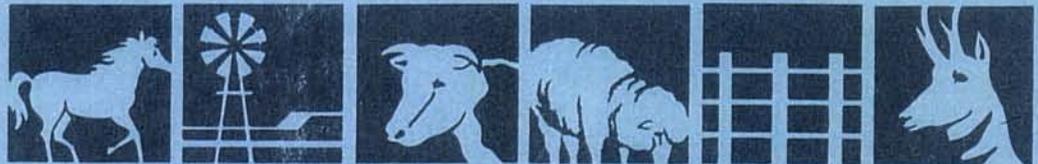


Frank



United States Department of the Interior
Bureau of Land Management
Rawlins District



SEVEN LAKES

Grazing Environmental Statement

DEPARTMENT OF THE INTERIOR

FINAL

ENVIRONMENTAL STATEMENT

PROPOSED DOMESTIC LIVESTOCK

GRAZING MANAGEMENT PROGRAM

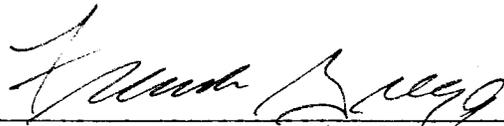
FOR THE

SEVEN LAKES AREA

Prepared by

BUREAU OF LAND MANAGEMENT

DEPARTMENT OF THE INTERIOR



Director, Bureau of Land Management, Washington, D.C.

SUMMARY

() Draft (X) Final Environmental Statement

Department of the Interior, Bureau of Land Management-lead Agency

1. Type of Action: (X) Administrative () Legislative

2. Brief Description of Action: The Seven Lakes ES area is situated 20 miles northwest of Rawlins, Wyoming, and encompasses 512,854 acres. Proposed use for the area is 54,869 winter sheep animal unit months (AUMs) for livestock: 1,325 winter sheep AUMs for wildlife; and 464 winter sheep AUMs for wild horses. The proposed action is to fully implement three allotment management plans (AMPs) on areas suitable for grazing within 5 years after completion of this ES. These AMPs would consist primarily of deferred rotation or deferred grazing systems for 15 livestock operators. Livestock rotation would be accomplished by fencing, herding, and selected water developments. This would require approximately 44 miles of allotment boundary fence and 36 water developments.

3. Summary of Environmental Impacts: Vegetation would improve in quality and quantity, providing increased litter and slight increases in vegetative cover. Approximately 230,000 additional acres would be made suitable for grazing cattle. Terrestrial wildlife habitat would remain stable or in improved condition. This would insure that present big game population objectives would be met. Slight increases in income would result from the proposed action.

Adverse impacts would include trampling damage to some archeological sites. Aquatic and riparian wildlife habitat would remain stable or decrease in quality. Construction of range improvements could destroy subsurface archeological sites. Fences would increase the risk of mortality to pronghorn and wild horses. They would also limit the free-roaming character of the wild horses. Activation of all licensed livestock forage which is presently in nonuse would increase forage and cover competition between wildlife and livestock.

4. Alternatives Considered:

1. No action;
2. Elimination of livestock grazing;
3. Implementation of the proposed action without fencing;
4. Reduced licensed livestock use with additional consideration for wildlife crucial areas;
5. Livestock grazing at the level of proposed action with no changes in class of livestock;
6. The proposed action with additional fencing;
7. Maximize wild horses and wildlife.

5. Comments have been Requested and Received from the Following:

See page ii. Comments on the draft statement were received from those agencies and organizations marked with an asterisk.

6. Draft Statement Made Available for E.P.A. and the Public: July 13, 1978.

7. Final Statement Made Available for E.P.A. and the Public:

Comments on the draft environmental statement were requested and received from the following agencies and interest groups.

Federal Agencies

- *Environmental Protection Agency
- *National Advisory Council on Historic Preservation
- *Nuclear Regulatory Commission

Department of Agriculture

- *U. S. Forest Service
- *Soil Conservation Service

Department of the Interior

- *U. S. Fish and Wildlife Service
- *Heritage Conservation and Recreation Service
- *Bureau of Mines
- *National Park Service
- Bureau of Reclamation
- *U. S. Geological Survey

State Agencies

- *Governor's Clearing House (Distributes to State Agencies)

Local Government

- Mayor of Rawlins
- *Sweetwater County Planning and Zoning Commission
- Carbon, Fremont, and Sweetwater County Commissioners
- Carbon and Fremont County Planning and Zoning Commissions

Other Organizations

- Natural Resources Defense Council (NRDC)
- Public Lands Council
- Wyoming Stockgrowers Association
- *Wyoming Woolgrowers Association
- The Wildlife Society, Wyoming Chapter
- Sierra Club
- *Old West Rangeland Monitoring Project
- Wild Horse Organized Assistance, Inc. (WHOA)
- *Wyoming Wildlife Federation
- *Friends of the Earth
- Wyoming Outdoor Council
- Carbon County Conservation Club
- Fremont County Audubon Society
- National Audubon Society
- Izaak Walton League
- Council for Agricultural Science and Technology (CAST)
- *Wilderness Society
- *Defenders of Wildlife
- Wyoming Historical Society
- *Wyoming Farm Bureau
- *American Horse Protection Association
- Carbon County Farm Bureau
- *University of Wyoming
- *International Society for the Protection of Mustangs and Burros
- Carbon County Extension Service
- *Society for Range Management
- National Wildlife Federation
- American Sheep Producers
- National Mustang Association
- National Wild Horse Association

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CHAPTER 1

DESCRIPTION OF THE PROPOSED ACTION

BACKGROUND

This environmental statement for livestock grazing management has been prepared in compliance with Section 102(2)(c) of the National Environmental Policy Act (NEPA), 42 U.S.C. 4321 et. seq.

