ACTION PLAN
FOR MANAGEMENT OF BIGHORN SHEEP
IN SOUTH DAKOTA

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INTRODUCTION

The South Dakota Department of Game, Fish, and Parks (SDGFP) manages wildlife and associated habitats for their sustained and equitable use, and the benefit, welfare and enjoyment of the citizens of this state and its visitors. South Dakota's wildlife resources demand prudent and increasingly intensive management to accommodate numerous and varied public demands and growing impacts from people such as habitat loss and fragmentation. This action plan provides important information for the formulation of sound management, to include the current status of bighorn sheep herds, habitat potential for new bighorn sheep areas, issues and concerns, management goals, objectives and strategies to guide management of this important resource into the future. This plan is intended to guide managers and biologists, and also aid in the decision-making process of the Division of Wildlife (DOW), Division of Parks and Recreation, and the SDGFP Commission.

CURRENT STATUS

Currently there are approximately 300 bighorn sheep in the state, of which about 200 are in huntable populations. Bighorn sheep in South Dakota are distributed in approximately 4 main herds (Figure 1): 1) Rapid City, 2) Elk Mountain, 3) Custer State Park (CSP), and 4) Badlands National Park.

Bighorn sheep presently occupy about 190,000 acres in the entire State of South Dakota (Table 1), of which 140,000 acres are in the Black Hills and are considered huntable acreages. Acreage estimates are based on habitat use of radio-collared bighorn sheep and field observations. Some areas within herd delineations are not used or used only briefly for seasonal movements and forays, and likely some areas outside of defined ranges are used but currently unknown.

Rapid City Herd
The Rapid City bighorn sheep herd is comprised of 3 sub-herds: Rapid Creek, Spring Creek, and Hill City (Figure 2). The 2012 population estimate is approximately 75-100 bighorn sheep. SDGFP has documented lamb mortalities from pneumonia which has severely impacted recruitment in this herd. Research is currently being conducted to examine lamb and ewe survival, disease prevalence, predation, and other population variables and is near completion. The current population goal for this area is 250 bighorn sheep.

Elk Mountain Herd
The Elk Mountain bighorn sheep herd (Figure 3) is currently estimated at approximately 75-100 animals. This herd is the most recently established herd in the Black Hills, with bighorn sheep first being transplanted to Hell Canyon from the Spring Creek herd, but within a year all animals moved west to Elk Mountain in 2001. This area is estimated to be able to hold substantially more bighorn sheep than present but current population estimates suggest the population remains stagnant. The SDGFP and the Wyoming Game and Fish Department began a research project in 2012 to learn more about this population and potential growth limiting factors. The current population goal for this area is 200 bighorn sheep.

Custer State Park Herd
The CSP bighorn sheep herd (Figure 4) experienced an all-age pneumonia die-off in the winter of 2004/2005. In 2012, there are currently still 6 lambs alive through mid-November which is the highest recruitment experienced since the die-off. Currently there are approximately 30 bighorn sheep in the Park. Prior to transplanting bighorn sheep and supplementing this herd, potential disease concerns due to several domestic sheep and goat herds adjacent to the Park must first be addressed. The current population goal for this area is 200 bighorn sheep.

Badlands National Park Herd
The Badlands herd (Figure 1) on National Park Service property was previously occupied by native herds of bighorn sheep prior to extirpation and was re-established as a potential source herd for other areas in South Dakota. This herd was reduced due to disease in the late 1990s, but has since begun to slowly increase likely in response to a recent augmentation of bighorn sheep in 2004 and an apparent remission of disease issues. Currently, about 100 bighorn sheep comprise this herd. Discussions are scheduled to be held with Park Service personnel to discuss population goals for this area and management objectives.

POTENTIAL NEW BIGHORN SHEEP AREAS AND AUGMENTATIONS

SDGFP has identified 2 areas to evaluate for future potential bighorn sheep herds and 1 area for augmentation (Figure 1). The Deadwood and Angostura sites are potential new areas and are estimated to be about 42,000 acres of suitable bighorn sheep habitat. These areas were identified from field observations and habitat suitability models (Figure 5). In addition, the Elk Mountain herd has been identified for a future augmentation in the adjacent Hell Canyon area which is approximately 5,100 acres.

Deadwood Potential Area
This area encompasses about 8,000 acres and is located immediately adjacent to the Deadwood, Lead, and Central City communities (Figure 6). We estimate this area could hold approximately 100 bighorn sheep. Potential issues that need to be investigated prior to reintroduction include urban interactions, vehicle collisions, habitat/forage assessment, and distance to nearest domestic sheep or goats.

Angostura Potential Area
This area could potentially encompass 2 sub-herds, one each on Horse Trap Mountain and Flagpole Mountain (Figure 7). Suitable habitat is estimated to be about 18,600 acres on Horse Trap Mountain and 15,700 acres on Flagpole Mountain. We estimate this area could hold approximately 300 bighorn sheep. Habitat and forage quality assessments need to be evaluated and issues such as range overlap with domestic sheep and goats and public access need to be addressed prior to establishing these herds.

Hell Canyon Augmentation
The Hell Canyon area immediately adjacent to the Elk Mountain Bighorn sheep herd has been identified as a potential supplemental stocking area (approximately 5,100 acres) and future sub-herd (Figure 3). In 2001, bighorn sheep were transplanted on the southern end of Hell Canyon from the Spring Creek herd, but within a year all animals moved west to Elk Mountain. A short time after reintroduction, the Rogers Shack Fire burned a significant amount of forest in the Hell Canyon area which likely created new sheep habitat. A few bighorn sheep have been documented using this area seasonally. It is estimated this area could hold approximately 50 bighorn sheep. Foreseeable issues that need to be evaluated and addressed include habitat and forage quality assessments, vehicle collisions, and range overlap with domestic sheep and goats.

ISSUES, CONCERNS, AND OPPORTUNITIES

There are many challenges associated with managing bighorn sheep populations in South Dakota. The following issues/actions should be priorities for managing current and future bighorn sheep herds.

Disease
Epizootic pneumonia is the most devastating disease in bighorn populations of South Dakota and throughout the range. Bacterial respiratory pathogens are responsible for the pneumonia and evidence suggests that in at least some instances, this disease is introduced into bighorn sheep populations resulting from contact with domestic sheep or goats.

Separation of domestic sheep and goats from wild sheep populations should be recognized as the most important step in maintaining healthy populations and assessing new areas for potential reintroductions. The Western Association of Fish and Wildlife Agencies (WAFWA) Wild Sheep Working Group (WSWG) defines "effective separation" as spatial or temporal separation between wild sheep and domestic sheep or goats to minimize the potential for association and the probability of transmission of diseases between species (Wild Sheep Working Group 2012).

The US Forest Service, Region 2, encompasses forested and grassland habitats of potential future bighorn sheep expansions: Black Hills National Forest and Nebraska National Forest (which manages Buffalo Gap National Grasslands near Angostura and Badlands National Park). USFS Region 2 has listed bighorn sheep as a "sensitive

species", those plant and animal species identified by a Regional Forester for which population viability is a concern, as evidenced by the following: 1) significant current or predicted downward trends in population numbers or density; and 2) significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution. Disease outbreaks across the West continue to keep bighorn sheep at the forefront of Forest Service land management. Forest Service has several management objectives for designated sensitive species, which are similar to SDGFP's objectives outlined in this Plan.

