BLM land.

Duggan, USFS has been spraying Rejuvra for over a week and have treated acres at Woods Gulch, Smokey Bear Rd area, and Fisher Basin. Vasquez is thinking of using Secure Rural Schools Act Title 2 funds to target cheatgrass treatments on Forest Service land. Vasquez is currently serving a detail as the GMUG's Renewable Resources Staff Officer, started in August and ends in mid-December. Still serving as point of contact for wildlife for GMUG.

Seward, CPW removed and relocate the Copper Creek pack. This pack had three pups. The male was casing depredation on a ranch in the Copper Creek area. The male was in poor condition. CPW relocated all individuals. The female and pups are in a holding facility. The male ended up dying. Another related wolf also died. Out of the 10 wolves released, 4 have died. CPW having hard time finding source of wolves to releases. The next release will occur in Grant County and 15 wolves will come from Canada. Mowery, if a wolf has chronically depredated it cannot be released back into Colorado. It is being proposed that chronic depredation occurs when a wolf depredates 3 times in a 30-day period. Seward, pack not large enough to sustain pups. Mowery, this pack had previously been targeting cattle in Oregon. Seward, if pack was larger, they would be able to target elk. CPW spent 2 months attempting to prevent the wolves from preying on the Copper Creek ranch, but these attempts did not work.

Seward, leaving for Durango to be the CPW Conservation Biologist in Durango. Will be starting this position on October 1<sup>st</sup>. He will be missing the Gunnison community and all the great work they have done for sage

grouse. His wife was able to sell her vet clinic and get a position as a veterinarian at clinic in Durango. By not owning her own clinic, she will be able to spend much more time with their children. This move was best for their family. The transition will be phased, and he will not be leaving the committee yet. Once someone is hired as the new Gunnison CPW Conservation Biologist, they will hopefully chair the committee. Vasquez asked Seward what he will be focusing on work wise in Durango. Won't be Gunnison sage grouse, has been 6-7 years since any have been seen in the Dove Creek population. Will be doing a mountain lion density study in the Durango area. Excited to learn the new country. Other species he will work with are New Mexico jumping mice, yellow bellied cuckoos, and southwest willow fly catchers. Smith, thanks Nate for his work and service. Mowery, thanks Nate for leading the CCAA project. Seward, will stay on as chair until new biologist is hired.

Smith, some potential projects for the technical subcommittee to go over. Rocky Mountain Biological Laboratory trying to cultivate a massive amount of data. Might be good to incorporate into future HPT updates and other projects.

Seward, next project for technical subcommittee is updating the HPT. Hasn't been updated since 2018, should be updated every 2-3 years. The biggest update is updating overall lek statuses. Subcommittee should discuss other potential layers to add (i.e. conifer layer), increasing buffer zones around leks to 1 mile, and changing Tier 2 habitat to Tier 1. Vasquez, forest plan gives a 1-mile buffer around leks. BLM has proposed a 1-mile buffer around leks, but not finalized. Would be good to get the HPT data to the CWPP planning for wildfires, specifically the lek sites in the Gunnison Basin.

**PUBLIC COMMENTS**

None.

**FUTURE MEETINGS: Future meetings will occur in the Gunnison County Blackstock Government Center, 2<sup>nd</sup> floor meeting room and by Zoom online meetings, unless changed for a specific reason.**

06-12-24	10-12	Regular Meeting	Blackstock; 221 N. Wisconsin 2 <sup>nd</sup> floor meeting room
07-17-24	10-12	Regular Meeting	Blackstock; 221 N. Wisconsin 2 <sup>nd</sup> floor meeting room
08-21-24	10-12	Canceled	Blackstock; 221 N. Wisconsin 2 <sup>nd</sup> floor meeting room
09-18-24	10-12	Regular Meeting	Blackstock; 221 N. Wisconsin 2 <sup>nd</sup> floor meeting room
10-16-24	10-12	Canceled	Blackstock; 221 N. Wisconsin 2 <sup>nd</sup> floor meeting room
11-20-24	10-12	Regular Meeting	Blackstock; 221 N. Wisconsin 2 <sup>nd</sup> floor meeting room
12-18-24	10-12	Regular Meeting	Blackstock; 221 N. Wisconsin 2 <sup>nd</sup> floor meeting room

June meeting is rescheduled for June 12 10:00 am – 12:00 pm given the Juneteenth holiday on the regularly scheduled meeting.

**ADJOURN:** The September 20, 2024 meeting of the Gunnison Basin Sage-grouse Strategic Committee adjourned at 12:00 PM.

Minutes Prepared By: Ben Prior, Gunnison Conservation District



U.S. Department of the Interior  
Bureau of Land Management

# Gunnison Sage-Grouse Resource Management Plan Amendment/Environmental Impact Statement

Newsletter • Issue 6 • October 2024



## Record of Decision/Approved RMP Amendment Issued

The Bureau of Land Management (BLM) is pleased to announce issuance of the Record of Decision (ROD) and Approved Resource Management Plan (RMP) Amendment for the Gunnison Sage-Grouse (*Centrocercus minimus*). The Approved RMP Amendment will provide guidance for managing approximately 2,182,660 acres of BLM surface lands and 2,852,390 acres of Federal subsurface mineral estate in Colorado and Utah. The Gunnison sage-grouse is federally listed as a threatened species under the Endangered Species Act (16 U.S.C. §1531-1544). Eight Gunnison sage-grouse populations are scattered across 10 Colorado counties and two Utah counties—Delta, Dolores, Gunnison, Hinsdale, Mesa, Montezuma, Montrose, Ouray, Saguache, and San Miguel in Colorado and Grand and San Juan in Utah.