The ES area (Figure 1-1) is located within the nationally known Red Desert and helps support the nation's largest migratory herd of pronghorn (personal communication Wyoming Game and Fish Department). Approximately 95% (490,000 acres) is within the Great Divide Basin of Wyoming. The ES area is generally undeveloped. Developments consist primarily of limited range improvements, roads, and mineral extraction facilities. Access is mainly on unmaintained trails and roads.

The boundary of the Seven Lakes ES area conforms to the boundary of the Seven Lakes Planning Unit of the Divide Resource Area with one major exception. The Arapahoe Creek allotment (181,660 acres) was omitted because Green Mountain livestock operators have historically used this portion of the Seven Lakes Planning Unit in conjunction with the Green Mountain Unit; therefore, the Arapahoe Creek allotment will be included in the forthcoming Green Mountain Grazing Environmental Statement (Map 2-19). Both the Divide Resource Area and the Green Mountain Unit area are part of the Rawlins District.

The use of the area has been changing over the last 20 years as the nation's energy demands have prompted petroleum and uranium exploration and development. While this activity is evident in most portions of the Seven Lakes ES area, it has not dominated the open space qualities inherent to the basin.

The history of livestock use in the ES area focuses on sheep grazing. However, sheep use is declining (Table 1-1 and Figure 1-2) and many livestock operators have expressed a desire to convert sheep use qualifications to cattle use. The requested conversions from sheep to cattle have not been allowed by BLM, pending a full assessment of the environmental impacts. Seven out of fifteen operators in the Seven Lakes ES area have requested changes of use through personal meetings, letters, or public meetings. All requests have been made formally, in writing, to the Divide Resource Area, Rawlins District Office, Rawlins, Wyoming.

Currently the Seven Lakes ES area is divided into two uncommon allotments, the Seven Lakes allotment and the Ferris allotment (Map 2-19). The ES area contains 512,854 acres and is 94% public land (Table 1-2 and Map 1-1). BLM's policy is to manage the public land for mul-

tipale use. Present uses and values, in addition to domestic livestock grazing, include: use by about 3,800 winter pronghorn and 4,500 summer pronghorn; use by 240 wild horses year-round; use by 175 mule deer year-round; recreational use consisting primarily of hunting; and considerable petroleum and uranium production and exploration.

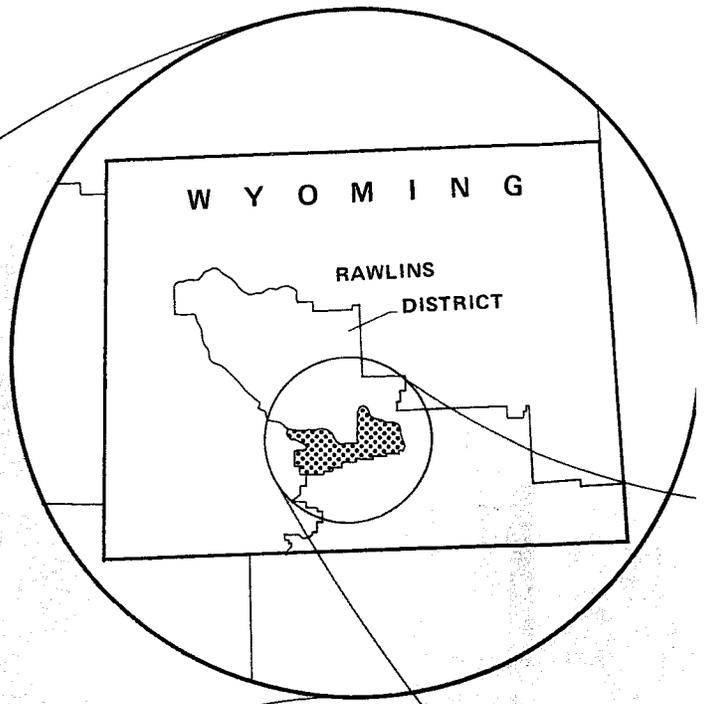
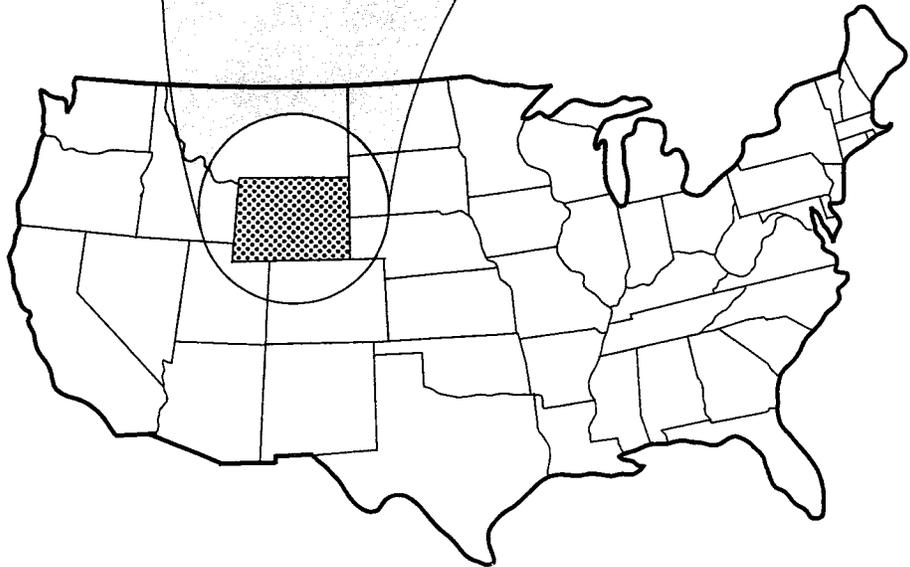
PROPOSED ACTION