Habitat

Habitat management for bighorn sheep in the Black Hills consists primarily of maintaining open habitats and managing forage quality and quantity through proper livestock grazing and prescribed fire. Bighorn sheep prefer open grassland habitats near steep terrain (known as escape terrain), and therefore prescribed fires, timber clear-cuts, and other habitat manipulations completed in areas of steep terrain can be beneficial. Adequate forage is needed to maintain healthy populations of bighorn sheep. In some areas water availability is also an important aspect of habitat management for bighorn sheep. Because most current and projected habitat occurs on non-state lands, federal partnerships with Black Hills National Forest, Nebraska National Forest and National Park Service will be critical for all phases of planning, implementation, and post-release habitat management. The SDGFP will need to discuss feasibility and opportunities to establish cooperator status for federal land management requirements such as National Environmental Policy Act.

Public Access

Access to bighorn sheep populations for hunting and viewing opportunities is a priority goal of the SDGFP. Most bighorn sheep herds within the Black Hills and the Badlands areas are relatively accessible to the public and provide many recreational opportunities. Some areas being evaluated for potential reintroductions, however, may have substantial parcels of public habitat surrounded by private land with little or no public access. The SDGFP will work with adjacent private landowners to find reasonable solutions to access issues such as establishing public access agreements.

Transplants – new areas and augmentations

Prior to any bighorn sheep transplants into new areas or augmentations to existing herds, disease, habitat, and public access issues will first be evaluated and addressed. Subsequent to those evaluations, bighorn sheep transplants may be necessary to maintain and establish sufficient numbers of bighorn sheep in the state. The SDGFP is an active member and participant of the WAFWA WSWG, and is in constant communication with bighorn sheep biologists from other states and provinces. As source stock of bighorn sheep become available, the SDGFP will secure transplants as needed for potential reintroductions into new areas and augmentations of existing herds. SDGFP has a 1985 Memorandum of Understanding with Region 2 of the Forest Service. All wildlife transplants, re-introductions and moves will be coordinated.

GOALS, OBJECTIVES & STRATEGIES

The following statements have guided the development of the bighorn sheep management goals and objectives and reflect the collective values of the SDGFP in relation to management of bighorn sheep in South Dakota:

- that wildlife, including bighorn sheep, contributes significantly to the quality of life in South Dakota and therefore must be sustained for future generations.
- that bighorn sheep play an important role in mountain and grassland ecosystems.
- in providing for and sustaining the diversity of our wildlife heritage for present and future generations.
- in management of bighorn sheep in accordance with biologically sound principles.
- in providing accurate and timely information to the public concerning bighorn sheep and recreational opportunities in South Dakota.
- that the future of bighorn sheep in South Dakota depends on a public that appreciates, understands and supports bighorn sheep and their habitats.

BIGHORN SHEEP MANAGEMENT GOAL: The Division of Wildlife will manage bighorn sheep populations and habitats consistent with ecological, social, aesthetic, and economic values of South Dakota citizens while addressing the concerns and issues of both residents and visitors of South Dakota.

Objectives and Strategies

Objective 1: Address disease issues in bighorn sheep herds by maintaining "effective separation" (Wild Sheep Working Group 2012) between bighorn sheep populations and domestic sheep and goats.

Strategy A. Work with the United States Forest Service (USFS) and the Bureau of Land Management (BLM) on grazing allotments in bighorn sheep areas to ensure effective separation between bighorn sheep and domestic sheep and goats.

Strategy B. By 2014, complete an inventory of domestic sheep and goats in the Black Hills and continue to document areas of known domestics through opportunistic field observations in the future (Figure 5).

Strategy C. To accomplish Strategy B, develop partnerships with conservation and agricultural organizations to collect additional data on domestic sheep and goat locations.

Strategy D. Promote double-fence construction/modification in bighorn sheep ranges with domestic sheep and goats by providing technical and financial assistance to private landowners through the DOW's private lands habitat programs.

Strategy E. Work with conservation organizations to develop cooperative programs to discourage domestic sheep and goat ownership in

areas that impede effective separation, or provide financial incentives or cost-share options towards mitigation such as alternative livestock and double fencing.

Strategy F. Work with the South Dakota Animal Industry Board to discuss potential risks to bighorn sheep from domestic sheep and goats in the Black Hills.

Strategy G. Monitor bighorn sheep disease by collecting and sampling all reported or observed sick or dead bighorn sheep demonstrating disease symptoms of concern.

Strategy H. Implement Department policy (Appendix 2) for the lethal take of bighorn sheep when associated with domestic sheep or goats.

Objective 2: Advocate management of forests and rangelands to enhance quantity and quality of current and future bighorn sheep habitats on private and public lands within the Black Hills and Badlands National Park.

Strategy A. Participate and facilitate periodic meetings with personnel from the USFS, BLM, United States Department of Agriculture (USDA), National Park Service (NPS), and other conservation agencies and organizations to discuss and address potential disturbances (e.g., recreational activities), grazing, and other habitat issues related to bighorn sheep management.

Strategy B. Work with personnel from USFS, BLM, USDA, NPS, and other conservation agencies and organizations on habitat manipulations such as logging and prescribed fires that open forested habitats to maintain and increase suitable habitats for bighorn sheep.

Strategy C. Work with appropriate land management agencies to determine habitat suitability and forage capability of new and existing bighorn sheep areas.

Strategy D. Continue to develop and ground truth habitat suitability models for bighorn sheep in the Black Hills and portions of western South Dakota.

Strategy E. Maintain and improve habitats in the Black Hills for bighorn sheep on state Game Production Areas and other lands with SDGFP management responsibility or long-term habitat/access leases.

Strategy F. Implement grazing stewardship practices through department cost-share programs, including managed grazing systems designed to measurably benefit wildlife and long-term sustainable use of native forest and rangelands for livestock production.

Strategy G. Support acquisition of conservation easements within the bighorn sheep range from agencies and non-governmental organizations such as the Wild Sheep Foundation, the Safari Club International, and the Rocky Mountain Elk Foundation.

Objective 3: Evaluate and pursue suitable reintroductions of bighorn sheep into new areas within the Black Hills and portions of western South Dakota, and augmentations into existing herds.

Strategy A. Reach effective separation between current and potential bighorn sheep herds and domestic sheep and goats.
Strategy B. Ensure adequate open habitats, steep escape terrain, and forage habitats are managed on current or potential herd areas.
Strategy C. Evaluate public access availability in any newly proposed bighorn sheep habitats.
Strategy D. Secure out-of-state transplant stock from similar habitat landscapes.
Strategy E. Work with NPS to evaluate and pursue reintroductions and augmentations of bighorn sheep.
Strategy F. Coordinate with the USFS, BLM, and/or other appropriate land management agencies prior to pursuing reintroductions or augmentations.
Strategy G. Thoroughly test and screen all source bighorn sheep for various disease pathogens prior to any new reintroduction or augmentation.

Objective 4: Engage and collaborate with the public to manage bighorn sheep populations and determine unit-specific objectives.