The Approved RMP Amendment provides a framework to conserve and enhance habitat for the Gunnison sage-grouse in all BLM land use plans with occupied and unoccupied habitat and, as applicable, aligns with the U.S. Fish and Wildlife Service's 2020 Final Recovery Plan. The landscape level management decisions in the Approved RMP Amendment provide habitat conservation and reduction of threats to Gunnison sage-grouse populations. They reflect a long-term commitment by the BLM and cooperating agencies to conserve the species by continuing protection, restoration, and enhancement of Gunnison sage-grouse habitat.

The Proposed RMP Amendment/Final Environmental Impact Statement (EIS) was subject to a 30-day protest period that ended on August 5, 2024. The BLM received five unique protest submissions on the proposed planning decisions. The BLM Director considered and dismissed or denied all valid protest issues after concluding that the BLM Colorado and Utah State Directors had followed applicable laws, regulations, and policies and had considered all relevant resource information and public input. That decision becomes the final decision of the U.S. Department of the Interior. A copy of the Protest Resolution Report is available at: <https://www.blm.gov/programs/planning-and-nepa/public-participation/protest-resolution-reports>.



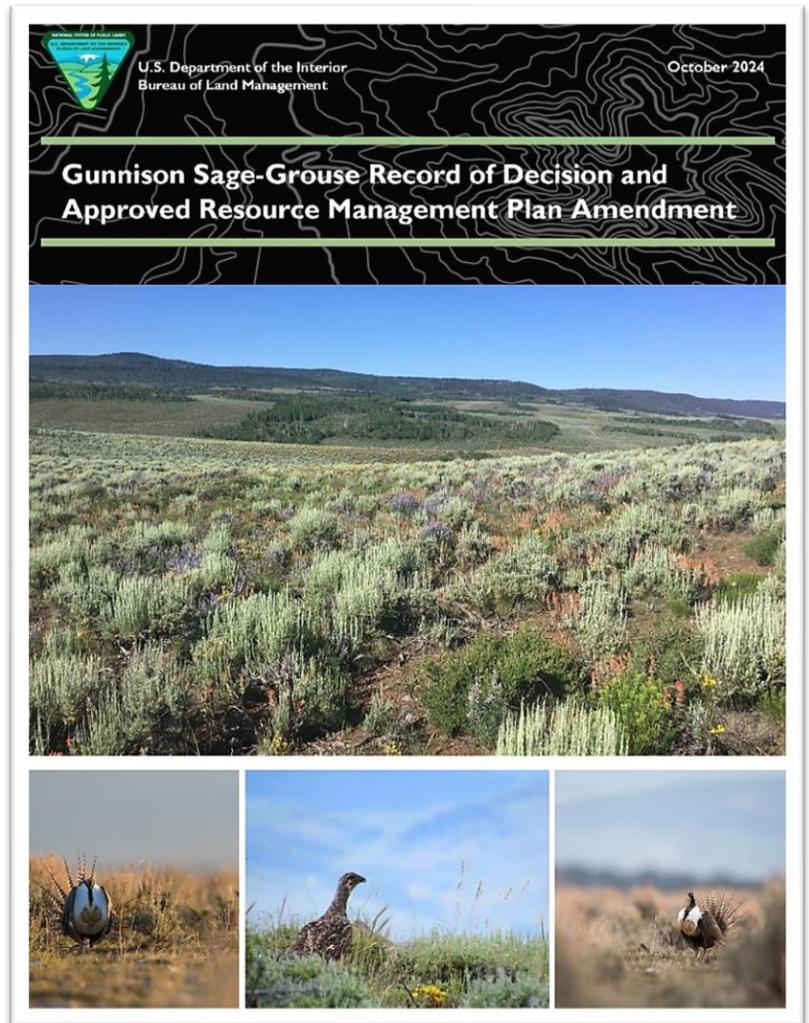
Photo: Kathy Brodhead

The 60-day Governor’s consistency review period for the Proposed RMP Amendment/Final EIS, which promotes consistency with State government plans or policies, concluded on September 3, 2024. The State of Utah identified potential inconsistencies with State policy, and the State Resource Management Plan. In response, BLM modified a travel management action and followed up with a response letter to address additional topics of concern. The State of Colorado did not identify any inconsistencies with state or local plans, policies, or programs.

The ROD and Approved RMP Amendment are available on the BLM website at: <https://eplanning.blm.gov/eplanning-ui/project/2019031/510>. Printed copies are available for public inspection at the BLM Grand Junction, Gunnison, San Luis Valley, Tres Rios, and Uncompahgre field offices in Colorado and the Moab and Monticello field offices in Utah.

The BLM greatly appreciates everyone who participated in this important planning effort for the Gunnison sage-grouse. This decision is rooted in the careful review of substantive comments from federal, tribal, state, and local governments, as well as input from the public, industry stakeholders, and the 30 cooperating agencies that engaged throughout the planning process. Your commitment and dedication throughout have played an integral role in shaping a comprehensive and effective plan. Thank you once again for your invaluable contributions.

