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Subject: Proposed Focused Investment Partnership Priority (FIP) Response

On behalf of the All Oregon Counties Candidate Conservation Agreement (CCAA) Strategic Steering Committee, we are pleased to submit a request for consideration of the attached proposed focused investment partnership priority.

Our committee believes that the sagebrush steppe ecosystem provides both seasonal and year round habitat for a variety of wildlife species. Specifically, the primary threats to the sagebrush steppe ecosystem are the same primary threats that pose a risk to the Greater sage-grouse. Because of the correlation between this unique bird and the sagebrush steppe, the Greater sage-grouse serves as an umbrella species to the estimated 20% of plants and animals associated with the sagebrush ecosystem that may be at risk (H. John Heinz III Center for Science, Economics and Environment 2002).

The proposed FIP is a priority for Oregon and time is of the essence for investment. Since 2011, the grass roots efforts of Oregonians working on sage-grouse issues have been unprecedented. The Governor's SAGECON working group provides the roadmap for highly functioning partnerships like ours to strategically invest in on-the-ground conservation that will provide ecological, economic, and social benefits across jurisdictional boundaries in Oregon.

Thank you for the opportunity to submit the proposed focused investment partnership priority to the board of directors.

Sincerely,

Marty Suter-Goold

Marty Suter-Goold, District manager

The Oregon Model to Protect Sage-Grouse

Proposed Focused Investment Partnership Priority (FIP) Response

Prepared by the Oregon All Counties CCAA Strategic Committee

In Cooperation with Steve Leonard & Dr. Wayne Burkhardt

October 14, 2014

The Oregon Model to Protect Sage-Grouse Proposed Focused Investment Priority Area

1. Priority Description

a. What is the native fish or wildlife habitat to be conserved or other natural resource issue to be addressed?

The sagebrush steppe is one of the largest ecosystems in North America extending from the rain shadow of the Pacific Coast Mountains to the Rocky Mountains. In Oregon, the sagebrush steppe covers the majority of the eastern portion of the state. This vast arid and semi-arid ecosystem is characterized by extreme climate conditions and a diverse array of plants and animals that have adapted to the seasonal climatic changes. Summers are typically hot and dry and winters are usually long and cold. Snowfall is the predominant vector for precipitation and many of the plants associated with the sagebrush steppe are relatively drought tolerant.

The sagebrush steppe ecosystem provides both seasonal and year round habitat for a variety of wildlife species. Large ungulates such as deer and elk commonly rely on this vast sagebrush landscape as winter range. Small mammals like rabbits and coyotes are readily found foraging, hunting, and burrowing throughout the shrub land. Additionally, avian species such as migrant song birds, sagebrush dependent passerines, and galliforms including the imperiled Greater sage-grouse (*Centrocercus urophasianus;* hereafter referred to as 'sage-grouse') are dependent on the sagebrush steppe for shelter and food at various times of the year.

Land practices and changing ecological processes have severely reduced the extent or altered the dynamics within the sagebrush steppe (Connelly et al. 2004). Exotic annual grasses present one of the most widespread and significant challenges to the maintenance of healthy sagebrush ecosystems in the Great Basin. Perhaps of greatest concern are the detrimental impacts caused by the self-perpetuating annual grass-wildfire cycle. Fueled by repeated disturbance, vast native shrub-steppe communities are now being completely converted to annual grasslands. In addition, over 12 million acres in the Great Basin are affected by conifer encroachment, with 90% of those lands historically supporting sagebrush steppe (Miller et al. 2008).

The primary threats to the sagebrush steppe ecosystem are the same primary threats that pose a risk to the Greater sage-grouse. Because of the correlation between this unique bird and the sagebrush steppe, the Greater sage-grouse serves as an umbrella species to the estimated 20% of plants and animals associated with the sagebrush ecosystem that may be at risk (H. John Heinz III Center for Science, Economics and Environment 2002).

A strategic and targeted conservation approach is critical to providing sustainability to the sagebrush steppe and to the all of the animals that inhabit this diverse shrub land.

b. What are the specific expected ecological outcomes to be achieved after this priority is addressed?