Strategy A. Annually meet with the SD Bighorn Sheep Working Group, concerned individuals, NGOs, local sportsman's groups, and private landowners to facilitate discussions about bighorn sheep populations and management.
Strategy B. By 2014, involve the SDGFP western Regional Advisory Panel with further development of this plan and with future issues related to bighorn sheep management.
Strategy C. Annually gather public input on game management unit objectives through Regional Public Open-houses, local press releases, and field staff contacts.
Strategy D. Annually evaluate population objectives for all bighorn sheep management units and future established herds.

Objective 5: Manage for a biologically viable and socially acceptable statewide bighorn sheep population.

Strategy A. Assess and monitor population levels and trends by annually completing ground and aerial surveys.
Strategy B. Model population changes within units and sub-herds.
Strategy C. Annually assess unit management goals and utilize necessary management tools to ensure objectives are met.

> *Strategy D.* Based on habitat conditions and population size, in concert with public input, periodically evaluate if adjustments to unit objectives are warranted.
>
> *Strategy E.* Monitor bighorn sheep disease by collecting and sampling all reported or observed sick or dead bighorn sheep demonstrating disease symptoms of concern.
>
> *Strategy F.* Work with personnel from NPS to manage bighorn sheep on National Parks

<u>Objective 6</u>: Evaluate research and management needs and prioritize on an annual basis.

> *Strategy A.* Annually collaborate with stakeholders to collect and assess research and management needs and ideas.
>
> *Strategy B.* Periodically review bighorn sheep survey protocol and discuss changes that could improve data collection efficiency and accuracy.
>
> *Strategy C.* The SDGFP will send at least one staff member to the WAFWA annual Bighorn Sheep Working Group meeting. This meeting facilitates the exchange of information between states on survey techniques, harvest regulations, research and habitat management.
>
> *Strategy D.* The SDGFP will consider sending a representative to scientific meetings that will exchange information related to bighorn sheep management.

<u>Objective 7</u>: Promote public, landowner, and conservation agency awareness of bighorn sheep and habitat management issues of highest conservation concern.

> *Strategy A.* By December 2013, provide paper and electronic copies of the "Action Plan for Management of Bighorn Sheep in South Dakota" to all interested conservation partners, the public, private landowners, and all communities and businesses
>
> *Strategy B.* Periodically include articles about bighorn sheep and bighorn sheep habitat in the SD Conservation Digest and other popular magazines, journals, and media outlets.
>
> *Strategy C.* Add a web page about bighorn sheep under the outdoor learning section of the department website which includes information and pictures of bighorn sheep in South Dakota.

IMPLEMENTATION AND COST SCHEDULE (2013-2017)

The potential exists to increase bighorn sheep numbers in South Dakota by supplementing current populations and reintroducing bighorn sheep in new areas. Prior to any reintroduction, at a minimum, disease issues, habitat quality, and public access

must be evaluated and addressed. Any bighorn sheep released should be monitored to assess at minimum survival and movements.

When assessing slope habitats alone as the primary variable providing potential bighorn sheep habitat in the Hills (Figure 8), there are several additional potential areas that SDGFP should evaluate. In addition, other areas may exist in the Black Hills if more forests were manipulated into open habitats.

Costs to transplant bighorn sheep will vary depending on the source herd. In some instances state or provincial agencies may charge a flat fee for their services to capture the animals, which could run as high as $1,200 or more per animal. Other agencies may only require SDGFP staff to assist with the captures, so expenses would be primarily related to staff time, capture, and travel expenditures. Other costs associated with transplants include monitoring expenses (radio collars, staff time) and disease testing. We anticipate augmenting the Elk Mountain by the fall of 2013 or 2014.

An implementation and cost schedule is provided in the Appendix which includes the estimated time and associated costs for each strategy and method per year for the next five years. Most tasks would be coordinated by Sr. Biologists and the Regional Wildlife Manager; however each activity's estimated time and expenditures include a wide range of SDGFP staff to complete the respective tasks.

Because the current range and potential new areas of bighorn sheep in the Black Hills encompass both public and private land, staff that are engaged in public land management and those that work with partnering federal agencies will play a critical role in accomplishing the tasks. Private land biologists will be used to assist in private land habitat opportunities as well as assisting with the establishment and implementation of cost-share programs that address habitat and diseases related issues.

Many of the outlined strategies and methods are currently in progress and the strategic plan provides a formal approach for the Department in our bighorn sheep management efforts. The plan identifies specifics methods and which staff will play a role in coordinating and completing tasks. The combined effort of a coordinated approach and utilization of multiple staff will maximize the opportunities to successfully reach population, habitat, and address items of concern goals.

LITERATURE CITED

Wild Sheep Working Group. 2012. Recommendations for domestic and goat management in wild sheep habitat. Western Associations of Fish and Wildlife Agencies.

TABLES

Table 1. Bighorn sheep herds of South Dakota and associated areas occupied.

	Name	Acres
Current	Spring Creek	63,790
	Elk Mountain	48,170
	Custer State Park	26,160
	Badlands National Park	51,720
	Total current	189,840

