Table 2. Conservation Measures

THREAT	CONSERVATION MEASURES	CONSERVATION BENEFITS	COMPLIANCE MONITORING
Fragmentation of the Landscape			
Fragmentation of the landscape causes birds to leave leks or abandon nests or important habitats (i.e., direct impact to nests and brooding hens), resulting in decreased reproductive success.	Maintain contiguous habitat by avoiding fragmentation (e.g., do not subdivide property; enter into conservation easements; consolidate new roads, buildings, power lines).	Reduces disruptions to sage-grouse activities, maintains habitat quality & quantity, maintains population connectivity and recruitment, and reduces vulnerability to predation	Describe measures taken to avoid fragmentation of the habitat (e.g., consolidating new and existing roads, buildings, power lines). If conservation easements are implemented, describe any signed and acres enrolled.
Infrastructure			
Infrastructure (e.g., power lines, roads, fences) can fragment sage-grouse habitat, decreasing sage-grouse use and habitat quality.	Convert electrically (AC) powered pumps or wind mills to solar.	Removes or reduces amount of habitat fragmentation and mortality due to infrastructure across the landscape	Describe specific actions taken to avoid new infrastructure or consolidate or otherwise minimize existing infrastructure to comply with these conservation measures.
	Avoid building new infrastructure (e.g., roads, buildings, fences) within 0.6-mile of occupied leks and within sage-grouse habitats. In core areas, use the DDCT method as outlined in the Governor's Executive Order 2011-5.		
	Consolidate existing roads, buildings, etc. within 0.6 mile of occupied leks or within sage-grouse habitats.		
	If feasible, bury new and existing power lines.		
Restoring Disturbed Habitats			
Disturbed, degraded, or fragmented sage-grouse habitat not restored or reclaimed results in permanent loss of sage-grouse habitat quality and quantity.	Implement restoration projects in areas with known issues/concerns.	Enhances degraded habitats and reduces potential for spread of noxious weeds Increases success and reduces time necessary for successful establishment of new plantings	Describe any restoration projects and status of same in annual monitoring reports.
	Rest newly seeded/planted rangeland from livestock use. Consult agency specialist for the amount of time to rest.		Describe management plan, actions taken to implement the plan, and monitoring to measure success.
	Work with agencies to include provisions for successful interim reclamation and complete restoration of habitats that have experienced development and/or surface disturbing activities.		Describe restoration or reclamation plan, actions taken to implement the plan, and monitoring to measure success.

Table 2 continued. Conservation Measures

THREAT	CONSERVATION MEASURES	CONSERVATION BENEFITS	COMPLIANCE MONITORING
Establishment of Non-native Monocultures			
Establishment of plant communities that do not provide suitable habitat (e.g., monocultures of non-natives such as crested wheatgrass) reduces sage-grouse habitat quality and quantity.	Do not introduce non-natives (e.g., crested wheatgrass) tending toward monocultures on enrolled lands, except non-persistent annual grasses used for soil protection until perennial native vegetation can be established (e.g., sterile Triticale) or non-invasive beneficial forbs.	Reduces impacts to sage-grouse habitat quality and quantity	Describe specific action taken to avoid introduction of invasive non-native vegetation. Describe monitoring to detect potential presence of non-natives.
	Work to remove the invasive, non-native vegetative component; inter-seed range with native/beneficial seed mixes.		Describe which non-natives detrimental to sage-grouse habitat quality were present. Describe actions to remove any detrimental non-native vegetation.
Management of Invasives and Non-native Plant Species			
Establishment of invasive plant species (including post wildland fire) reduces sage-grouse habitat quality and quantity.	Participate in weed-control groups/processes such as Cooperative Weed Management Areas (CWMAs) or a Coordinated Resource Management (CRM).	Reduces impacts to sage-grouse habitat quality and quantity	Describe your activity in these programs.
	Work with management agencies (e.g., BLM, USFS) or Weed and Pest Districts to identify areas of invasives and work to control them.		Describe the method of treatment and number of acres treated. Monitor and report treatment results.
	Work with PA to ensure suitable reclamation of weed treated areas for sage-grouse (e.g., seed mixes in sage-grouse habitat with appropriate shrub, forb, and grass components). Rest newly seeded/planted rangeland from livestock use. Consult agency specialist for amount of time to rest.		Describe actions to reclaim these areas.
	Use state-certified weed-free seed mixes and mulches.		Describe any weed-free seed mixes and mulches used.
	Work with PA specialists to address post-wildland fire issues.	Reduces impacts from wildfires or minimizes likelihood of wildfires	Describe management before and/or after wildland fire.
	Work with PA specialists to address and prevent wildland fire, especially if rangelands have a cheatgrass component. This is most relevant for areas adjacent to railroads, interstates, and in the Powder River Basin.		