Development of a strategic and focused plan of action that crosses ownership and demographic boundaries is imperative to ameliorating the threats to the sagebrush steppe ecosystem. Research has indicated that >80% of sage-grouse breeding habitat in the northern Great Basin is on public land, while >80% of brood rearing habitat is in private ownership (Sage Grouse Initiative 2014). This example illustrates the importance of taking collaborative, landscape scale approaches to achieve successful conservation.

An interdisciplinary team of research professionals, agency personnel, stakeholders, and landowners has been developed in Oregon to facilitate the implementation of conservation measures designed to benefit

sage-grouse and the sagebrush steppe. The Oregon All Counties CCAA Strategic Committee (the Committee) has identified three specific conservation objectives for achieving the desired ecological outcomes on private land by 2045.

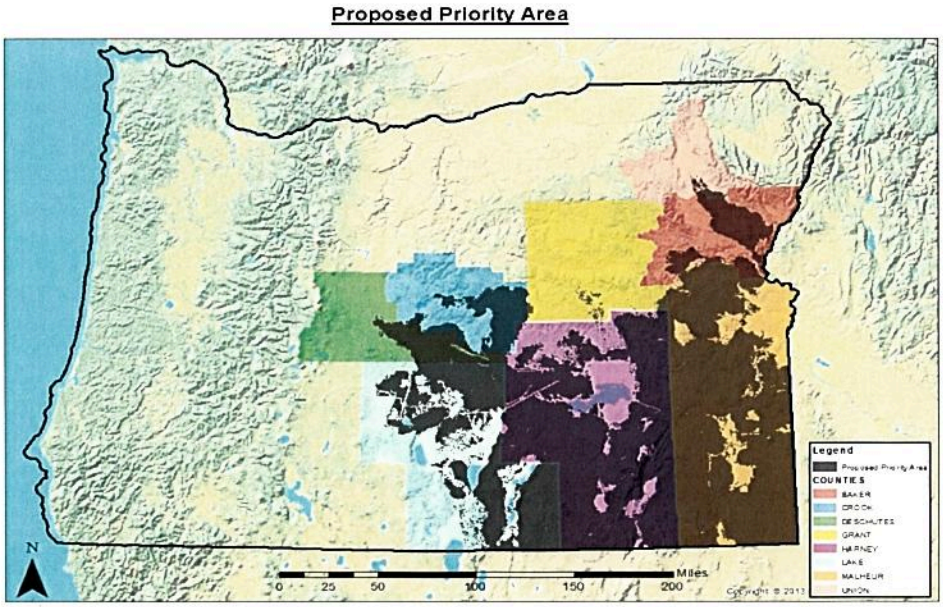
> Conservation Objective 1: Identified threats within the control of private landowners will be removed or reduced on 90% of enrolled privately owned sage-grouse habitat in Oregon.
>
> Conservation Objective 2: Seasonal or year-round sage-grouse habitat on enrolled private lands in Oregon will increase by 15%.
>
> Conservation Objective 3: 85% of enrolled private lands in Oregon will exhibit a stable to improving trend in ecological condition.

In addition to the CCAA efforts administered on private land in the eight Oregon sage-grouse counties (Baker, Crook, Deschutes, Grant, Harney, Lake, Malheur, and Union), CCAs have been developed for public lands across eastern Oregon. While the specific conservation objectives have targeted private lands, the over-arching goal of the Committee is for the sagebrush steppe ecosystem to show an improving trend in overall health and for sage-grouse non-habitat ecological states to transition to states that provide habitat to sage-grouse.

c. What is the defined geographic location within which this proposed priority can be successfully addressed?

Building on the concept of sage-grouse as an umbrella species for the sagebrush steppe ecosystem, the defined geographic location for this proposed priority is sagebrush steppe within BLM designated Preliminary Priority Habitat (PPH) and Preliminary General Habitat (PGH) for sage-grouse in Baker, Crook, Deschutes, Grant, Harney, Lake, Malheur, and Union counties. Refer to Figure 1.

Figure 1. Proposed Priority Area: sagebrush steppe within sage-grouse PPH and PGH.