FIGURES

Figure 1. Distribution of the 4 current bighorn sheep herds in South Dakota, including the Hell Canyon augmentation, and the 2 potential sights to evaluate for future reintroductions.
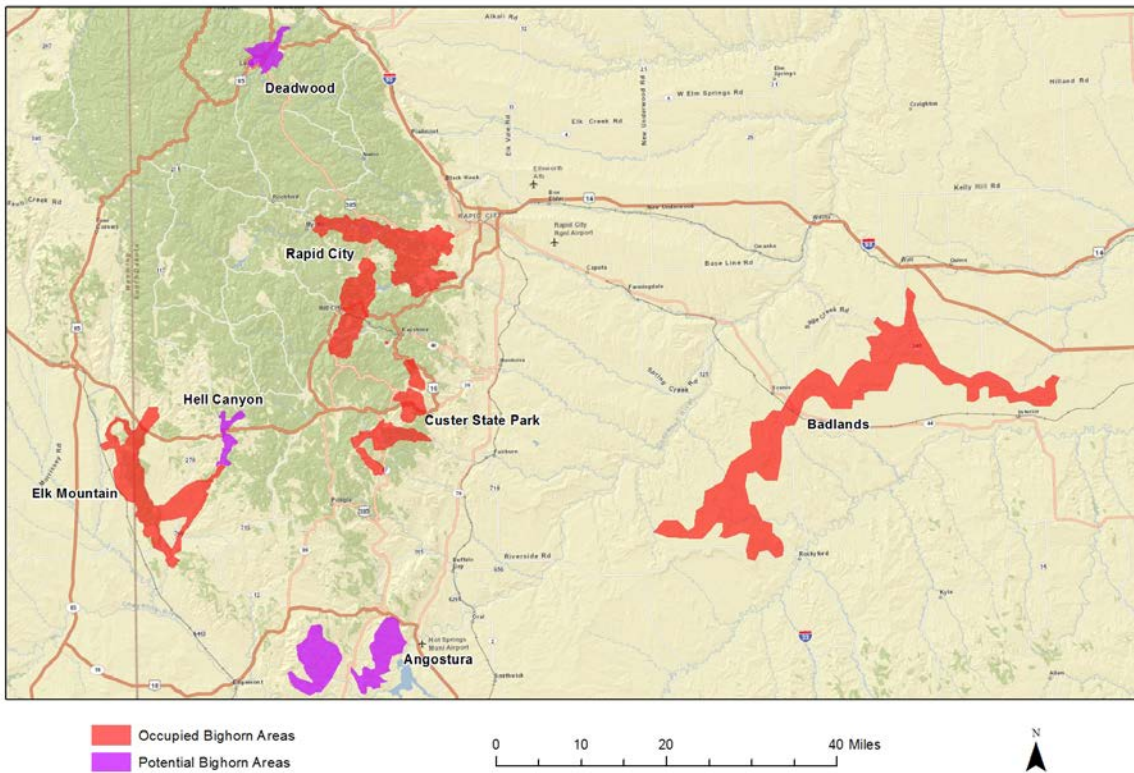
Figure 2. Rapid City bighorn sheep herd, which includes the Spring creek, Rapid creek, and Hill City subherds.
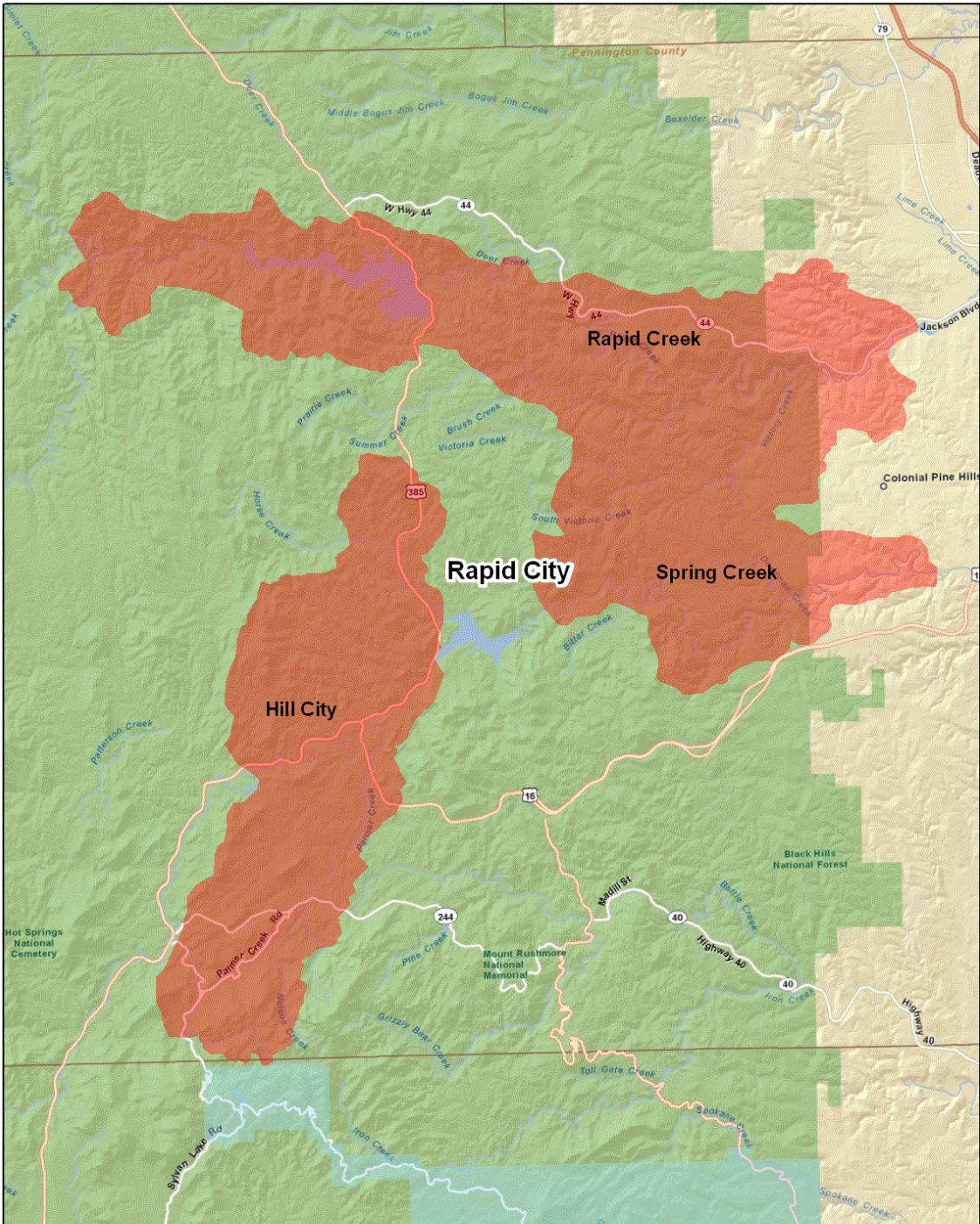
