3.8.2.2 Field Surveys

Field surveys for breeding birds were completed in the Permit Area during spring 2006, 2010, and 2011; Greater sage-grouse lek and nesting raptor surveys were completed during spring 2006, 2007, 2008, 2009, 2010 and 2011. Pygmy rabbit surveys were completed during June and July 2007 and August 2010. Big game surveys were completed during 2006, 2010 and 2011. The presence of other wildlife species or their identifying signs was also recorded, and all observed species are included in **Table 3.8-1**. Breeding bird surveys were conducted within the Permit Area; surveys for raptor nests included the Permit Area and a surrounding one-mile buffer; surveys for Greater sage-grouse leks included a two-mile buffer from 2006 through 2009, and a much larger study area in 2010 and 2011. Surveys for big game also included a two-mile buffer from 2006 through 2011.

General field surveys were completed by traversing the Permit Area and the surrounding area in a high-wing aircraft, four-wheel drive vehicles, and on foot. Binoculars and spotting scopes were used for observations. Specific survey methods for individual species or groups of species are presented in Attachment D9-2 of the WDEQ-LQD Permit to Mine (LCI, 2011b). The field survey protocols were consistent with recommendations from both the BLM and WGFD as provided in Attachment D9-3 of the WDEQ-LQD Permit to Mine (LCI, 2011b). As mentioned above, during the spring of 2010, LCI began a long-term program of wildlife monitoring. Details of this monitoring are described in Attachment OP-6 of the WDEQ-LQD Permit to Mine (LCI, 2011b). Additional information is included in the Project's 2010 and 2011 Annual Wildlife Monitoring Report (LWR Consultants, Inc. and Wyoming Wildlife Consultants, Inc., 2011 and 2012, respectively [**Appendix C**]). This annual wildlife monitoring program expands upon and continues the baseline wildlife inventories.

3.8.3 Results

3.8.3.1 Big Game

The 2012 WGFD data define the Permit Area as seasonal range for elk, mule deer, and pronghorn (**Figure 3.8-1**, **Figure 3.8-2**, and **Figure 3.8-4** respectively). The Permit Area is outside of WGFD mapped moose range (**Figure 3.8-3**). Areas described as "out of range" contain few animals or the available habitat is of limited importance to the species. No moose or signs of moose have been observed. No crucial range for big game is present in the Permit area according to the WGFD 2012 data.

The WGFD WOS indicates that pronghorn are the most abundant big game species in the Permit Area. WGFD and BLM GIS data show that the Permit Area and surrounding areas are classified as Winter/Yearlong Pronghorn Range. Winter/Yearlong Range includes range where a population of animals makes

general use of the habitat on a year-round basis, and there is a significant influx of animals between December and April. The Permit Area comprises a portion of the Red Desert Antelope Herd Unit (WGFD Hunt Area 61). Based on the most current Annual Big Game Herd Unit Job Completion Reports (WGFD, 2006), the Red Desert Antelope Herd had an average population of 14,454 pronghorns from 2000 to 2005.

The 2007 WGFD Herd Unit Data describe two elk herds, the Shamrock Herd Unit (#643) and the Steamboat Herd Unit (#426), as being situated on or near the Permit Area. Elk and mule deer have been infrequently spotted in low numbers in the Permit Area.

The relative abundance of big game observed during the course of field work during 2006 and 2007 was recorded and is presented in **Table 3.8-2**. **Table 3.8-3** shows the summary of results from big game counts conducted during 2010 and 2011. Pronghorn, mule deer, and elk were the only big game animals recorded in the Permit Area during field observations in 2006 to 2011. Pronghorn and elk were observed in the survey area during 2010 and 2011 surveys. No mule deer were observed in the survey area during 2010 and 2011 surveys.

Table 3.8-2 Relative Abundance of Big Game Observations 2006 and 2007

Month	Species	Habitat Type	
		Upland Sagebrush	Lowland Sagebrush
March	Pronghorn	High	High
March	Elk	Low	Low
April	Pronghorn	High	High
June	Pronghorn	Medium	Medium
July	Mule Deer	Low	--
July	Elk	Low	--
July	Pronghorn	Medium	Medium

Table 3.8-3 Summary of Big Game Counts Conducted During 2010 and 2011[1]

Survey Date	Pronghorn		Elk	
	Male	Female	Male	Female
2010				
02/19/2010	5	3	0	0
03/28/2010	22	51	0	0
06/03/2010 06/04/2010	8	23	0	3 7
08/23/2010	1	2	0	0
2011				
01/27/2011	0	0	0	0
03/14/2011	9	28	0	0
04/06/2011 04/07/2011	6	13	0 3	0 6
06/15/2011 06/16/2011	4 2	6 10	0 0	0 0
08/06/2011	5	2	0	0

[1]Data from LWR, 2011 and 2012, respectively (**Appendix C**)