2. **Significance to the State**

a. **Why is this proposed priority of ecological significance to the state even though it may not be present everywhere?**

The sagebrush steppe is the largest ecosystem in eastern Oregon encompassing over 18 million acres. The continued decline of conditions due to the escalating invasive annual/wildfire cycle at lower elevations and conifer encroachment at higher elevations is irreversible without direct management intervention. The virtual monocultures that develop due to these processes essentially form a biological desert impacting all sagebrush steppe inhabitants including humans. The proposed priority provides a strategic, focused and targeted way to address these threats as well as other cumulative threats to sage-grouse on both private and public lands in Oregon. A thriving sage-grouse population is the result of a highly functional ecosystem, thus managing for the benefit of sage-grouse directly improves the integrity of the sagebrush steppe.

b. **Are there any social and/or economic considerations that the Board should understand regarding this proposed priority?**

Livestock production, primarily cattle, is the most extensive economic activity in the sagebrush steppe for the counties involved. With an inventory of well over a half billion dollars and the multiplier effect on supporting goods and services, livestock production is a significant contribution to local and regional economies of Oregon.

Livestock production and supporting economies are threatened not only by a continuing decline in forage conditions but also the probability of regulatory restrictions imposed by the Endangered Species Act (ESA) if sage-grouse are listed. Without urgent and compelling evidence that the sagebrush steppe and associated sage-grouse habitats are being sustained, many producers will be forced out of business, often resulting in subdivision of private properties to maintain financial solvency. Subdivision invariably leads to further habitat fragmentation with roads, power lines, fences, home sites and other infrastructure.

To date, landowners and livestock producers in eastern Oregon have shown an unprecedented commitment to innovative sage-grouse conservation through participation in the Sage Grouse Initiative and CCAAs. In many cases the landowners have entrusted their livelihood to the recommendations of resource professionals. Continued support for landowners and livestock producers is critical to maintaining credibility and promoting future conservation efforts.

c. **In addition to its significance to the state, identify how the proposed priority fits within regional and local ecological priorities.**

Sagebrush communities have been identified as one of the most threatened land types in North America, and as much as half of this land type has already been lost in the Great Basin. Eleven western states have sage-grouse habitat and would be affected by a listing. Clearly, the sagebrush steppe and sage-grouse habitat are an ecological priority across the West. The proposed priority addresses the primary threats to Greater sage-grouse as outlined in the USFWS Conservation Objectives Team (COT) Report. Additionally, focusing conservation efforts on restoring the sagebrush steppe ecosystem and sage-grouse aligns directly with the Oregon SageCon Action Plan and compliments the USDA NRCS Sage Grouse Initiative. The Oregon Association of Conservation Districts recently submitted a national $9.6 million dollar NRCS- Regional Conservation Partnership Program (RCPP) proposal which, if funded, can be used as collaborative match to further solidify the success of implementing landscape scale conservation of the Oregon sagebrush steppe.

3. Limiting Factors

a. What ecological limiting factors exist that relate to the proposed priority identified?

Ecological limiting factors are primarily: 1) extent of infestation by the exotic annual grasses cheatgrass and medusahead rye, 2) inability of native plants to effectively and economically establish following infestation and 3) altered fire regimes across all areas affected by invasive annuals. Unfortunately, wholesale restoration of plant communities with large infestations of annual grasses is expensive and has a high risk of failure (Davies et al. 2011). Active management of large annual grasslands requires significant investment of capital inputs (e.g. herbicide application, seeding) across large landscapes where the low precipitation further adds to the challenge of restoration success. Sites with abundant annual grasses and low perennial plants may have already crossed thresholds that may not be feasible to fix at a broad scale with current technology.

The challenges related to controlling annual grass infestations and restoring native plant communities are considerable. However, researchers are currently working on a variety of fronts to overcome these challenges. Technologies exist and are being developed in the context of this proposed priority to cumulatively restore ecological structure and function in the short term through project implementation and improve native plant diversity and function in the long term through management implementation. These technologies involve cultural land treatments to deplete the invasive annual grasses and their seed bank and then replace those invasive species with native or desirable perennial grasses and forbs.

b. Reference any framework(s) that exist (Recovery Plans, Implementation plans, etc.).