Figure 3. Elk Mountain bighorn sheep herd, which includes the Hell Canyon area where an augmentation may potentially occur.
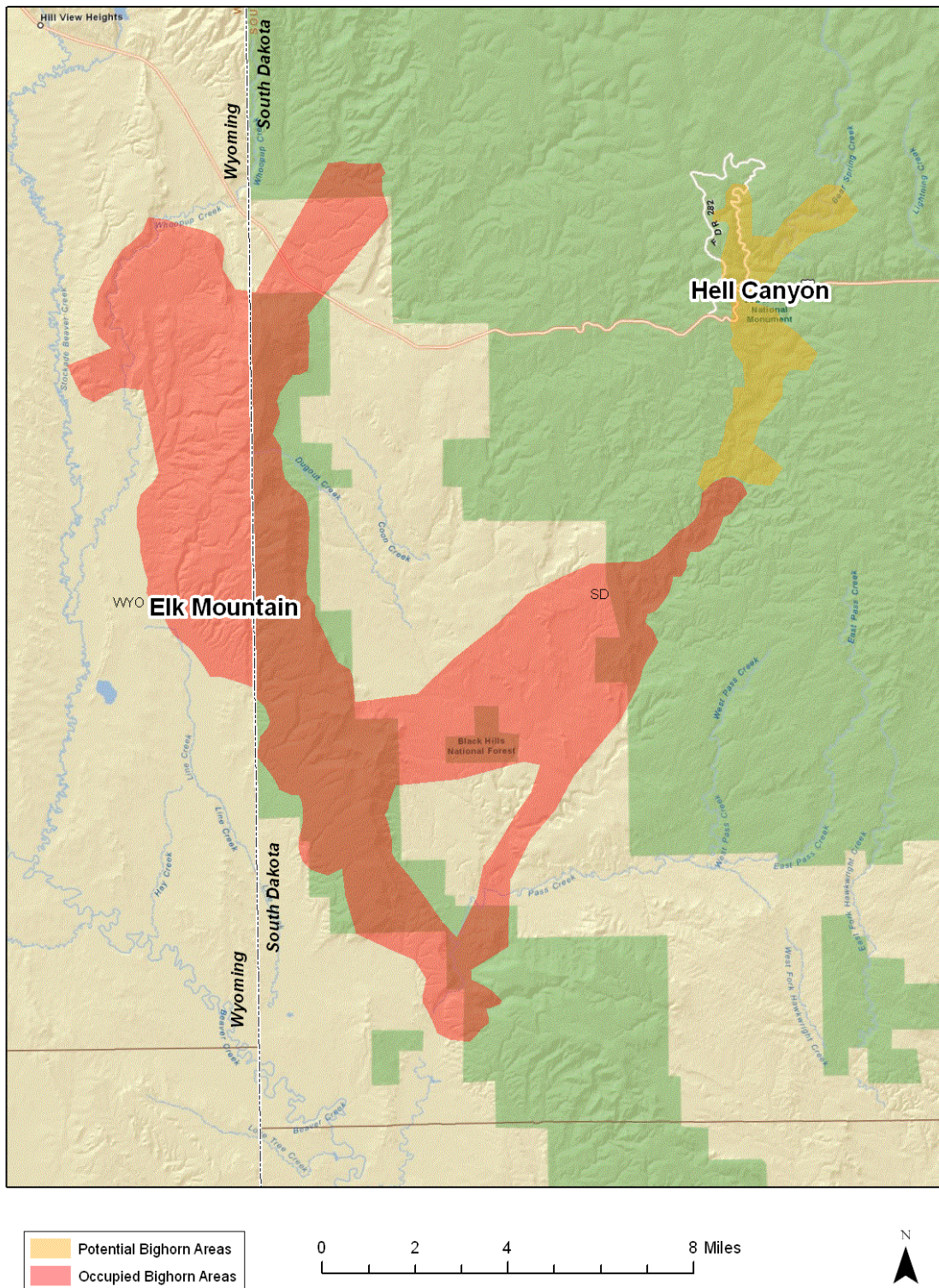
Figure 4. Custer State Park bighorn sheep herd.
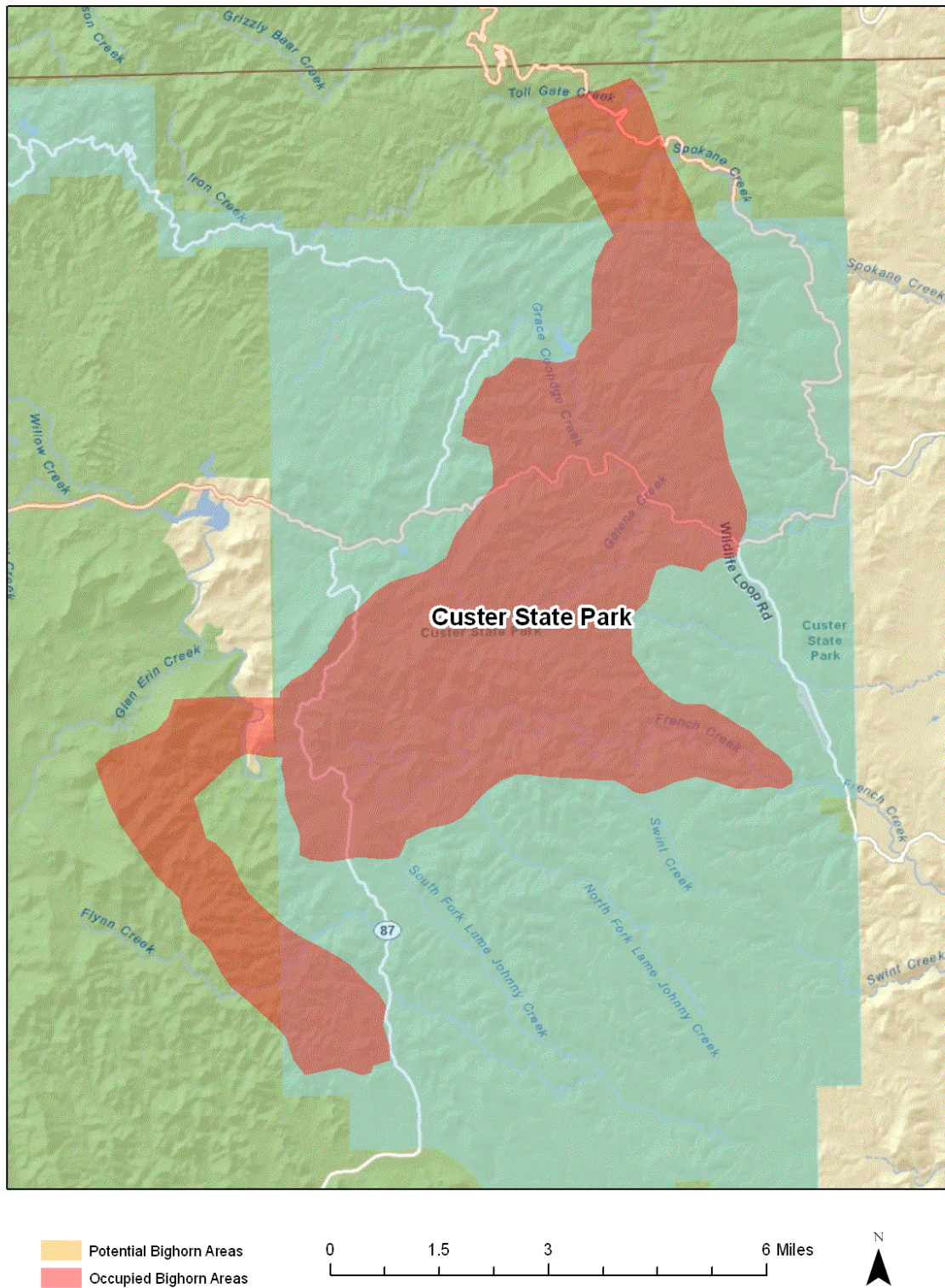
Figure 5. Habitat suitability of the Black Hills for bighorn sheep, based on percent slope and percent canopy cover. Current herds are outlined in black and potential