Table 2 continued. Conservation Measures

THREAT	CONSERVATION MEASURES	CONSERVATION BENEFITS	COMPLIANCE MONITORING
Surface Water Developments/Disease			
Surface water developments such as ponds may increase mosquito habitat, resulting in increased sage-grouse mortality from disease (e.g., WNv). This is most relevant in northeast Wyoming, where WNv is prevalent.	Treat mosquito larvae present in ponds using Bacillus thuringiensis or appropriate chemicals.	Reduces potential for direct mortality and/or disease transmission	Describe if and when larvae were treated.
	Where new pond construction is proposed (e.g., for livestock or waterfowl), use innovative design for ponds (e.g., pipe water to trough offsite from a pond with steep sides to prevent establishment of aquatic vegetation); include wildlife escape ramp as needed.		Describe if and where new ponds were constructed, including pond design.
	Report to either WYGD or FWS within 24 hours any dead or sick sage-grouse found.		Describe when and where any dead or sick sage-grouse were found.
Sagebrush Management			
Sagebrush management (e.g., prescribed fire, chemical, mechanical) can result in a reduction of sage-grouse habitat quality and quantity.	Avoid eradicating sagebrush. Undertake no new conversion of rangeland to cropland.	Maintains or enhances sagebrush communities	Describe actions taken (or not taken) to avoid reducing sagebrush.
	Work with agency specialists to plan sagebrush treatments, avoiding areas currently providing sage-grouse habitat. Agency specialists will determine if sagebrush treatments are part of an appropriate landscape plan. After a plan is developed with agency specialists and if sagebrush treatment is warranted, utilize a mosaic pattern of treatment rather than a large uniform block. Avoid fire for sagebrush treatments in areas with less than 12 in annual precipitation. Work with agency specialists to develop prescribed fire management plans to address timing (e.g., spring burn versus fall), as well as the importance of treatment of the potential habitat to sage-grouse.		Describe sagebrush management.

Table 2 continued. Conservation Measures

THREAT	CONSERVATION MEASURES	CONSERVATION BENEFITS	COMPLIANCE MONITORING
Livestock Management and Rangeland Health			
Some grazing management practices alter shrub cover and/or grass and forb composition, reducing sage-grouse habitat quality and quantity.	Work with agency specialists to inventory vegetation and compare with the Ecological Site Description.	Maintains or enhances sage-grouse habitat, reproduction, and survival Minimizes potential for adverse impacts caused by grazing	Describe how a vegetative inventory was conducted.
	Within 12 months, work with PAs to develop and implement a written conservation management plan.		Provide the conservation management plan to the FWS.
	Within 24 months, develop and implement a written grazing management plan (a key component of any conservation management plan) to maintain or enhance the existing plant community as suitable sage-grouse habitat. This may be accomplished by site-specific modifications to grazing season of use, location, duration, frequency, number of animals, and/or types of livestock (see Cagney et al. 2010).		Provide the grazing management plan to the FWS.
Concentration of livestock caused by activities such as stock tank placement, branding, and roundup may impact vegetation and soil structure, resulting in a reduction of sage-grouse habitat quality and quantity. Intensity and duration of livestock present will affect the extent of impacts.	Avoid (or rotationally utilize) known nesting and brood-rearing habitat as a location for activities that concentrate livestock such as stock tank placement, branding, and roundup.	Maintains or enhances sage-grouse habitat, reproduction and survival Minimizes potential for adverse impacts caused by grazing	Describe how these habitat types were avoided.
	Place salt or mineral supplements in sites minimizing impacts to sage-grouse habitat.		Describe locations of salt or mineral supplements in relation to sage-grouse habitat.
	Avoid placing salt or supplements within 0.25-mile of riparian habitats.		Describe locations of salt or mineral supplements in relation to riparian habitat.
	If necessary, fence riparian habitat with markers (consult agency specialist), to protect habitat from trampling; or implement a grazing strategy.		Describe fencing of riparian habitats.