Sincerely,  
 Doug Vilsack, Colorado State Director



## ROD/Approved RMP Amendment Highlights

Management direction outlined in the ROD/Approved RMP Amendment includes:

- **Mitigation:** The decision approves a 5:1 mitigation ratio, which uses minimization criteria to avoid, minimize, and compensate for any potential impacts. There will be additional opportunities to develop a range-wide mitigation strategy with cooperators.
- **Lek buffers:** The decision approves buffer protections for all lek statuses. No above ground development will be allowed within one mile of any lek.
- **Surface disturbance:** The decision outlines management to achieve the objective of no net increase in surface disturbance in order to conserve habitat in the Gunnison sage-grouse satellite populations outside of the Gunnison Basin. Resource use restrictions for Lands and Realty rights-of-way and renewable energy. Salable and non-energy leasable minerals are excluded within occupied habitat.
- **Fluid Minerals:** The decision closes all areas with no and low potential for fluid mineral leasing in both occupied and unoccupied habitat management areas, which is the majority of habitat.
- **Special Designation Areas:** Three new Areas of Critical Environmental Concern and one new Backcountry Conservation Area were designated through the decision, specifically for the protection and enhancement of Gunnison sage-grouse habitat. In addition, management direction was updated for two existing ACECs.



# Gunnison Sage-grouse Habitat Prioritization Tool

2018 Update  
Documentation



2018 Update

*Approved by the Gunnison Basin Sage-grouse Strategic Committee June 20, 2018*

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*The below listed information was incorporated into a spatial model to evaluate habitat within the Gunnison Basin for Gunnison sage-grouse. The spatial model in itself can only be used on a broad scale for planning and rough habitat assessment. Projects and development will still need to be evaluated with an onsite assessment on a project-by-project basis.*

*This updated version of the model sought to update data and spatial layers to ensure the best, most-current science and knowledge was used in the prioritization of Gunnison sage-grouse habitat within the Gunnison Basin.*

*Address why this model only covers occupied critical habitat and not all critical habitat. The Habitat Prioritization Tool only addresses Gunnison Sage-grouse occupied habitat. Unoccupied habitat within USFWS designated critical habitat was not addressed because of discrepancies in soil types, necessity of significant habitat modifications to make it actually usable by GuSG, and other issues. The importance of prioritizing habitat where the species actually exists was determined to be of paramount importance.*

*This model has been developed through collaborative efforts of the Gunnison Basin Sage-grouse Strategic Committee with specific guidance from Gunnison County, US Fish and Wildlife Service (USFWS), Bureau of Land Management (BLM), US Forest Service (USFS), Colorado Parks and Wildlife (CPW), National Park Service (NPS), Natural Resources Conservation Service (NRCS), Gunnison Conservation District and interested stakeholders. This model incorporates the most recent information providing a representation of potential on the ground habitat conditions in the Gunnison Basin. Data included is the best information available at the time. Future updates will be essential when new and better data is available.*

## **1. HABITAT POTENTIAL**

Gunnison sage-grouse habitat potential was evaluated within the CPW Occupied Habitat boundary for the Gunnison Basin population. This mapped layer is updated frequently and this tool currently uses data from 2015 with slight modification to include areas around Blue Mesa reservoir down to the high water line. All land within the outer boundary is evaluated. This layer is slightly different than the habitat polygon delineated in the Federal Register. Potential and vacant/unknown habitats are not included in scoring because of lack of habitat and geospatial data. Vacant/Unknown habitat is apparently high quality habitat without birds. Potential habitat would require a significant amount of time, energy and resources to create to a habitat of sufficient quality that could be colonized by grouse.

This tool evaluates the habitat potential as a sum of the weighted scores assigned to each habitat layers in combination with perceived impacts (uncontrollable threats.) This score is the foundation for assigning habitat statuses (Tier 1 and Tier 2). The goal of this valuation is to decrease future habitat fragmentation and to increase the ability for conservation planning. Tier 1 habitat is defined as those habitats scoring 15 or higher. Tier 2 habitats are all other habitats (<15).

## 1.1 HABITAT

**Lek:** The official lek status and high male count are defined and reported from lekking data collected and published by CPW in their annual Gunnison Basin Lek Count Summary and Population Estimate. The Official Status of a lek is given as a cumulative status and designated as Active, Historic, Inactive, or Unknown. To be Officially Active, a lek only needs to be designated as Active in the current year. A lek is not considered Officially Inactive unless it has been seasonally Inactive for five consecutive years. Thus, a lek might not have any birds for a given season, but its official status may be Unknown because the lek had not been Inactive all of the past five years. Historical lek status is not given until a lek has been Inactive for 10 consecutive years. (Jackson and Seward, 2011)

- **Geospatial Data:** This layer is the CPW lek polygon layer and includes a 0.6 mile buffer from the outside edge of the lek polygon with spatial boundaries from the 2014 unofficial update as well as the local status from 2016. Buffering the lek polygons by 0.6 miles matches up with the disturbance guidelines in the Rangewide Conservation Plan. This 0.6 mile buffer serves as a measure of protection to ensure that the entire lek polygon is captured within the buffer polygon and that potential direct or indirect impacts directly adjacent to a lek that could influence lekking behavior are evaluated.
- **Evaluation class breaks (weight) justification:** Leks are considered important habitat for the grouse. Habitat alteration on or near a lek has the potential to have a great impact to the population. There is a need to conserve all leks, regardless of the number of birds displaying on the lek. (Aldridge, 2011b; Phillips, 2011; Jackson and Seward, 2011.)
  - o **Active (15)** *Active leks are those of greatest value to the grouse population. Birds are displaying regularly on an annual basis.*
  - o **Unknown (10)** *These leks could have and Official Status of unknown for many reasons, including missing count data. Leks can fall into this category in a one year time frame.*
  - o **Inactive (8)** *These leks should not be completely discounted. There is potential for the grouse to comeback and begin using these areas on a regular basis if numbers increase or surrounding habitat improves. It takes 5 years for a lek to move into this category.*
  - o **Historic (1)** *The majority of these leks are close to high build-out densities and will probably never be able to recover to active status regularly. The lek would have been inactive for 10 years or greater.*
- **Data for support:**
  - o 2015 Gunnison Basin Gunnison sage-grouse Lek Count Summary and Population Estimate Final Report (Jackson and Seward, 2015).
  - o 2011 Gunnison Basin Gunnison Sage-grouse Lek Count Summary and Population Estimate Final Report (Jackson and Seward, 2011).
  - o 2011. Seward, Nate. Lek Status Definitions.
  - o 2011b. Aldridge, Cam. Public meeting information, December 1, 2011. Meeting to validate the priority tool model called by the Technical Subcommittee for the Gunnison Basin Strategic Committee for the Gunnison Sage-grouse.
  - o 2011. Phillips, Mike. Public meeting information, December 1, 2011. Meeting to validate the priority tool model called by the Technical Subcommittee for the Gunnison Basin Strategic Committee for the Gunnison Sage-grouse.
  - o *Endangered and Threatened Wildlife and Plants: Critical Habitat for Gunnison Sage-Grouse; Final Rule, 79 Fed. Reg. 69312 (November 20, 2014)*
- **Area for improvement:**
  - o The Local CPW Office GuSG Annual Report definitions do not align with the RCP or current Statewide definitions for Official Lek Status as defined by Colorado Parks and Wildlife. Local CPW staff has maintained consistency in local definitions and is working to align them with the RCP and Statewide definitions.