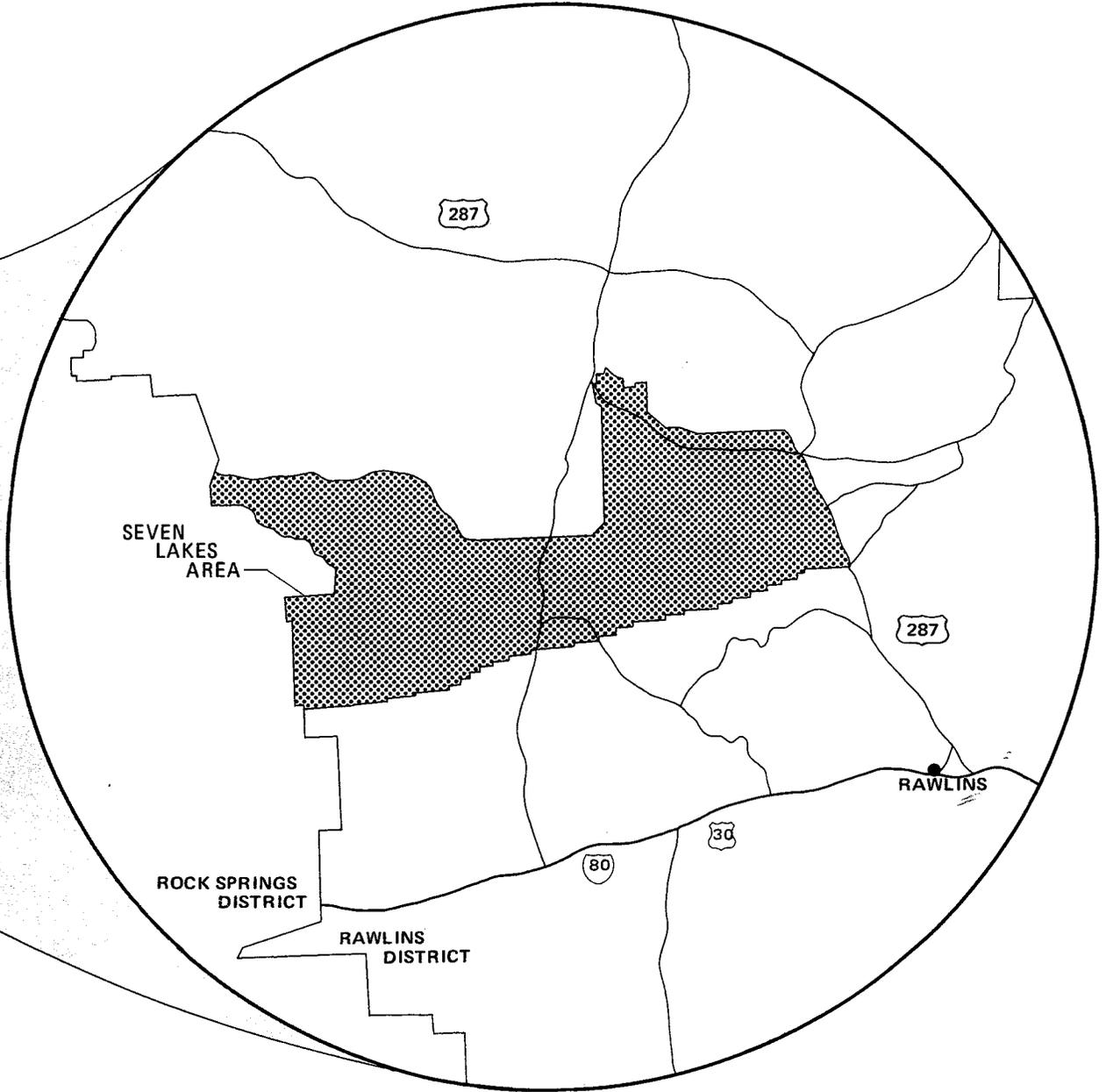
General

The proposed action by the BLM is to implement livestock grazing management systems in the Seven Lakes ES area. The proposed livestock grazing program would change the existing grazing use, which is described in Chapter 2. Table 1-3 provides a summary comparison of the proposed action with the existing situation for the ES area.

Under the proposed action, the Seven Lakes ES area would be divided into three separate grazing areas (allotments), i.e., the two existing uncommon allotments would be divided into these allotments (Ferris, Stewart Creek and Cyclone Rim). An allotment management plan (AMP) for each area would be implemented to improve or maintain the forage, watershed, soil conditions, wildlife habitat, and/or recreational values. The Cyclone Rim allotment is proposed primarily as a winter use area for both sheep and cattle. The Ferris allotment is proposed as a winter sheep and summer cattle area, and the Stewart Creek allotment is designed mainly for summer cattle use. The proposed allotments are shown on Map 1-1 and in Table 1-2.

The purposes of the proposed action would be: (1) to supply 464 winter sheep animal unit months (AUMs) (see Appendix B-2-7) of forage for wild horses in accordance with the draft Seven Lakes Herd Management Area Plan (HMAP), which plans for a maximum of 135 wild horses in the ES area; (2) to furnish 3,434 winter sheep AUMs of forage for wildlife (Table 1-4 states that 1,325 AUMs are proposed to be used by mule deer and pronghorn; the difference between 3,434 and 2,152 is the number of AUMs furnished but not used by mule deer and pronghorn); (3) to make 81,926 acres suitable for summer cattle use and 149,416 acres suitable for winter cattle use which are presently potentially suitable because of a lack of water and low vegetative production; (4) to enable seven





GENERAL LOCATION

Seven Lakes Grazing
Environmental Statement

Figure 1 - 1

TABLE 1-1
 PAST AUTHORIZED LIVESTOCK USE
 (Expressed in Animal Unit Months--AUMs)*

Seven Lakes Incommon Allotment						
Year	Sheep			Cattle		
	Active	Nonuse	Percent Nonuse	Active	Nonuse	Percent Nonuse
1972	18,786	34,698	64.8	7,829	2,810	26.4
1973	18,646	34,838	65.1	6,206	4,433	41.6
1974	17,002	36,482	68.2	8,875	1,764	16.5
1975	18,997	34,323	64.3	8,506	2,133	20.0
1976	17,076	35,451	67.5	8,948	2,448	21.5
Average	18,101	35,158	66.0	8,073	2,718	25.2

Ferris Incommon Allotment						
Year	Sheep			Cattle		
	Active	Nonuse	Percent Nonuse	Active	Nonuse	Percent Nonuse
1972	2,969	2,660	47.2	176	0	0
1973	4,431	1,198	21.2	176	0	0
1974	3,632	1,997	35.4	176	0	0
1975	3,082	2,547	45.2	176	0	0
1976	2,563	2,901	53.0	341	0	0
Average	3,335	2,261	40.4	209	0	0

The above figures represent licensed active use and nonuse of federal grazing privileges. Some 93% of the livestock AUMs in the Seven Lakes incommon allotment are federal, and 88% of the AUMs in the Ferris incommon allotment are federal.