new areas for future herds are outlined in blue. Dots represent areas where SDGFP staff has observed domestic sheep or goats.
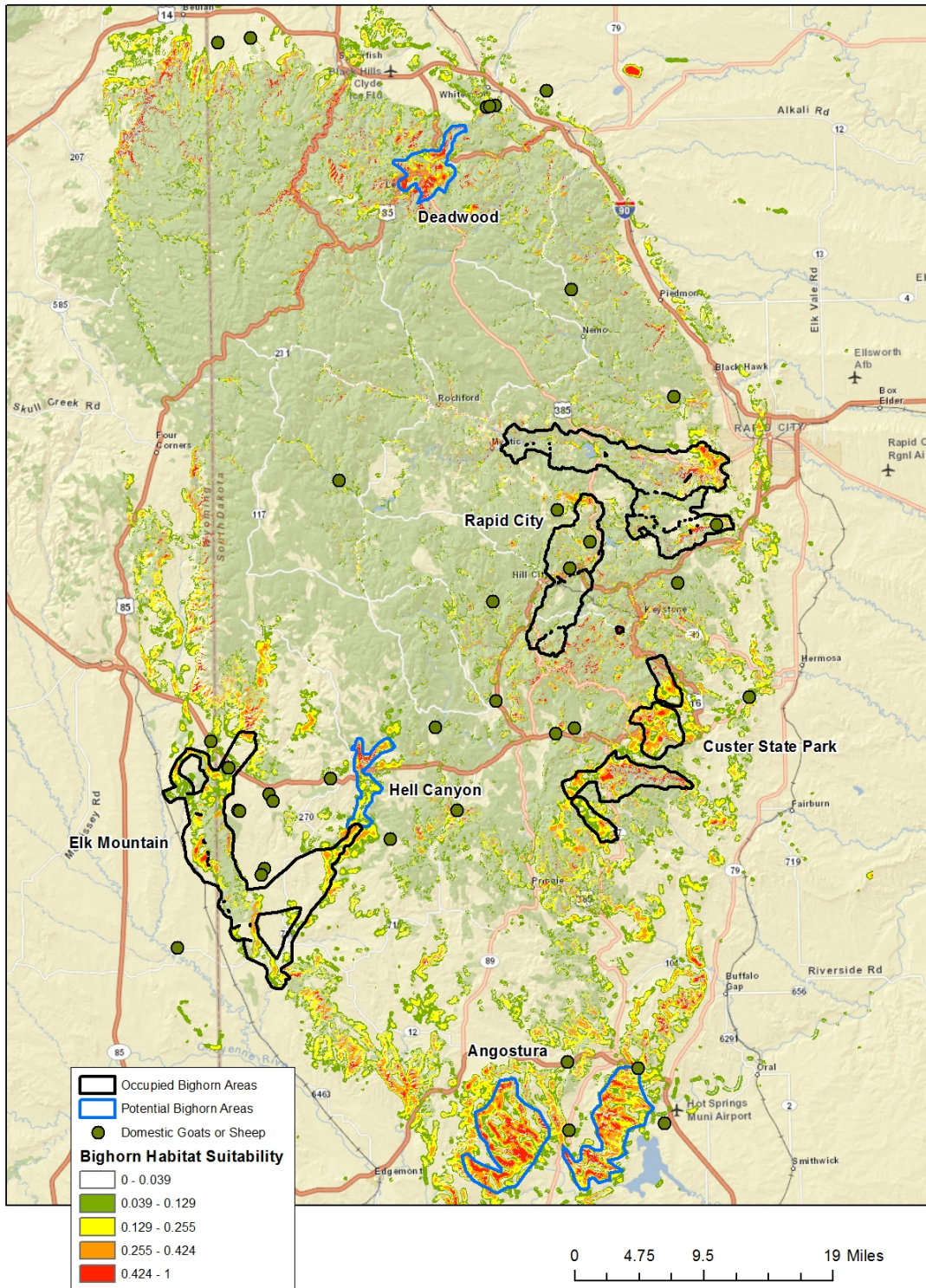
Figure 6. Deadwood potential bighorn sheep area.
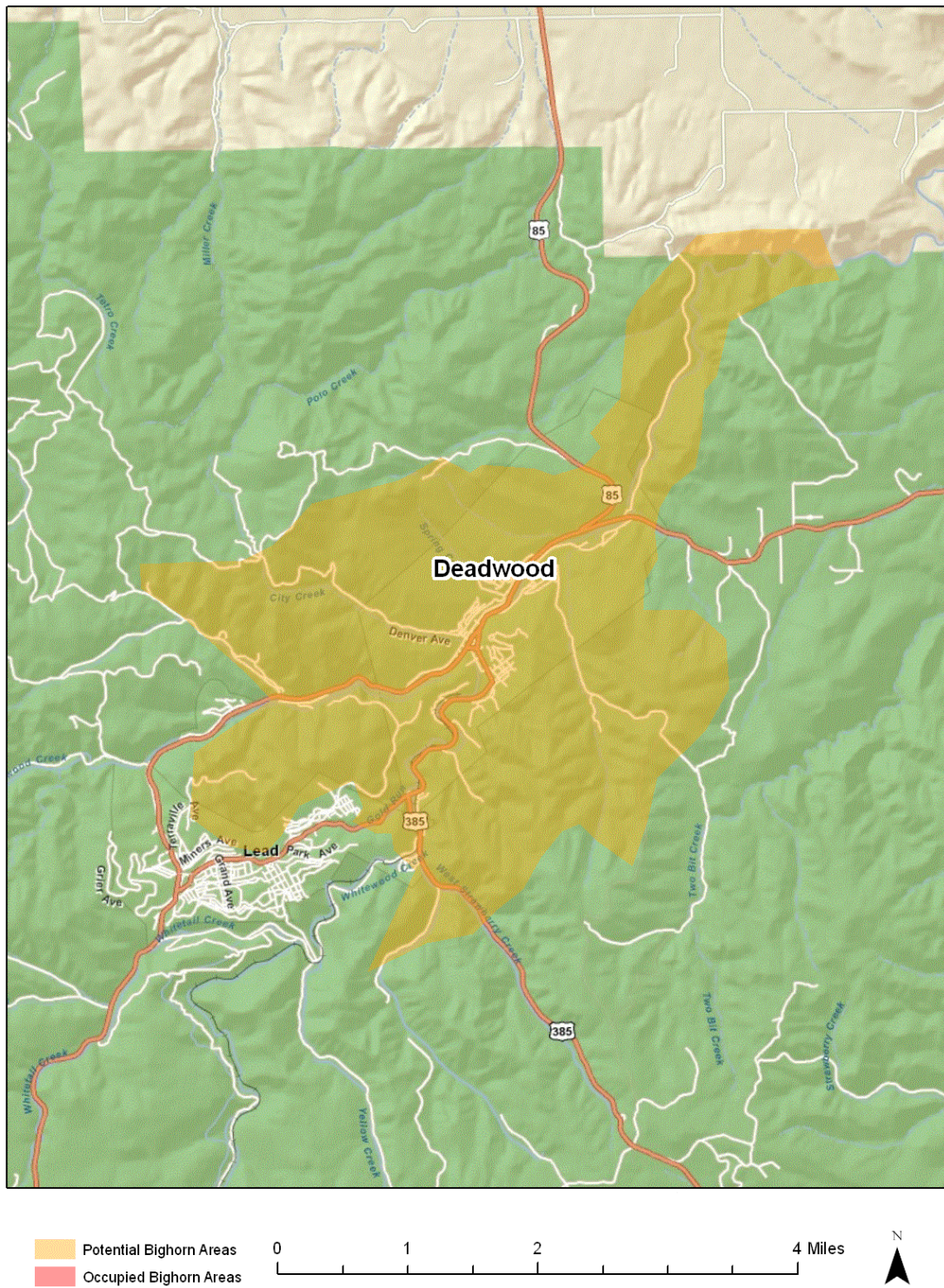
Figure 7. Angostura potential bighorn sheep area, including two potential subherds: one on Horse Trap Mountain and one on Flagpole Mountain.