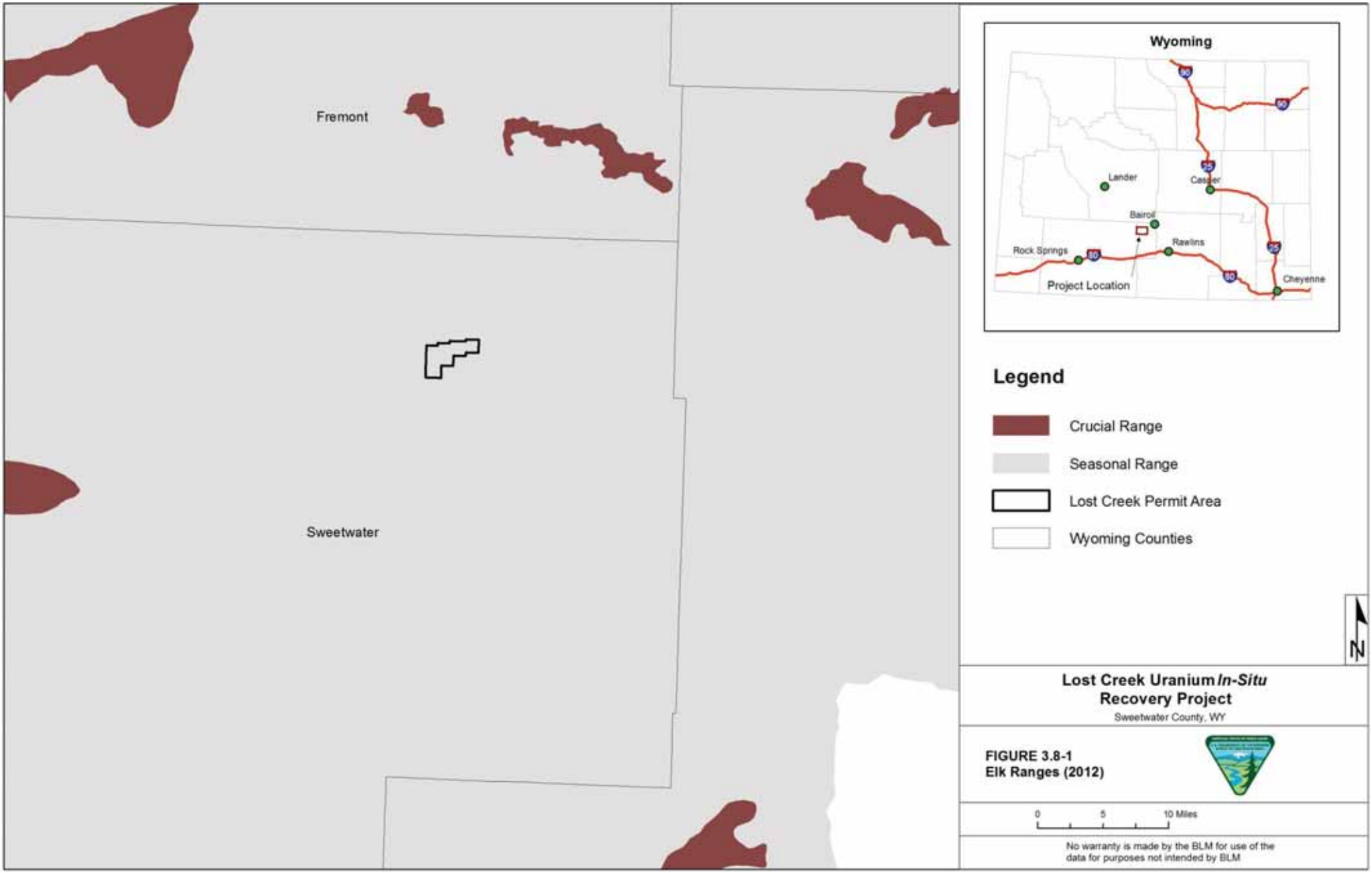

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FIGURE 3.8-1
Elk Ranges (2012)

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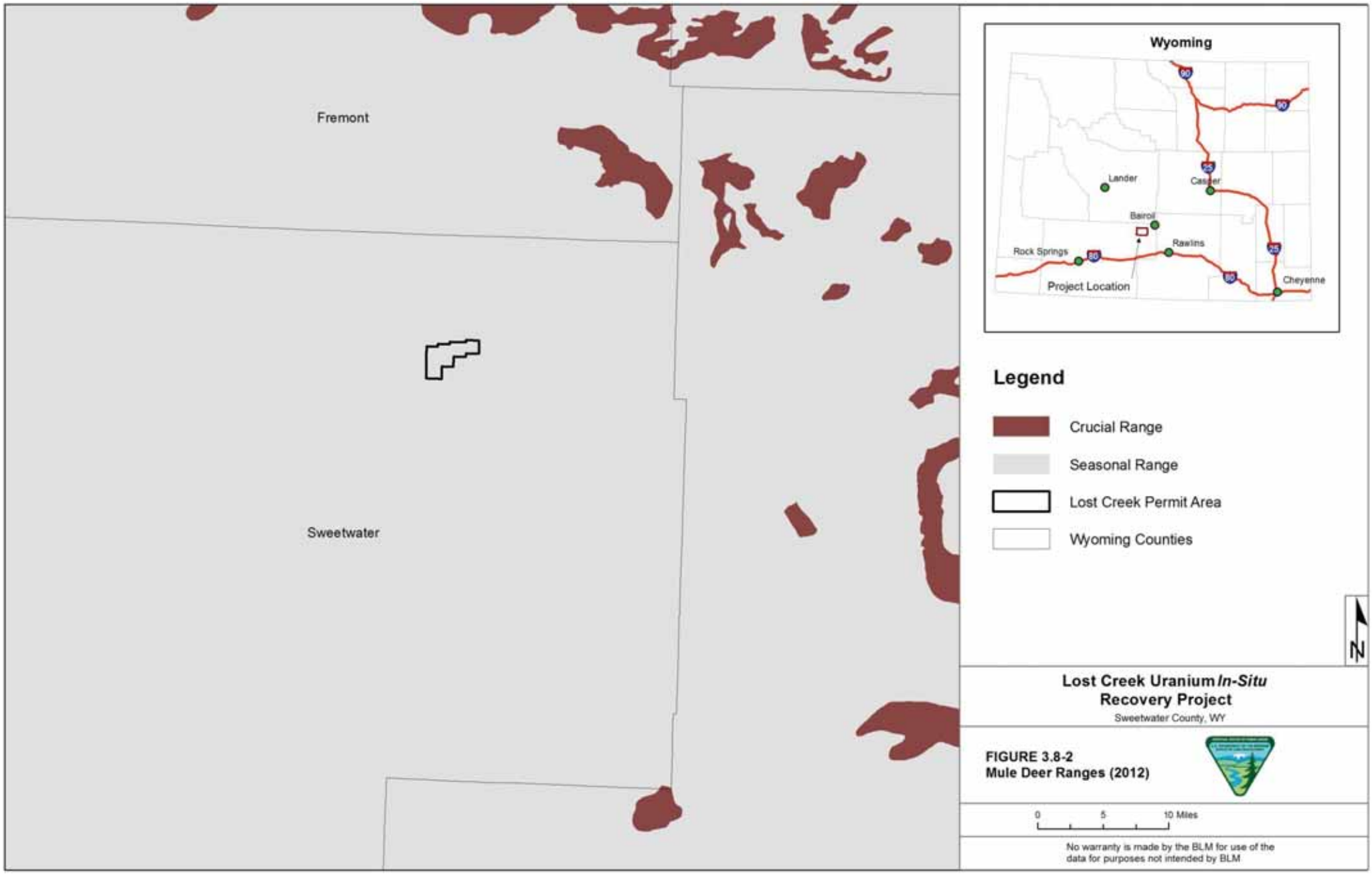

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FIGURE 3.8-2
Mule Deer Ranges (2012)