The Table 1-1 figures were derived from the actual licensed use from 1972-1976, based on two incommon allotments, which have more acreage than the ES area, i.e., the figures include use on the Arapahoe Creek allotment which has been excluded from the Seven Lakes incommon allotment of the ES area. Active use for the ES area is estimated to be 26,105 AUMs (Appendix and B-1-3).

*An animal unit month (AUM) is the amount of forage required to sustain the equivalent of one cow or five sheep for one month.

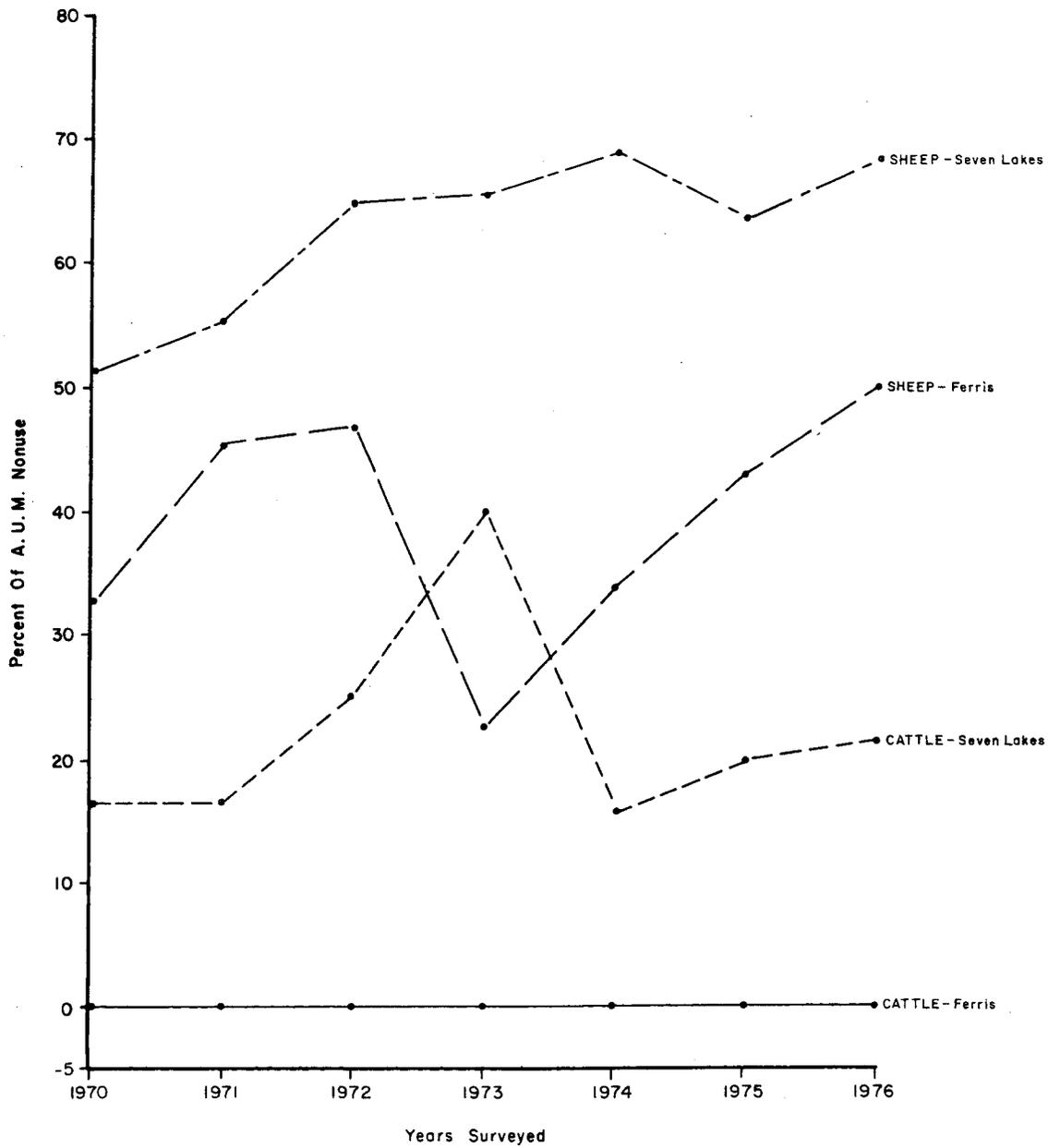


Figure 1 - 2
**NONUSE TRENDS FOR LIVESTOCK
 IN THE SEVEN LAKES E.S. AREA**

TABLE 1-2
 ACREAGES OF THE THREE PROPOSED GRAZING ALLOTMENTS
 IN THE SEVEN LAKES ES AREA

<u>Allotment</u>	<u>Public Land</u>	<u>%</u>	<u>State</u>	<u>%</u>	<u>Private</u>	<u>%</u>	<u>Total</u>
Ferris	61,284	90	4,935	7	2,126	3	68,345
Stewart Creek	178,932	95	9,891	5	168	1	188,991
Cyclone Rim	243,424	95	11,250	4	844	<1	255,518
Total	483,640	94	26,076	5	3,138	<1	512,854