**Brood Rearing Habitat:** Brood rearing habitat is defined in the Rangewide Conservation Plan (RCP). It includes mesic areas (swales, meadows, sagebrush near irrigation ditches and irrigated meadows) with lush vegetation.

- **Geospatial Data:** This layer was updated extensively in the Version 2 model. A 10m DEM slope assessment was completed to find all drainages and draws. This layer was then combined with the NHD Stream Layer and ditch layers to capture more brood rearing habitat. Using a cost analysis which incorporated slope, the group was then able to create a varied width representing the actual floodplain and thus the brood habitat. The model also incorporated the wet meadow/sagebrush interface and all Aw (alluvial) soils. Areas within lakes and irrigated areas outside the 50m of ditches were removed from the Brood layer. Lastly areas outside of nesting/summer/fall/winter habitat but within the occupied habitat boundary were removed from this layer. The modifications to this layer tried to improve upon the general 50m buffer provided for in the Gunnison Basin Local Plan by incorporating varying relief and differences in width in these floodplain areas. Some areas may be wider than 50m while other are less.
- **Evaluation class breaks (weight) justification:**
  - o Present (13)
- **Data for support:**
  - o The Nature Conservancy: Gunnison Basin Mesic area project prioritization model, 2017
  - o Gunnison Sage-grouse Rangewide Conservation Plan
  - o Gunnison Basin- Colorado. 1997. Local species management plan.
  - o USFWS Federal Register Critical Habitat
  - o CPW streams layer
- **Area for improvement:**
  - o Removal of any brood rearing habitat from heavily treed areas, and open water.
  - o There is a need to add other features including springs and seeps that are not captured in the current data layers.

**Nesting/Summer/Fall/Winter Habitat:** These habitats are defined in the RCP and in the Federal Register for Critical Habitat and includes; sagebrush dominated areas.

- **Geospatial Data:** This data layer was compiled from NRCS soils data and includes all sagebrush dominated range sites (mountain loam, subalpine loam, mountain outwash, dry mountain loam, dry exposure and deep clay loam) and stony rock areas. *See Appendix X for soils included from each Soil Survey.* Brood and irrigated layers were removed from this layer.
- **Evaluation class breaks (weight) justification:** As we looked at the map the group decided to differentiate nesting habitats based on proximity to brood rearing habitat-- nesting habitat closer to the brood rearing habitat would receive a higher score. Sage grouse hens have to be able to move their broods from the nests to brood rearing habitat by walking. All nesting habitat is of value, but nesting habitat closer to brood rearing habitat has potential to be of higher value. All nesting habitat within 4 miles of a lek is accounted for in the model (Connelly et al 2000, Aldridge 2011b).
  - o Present <750 ft from brood rearing and winter habitat (15)
  - o Present >750 ft from brood rearing and winter habitat (10)
- **Data for support:**
  - o Gunnison Sage-grouse Rangewide Conservation Plan; Gunnison Basin- Colorado. 1997. Local species management plan.
  - o NRCS Soil Surveys—See Appendix X

- 2011b. Aldridge, Cam. Public meeting information, December 1, 2011. Meeting to validate the priority tool model called by the Technical Subcommittee for the Gunnison Basin Strategic Committee for the Gunnison Sage-grouse.
- Connelly et. al 2000
- 2011. Phillips, Mike. Public meeting information, December 1, 2011. Meeting to validate the priority tool model called by the Technical Subcommittee for the Gunnison Basin Strategic Committee for the Gunnison Sage-grouse.

- **Area for improvement:**

- Updated NRCS soils mapping and ecological site mapping.

- **Critical Winter Habitat:** Gunnison Sage-grouse Rangewide Conservation Plan; Gunnison Basin- Colorado. 1997. Local species management plan. This layer was not included in the HPT because defining data was not available.

- **Area for improvement::**

- There is a need to define these areas spatially, but the group does not have the tools/data necessary at this point.

-

**Land Near Active Leks:** Land near active leks is considered a higher priority for preservation. Leks are often in close proximity to quality nesting habitat. (Connelly et al. 2000; Aldridge et al. 2011) The Local Gunnison Sage-grouse Conservation Plan notes that these areas are priority areas used by nesting hens (1997).