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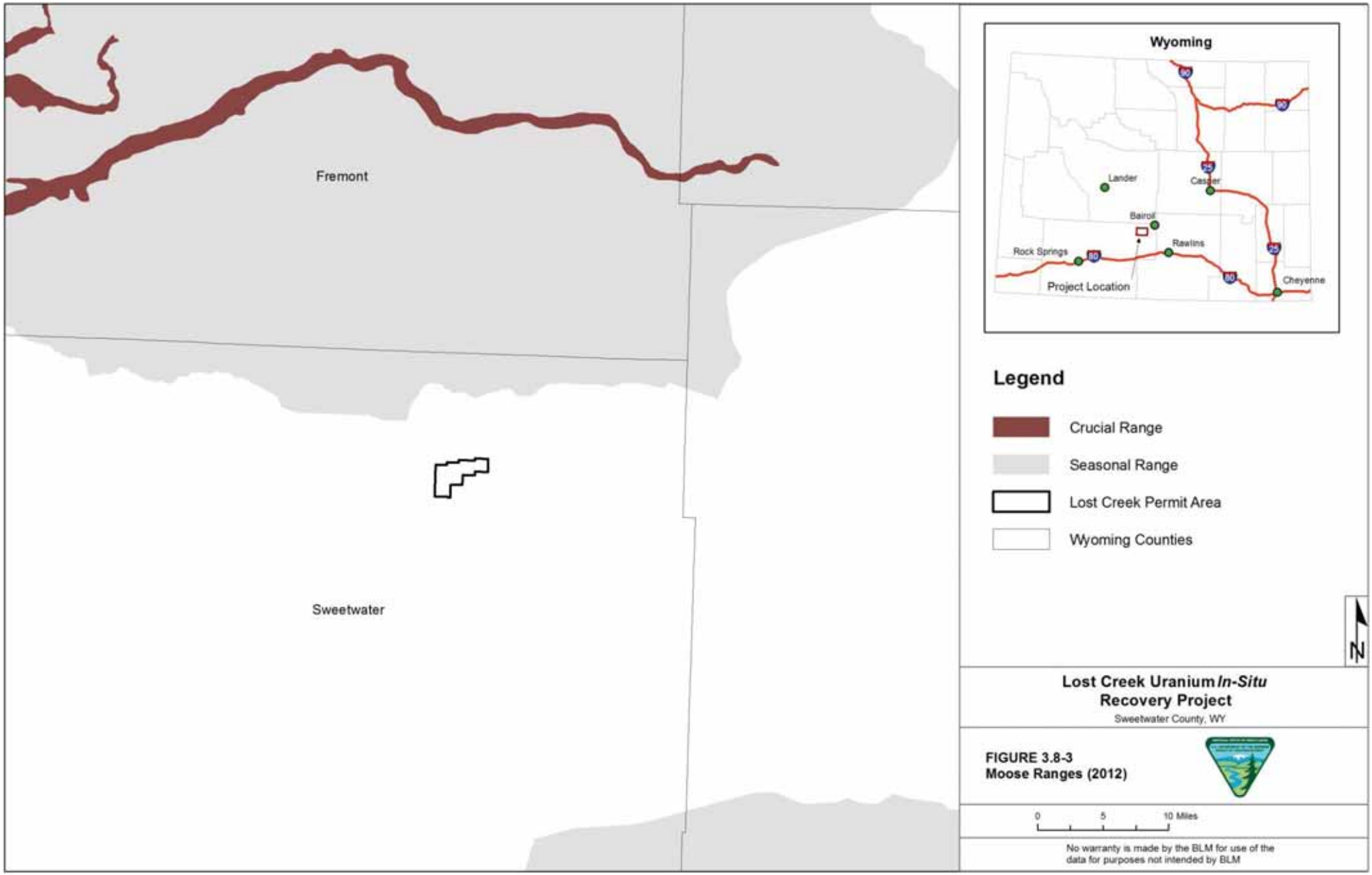

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FIGURE 3.8-3
Moose Ranges (2012)

No warranty is made by the BLM for use of the data for purposes not intended by BLM

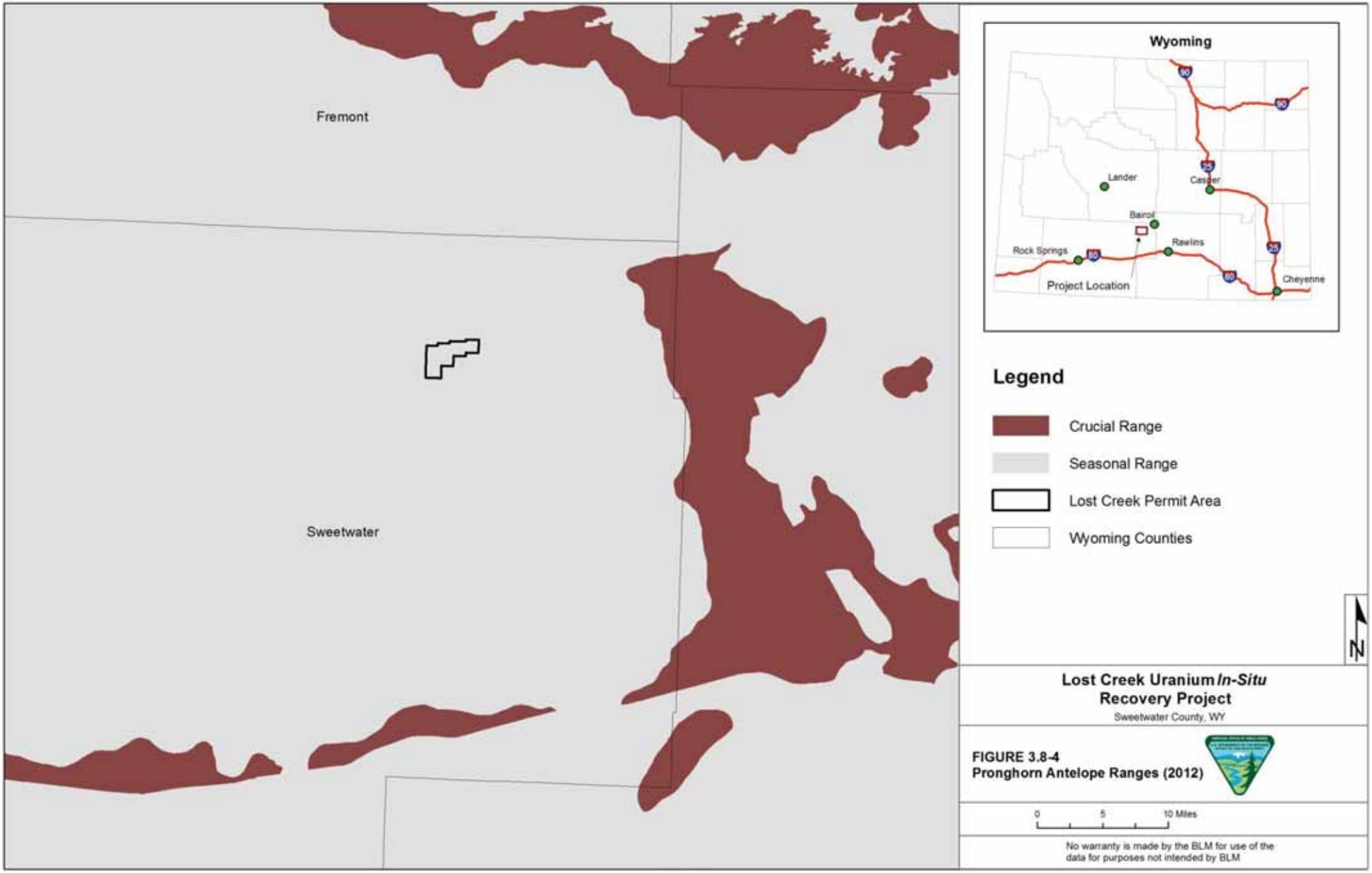

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FIGURE 3.8-4
Pronghorn Antelope Ranges (2012)