1 CYCLONE RIM ALLOTMENT
255,518 Acres

2 STEWART CREEK ALLOTMENT
188,991 Acres

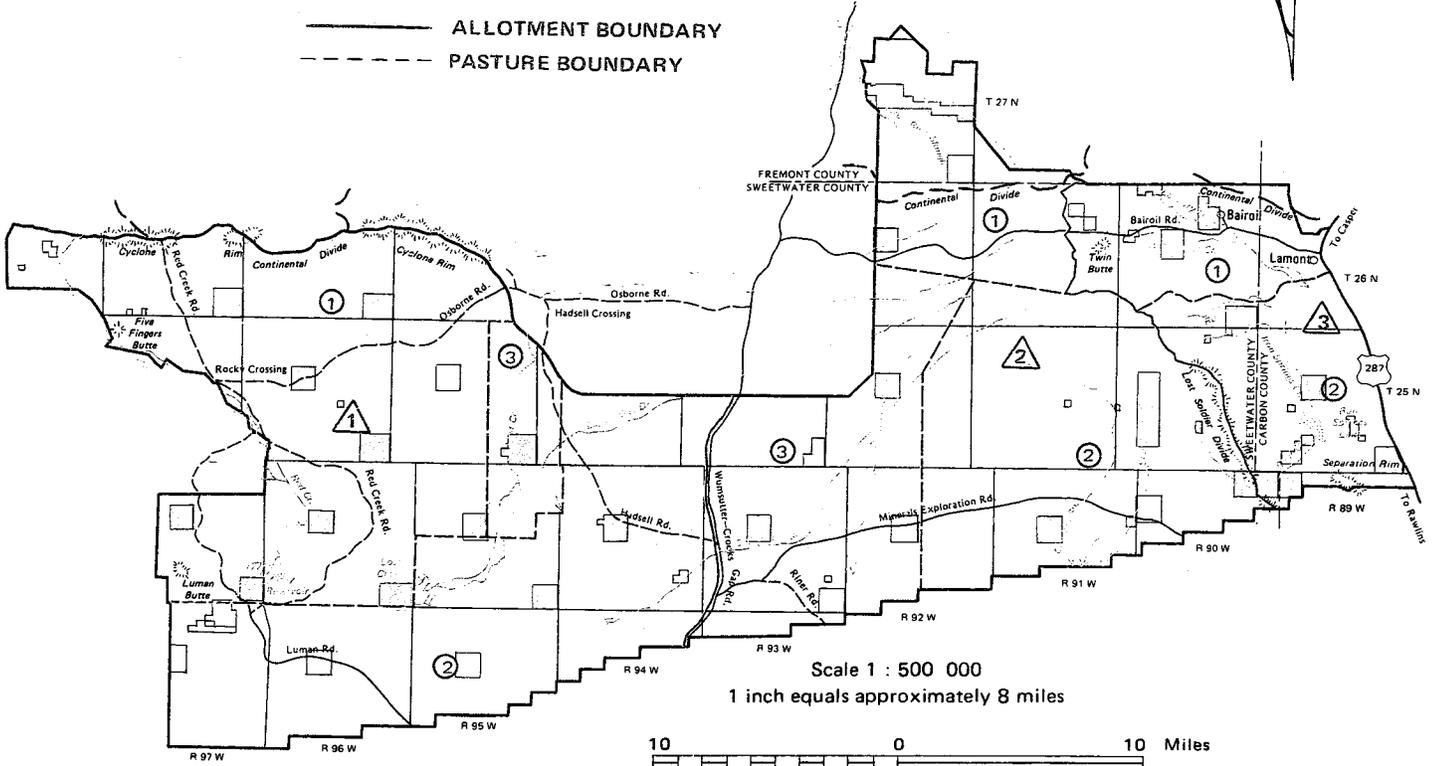
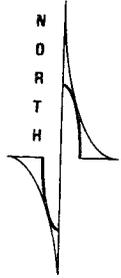
3 FERRIS ALLOTMENT
68,345 Acres

- PASTURES
- ① CYCLONE
130,216 acres
 - ② LUMAN
109,794 acres
 - ③ LOST CREEK
15,508 acres

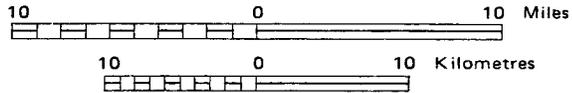
- PASTURES
- ① SAND SPRING
39,647 acres
 - ② CHICKEN SPRING
86,768 acres
 - ③ OSBORNE WELL
62,576 acres

- PASTURES
- ① LOST SOLDIER
29,500 acres
 - ② BULL SPRINGS
38,845 acres

———— ALLOTMENT BOUNDARY
- - - - PASTURE BOUNDARY



Scale 1 : 500 000
1 inch equals approximately 8 miles



LEGEND

- FEDERAL HIGHWAY
- COUNTY ROADS
- BLM ROADS
- TOWNS

- PUBLIC LANDS (ADMINISTERED BY BUREAU of LAND MANAGEMENT)
- STATE LANDS
- PRIVATE LANDS
- CONTINENTAL DIVIDE

**LAND STATUS BY
PROPOSED ALLOTMENT AND PASTURE
Seven Lakes Grazing
Environmental Statement**

TABLE 1-3
 SUMMARY COMPARISON OF THE PROPOSED ACTION
 AND THE EXISTING SITUATION

	Number of <u>Allotments</u>	Number of <u>Operations</u>	<u>Type of Operation</u>			Livestock Use (AUMs)	Livestock Qualifications (AUMs)	Forage Production (AUMs)
			<u>Cattle</u>	<u>Sheep</u>	<u>Sheep and Cattle</u>			
Proposed Action	3	15	6	7	2	54,869	54,869	64,707*
Existing Situation	2	21**	6	13	2	26,105	58,687	60,620

*Long-term (1998) production of forage in terms of properly usable and suitable winter sheep AUMs (see Table 3-6).