The Committee has developed a draft Strategic Action Plan, intended to be the recovery and implementation vehicle for private lands in Oregon. The Strategic Action Plan establishes administrative and conservation outcomes and objectives for enrolling private lands in CCAAs, reducing threats to sage-grouse habitat, and improving ecological conditions in the sagebrush steppe. This plan is compatible with and complimentary to other plans such as the Oregon Greater Sage-Grouse Draft RMP/EIS (in progress) for public lands, the Oregon BLM Sage-Grouse CCA, and Sage-grouse Conservation Partnership (SageCon) Action Plan which coordinates federal, state and local efforts in Oregon.

4. Threats and Benefits

a. What overall threats exist to the proposed priority identified?

According to the COT Report, the primary threats to sage-grouse in Oregon are fire, exotic annual grasses, and conifer encroachment. Other threats to sage-grouse, such as agricultural conversion, urbanization, and energy and mineral development, are present but much more localized. While Table 1 indicates that livestock grazing is widespread, the improper grazing that represents a true threat to sage-grouse is much more localized.

Table 1. Threats to Greater Sage-Grouse Populations in Oregon as Identified in the Conservation Objectives Team (COT) Report.

		Population			
		Baker	Northern Great Basin	Central Oregon	Western Great Basin
Threats	Fire	Y	Y	Y	Y
	Weeds/Annual Grasses	Y	Y	Y	Y
	Conifers	L	Y	Y	Y
	Grazing	U	Y	Y	Y
	Mining	Y	L	Y	L
	Sagebrush Elimination	Y	L	L	L
	Agricultural Conversion	Y	L	L	L
	Infrastructure	L	Y	L	L
	Energy	L	L	L	L
	Recreation	L	Y	L	U
	Urbanization	L	Y	L	N
	Free Roaming Equids	N	L	U	Y
	Isolated/Small Size	Y	N	N	N

Y = Threat present and widespread, L = Threat present but localized, N = Threat not known to be present, U = Unknown

b. What will happen if threats aren't addressed?

Unaddressed threats will encourage annual grass expansion with large areas being converted to monocultures. An accelerated wildfire cycle will increase the risk that large acreages of sagebrush steppe will be lost impacting the variety of species that rely on them. Continued conifer encroachment will further degrade the ecosystem, further reducing habitat for sage-grouse and other wildlife.

c. Describe the economic, social, iconic and cultural benefits of addressing the outcome and impacts of not addressing it.

Restoring productive perennial forage resources, healthy watersheds and viable wildlife habitat for sagebrush obligates will provide economic benefits and long-term sustainability to existing ranching enterprises and local communities. Improving sage-grouse habitat on private lands improves sustainability of larger-scale ranching operations and avoids the further habitat fragmentation that may occur with land subdivision which in turn reduces opportunities to restore large areas of sage-grouse habitat. It is probable that restoration support industries will become established. Recreational and sport hunting opportunities provide additional economic benefits to communities. Certainly, improving sage-grouse habitat on private rangeland is an important part of maintaining and restoring populations of this iconic bird of the sagebrush biome.

Failure to address outcomes is estimated to result in a 40% or more decline in livestock revenues. It is not inconceivable that cumulative effects associated with a decline of that magnitude would result in the economic collapse of some smaller communities and economic depression of remaining communities in an already economically challenged region of Oregon.

d. Briefly summarize how much has been done already, how much is remaining.

Efforts to address threats to Greater sage-grouse have been largely collaborative across eastern Oregon. The Committee was developed to guide the conservation efforts and ensure collaboration across ownership and demographic boundaries. The Harney County CCAA has been completed and approved in May 2014 and will serve as a template for the remaining counties in the priority areas. At least 50 landowners in Harney County have expressed interest in site specific plans to address threats. It is anticipated that additional landowners will enroll prior to September 2015. The goal is to complete the remaining programmatic CCAAs by the end of year 2014 so that implementation of coordinated plans and conservation measures can begin with at least 360 landowner enrollees within 2 years. Oregon NRCS has focused Sage Grouse Initiative (SGI) efforts on removal of western juniper, primarily because it represents the "low hanging fruit" (i.e. high probability of success, high level of landowner interest/support for the practice). However, it is critical that Oregon begin to address the other primary threats (fire and annual grasses) in meaningful ways, while continuing our commitment to juniper removal. To date, approximately 150,000 acres of juniper have been treated through SGI.

e. What is your best estimate of cost to address the priority, and as a result, how economically feasible do you believe it is to address this priority over time.