- **Geospatial Data:** A two mile buffer was placed around the outer edge of the 2017 CPW lek polygon layer. Both the area within the 2 mile buffer and the lek itself were included in this layer. Irrigated areas were removed from this layer. The two mile buffer is from the Gunnison Sage-grouse Rangewide Conservation Plan (1997).

- **Evaluation class breaks (weight) justification:**

- Areas within active leks and < 2 miles from the edge of the active leks (5)

- **Data for support:**

- Connelly, J.W., M.A. Schroeder, A.R. Sands and C.E. Braun. 2000. Guidelines to manage sage grouse populations and their habitat. Wildlife Society Bulletin 28:967-985.
- Aldridge et al. 2011
- Gunnison Sage-grouse Rangewide Conservation Plan; Gunnison Basin- Colorado. 1997. Local species management plan.

**Irrigated Lands:** Irrigated areas greater than 50m from the sagebrush interface and outside CPW lek polygons are not considered as suitable grouse habitat.

- **Geospatial Data:** This is a spatial layer of irrigated meadows where the inside of the polygon greater than 50m from the sagebrush was scored to reduce the value of the habitat as indicated in the RCP and Federal Register. If this area happened to coincide with a lek polygon, the value was not removed (the higher score was kept). Irrigated areas within brood habitat were removed from this layer.

- **Evaluation class break (weight) justification:**

- Present (1)

- **Data for support:**

- Gunnison Sage-grouse Rangewide Conservation Plan; Gunnison Basin- Colorado. 1997. Local species management plan.
- *Endangered and Threatened Wildlife and Plants: Threatened Status for Gunnison Sage-Grouse; Final Rule*, 79 Fed. Reg. 69192 (November 20, 2014)
- 2011. Phillips, Mike. Public meeting information, December 1, 2011. Meeting to validate the priority tool model called by the Technical Subcommittee for the Gunnison Basin Strategic Committee for the Gunnison Sage-grouse.

**Tree Canopies:** Trees are not typically present in grouse habitat, not only do they reduce desired vegetation by the grouse, they also increase the risk of predation. This is not a specific layer in the HPT. It is somewhat defined by the forested soils layer.

## 1.2 Impacts

**Subdivisions:** Areas divided by subdivision and development have greater impacts on grouse habitat.

- **Geospatial Data:** Gunnison and Saguache County's parcel layers, as well as their 9-1-1 house point layers, have been combined to determine development potential/impact. Development was defined as home, barn, or any improvement valued at more than \$30,000 on a parcel. At each house point, there was a 300 foot radius buffer added to the known structure. House points that were within 1000 ft of another two house points were then buffered by 1000 ft due to the increased impact on the grouse. (Cochran, 2011) The 300 ft buffered housing points buffer was clipped and removed from the 1000 ft buffer so that points did not receive a negative score for both the buffers. Parcel and house point data is from 2017 updates for both counties.
- **Evaluation class break (weight) justification:**
  - Areas within 300ft of a house point (-5) *Areas adjacent to houses are not suited for grouse habitation.*
  - Areas where a 3 house points are within 1000 ft (-20) *Areas where more house points are located closer together (subdivisions) will have an even greater negative impact on the grouse habitat.*
- **Data for support:**
  - Cochran, Jim. 2011. Personal communication.
  - Phillips, Mike. 2011. Personal communication.

**Roads and Trails:** All roads and improved trails were evaluated for their impact to the habitat from fragmentation and predator corridors. **Use and recreation impacts from disturbance are not considered in this layer. This is a habitat impact evaluation of the roads themselves.** Improved roads are considered all roads bigger than all season, 2-wheel drive roads. Improved roads are defined as passenger car roads, highways, and improved county roads. Double track roads are considered unimproved roads and include: admin routes, jeep trails, primitive roads, high clearance roads, private roads, and ATV routes. Single track routes are considered trails (mechanized and motorized are included). Closed routes are routes that are permanently closed (not seasonally) that have not been reclaimed.

- **Geospatial Data:** Road data from the county, CPW, BLM, NPS and USFS were used to create this layer. Data included is from 2017 and the 2010 USFS/ BLM Travel Management Plan
- **Evaluation class break (weight) justification:**
  - <150 ft from the centerline of an improved road (-4) *These roads are defined as passenger car roads, highways, and county roads.*
  - <50 ft from centerline of a double track(-3) *These roads are defined as roads with vegetation growing between the tracks and include admin routes, jeep trails, primitive roads, private roads (driveways), unmaintained roads, and ATV routes.*
  - <25 ft from that center line of a single track (-2) *These are defined as smaller disturbances that include trails, including both mechanized and motorized uses.*
  - <25 ft from that center line of a closed route (0) *These are defined as routes that are permanently closed (not seasonally) that have not been reclaimed.*
- **Data for support:**
  - Aldridge et al. 2010- Aldridge does not agree with the 150ft buffer. He feels that improved roads can impact nesting habitat up to 8km away. Double track roads can have an impact to over 6 km away. He feels that there is not a non-linear response as you move away from the road and that a regression model needs to be used to depict this.

- *2010 Gunnison Basin USFS and BLM Federal Travel Management Plan*

- **Area for improvement:**

- Winter use trails and roads should be incorporated when information is available
- Reclaimed roads and trails should be incorporated

**Power Lines:** Power lines pose a potential risk for habitat degradation due to predation and fragmentation. There is a significant distinction between WAPA lines and the GCEA lines. WAPA lines do have large structures, high lines, and improved roads associated with them. GCEA lines are smaller primary and secondary lines that usually do not have roads associated with them.

- **Geospatial Data:** There is a data layer available with large, above ground, WAPA transmission lines mapped.