**Six cattle operations presently using portions of the Seven Lakes ES area would have their use authorized in an adjacent area to the north (Green Mountain unit) under the proposed action.

TABLE 1-4
PROPOSED FORAGE USE BY ALLOTMENT

Allotment (& Acreage)	Grazing System	Class of Livestock/ Species	Season of Use ¹	Number of Animals ²	AUMs ³			Total AUMs	Total lbs. of Forage use ⁴
					Public	State	Private		
Ferris (68,345)	two-pasture deferred rotation	cattle ⁵	5/15 - 10/15	98	884	110	19	1,013	382,200
		sheep	11/1 - 3/31	3,882	3,591	239	52	3,882	1,746,900
	mule deer ⁶ wild horse ⁷ pronghorn ⁸	yearlong	25	34			34	108,000	
		yearlong	21	72			72	226,800	
		5/1 - 10/31	1,665	201			201	539,460	
	pronghorn	11/1 - 4/30	1,300	<u>514</u>			<u>514</u>	<u>421,200</u>	
	Allotment Total					5,296 ⁹	349	71	5,716
Stewart Creek (188,991)	three-pasture deferred rotation	cattle	5/20 - 10/31	1,125	9,750	501	9	10,260	4,679,971
		sheep	11/1 - 3/31	6,166	6,081	78	7	6,166	2,774,700
	mule deer wild horse pronghorn	yearlong	75	90			90	324,000	
		yearlong	57	196			196	615,600	
		5/1 - 10/31	1,890	159			159	612,360	
	pronghorn	11/1 - 4/30	1,250	<u>488</u>			<u>488</u>	<u>405,000</u>	
	Allotment Total					16,764	579	16	17,359

TABLE 1-4 (CONTINUED)
PROPOSED FORAGE USE BY ALLOTMENT

Allotment (& Acreage)	Grazing System	Class of Livestock/ Species	Season of Use ¹	Number of Animals ²	AUMs ³			Total AUMs	Total lbs. of Forage Use ⁴
					Public	State	Private		
Cyclone Rim (255,518)	three-pasture seasonal discontinuous	cattle ⁵	10/1 - 3/31	934	7,716	188		7,904	4,371,120
		sheep	11/1 3/31	23,909	22,587	1,305	17	23,909	10,759,050
	one-pasture seasonal	sheep	5/1 - 7/15	1,836	1,735			1,735	688,500
		mule deer ⁶	yearlong	75	32			32	324,000
		wild horse ⁷	yearlong	57	196			196	615,600
		pronghorn ⁸	5/1 - 10/31	945	166			166	306,180
		pronghorn	11/1 - 4/30	1,250	468			468	405,000
Allotment Total					32,900	1,493	17	34,410	17,469,450
GRAND TOTAL					54,960	2,421	104	57,485	30,305,641

1 Season of Use--Period of time livestock would use each allotment under the proposed action.

2 Livestock use after development of range improvements (fences, water, etc.) (5 years).

3 Total proposed livestock use on public, state, and private lands included in the proposed action (see Table 1-2).
Use on state and private lands would be authorized by exchange-of-use agreement.

All use in AUMs expressed on a winter sheep basis (see Appendices B-2-7 and B-1-1).

4 Total forage use is calculated by multiplying the number of months a class of animal is on the range by the number of animals and then multiplying that product by the pounds of forage consumed by that class of animal in a month.

5 One cow consumes 780 pounds of forage per month and one sheep consumes 150 pounds per month in summer and 90 pounds per month in the winter (Rice 1975).

6 A mule deer consumes 360 pounds of forage per month (Rue 1968).

7 A wild horse consumes 900 pounds of forage per month (Rice 1975).

8 A pronghorn consumes 54 pounds of forage per month (Severson, May, and Hepworth 1968).

9 Includes a 24 AUM underallocation to wildlife in Ferris allotment.

DESCRIPTION OF PROPOSED ACTION

livestock operators to change their class of livestock from sheep to cattle; (5) to eliminate livestock use on 4 acres of waterfowl habitat; and (6) to authorize 54,869 AUMs (on a winter sheep basis) of livestock forage consumption for sheep and cattle upon full implementation of AMPs. Table 1-4 shows proposed use levels by livestock, wild horses, and big game in the ES area upon AMP implementation. The methodology used to determine forage production is described in Appendix B-2-7.

Allotment Management Plans

The AMPs would be implemented on the three allotments over a 5 year period. The draft AMPs, which document the grazing management proposals for each allotment, are available for review in the Rawlins District Office. Each plan includes: (1) a brief description of the location and character of the allotment; (2) a list of the management framework plan (MFP) constraints and resource problems to be addressed; (3) a list of objectives to be accomplished by livestock management; (4) identification of key areas and their vegetative composition; (5) a list of key vegetative species and their important phenological dates; (6) a description of the proposed grazing systems, including grazing use authorization; (7) provision for changes in authorized use; (8) a description of licensing and billing procedures; (9) a description of the studies to be made to monitor use and evaluate the plan; and (10) a schedule of range project development. Each AMP was prepared following a review and analysis of resource data, a review of management framework plan (MFP) decisions, and meetings with livestock operators.

Prior to AMP design, BLM developed proposed seasons of use and proper livestock grazing capacity for each of the three allotments and proposed forage allocations for wildlife and wild horses in each allotment. Table 1-4 depicts the proposed use on each allotment by livestock, wildlife and wild horses. Table 1-4a provides a summary of the proposed use as compared to present forage production. The livestock use proposed is derived by applying suitability criteria (Appendix B-1-4) to the results of the 1975-1976 weight estimate forage survey of the Seven Lakes Planning Unit (available for review in Rawlins District Office).