Table 2 continued. Conservation Measures

THREAT	CONSERVATION MEASURES	CONSERVATION BENEFITS	COMPLIANCE MONITORING
Woodland Encroachment			
Encroachment of woodland species (e.g., juniper, conifers, Russian olive, and salt cedar) into sage-grouse habitat can lead to a reduction in the amount of sage-grouse habitat, a reduction in its use, or abandonment.	Treat/remove undesirable woodland species encroaching into sage-grouse habitats. Work with agency specialists to determine if treatment is needed and an appropriate treatment method. Any treatment should include measures to control invasive species, particularly south-facing slopes which are conducive to cheat grass and thistle establishment.	Maintains important existing sagebrush communities	Describe any treatment in areas with encroachment and the number of acres treated.
Livestock Management in Important Sage-grouse Habitats			
Livestock, humans, and vehicles can physically disturb birds and cause them to leave leks or abandon nests (i.e., direct impact to nests and brooding hens), resulting in decreased reproductive success.	From March 1 through May 15, avoid new surface disturbing activities (e.g., roads, pipelines, corrals for branding) within 0.6-mile of the perimeter of occupied leks.	Reduces disruptions to lek and nesting activity , thereby reducing abandonment and predation risk	Describe any surface disturbing activities from March 1 – May 15.
	From March 1 through May 15, avoid disruptive activities between 6 p.m. and 8 a.m. within 0.6-mile of the perimeter of occupied leks.		Describe any disruptive activities from March 1 – May 15.
	From March 15 through June 30, avoid concentrating livestock in nesting habitat.		Describe if livestock were concentrated in potential nesting habitat from March 15 – June 30.
	From March 15 through June 30, avoid off-trail vehicular travel in nesting habitat, unless it is essential for routine ranch management (including but not limited to: repairing fence, "doctoring" livestock, finding lost livestock).		Describe if there was off-trail vehicular traffic from March 15 – June 30.
Design and Placement of Water Developments (including ponds and springs)			
Livestock watering tanks and troughs can cause sage-grouse mortality by entrapment and drowning.	Fit existing and new water troughs with escape ramps.	Reduces potential for direct mortality	Describe where and how many ramps were installed.

Table 2 continued. Conservation Measures.

THREAT	CONSERVATION MEASURES	CONSERVATION BENEFITS	COMPLIANCE MONITORING
Water diversions and spring developments can dry up meadow and riparian areas, reducing sage-grouse habitat quality and quantity.	Allow springs to be free-flowing (do not capture all of the water) at the point of diversion or source of the spring in order to maintain or enhance a wet riparian area. If necessary, fence riparian habitat with markers to protect habitat from trampling (consult agency specialist).	Maintains or enhances availability of nesting/early brood-rearing habitats	Describe if springs were developed and where habitat was protected.
Predation			
Some farm and ranch operations can increase opportunities for avian and mammalian predation of sage-grouse and their nests.	Avoid locating new garbage and dead piles closer than 0.6-mile from occupied leks, or within nesting or brood-rearing habitat. Relocate existing garbage and dead piles within 0.6-mile of occupied leks, nesting, or brood-rearing habitat. Limit access to leks, nesting, or brood-rearing habitat by domestic pets.	Reduces direct mortality to individuals and broods	Describe any measures taken to avoid predation.
	Install raptor perch deterrents on existing structures (e.g., power poles).		
Insecticide Use			
Application of insecticides can remove insects important to sage-grouse, reducing sage-grouse habitat quality.	Implement the Reduced Area & Application Treatment (RAAT) approach. Avoid carbaryl/malathion.	Maintains insects as a seasonally important food item	Describe any spraying that occurred on the property and if RAAT was implemented.
	Work with agency specialists to plan and design control efforts that avoid harming non-target species.		Describe your plan to avoid harm to non-target species and actions taken to implement plan.
Drought			
Prolonged drought can harm plants important to sage-grouse, reducing sage-grouse habitat quality and quantity.	Work with agency specialists to incorporate a drought management component into grazing plan, considering the needs of sage-grouse (e.g., stocking conservatively, destocking when necessary to reduce impacts on rangeland health, applying grazing regimes protective of sage-grouse habitats to the greatest extent practicable).	Maintains or reduces potential loss of sage-grouse habitat, reproduction, and/or survival	Describe if Animal Unit Months or season of use changed as a result of drought.
	Adjust livestock use (season of use, intensity, and/or duration) to reduce the impact on perennial herbaceous cover, plant species diversity, and plant vigor.		

Table 2 continued. Conservation Measures

THREAT	CONSERVATION MEASURES	CONSERVATION BENEFITS	COMPLIANCE MONITORING
Big Game Populations			
Concentrated or overabundant big game populations can harm plant communities important to sage-grouse, reducing habitat quality and quantity.	Utilize public hunting access opportunities to manage big game numbers and associated habitat conditions. Enroll properties in hunter management areas or walk-in area programs through WGFD's Private Lands Public Wildlife program. Cooperatively work with WGFD setting the big game season and/or objective.	Reduces impacts to sage-grouse habitats Maintains or enhances sage-grouse reproduction and survival	Describe if lands were opened to hunting.
	Cooperatively work with WGFD to implement habitat treatments to distribute big game.		Describe response of habitat to treatment.
Placement of Fences			
Sage-grouse can collide with fences resulting in serious injury or death.	Avoid construction of new fences within 0.6-mile of occupied leks or riparian areas where broods are known to concentrate. If fencing is needed for livestock management, mark fence.	Reduces mortalities from collisions	Describe the location of new fences.
	Consult with agency specialist to relocate, redesign (e.g., wood posts, buck and pole fences), or mark existing fences (e.g., wire markers) that occur within 0.6-mile of a lek, especially where previous collisions have been observed.		Describe if existing fences within 0.6-mile of occupied leks were relocated, redesigned or marked.