- **Evaluation class break (weight) justification:**

- 0 to 820 ft. (0.25km) from an above-ground, transmission power line (WAPA) (-3) *These lines typically have a maintained road and taller structures associated with them.*
- 820 ft. to 1,640 ft. (0.25 to 0.5 km) from an above-ground, transmission power line (WAPA) (-2) *These lines typically have a maintained road and taller structures associated with them.*
- 1,640 ft. to 4,920 ft. (0.5 to 1.5 km) from an above-ground, transmission power line (WAPA) (-1) *These lines typically have a maintained road and taller structures associated with them.*
- 4,920 ft. to 6,560 ft. (1.5 to 2km) from an above-ground, transmission power line (WAPA) (0) *These lines typically have a maintained road and taller structures associated with them.*
- 150 ft. to 450 ft. from a GCEA above-ground, distribution power line (-1) *Are typically smaller in structure and have no maintained road that accompanies them.*
- <150 ft. from a GCEA above-ground, distribution power line (-2) *Are typically smaller in structure and have no maintained road that accompanies them.*

- **Data for support:**

- 2011. Phillips, Mike. Public meeting information, December 1, 2011. Meeting to validate the priority tool model called by the Technical Subcommittee for the Gunnison Basin Strategic Committee for the Gunnison Sage-grouse. Mike feels that an impact from power lines is for direct mortality (2 birds within the scope of his study).
- 2011b. Aldridge, Cam. Public meeting information, December 1, 2011. Meeting to validate the priority tool model called by the Technical Subcommittee for the Gunnison Basin Strategic Committee for the Gunnison Sage-grouse.
- Messmer, T. et al. 2017 Greater sage-grouse lek persistence and breeding distributions relative to electric power transmission and distribution lines

- **Area for improvement:**

- Exponential decay out to about 2.5km is more probably the direct influence of the power lines. This would reflect the impact of predation on the grouse from perching predators. (Aldridge 2011b.)

**Unsuitable Habitat:** There are areas within the Gunnison Basin that may have been included within CPW's occupied habitat layer that need to be removed. This layer serves to call out specific, finite areas that should not be counted as grouse habitat.

- **Geospatial Data:** The spatial information comes from aerial imagery and county parcel data.
- **Evaluation class break (weight) justification:**
  - o Landfill boundary (-30) *The Gunnison County landfill does not count as grouse habitat due to the level of disturbance, lack of appropriate vegetation and/ or subsidized predation.*
  - o <500 ft of the landfill boundary (-30) *This area still provides large subsidies for predators and reduces the quality of habitat to the grouse due to increased levels of predation.*
  - o UMTRA site (-30) *This site is the mitigated tailing location for uranium mining that has historically occurred in the valley. Currently, the area is capped with a very thick layer of coarse black rock that precludes growth of vegetation. The boundary of the rock can be seen using aerial imagery and it is not grouse habitat.*
  - o Gunnison County Airport (-30)
  - o Large areas of open water (-30)
  - o Large, historic gravel pits (-30)
- **Data for support:**
- **Area for improvement:**

**2. Validation**

The 2012 HPT was validated using known grouse locations by CPW. The 2018 HPT has not been validated against known grouse locations.

Model Accuracy*		
	Version 1	Version 2
Tier 1	87.75	
Tier 2	12.25	
Total	100.00	

*\*Number presented are the % of known bird locations accounted for within the tool.*

**Scoring Reference Matrix**

Habitat Potential	Evaluation Class	Weight
	active	15
	unknown	10
	inactive	8
	historic	1
<b>Lek</b> (0.6 mile buffer from edge of lek polygon)		
<b>Brood Rearing Habitat</b> within 50m of water (riparian, irrigation ditches, mt meadows, swales) and sagebrush	present	13
	< 750ft from brood rearing habitat	15
	> 750ft from brood rearing habitat	10
<b>Nesting/Summer/ Fall/ Winter Habitat</b> (sagebrush dominated ecological sites and stony rock lands)		
<b>Land Near Active Leks</b> (areas within 2 miles of an active lek and the lek itself)	lek and land <2 miles from active lek boundary	5
	lek and land <2 miles from active lek boundary	5
<b>Land Near Active Leks</b> (areas within 2 miles of an active lek and the lek itself)	lek and land <2 miles from active lek boundary	1
	<b>Irrigated Lands</b> (irrigated land greater than 50m from sagebrush not discounting any leks in these areas)	present

Impacts	Evaluation Class	Weight
<i>(This accounts for impacts on the habitat that will not likely be changed.)</i>		
<b>Subdivisions</b> (areas with development at certain densities)	within 300' of development (house)	-5
	areas with 3 housing points within 1000'	-20
<b>Subdivisions</b> (areas with development at certain densities)		
	<b>Roads and Trails</b> (this accounts for the fragmentation impacts of the road/trail structure <150ft from the centerline of improved roads)	-4

and NOT the impacts associated with the recreational use) <b>Roads and Trails</b> (this accounts for the fragmentation impacts of the road/trail structure and NOT the impacts associated with the recreational use)	<50ft from the centerline of a double track roads	-3
<b>Powerlines</b>	<25ft from the centerline of a single track roads	-2
	<25ft from the centerline of a closed routes	-1
	0 – 820 ft from above ground transmission line (-3)	-3
	820ft – 1,640ft from above ground transmission line (-2) 1,640 – 4920 ft from above ground transmission line (-1) 4,920 – 6,560 ft from above ground transmission line (0) 150- 450ft from above ground distribution line (-1) <150ft from above ground distribution line (-2)	-5
	<b>Unsuitable Habitat</b>	
	Landfill boundary (-30)	-30
	< 500ft of the landfill boundary (-30)	-30
	UMTRA site (-30)	-30
	Gunnison County Airport (-30)	-30
	Open water (-30)	-30
	Large, historic gravel pits (-30)	-30