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3.8.3.2 Greater Sage-Grouse

Greater sage-grouse and mourning doves were the only upland game birds noted in the study area. Greater sage-grouse inhabit the area all year, but mourning doves are migrants present during spring through early fall. The USFWS recently found that the Greater sage-grouse was warranted but precluded for listing as a T&E species (USFWS, 2010c). This designation means the USFWS has determined that, based on current status, the Greater sage-grouse warrants listing but listing is precluded because of the need to address other higher priority species.

The Wyoming Governor's SGIT was created in 2008 to develop and coordinate Greater sage-grouse conservation efforts in Wyoming. The original group included stakeholders from agriculture, conservation organizations, oil and gas, wildlife and land management agencies. SGIT then added representatives from county governments, WDEQ, Wyoming BLM, and the mining industry (LCI participated as a substitute organization when the regular industry representative could not attend). The SGIT has designated 'core population areas' throughout the state (**Figure 3.8-5**) and developed stipulations for the conservation of Greater sage-grouse in those areas (Mead, 2011 and Wyoming Interagency, 2011). As shown in **Figure 3.8-6**, the Permit Area is located within the Greater sage-grouse Core Area. The BLM designation of Key Habitat Areas corresponds directly with the State of Wyoming's Core Population Area (Core Area) (BLM, 2010). LCI would follow the stipulations and management principles provided by the Wyoming Governor's SGIT while conducting the Proposed Action. Additionally, LCI has consulted extensively with WGFD during the WDEQ permit process on various wildlife protection issues, including the protection of Greater sage-grouse in the Project area (Attachment D9-4 of the WDEQ-LQD Permit to Mine, 2011b and Hiatt, 2011).

Field surveys of upland game birds have focused on Greater sage-grouse leks (also known as strutting grounds). All known leks were inventoried, and the entire study area within two miles of the Permit Area was searched for additional leks during the period of 2006 to 2009. Three aerial surveys were completed for new leks from April of 2006 through 2009. In addition, ground surveys of new leks were completed by driving on roads within the study area and listening for booming Greater sage-grouse. Lek attendance surveys, which document the number of male Greater sage-grouse observed at each lek, were completed on the ground three times for each known lek during April and May of 2006 to 2009.

Starting in the spring of 2010, the study area for Greater sage-grouse surveys/monitoring was expanded to include a Small Sage Grouse Monitoring Area and a Large Sage Grouse Monitoring Area (**Figure 3.8-7**). The Small Sage Grouse Monitoring Area includes the area where nesting and early brood-rearing females may be influenced by Project activities. The Large Sage Grouse Monitoring Area includes a much larger area with leks that can be considered control leks (leks outside of the influence zone of the Project). During the springs

of 2010 and 2011, lek counts were completed in both the Large and Small Greater Sage-grouse Monitoring Areas. During the 2011 surveys, the original Small Monitoring Area was replaced by the Total Affected Area established by the DDCT as mandated by the Wyoming State Governor's Executive Order 2010-4 (see **Section 4.9** for discussion of the DDCT). The 2010 Large Greater Sage-grouse Monitoring Area was delineated to maximize the probability that control leks were included within the monitoring area. Concentrated ground surveys for searching for new leks were also completed in both areas. Thirty-six Greater sage-grouse hens from nine leks were trapped and radio-tagged during April 2010, and 30 hens from seven leks were tagged during April 2011 within the Small Greater Sage-grouse Monitoring Area. Ongoing radio-telemetry studies are being completed on these birds as part of a detailed Habitat Selection Study. The Habitat Selection Study is being completed to determine nest location, nest productivity, and seasonal habitat affinities. Detailed methods of these investigations are included in Attachment OP-6 of the WDEQ-LQD Permit to Mine (LCI, 2011b). Detailed results of the 2010 and 2011 investigations are included in the Project's 2010 and 2011 Annual Wildlife Monitoring Report (LWR Consultants, Inc. and Wyoming Wildlife Consultants, Inc., 2011 and 2012, respectively [**Appendix C**]).

No active Greater sage-grouse leks have been located in the Permit Area. The Crooked Well Lek, located along the northeast boundary of the Permit Area (Township 25 North, Range 92 West, Section 16) is classified by WGFD as occupied but surveys completed from 2006 to 2011 have found it to be inactive (**Figure 3.8-8**). Informal surveys before 2006 also indicated that birds had not been using the lek since 1994. A letter requesting a check of the official status of this lek was sent to WGFD in June 2009. Per the WGFD response, the lek is considered Occupied - Inactive. The request, which includes a summary of the formal and informal survey results, and response are included in Attachment D9-4 of the WDEQ-LQD Permit to Mine (LCI, 2011b).