Figure 8. Habitat suitability model within the Black Hills showing areas of at least 40% slope, depicting potential areas that could be more suitable to bighorn sheep if habitats were manipulated to open current forested habitats.

APPENDICES

Appendix 1. Implementation and Cost Schedule 2013-2017.

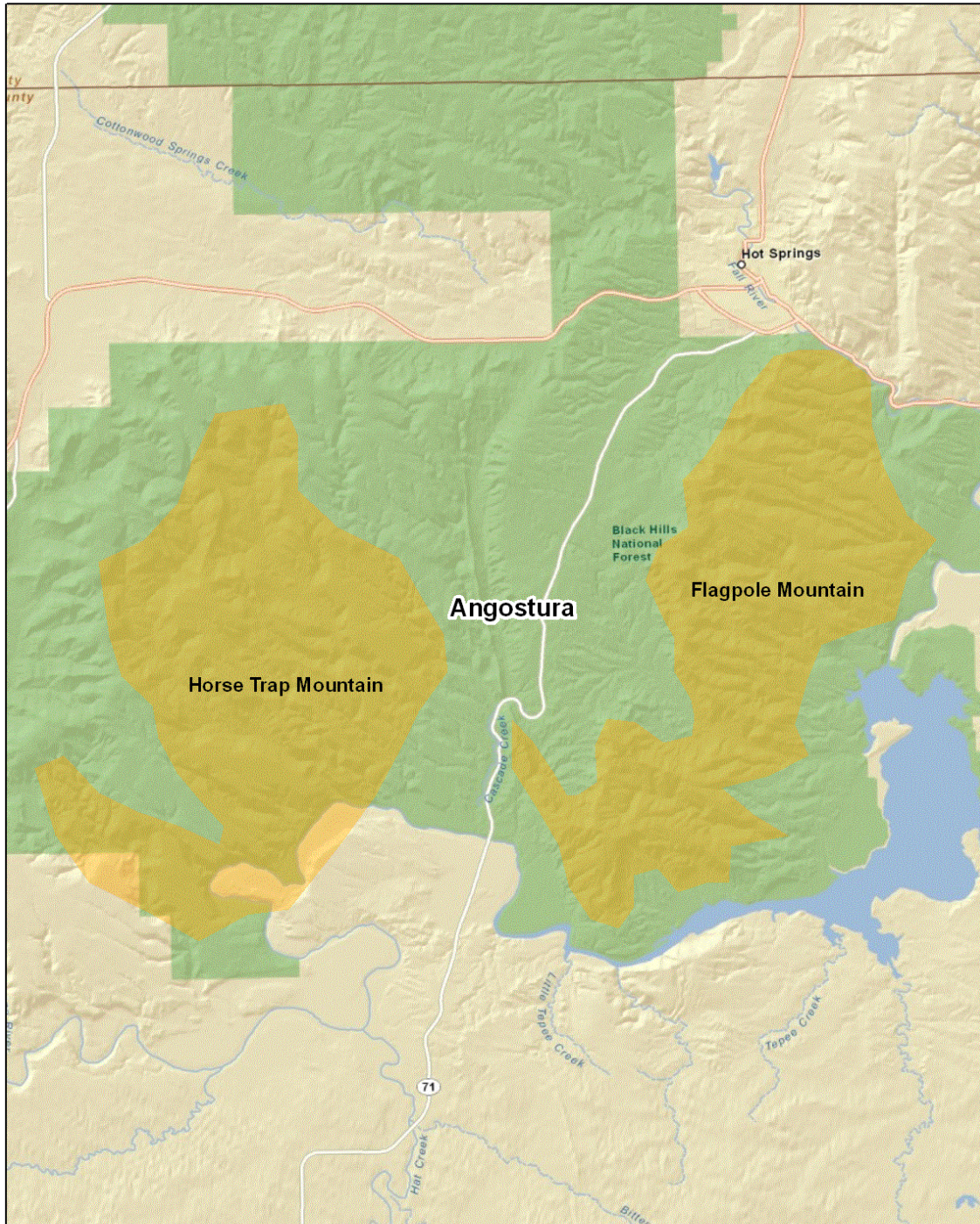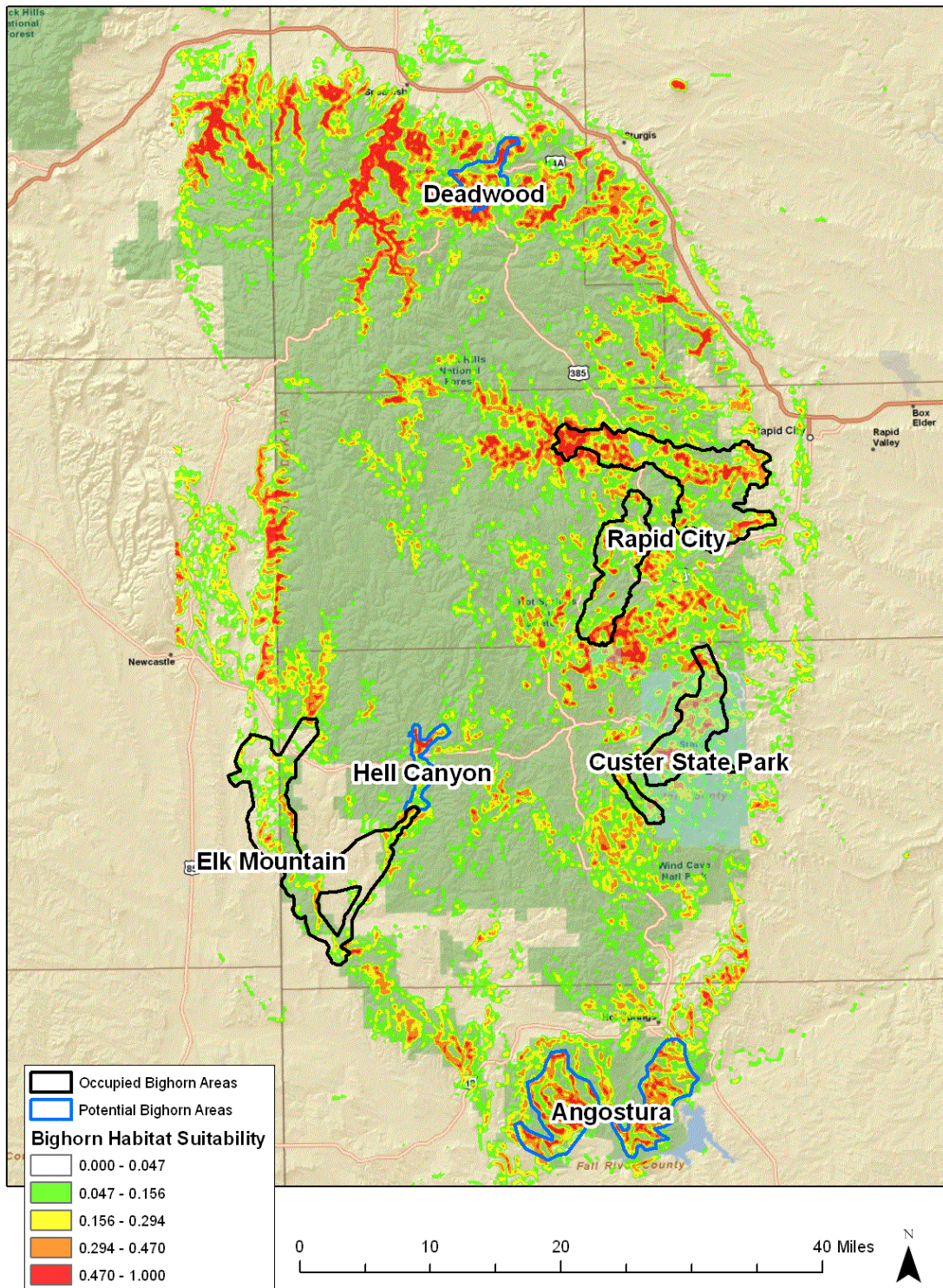| Action Strategies and Methods		2013 Hours	2013 Cost		2014 Hours	2014 Cost		2015 Hours	2015 Cost		2016 Hours	2016 Cost		2017 Hours	2017 Cost	Primary Responsibility
Disease																
Adopt appropriate recommendations and guidelines developed by the WAFWA Wild Sheep Working Group.	X	NA	NA	X	NA	NA	X	NA	NA	X	NA	NA	X	NA	NA	Wildlife Administration / Senior Big Game Biologist / Regional Wildlife Manager
Implement Deparment policy for the lethal take of bighorn sheep when associated with domestic sheep or goats.	X	NA	NA	X	NA	NA	X	NA	NA	X	NA	NA	X	NA	NA	Wildlife Administration / All GFP Staff
Identify and locate all domestic sheep and goats herds in the Black Hills.	X	320	$6,400	X	160	$3,200	X	40	$800	X	40	$800	X	40	$800	Senior Big Game Biologist / Big Game Biologists / Regional Wildlife Manager
Discuss with South Dakota Animal Industry Board potential and known disease risks to bighorn sheep from permitted domestic sheep and goats in the Black Hills.	X	80	$1,600	X	40	$800	X	20	$400	X	20	$400	X	20	$400	Wildilfe Administration / Senior Big Game Biologist
Cost share for fencing materials to reduce/eliminate contact between bighorn sheep and domestic sheep and goats.	X	NA	$90,000	X	NA	$90,000	X	NA	$90,000	X	NA	$90,000	X	NA	$90,000	Habitat Program Adminstrator / Habitat Biologist
		400	**$98,000**		**200**	**$94,000**		**60**	**$91,200**		**60**	**$91,200**		**60**	**$91,200**	
Habitat																
Develop and ground truth habitat suitability model.	X	320	$6,400	X	160	$3,200		40	$800	X	40	$800	X	40	$800	Senior Big Game Biologist / Big Game Biologists
Colloborate with USFS, BLM, and private landowners on techniques to create, restore, and manage suitable bighorn sheep habitat.	X	480	$9,600	X	480	$9,600	X	480	$9,600	X	480	$9,600	X	480	$9,600	Wildlife Administration / Senior Big Game Biolgoist / Regional Wildlife Manager / Regional Habitat Manager / USFS Liason
Colloborate with USFS, BLM, and private landowners on grazing allotments.	X	160	$3,200	X	160	$3,200	X	160	$3,200	X	160	$3,200	X	160	$3,200	Wildlife Administration / Senior Big Game Biolgoist / Regional Wildlife Manager / Regional Habitat Manager / USFS Liason
Evaluate and implement habitat management projects with participating landowners on private land.	X	80	$16,600	X	80	$16,600	X	80	$16,600	X	80	$16,600	X	80	$16,600	Habitat Program Adminstrator / Habitat Biologist
Evaluate and implement habitat management projects on Game Production Areas and other lands with SDGFP management responsibility.	X	80	$16,600	X	80	$16,600	X	80	$16,600	X	80	$16,600	X	80	$16,600	Habitat Program Administrator / Regional Habitat Manager / Senior Big Game Biologist / Big Game Biologists
		1,120	**$52,400**		**960**	**$49,200**		**840**	**$46,800**		**840**	**$46,800**		**840**	**$46,800**	