#### 4. Mapped Acreage

Mapped Acreage			
		<i>Version 1 (2012)</i>	<i>Version 2 (2018)</i>
Lek	Active Unknown Inactive Historic		
	Brood Rearing Habitat		
	Nesting/Summer/ Fall Habitat		
	Winter Habitat		Included with Nesting/Fall
	Critical Winter Habitat	Not Evaluated	
	Land Near Active Leks		
	Irrigated Lands		
Subdivisions	< 300' of a development 3 housing points within 1000' <70 acres and developed		
Roads and Trails	<150' from improved road <50' from double-track <25' from single-track <25' from closed route		
Power Lines	<450' from GCEA line <450' from WAPA line		

#### 6. Summary of Updates

In order to maintain the usefulness and improve the accuracy of this tool, occasional updates will be needed. It is proposed that this tool be reviewed and adjusted according to new science and spatial information. Reviews should coincide with CPW's species review for the Gunnison sage-grouse or at the request of the Gunnison sage-grouse Strategic Committee.

The major changes to the HPT are:

- Reduced the **buffer to proximity of Brood Rearing** (BR) habitat to the Nesting/ Summer/ Fall (NSF) habitat and added proximity to Winter habitat. This was to capture the idea that NSF and Winter habitat in closer proximity to brood rearing/ mesic areas has higher value.

- Drastically updated the **brood rearing habitat** to capture the floodplain versus a buffered line (increased brood rearing substantially)—based on the TNC mesic area project prioritization model created by The Nature Conservancy in their Climate Resiliency Project. This update also captured small depression areas in ephemeral drainages that might not have been captured in the first tool.
- Added missing **soil layers** (like Taylor Park Soil Survey)
- Removed the **development threat to areas greater than 70 acres**. This tended to reduce the core of high quality habitat for political reasons that are not appropriate for a habitat assessment.

Updates that were not incorporated, but may provide useful in future updates:

- **Tree stands** are not consistently removed from the habitat model. Is there a better way to capture sites that have the potential to produce trees? If so, those areas should be removed.
- **Noxious weeds** and invasive species information would be very valuable to add to the tool, but due to inconsistencies in mapping across private and public lands, it is hard to incorporate into this model. Adding this layer would also tend to indicate a permanent loss or degradation of habitat that may not actually reflect new treatment and restoration technologies.
- Consider using a view shed analysis to review implications of **powerlines** on habitat. Currently there is a gradient, but topography is not weighing in to the mapping. To complete this analysis, we would need more information like tower and wire heights.

Major Questions/ Concerns:

- Have we adequately captured grouse habitat (at nearly 60% of the basin)? Can we ground truth this again like we did in the previous model with the CPW data. (Version 1 captured >80% of the bird locations.)
- Winter habitat was combined with the nesting/summer/fall habitat. Differentiation between the two habitat types was difficult and inaccurate. A new Critical Winter Habitat layer is needed in future year updates.
  - Official lek status was updated to 2016 data provided by CPW. The lek boundary layer remains the 2012 layer.
  - The occupied habitat layer collected by CPW will be updated from the 2005 data to the 2015 data.
  - All address points (indicating development and housing) will be updated to the current available data (2017).
  - Road data is current as of 2010 for BLM, USFS, County, Municipal, State and US.
  - Unofficial Taylor Park Soil Survey data was incorporated into the model.
  - Updated power line data to include GCEA local distribution lines.
  - To simplify the geospatial layers included in the model, the 2018 model will only include scored habitat and impact layers. All other layer data will be kept for future years project analysis.
    - Small sliver polygons less than 1 acre will be blended into an adjacent polygon in which it shares the largest border. Due to the model's spatial inaccuracies, the removal of these small polygons will more closely reflect the data's accuracy.
    - More information is needed to substantiate the ranking values assigned.
    - Comparative analysis of model to known grouse locations as provided by CPW and NPS needs to be done to fully understand the model's ability to capture grouse habitat suitability. Initial reviews of the original tool with on the ground assessment and preliminary data from CPW have shown good ability to capture habitat values.
      - A future update strategy needs to be created.
      - Area around Blue Mesa that was initial outside of CPW's occupied habitat layer but above the Bureau of Reclamation's high water line for the reservoir was added back in.
      - When compared to several other models that have been created specifically for the Gunnison sage-grouse, the HPT is the only one that focuses on habitat potential based upon soils and not bird tracking locations. Both Mindy Rice's (CPW) and Cam Aldridge's models (USGS) focus on resource selection which may not truly depict habitat potential, quality and distribution.

## 6. HPT Future Update Plan

Annual: (These updates do not require approval by the Strategic Committee unless a majority of the Committee requests review/approval of one or more of these updates. These updates will only occur if new data is available.)

House points

Lek status (including new leks identified by CPW)

Roads and trails

New roads/trails

Changed status of roads/trails (upgrades/downgrades)

Decommissioned roads/trails

Every 5 years: (These updates require recommendation by the Technical Subcommittee and approval by the full Strategic Committee. At minimum a review of the specific data/layers noted below is required by the Technical Subcommittee to determine if updates in any of these categories are necessary/appropriate.)

Lek polygons

Occupied habitat polygon

Consider any new science that may be applicable to the HPT

Continue work to refine the brood rearing habitat layer

Continue work to refine/improve the treed layer within the HPT

Changes to soil layer if needed

Reporting: The Chair of the Technical Subcommittee and/or the Gunnison County GIS Program Manager shall report to the Strategic Committee at its June meeting annually on any updates made to the HPT.