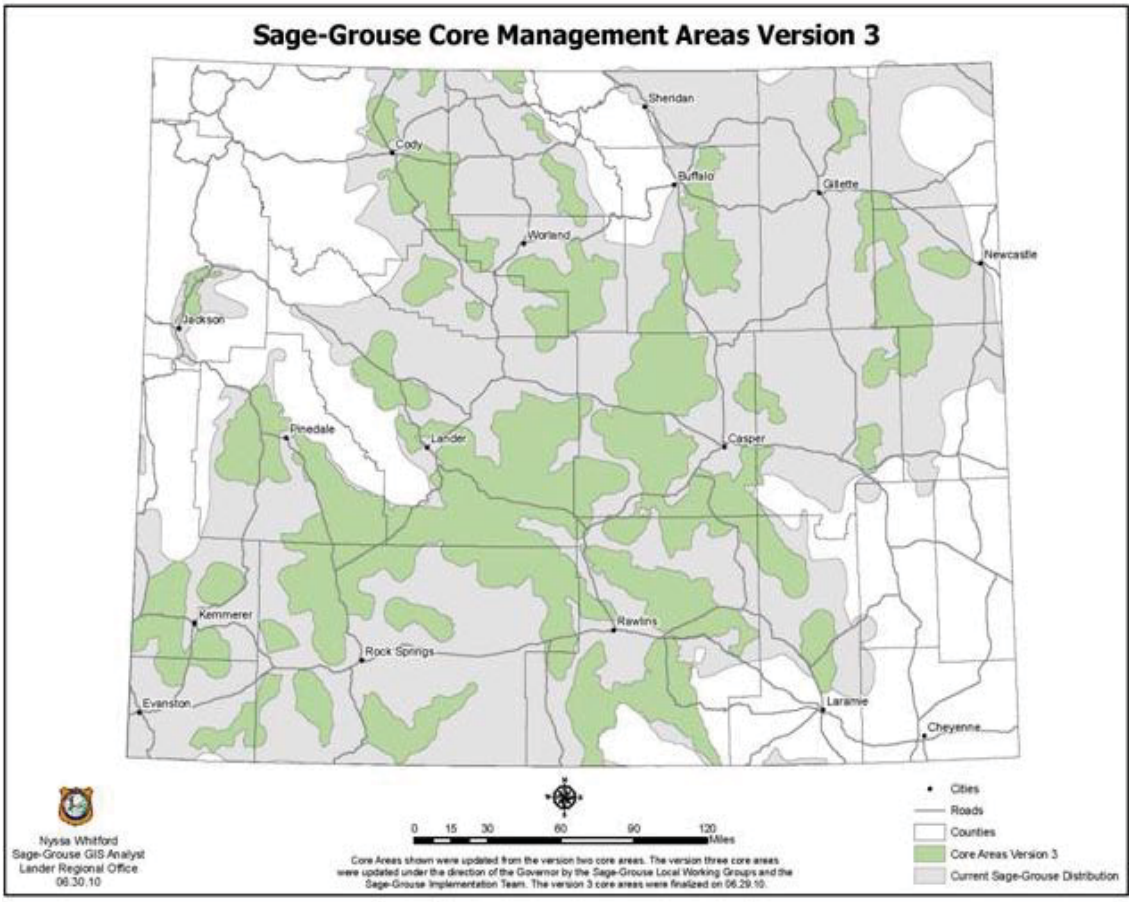
Four occupied and active leks were located within the two-mile buffer zone of the main Permit Area based on the 2006 through 2010 surveys. These include the Green Ridge Lek, Prospect South Lek, Discover Lek, and Discover South Lek. The active Discover South Lek was found during 2010 surveys. Recent surveys (2008 to 2011) have found the Discover East Lek to be inactive, it is considered to be Occupied- Inactive. Three occupied and active leks were located not far north of the two-mile buffer zone of the Permit Area based on the 2006 through 2011 surveys: the Prospects Lek; the Eagles Nest Draw Lek; and the Sand Gully Lek. The locations of the aforementioned leks are presented in **Figure 3.8-8** and **Table 3.8-4. Table 3.8-4** also displays observed lek attendance. The Green Ridge Satellite Lek was observed on only two occasions in 2007, as shown in **Table 3.8-4**. The number of birds observed and the frequency of the observances did not meet the criteria to be classified as a lek (Hiatt, 2011). As a result, this lek is not included in the WGFD Greater sage-grouse database. Other nearby (between two and five miles of the Permit Area boundary) active leks include: Sooner,

Minex West, Southland Well, which are within the area shown on **Figure 3.8-8**; and Harrier and Upper Osborne, which are outside the area shown on the figure. The locations are shown in the 2011 Annual Wildlife Monitoring Report (LWR Consultants, Inc. and Wyoming Wildlife Consultants, Inc., 2012 [**Appendix C**]).

Lek attendance has generally declined since 2006 at all active leks (**Table 3.8-4**). This trend is consistent with a regional decline in lek attendance numbers (WGFD, 2008c). The Greater sage-grouse leks occurred in the Upland Big Sagebrush Shrubland community in areas with cushion plants, blowouts and bare ground.

Data on seasonal habitat use and preferences of Greater sage-grouse in the area were collected as part of the ongoing annual Greater sage-grouse monitoring studies. Detailed methods of these investigations are included in Attachment OP-6 of the WDEQ-LQD Permit to Mine (LCI, 2011b). Detailed results of these investigations are included in the Project's 2010 and 2011 Annual Wildlife Monitoring Report (LWR Consultants, Inc. and Wyoming Wildlife Consultants, Inc., 2011 and 2012, respectively [**Appendix C**]).