Forage for wild horses is reserved in accordance with MFP decisions and the draft Seven Lakes HMAP. The draft HMAP calls for the management of a maximum of 135 horses. Forage for wildlife is reserved as detailed in Appendix B-1-1. The remaining suitable, properly usable forage is allocated to fifteen existing livestock operators in the area in proportion to their present grazing privileges. The proposed livestock forage allocations represent reductions from the existing allocations of 27.5% (1,871 AUMs) in the Ferris uncommon allotment and 8.2% (5,582 AUMs) in the Seven Lakes uncommon allotment.

The proposed action includes dividing a portion of the existing Seven Lakes uncommon allotment into the Stewart Creek and Cyclone Rim allotments as well as adding

a portion of the existing Green Mountain uncommon allotment to the Stewart Creek allotment. Livestock drift is proposed to be controlled by a fence on the north boundary of the Cyclone Rim and Stewart Creek allotments. The boundary and users of the Ferris allotment would remain unchanged from the existing situation.

Change in class of livestock is provided for in each of the draft AMPs. Conversion ratios are established for each allotment (see Appendix B-1-1), based upon the suitable, properly usable forage available for each class of livestock in each allotment.

A benefit/cost analysis was conducted on each draft AMP. Results of the analyses are in Table 1-5. The benefit/cost studies and the methodology used are available for review at the Rawlins District Office.

Specific Objectives

The AMPs would guide the management of the Ferris, Stewart Creek, and Cyclone Rim allotments. Table 1-6 lists the specific objectives of each AMP.

Grazing Management

Grazing systems are accepted methods of proper rangeland management. The following statements by Stoddart, Smith, and Box (1975) reflect the thoughts of many range management specialists:

"Range forage is one of the most important resources for meeting the red meat requirements of the world's human population. In the past it has been exploited through heavy, uncontrolled grazing. Today there are principles of scientific management that can be applied to improve the range resource and insure a sustained yield of goods and services from rangeland. In order to apply these principles, grazing must be planned and the plan executed. Several planned-grazing systems are available to improve range productivity.

"The first consideration in planning range use is to ensure that the basic plant and soil resources are used in such a way that they continue to be productive under the grazing system employed.

"The selection of a particular system will depend upon the kind of vegetation, the physiography of the range, the kind of animals, and the management objectives of the operator.

"Continuous grazing wherein livestock are placed on the range and allowed to remain yearlong or throughout the grazing season has been shown to result in undesirable successional changes in range forage. To prevent this, specialized systems of grazing management have been used widely. Although differing greatly in details, they have two features in common, a period of rest to allow forage plants to grow unmolested and a systematic grazing schedule among different parts of the range.

"The objectives sought are (1) restoring vigor to forage plants, (2) allowing plants to produce seed, (3) attaining heavier and more uniform utilization, and (4) increasing animal production"

TABLE 1-4a
COMPARISON OF PROPOSED USE TO PRESENT FORAGE PRODUCTION ^{1/}

<u>Allotment</u>	<u>Proposed Use in AUMs</u>				<u>Total Use</u>	<u>Present Forage Production in AUMs</u>
	<u>Sheep</u>	<u>Cattle</u>	<u>Wildlife</u>	<u>Wild Horses</u>		
Ferris	3,882	1,013	749	72	5,716	5,625
Stewart Creek	6,166	10,260	737	196	17,359	19,710
Cyclone Rim	<u>25,644</u>	<u>7,904</u>	<u>666</u>	<u>196</u>	<u>34,410</u>	<u>35,285</u>
TOTAL	35,692	19,177	2,152	464	57,485	60,620

^{1/} All use and production figures are expressed as winter sheep AUMs (see Appendices B-1-1 and B-2-7).

TABLE 1-5
BENEFIT/COST ANALYSES OF DRAFT
ALLOTMENT MANAGEMENT PLANS

<u>Allotments</u>	<u>B/C Ratio</u>
Ferris	.84:1
Stewart Creek	1.07:1
Cyclone Rim	1.26:1

Each benefit/cost ratio shown above is a ratio of the increase in revenue from the proposed action over the present situation which would be produced over the 20-year analysis period (discounted to present value) over a similar increase in costs. That is, for every dollar of increased costs associated with the proposed action, an \$.84 increase in revenue would be obtained for the Ferris allotment.

TABLE 1-6
AMP OBJECTIVES BY ALLOTMENT

Ferris

1. Increase properly usable livestock AUMs (winter sheep basis-- Appendix B-2-7) on all lands in the allotment from 4,828 to 5,652 within 15 years by implementing grazing management systems.

2. Continue to provide 725 AUMs of forage (winter sheep basis) for wildlife.

3. Continue to provide 72 AUMs of forage (winter sheep basis) for wild horses.

4. Increase vegetative canopy cover through livestock management in two key areas*** (study sites to monitor management results) from:

- 1) 21% to 30%
- 2) 16% to 20%

Stewart Creek

1. Increase properly usable livestock AUMs (winter sheep basis) on all lands in the allotment from 18,558 to 20,332 within 15 years by implementing grazing management systems.

2. Continue to provide 956 AUMs of forage (winter sheep basis) for wildlife.

3. Continue to provide 196 AUMs of forage (winter sheep basis) for wild horses.

4. Increase vegetative cover 10% in the Sand Spring and Chicken Spring pastures and 20% in the Osborne Well pasture.

5. Increase the relative percentages of the identified key species (Table 1-7) by 5% in the key areas within 15 years of full implementation of the AMP.

6. Lower the SSF* values in the key areas by 10% within 15 years of full implementation of the AMP.

Cyclone Rim

1. Increase properly usable livestock AUMs (winter sheep basis) on all lands in the allotment from 33,336 to 41,452 within 15 years by implementing grazing management systems.