## 7. 2018 Project Update Team

**Matt Vasquez**- US Forest Service, *chair*  
**Russ Japuntich**- Bureau of Land Management  
**Kathy Brodhead**- Bureau of Land Management  
**Theresa Childers**- National Park Service  
**Jim Cochran**- Gunnison County  
**Mike Pelletier**- Gunnison County  
**Nathan Seward**- Colorado Parks and Wildlife  
**Brooke Vasquez**- Gunnison Conservation District  
**Gay Austin**- Bureau of Land Management  
**Tara DeValois**- Bureau of Land Management  
**Liz With**- Natural Resources Conservation Service  
**John Scott**- Scott Resources Management  
**Brooke Vasquez**- Gunnison Conservation District  
**Mark Brennan**- USFWS  
**Pat Magee**- Western State Colorado University  
**Suzie Parker**- USFS  
**Aleshia Fremgen**- Interested community member

## 8. 2011 Project Team

**Matt Vasquez**- US Forest Service  
**Russ Japuntich**- Bureau of Land Management  
**Tony Apa**- Colorado Parks and Wildlife  
**Mike Phillips**- Colorado Parks and Wildlife  
**Theresa Childers**- National Park Service  
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**Tara DeValois**- Bureau of Land Management  
**Liz With**- Natural Resources Conservation Service  
**John Scott**- Natural Resources Conservation Service  
**Amanda**- Bureau of Land Management  
**Ken Stalhnecker**- National Park Service  
**John Toolen**- Bureau of Land Management  
**Charlie Sharp**- US Fish and Wildlife Service  
**Susan Linear**- US Fish and Wildlife Service

## 8. References

Colorado Division of Wildlife. *2011 Gunnison Basin Gunnison Sage-Grouse Lek Count Summary and Population Estimate Final Report*. Colorado Division of Wildlife, Gunnison basin, Colorado, USA.

Colorado Division of Wildlife. *2010 Gunnison Basin Gunnison Sage-Grouse Lek Count Summary and Population Estimate Final Report*. Colorado Division of Wildlife, Gunnison basin, Colorado, USA.

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*Web Soil Survey - Home*. USDA Natural Resources Conservation Service. Web. 15 Nov. 2011.  
<<http://websoilsurvey.nrcs.usda.gov/app/>>.

Aldridge, Cameron L., D. Joanne Saher, Theresa M. Childers, Kenneth E. Stahlnecker, and Zachary H. Bowen. "Crucial Nesting Habitat for Gunnison Sage-Grouse: A Spatially Explicit Hierarchical Approach." *Journal of Wildlife Management*.

Rice M. et al. The importance of seasonal resource selection when managing a threatened species: targeting conservation actions within critical habitat designations for the Gunnison sage-grouse. 2017. CSIRO Publishing

## **9. Acronyms**

BLM- Bureau of Land Management

CPW- Colorado Parks and Wildlife

CDOW- Colorado Division of Wildlife

GCEA- Gunnison County Electric Association

NPS- National Park Service

NRCS- Natural Resources Conservation Service

RCP- Gunnison Sage-grouse Rangewide Conservation Plan

USFS- US Forest Service

USFWS- US Fish and Wildlife Service

WAPA- Western Area Power Association

## Appendix I: NRCS Soil Survey data

### Nesting/Summer/Fall

Soil survey CO660: [MUSYM] in ("127", "138", "142") ] and in NE aspects (331 to 149 degrees) in ("107", "131", "139", "153", "165", "172", "191")

Soil survey CO661: [MUSYM] in ("PeA") and in NE aspects (331 to 149 degrees) in ("BaE", "BaF", "EyF", "GoE", "JuF", "LiF", "LmF", "LuE", "LuF", "MhF", "RI", "SmF", "SoF", "St", "SuF")

Soil survey CO662: [MUSYM] in ("BsB", "CuB", "DeB", "EvB", "EvD", "GeB", "IrB") and in NE aspects (331 to 149 degrees) in ("Ad", "BoE", "CeE", "CoE", "CrE", "DeC", "DoE", "DrE", "DsE", "EvD", "GeE", "JeE", "KcE", "KuE", "KvE", "LeE", "LhF", "MoE", "MrE", "PhF", "PmF", "PwE", "RcE", "Ro", "Rs", "RuE", "SuE", "St", "YgE", "YIE", "YpE")

Soil Survey: CO663 [MUSYM] in ("108") and in NE aspects (331 to 149 degrees) in ("105", "109", "110", "111", "119", "121", "122", "130", "131", "132", "133", "141", "142")

### Winter Habitat (just the SW aspects of 150 to 330 degrees for all following soils)

Soil survey CO660: [MUSYM] in ("107", "131", "139", "153", "165", "172", "191")

Soil survey CO661: [MUSYM] in ("BaE", "BaF", "EyF", "GoE", "JuF", "LiF", "LmF", "LuE", "LuF", "MhF", "RI", "SmF", "SoF", "St", "SuF")

Soil survey CO662: [MUSYM] in ("Ad", "BoE", "CeE", "CoE", "CrE", "DeC", "DoE", "DrE", "DsE", "EvD", "GeE", "JeE", "KcE", "KuE", "KvE", "LeE", "LhF", "MoE", "MrE", "PhF", "PmF", "PwE", "RcE", "Ro", "Rs", "RuE", "SuE", "St", "YgE", "YIE", "YpE")

Soil survey CO663: [MUSYM] in ("105", "109", "110", "111", "119", "121", "122", "130", "131", "132", "133", "141", "142")