Figure 3.8-5 State-Wide Greater Sage-Grouse Core Management Areas



Source: Governor of Wyoming Executive Order 2010-4

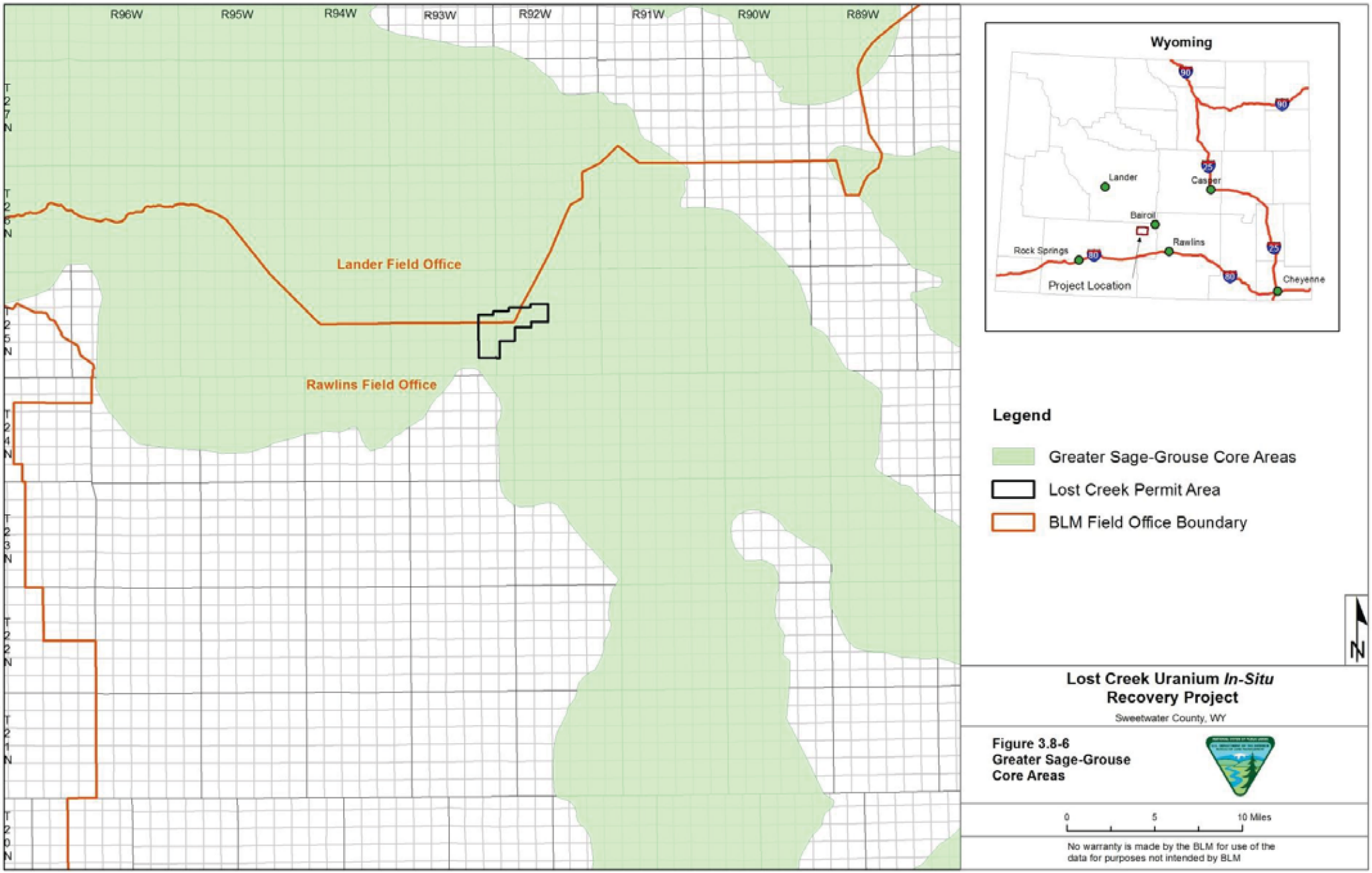

R96W
R95W
R94W
R93W
R92W
R91W
R90W
R89W
T 27 N
T 26 N
T 25 N
T 24 N
T 23 N
T 22 N
T 21 N
T 20 N
Lander Field Office
Rawlins Field Office
Wyoming
Lander
Casper
Bairoil
Rawlins
Rock Springs
Cheyenne
Project Location
Legend
Greater Sage-Grouse Core Areas
Lost Creek Permit Area
BLM Field Office Boundary
N
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Figure 3.8-6
Greater Sage-Grouse Core Areas
0
5
10 Miles
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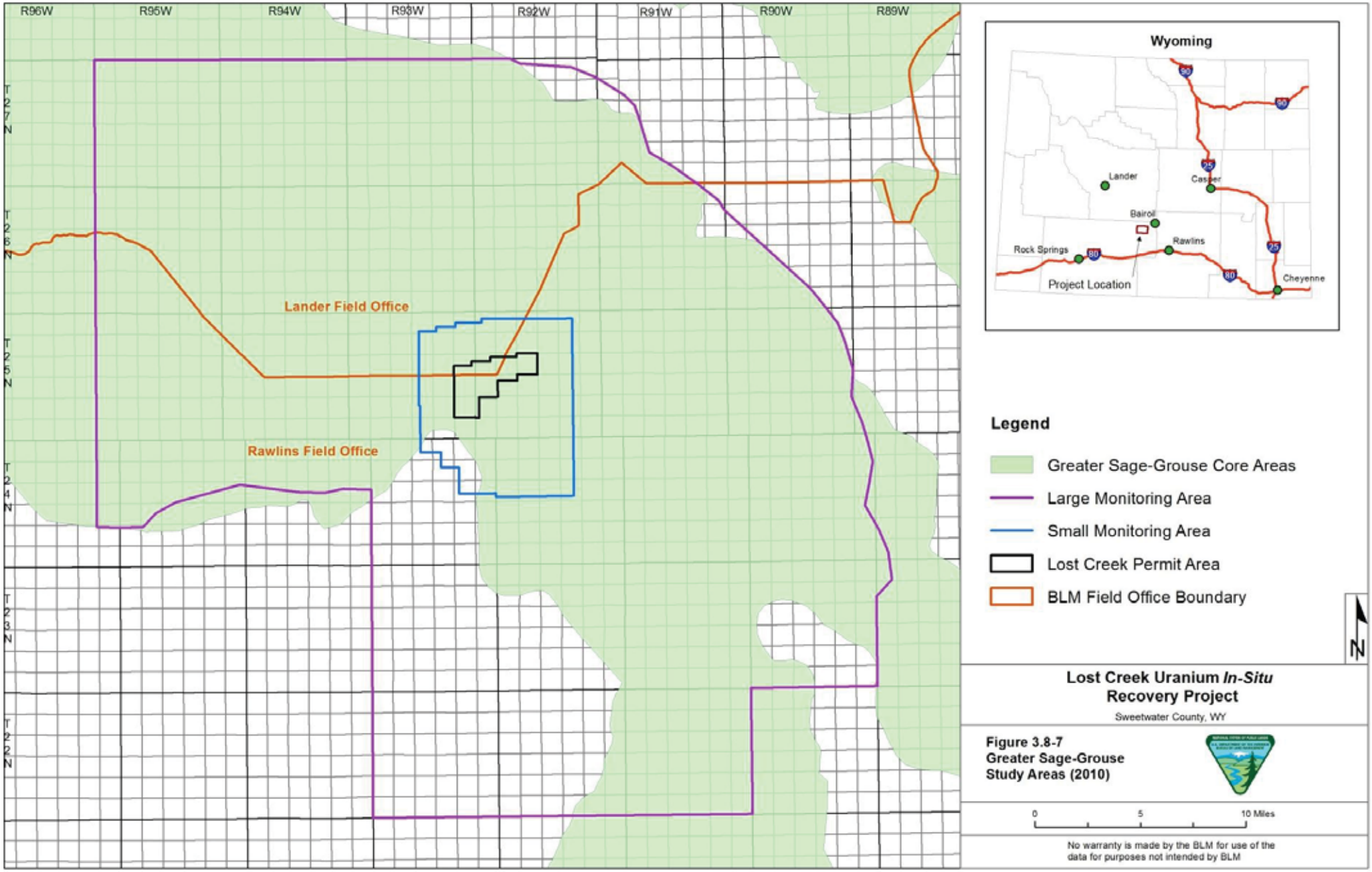
R96W
R95W
R94W
R93W
R92W
R91W
R90W
R89W
T27N
T26N
T25N
T24N
T23N
T22N
Lander Field Office
Rawlins Field Office
Wyoming
Lander
Casper
Bairoil
Rawlins
Rock Springs
Cheyenne
Project Location
Legend
Greater Sage-Grouse Core Areas
Large Monitoring Area
Small Monitoring Area
Lost Creek Permit Area
BLM Field Office Boundary
N
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Figure 3.8-7
Greater Sage-Grouse
Study Areas (2010)
0
5
10 Miles
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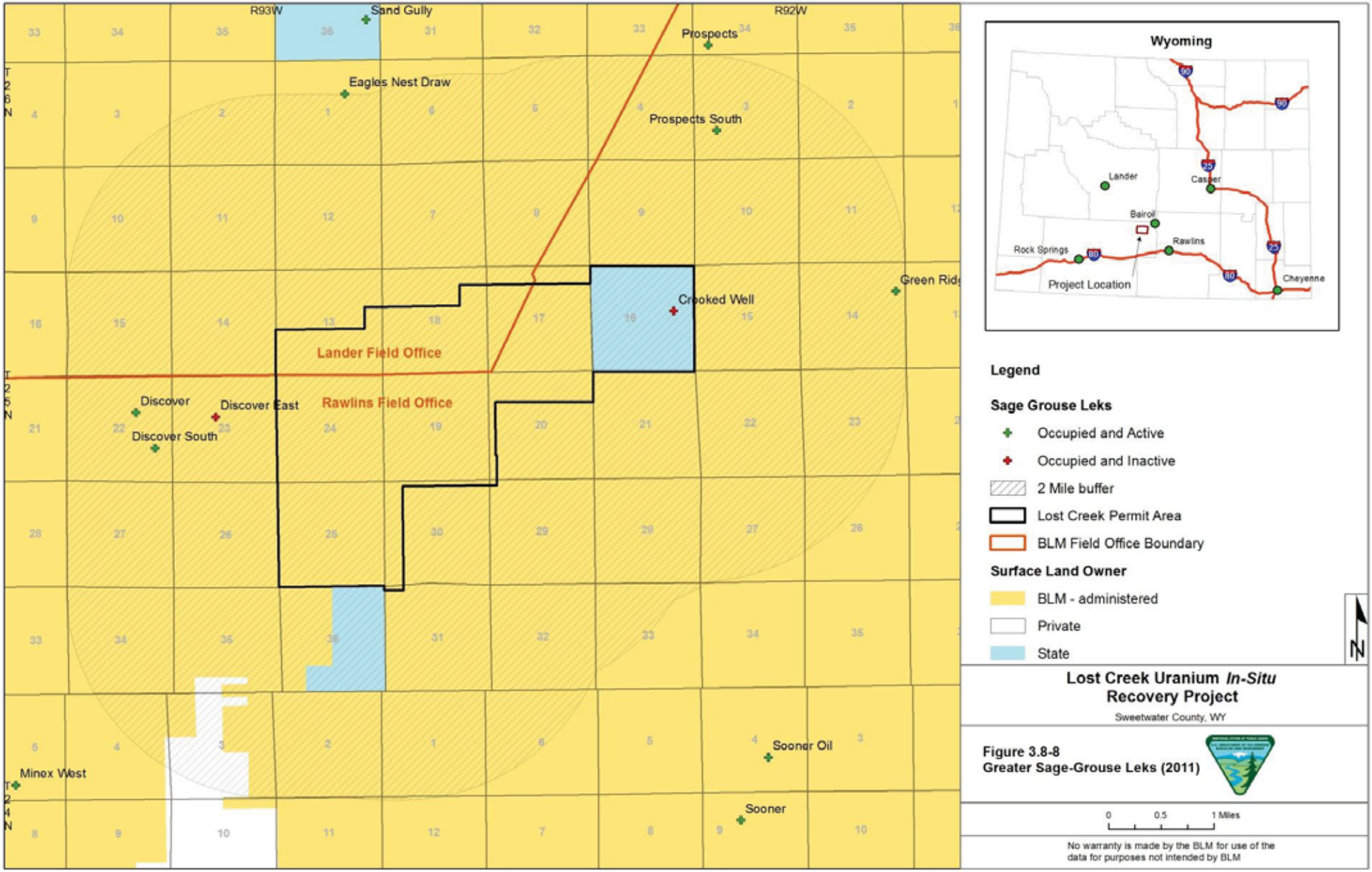