	2013			2014			2015			2016			2017			
Population Monitoring																
Assess and monitor population levels and trends by annually completing ground and aerial surveys. *Staff time and contractual flights.*	X	120	$17,400	X	120	$17,400	X	120	$17,400	X	120	$17,400	X	120	$17,400	Senior Big Game Biologist Big Game Biologists Regional Wildlife Manager Resource Biologists
Model population changes within management units and sub-herds.	X	40	$800	X	40	$800	X	40	$800	X	40	$800	X	40	$800	Senior Big Game Biologist Regional Wildlife Manager
Monitor bighorn sheep disease by collecting and sampling all reported or observed sick or dead bighron sheep.	X	80	$1,600	X	80	$1,600	X	80	$1,600	X	80	$1,600	X	80	$1,600	Senior Big Game Biologist Regional Wildlife Manager
Conduct trap and tranfer projects to establish new populations or augment existing populations. *Staff time only.*		NA	NA	X	200	$4,000	X	200	$4,000		NA	NA		NA	NA	Senior Big Game Biologist Big Game Biologists Regional Wildlife Manager
As determined necessary, develop and conduct research projects to fill information gaps and provide management implications.	X	NA	NA	X	NA	NA	X	NA	NA	X	NA	NA	X	NA	NA	Senior Big Game Biologist Big Game Biologists Regional Wildlife Manager
		240	**$19,800**		**440**	**$23,800**		**440**	**$23,800**		**240**	**$19,800**		**240**	**$19,800**	
Public Outreach																
Update and maintain department website related to bighorn sheep.	X	20	$400	X	20	$400	X	20	$400	X	20	$400	X	20	$400	Adminstration Staff Senior Big Game Biologist
Development and completion of formal bighorn sheep management plan.	X	480	$9,600													Senior Big Game Biologist Other GFP Staff
Annually meet with the SD Bighorn Sheep Working Group, concerned individuals, NGOs, local sportsman's groups, and private landowners.	X	40	$800	X	40	$800	X	40	$800	X	40	$800	X	40	$800	Wildlife Administration Senior Big Game Biologist Regional Wildlife Manager Other GFP Staff
		500	**$10,000**		**20**	**$400**		**20**	**$400**		**20**	**$400**		**20**	**$400**	
TOTAL	X	**2,260**	**$180,200**	X	**1,620**	**$167,400**	X	**1,360**	**$162,200**	X	**1,160**	**$158,200**	X	**1,160**	**$158,200**	

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Appendix 2. Department policy for the lethal take of bighorn sheep when associated with domestic sheep or goats.

LETHAL TAKE OF BIGHORN SHEEP WHEN ASSOCIATED WITH DOMESTIC SHEEP OR GOATS

Department of Game, Fish and Parks Policy
Effective: 09-28-07
Replaces: New

PURPOSE STATEMENT

To provide direction to Department staff in dealing with bighorn sheep that have come in direct contact with domestic sheep or goats. To prevent the spread of diseases from domestic sheep and goats back to wild bighorn sheep herds.

BACKGROUND

Scientific research has established that when bighorn sheep have even brief contact with domestic sheep or domestic goats, large numbers of bighorn sheep may die when the contacting bighorn returns to other bighorn sheep. Typically, the cause of death in the bighorn sheep is due to bacterial pneumonia, and the die-offs affect all age and sex classes.

POLICY REQUIREMENTS

It is the policy of the South Dakota Department of Game, Fish and Parks that bighorn sheep observed in close proximity to domestic sheep or goats are to be captured or killed as soon as feasible. Research and management work often dictates collection immediately upon notification or discovery of the encounter. Because time is of the essence and prior approval is impractical, collection may be completed by an employee without prior approval as long as circumstances meet the criteria described above and permission to access private property is acquired as necessary. It is recommended that live capture be attempted first and the animal used for disease research purposes. If live collection is not practical, then lethal means should be used. If lethal removal is accomplished via gunshot, the shot should be to the head to swiftly dispatch the animal and prevent damage to respiratory organs to facilitate collections for research.

Whenever possible, proper collection will be made of samples to include, but not be limited to, blood (both serum and anticoagulant), organs (spleen, liver, lymph nodes, tonsils and if possible the entire thoracic contents to include trachea, lungs, and heart), teeth, and fecals for parasites as required to supplement ongoing research and management projects.

Collected samples will be promptly forwarded to South Dakota State University veterinary diagnostic laboratory or other appropriate laboratory for analysis. Findings shall be relayed to the Department senior game staff, CSP wildlife biologist and the Regional Game Program manager.