The estimated cost is $20,000,000.00 over the first 5 years of the 30 year CCAA agreements. Costs can expected to decline after the initial start-up period of site specific plan development and project implementation. However, cost estimates greater than 5 years out would be purely speculative.

Current support for a coordinated, landscape approach addressing threats to sage-grouse and other sagebrush steppe associated species on private lands in Oregon indicates the priority is quite economically feasible. For example, Oregon NRCS estimates that all Phase 1 and 2 juniper encroachment in sage-grouse habitat in Oregon (including both public and private lands) could be treated in 10 years with a $7.3 million/year investment. NRCS is currently investing approximately $4 million/year through SGI. Certainly a coordinated approach can reduce duplication of effort and increase effectiveness on the landscape. It is unlikely that fragmented, independent approaches would result in sufficient success or would sustain or improve habitats as necessary to avoid listing of sage-grouse and deter associated economic losses. Failure to invest sufficient and timely economic resources now will likely jeopardize local economies, increase unemployment and diminish land values in addition to the long-term ecological costs.

4. Opportunities

A. Ecological:

a. What are the measures of ecological success?

Measures of success are:

- reduction in acres of sage-grouse habitat burned annually
- acres of rangelands where invasive annual grasses have been replaced by desirable perennial grasses and forbs
- acres of western juniper removed from sage-grouse habitat
- acres of prescribed grazing systems applied
- acres of potential sage-grouse habitat in non-habitat ecological states that transition to seasonal or year-round habitat states
- acres of rangelands exhibiting a stable to improving trend in ecological condition

What's the likelihood of ecological success in the short (6-year), medium and long-term (define the term lengths)?

Short-term (6 years): In the short-term, there is a high likelihood of success in addressing juniper encroachment and grazing/infrastructure related threats (i.e. improved grazing management where needed, escape ramps, fence marking, etc.), as demonstrated by current efforts such as the NRCS Sage Grouse Initiative, a variety of OWEB projects, and BLM efforts. Technology to reduce invasive annual dominance on arid rangelands and the attendant fire hazard in the short term certainly exists. However, the cost of land treatments to affect this change has, to date, precluded most attempts. Recently, significant progress has been made in understanding the role of ecological resistance and resilience in preventing, treating, and restoring lands impacted by annual grasses and fire. In addition, landscape scale prioritization of treatments is occurring right now as part of the BLM RMP Sage-Grouse Amendment process. These developments are setting the stage for increased success in addressing the impacts of fire and annual grasses, and we expect to start seeing the benefits of these efforts in small, targeted areas on the landscape within the next six years.

Medium-term (15 years): We expect to see significant progress and improved success in addressing fire and annual grasses in the medium-term, as a result of applying the principles of ecological resistance and resilience and adaptive management. The likelihood of ecological success in addressing these issues is moderate to high. The likelihood of overall success is very high, as we expect to see accelerated rates of landscape scale treatments and the ecological benefits of these treatments (improving trend in ecological condition) will become increasingly apparent in the medium-term.

Long-term (30 years): In the long-term, the likelihood of ecological success is very high. The sage-grouse CCAAs represent an unprecedented 30 year commitment on the part of private landowners to addressing the natural resource issues that threaten sage-grouse and the sagebrush steppe. The CCAAs emphasize adaptive management, as a means of adjusting to changing circumstances and capitalizing on lessons learned. This commitment on the part of the landowners is strengthened and supported by the presence of a strategic action plan and committee of resource professionals dedicated to ensuring that the necessary technical and financial assistance is available to ensure success.

b. What types of voluntary conservation actions could be undertaken to address the proposed priority?