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Sweetwater County, WY

Figure 3.8-8
Greater Sage-Grouse Leks (2011)

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Table 3.8-4 Greater sage-grouse Lek Counts (Page 1 of 9)

Lek Name (alphabetical)	04-08-06	04-13-06	4-14-06	4-20-06	4-21-06	Comments
2006						
Crooked Well	0 m 2 f		0m 0f		0m 0f	Two females observed near the lek site, no displaying males.
Discover	59m 30f	19m 23f		69m 10f		
Discover East		17m 14f		22m 10f		
Eagles Nest Draw	57m 37f	8m 6f			6m 2f	Disturbance by drilling activity within 0.25 miles of lek pushed birds off lek. Not known who was responsible for drilling.
Green Ridge	40m 45f		61m 38f		39m 11f	
Prospects	41m 29f		41m 12f		64m 14f	
Sand Gully	99m 8f		126m 62f		97m 23f	

Table 3.8-4 Greater sage-grouse Lek Counts (Page 2 of 9)

Lek Name (alphabetical)	04-03-07	04-04-07	4-10-07	4-11-07	4-17-07	4-18-07	Comments
2007							
Crooked Well	4m 0f			0m 0f		0m 0f	Males observed in the vicinity of the Crooked Well lek, no displaying was observed.
Discover	15m 19f		23m 0f		19m 7f		
Discover East	2m 0f		3m 0f		12m 0f		
Eagles Nest Draw	13m 6f		22m 3f		6m 4f		
Green Ridge		62m 17f		73m 4f		82m 11f	
Green Ridge Satellite				8m 0f		5m 1f	
Prospects		66m 15f		59m 6f		64m 15f	
Prospects South				7m 0f		10m 0f	
Sand Gully	108m 18f		58m 30f		88m 13f		
Sooner		28m 6f		36m 0f		32m 0f	
Sooner Oil		0m 0f		0m 0f		0m 0f	

Table 3.8-4 Greater sage-grouse Lek Counts (Page 3 of 9)

Lek Name (alphabetical)	04-17-08	4-25-08	5-07-08	5-09-08	5-11-08	Comments
2008						
Crooked Well	0m 0f	0m 0f		0m 0f		
Discover	30m 10f			104m 34f	90m 28f	On the last two days, the birds were located in two groups, one on the traditional lek & one to the south.
Discover East	5m 0f			0m 0f	0m 0f	
Eagles Nest Draw	50m 24f			52m 18f	38m 6f	Lek moved to drilling pad & flat area to east of pad. Coordinates are for traditional lek site.
Green Ridge	58m 7f	58m 4f	44m 3f			
Green Ridge Satellite	0m 0f	0m 0f	0m 0f			
Prospects	58m 8f	66m 6f	62m 7f			
Prospects South	9m 0f	5m 0f	6m 0f			
Sand Gully	72m 23f			62m 16f	41m 3f	
Sooner	18m 6f	18m 2f	26m 2f			
Sooner Oil	0m 0f	0m 0f	0m 0f			

Table 3.8-4 Greater sage-grouse Lek Counts (Page 4 of 9)

Lek Name (alphabetical)	04-02-09	4-07-09	04-08-09	4-15-09	4-21-09	4-22-09	4-28-09	4-29-09	4-30-09	Comments
2009										
Crooked Well	No sign of birds (see Comments).	0m 0f		0m 0f		0m 0f		0m 0f		Completed morning ground survey after evening snow; no tracks or sign.
Discover		22m 1f			8m 0f			22m 0f		
Discover East			0m 0f		0m 0f			0m 0f		No birds observed.
Eagles Nest Draw			32m 2f		30m 3f		47m 2f			Lek still at drilling pad & flat area to east (see 2008). Coordinates are for traditional lek site.
Green Ridge	28m 7f			53m 6f		43m 4f		3m 0f		On April 29th, golden eagle flushed birds.
Green Ridge Satellite	0m 0f			0m 0f				0m 0f		
Harrier						77m 6f			47m 3f	

Table 3.8-4 Greater sage-grouse Lek Counts (Page 5 of 9)

Lek Name (alphabetical)	04-02-09	4-07-09	04-08-09	4-15-09	4-21-09	4-22-09	4-28-09	4-29-09	4-30-09	Comments
2009 (continued)										
Minex West			7m 1f		0m 0f			0m 0f		Lek active early in season.
Osborne Draw	0m 0f				0m 0f		0m 0f			Ground search could find no sign of lek.
Prospects		45m 31f		42m 6f		45m 7f		52m 2f		
Prospects South		1m 1f		2m 0f		2m 0f		1m 1f		
Sand Gully	36m 2f				29m 4f		24m 4f			
Southland Well	49m 59f			0m 2f				45m 0f		
Sooner	12m 16f			21m 2f				16m 1f		
Sooner Oil	0m 0f			0m 0f				0m 0f		
Upper Osborne					25m 4f	60m 7f			55m 2f	

M = males; f = females

Table 3.8-4 Greater sage-grouse Lek Counts (Page 6 of 9)

Lek Name (alphabetical)	Early Count	Count 1	Count 2	Count 3	Count 4
2010[1]					
Crooked Well		0m 0f	0m 0f	0m 0f	
Cyclone Rim		85m 32f	37m 23f	46m 1f	
Discover		15m 4f	12m 2f	0m 0f	14m 0f
Discover East		0m 0f	0m 0f	0m 0f	0m 0f
Discover South		4m 5f	11m 0f	16m 1f	19m 2f
Eagles Nest Draw		19m 11f	46m 6f	26m 0f	
Green Ridge		45m 4f	43m 5f	46m 4f	
Harrier	37m 4f	35m 8f	20m 4f	42m 0f	

M = males; f = females

1. Counts in 2010 were conducted during 3/13/2010 – 5/8/2010.

Table 3.8-4 Greater sage-grouse Lek Counts (Page 7 of 9)

Lek Name (alphabetical)	Early Count	Count 1	Count 2	Count 3	Count 4
2010[1] (continued)					
Minex West	4m 2f	10m 2f	11m 2f	7m 0f	
Osborne Draw	0m 0f	0m 0f	0m 0f	0m 0f	
Prospects		36m 11f	34m 10f	31m 6f	
Prospects South		0m 0f	0m 0f	0m 0f	
Sand Gully		15m 4f	11m 4f	8m 0f	
Sooner		12m 7f	16m 11f	13m 9f	12m 3f
Sooner Oil		0m 0f	0m 0f	0m 0f	0m 0f
Southland Well		40m; 49m	22m; 46m	37m; 40m	33m
Stinking Springs North		6m 1f	5m 0f	2m 0f	
Stratton Camp		22m 0f	20m 2f	0m 0f	26m 0f
Upper Osborne		14m			

M = males; f = females

1. Counts in 2010 were conducted during 3/13/2010 – 5/8/2010.

Table 3.8-4 Greater sage-grouse Lek Counts (Page 8 of 9)

Lek Name (alphabetical)	Count 1	Count 2	Count 3	Count 4	Count 5	Count 6	Count 7
2011[1]							
Crooked Well	0m 0f	0m 0f	0m 0f	0m 0f			
Cyclone Rim	80m 17f	80m 0f	69m 1f				
Discover	10m 4f	11m 9f	10m 1f				
Discover East	0m 0f	0m 0f	0m 0f				
Discover South	18m 5f	19m 4f	14m 0f				
Eagles Nest Draw	59m 100f	48m 12f	11m 0f	57m 2f			
Green Ridge	44m 11f	28m 4f	18m 8f				
Harrier	60m 12f	42m 10f	27m 11f	24m 1f			

M = males; f = females

1. Counts in 2011 were conducted during 3/30/2011 – 5/8/2011.

Table 3.8-4 Greater sage-grouse Lek Counts (Page 9 of 9)

Lek Name (alphabetical)	Count 1	Count 2	Count 3	Count 4	Count 5	Count 6	Count 7
2011[1] (continued)							
Minex West	8m 4f	6m 2f	0m 0f	0m 0f			
Osborne Draw	0m 0f	0m 0f	0m 0f	0m 0f			
Prospects	27m 4f	26m 12f	30m 2f				
Prospects South	0m 0f	2m 1f	3m 2f				
Sand Gully	5m 1f	2m 0f	2m 1f				
Sooner	17m 11f	0m 0f	18m 10f	24m 10f			
Sooner Oil	0m 0f	7m 3f	1m 1f	0m 0f			
Southland Well	40m 14f	22m 1f	42m 49f	21m 2f	42m 2f	49m 6f	42m 1f
Stinking Springs North	0m 0f	1m 0f	0m 0f				
Stratton Camp	20m 6f						
Upper Osborne	24m 3f	23m 4f	31m 17f	27m 2f			

M = males; f = females

1. Counts in 2011 were conducted during 3/30/2011 – 5/8/2011.