Voluntary conservation actions which could be undertaken to address conservation of sage-grouse habitat and the sagebrush steppe ecosystem include enrollment of private lands in CCAAs, enrollment of BLM grazing allotments in CCAs, membership in Rangeland Fire Protection Associations, treatment and re-vegetation of areas infested with exotic annual grasses, removal of encroaching western juniper, implementation of prescribed grazing systems, and enrollment of private lands in working lands conservation easements.

c. Should the proposed priority be divided into geographic areas that are appropriate for partners to address?

The draft strategic plan identifies areas covered by county specific CCAAs as the appropriate subdivision. Leadership through the Oregon Association of Conservation Districts is envisioned to provide the coordination of resources needed for timely and effective implementation.

B. Social:

a. Do partnerships exist to address the proposed priority? If so, briefly describe.

As part of the Harney County CCAA strategic implementation plan, local partners have facilitated the coordination and development of The Oregon All Counties CCAA Strategic Committee. The Committee formed in March 2014 to develop and implement programmatic CCAAs for all counties with sage-grouse habitat. The Committee has developed a strategic action plan that establishes both administrative and conservation outcomes and objectives to ensure that an operational framework exists to support effective, efficient enrollment and implementation of CCAAs. The Committee consists of federal, state, and local agencies and private landowners. The diverse partners involved in these efforts include biologists, range scientists, extension agents, regulators, land managers, conservation interests, funding agencies, and technical assistance providers.

b. What social opportunities exist to address the proposed priority? Is there momentum built?

The CCAA process described provides the opportunity for local buy-in and empowerment to address their own destinies while cooperating in a regional and nationally significant issue. The rising interest for private land enrollment under the Harney County CCAA and collaboration taking place across county boundaries for remaining CCAA and strategic plan development suggests significant momentum.

c. Describe educational benefits, if any.

Case study analyses of individual project success/failure can help improve the ratio of success as projects proceed and possibly be of use in other geographic areas. Additional research may be identified where cause/effect relationships are not readily apparent.

d. Summarize the social, community, political, regulatory or other factors that will help lead to the success of the proposed priority.

Potential listing of sage-grouse and associated political, regulatory, and economic ramifications have resulted in widespread support to address these issues in the most comprehensive, timely and effective manner possible.

e. What can be leveraged to address the proposed priority (funding, acreage impacts, other resources)?

The Committee has secured financial and technical commitments exceeding $9.6 million for capacity, technical assistance, and conservation easement acquisition from a diverse array of stakeholders in Oregon. With pending investment of leverage from NRCS's RCPP proposal the following outcomes will be achieved:

1. 40% (608,000 acres) will be enrolled in CCAAs within the proposed priority area by September 30, 2016
2. Treatment of 10,000 acres of sage-grouse habitat currently infested with exotic annual grasses by September 30, 2019
3. Marking of 20 miles of fence in high risk collision areas by September 30, 2019
4. Remove 130,000 acres of juniper from sage-grouse habitat by September 30, 2019

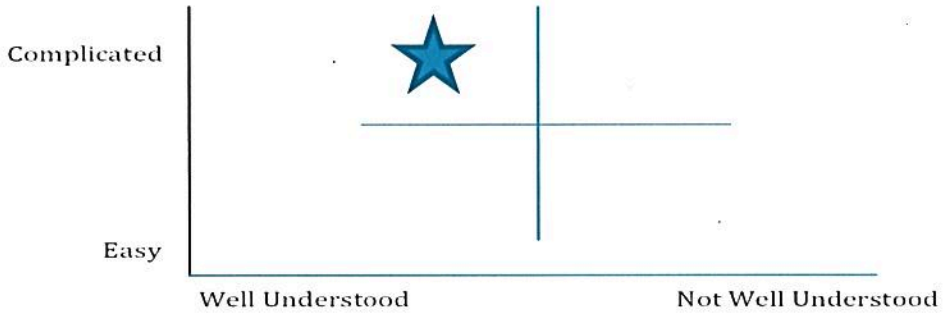
The strategically targeted resource investment would provide 277,970 acres of economic, ecological, and social impact across Oregon sagebrush steppe.

C. Economic Benefits

a. Describe the economic benefits of addressing the ecological proposed priority, including ecosystem services.

Addressing the threats to the sagebrush steppe will infuse restoration dollars into the depressed economy of eastern Oregon. More importantly, the resulting ecological uplift will result in increased profitability and sustainability of agricultural operations. Conifer encroachment and exotic annual grass infestations significantly reduce forage production on rangelands. Addressing these issues will restore lost productivity. In addition, working lands conservation easements provide options to assist landowners dealing with the financial issues associated with estate and succession planning.

5. Priority Difficulty/Understanding relationships



Technology and expertise to address current threats to the sagebrush steppe, associated species, and specifically sage-grouse habitat is available and for the most part implementation is well understood at a project level. Complication is primarily associated with the magnitude of threats and scale of implementation needed to effectively reverse the progress of threats and to eliminate them to the extent possible in any meaningful timeframe.

6. Is there other information the Board should know regarding this priority?

Information provided is complete to the best of our ability and knowledge with the space available.

7. List of other supporting individuals or organizations

Collaborating Partners:

Private landowners
Watershed Councils
Burnt River SWCD
Eagle Valley SWCD
Grant SWCD
Keating SWCD
U.S. Fish and Wildlife Service
Natural Resources Conservation Service
Oregon State University
Oregon Watershed Enhancement Board (OWEB)
Rural Electric Cooperatives
Baker Valley SWCD
Crook County SWCD
Ft. Rock-Silver Lake SWCD
Harney SWCD
Lakeview SWCD
Bureau of Land Management
Oregon Department of Fish & Wildlife
State of Oregon, Governor Kitzhaber
Oregon Department of Agriculture (ODA)
The Nature Conservancy

Oregon Association of Conservation Districts Oregon Department of Forestry
County Courts of:
Baker County; Crook County; Deschutes County; Grant County; Harney County; Lake County; Malheur County

Literature Cited:

Connelly, J. W., S. T. Knick, M. A. Schroeder, and S. J. Stiver. 2004. Conservation assessment of the greater sage-grouse and sagebrush. Unpublished report. Western Association of Fish and Wildlife Agencies. Cheyenne, Wyoming.

Davies, K.W., C.S. Boyd, J.L. Beck, J.D. Bates, T.J. Svejcar, and M.A. Gregg. 2011. Saving the sagebrush sea: An ecosystem conservation plan for big sagebrush plant communities. Biological Conservation 144: 2573-2584

H. John Heinz III Center for Science, Economics and the Environment (William C. Clark, Study Chair). *The State of the Nation's Ecosystems: Measuring the Lands, Waters and Living Resources of the United States.* Cambridge, UK: Report for Cambridge University Press, 09 2002.

Miller, R.F., R.J. Tausch, E.D. McArther, D.D. Johnson, and S.C. Sanderson. 2008. Age Structure and Expansion of Pinon-Juniper Woodlands: A Regional Perspective in the Intermountain West. USDA Forest Service. RMRS-RP-69.

Rowland, Mary M., Michael J. wisdom, Cara W. Meinke, and Lowell H. Suring. 2005. Utility of greater sage-grouse as an umbrella species. Chapter 8, pages 232-249, in Wisdom, M. J., M. M. Rowland, and L.H. Suring, editors. Habitat threats in the sagebrush ecosystem: methods of regional assessment and applications in the Great Basin. Alliance Communications Group, Lawrence, Kansas.

Sage Grouse Initiative. 2014. Private Lands Vital to Conserving Wet Areas for Grouse Summer Habitat. Science to Solutions Series Number 4. Sage Grouse Initiative. 4pp. http://www.sagegrouseinitiative.com/.

U.S. Fish and Wildlife Service. 2013. Greater Sage-grouse (*Centrocercus urophasianus*) Conservation Objectives: Final Report. U.S. Fish and Wildlife Service, Denver, CO. February 2013.

Wisdom, Michael J., Mary M. Rowland, Lowell H. Suring, Linda Schueck, Cara W. Meinke, and Steven T. Knick. 2005. Evaluating species of conservation concern at regional scales. Chapter 1, pages 5-74, in Wisdom, M. J., M. M. Rowland, and L.H. Suring, editors. Habitat threats in the sagebrush ecosystem: methods of regional assessment and applications in the Great Basin. Alliance Communications Group, Lawrence, Kansas.