2. Continue to provide 1,753 AUMs of forage (winter sheep basis) for wildlife.**

3. Continue to provide 196 AUMs of forage (winter sheep basis) for wild horses.

4. Increase vegetative cover through Livestock management in five key areas from:

- 1) 40% to 61%
- 2) 27% to 61%
- 3) 36% to 45%
- 4) 31% to 34%
- 5) 49% to 59%

5. Improve 70% of the acreage that is now in poor range condition for cattle and sheep to fair condition within 15 years of full implementation of the AMP.

*SSF: Soil Surface Factor, a number from 1 to 100 that indicates the erodibility of a site - the greater the number, the greater the erodibility.

**The proposed reservation of AUMs of forage for wildlife in the AMP objectives for the three allotments total 3,434. The proposed use by wildlife in Table 1-4 is 1,325 AUMs. The two figures are not the same because one is proposed use, i.e., the forage initially required by existing populations; and the other is the proposed reservation, i.e., the total allocated forage.

***A key area is a portion of range, which, because of its location, grazing or browsing value, and/or use, serves as an indicative sample of range conditions, trend, or degree of use seasonally.

DESCRIPTION OF PROPOSED ACTION

Studies of grazing systems conducted by Johnson (1965), Ratliff and Reppert (1974), and Hormay (1970) support the anticipated results of proper rest and systematic grazing.

Stoddart, Smith, and Box (1975) concluded, "Despite their disadvantages, proper deferred-rotation and rest-rotation schemes offer the range manager one of the most important tools in obtaining sustained productivity from rangelands"

To accomplish the specific objectives outlined in Table 1-6, each draft AMP proposes a grazing system including some form of deferment, rotation, and/or seasonal discontinuous grazing. Under the grazing system, each allotment would be divided into two or more grazing pastures which would be grazed by livestock or deferred from livestock use in a prescribed manner designed to accomplish the objectives.

The selection of the specific proposed grazing system to be applied to each of the three allotments was based upon several factors: (1) the effects of livestock grazing and livestock management facilities (fences and water developments) upon all the resources of the area; (2) simplicity (i.e., minimizing the number of pastures and livestock handling). Complex systems were simplified during planning because they require extensive fencing, which conflicts with other uses, or require excessive expenditure of time and money on livestock control by livestock operators; (3) range suitability for different kinds of livestock based upon the 1975-1976 Seven Lakes weight estimate range survey; (4) the needs and wishes of the livestock operators if they do not seriously conflict with resource values. The season of use in each allotment was determined by the physiology of the key range plants (specifically, the plants' needs for rest from grazing during early growth stages), and by the livestock operator's need to coordinate livestock grazing on public land with grazing on other federal, state or private land.

Under the proposed action, deferred systems would be used on two allotments (Ferris and Stewart Creek), affecting 257,336 acres and 22,391 AUMs (Table 1-7). Deferred grazing systems postpone grazing on alternating pastures until after seedripeness time of most key forage species (Table 1-8), allowing the forage plants in these allotments an opportunity to complete growth and reproductive processes.

The Cyclone Rim allotment would have a seasonal discontinuous system that would affect 255,518 acres and 34,267 AUMs. Summer sheep grazing would account for 1,735 AUMs (Table 1-4). The remainder of the livestock use (31,813 AUMs) would be winter cattle and sheep use. The light grazing use during the growing season is designed to allow the key forage species to complete growth and reproductive processes.

Grazing Treatments. Seven grazing treatments (A through G) are proposed. Figure 1-3 shows grazing treatments by pasture through one complete grazing cycle. Table 1-8 describes the phenology of key forage species in each allotment.

Treatment A. Graze from May 1 until Seedripeness of Key Species (August 1), Then Rest until Winter Grazing. Cattle movement would be controlled by topography,

placement of water facilities, partial allotment boundary fences, and herding. Sheep movement would be controlled by herding. Sheep bands would be required to be moved at least every 7 days a minimum distance of 1½ miles in the Ferris and Stewart Creek allotments and 3 miles in the Cyclone Rim allotment. The minimum distance is determined by computing the radius of an area of a given grazing capacity that would be properly grazed in 7 days by a band of sheep. The minimum distance the band must be moved is twice that radius, and thus assures that the same area would not receive continuous use.

Treatment B. Rest until Seedripeness of Key Species (August 1), Then Graze to Trample Seed into Soil until October 31. This treatment would defer grazing in a pasture until the important range plants have produced mature seeds.

Treatment C. Graze Season-Long Through the Winter (November 1-March 31). This treatment would be used with sheep, which would be moved as described in treatment A.

Treatment D. Graze Season-Long Through the Summer (May 20-October 31).

Treatment E. Graze October 1 Through January 15. This treatment would be used with cattle and sheep. The sheep would be moved as described in treatment A.

Treatment F. Rest Yearlong. Under this treatment, the pasture would not be grazed during the year.

Treatment G. Graze During the Period December 15 Through March 31. This treatment would be used with sheep and cattle, which would be moved and controlled as described in treatment A.

Table 1-9 shows the treatments given each pasture through one complete cycle of the grazing systems. Table 1-10 shows the acreage subjected to each grazing treatment through one complete cycle.

Grazing Systems. The seven grazing treatments are put together in various combinations to form grazing systems. The grazing system proposed for each allotment is determined by applying the factors discussed earlier in the Grazing Management section.

In the Ferris allotment, the proposed grazing system would be a two-pasture deferred-rotation system with season-long winter sheep grazing. Under this system, the allotment would be divided into two pastures of nearly equal carrying capacity. Cattle would be grazed the first year in Bull Spring pasture from the beginning of the season (May 15) until seedripeness of the key forage species (August 1). All cattle would then be moved into Lost Soldier pasture, which would be grazed for the remainder of the summer season (August 1 through October 15). Bull Spring pasture would be rested from August 1 to October 31. Sheep would be grazed in both pastures throughout the winter season (November 1 through March 31). In the second year in the Ferris allotment, cattle would be grazed in the Lost Soldier pasture from May 15 through July 31. They would all be moved to the Bull Spring pasture to graze from August 1 through October 15. Sheep would be grazed in both pastures

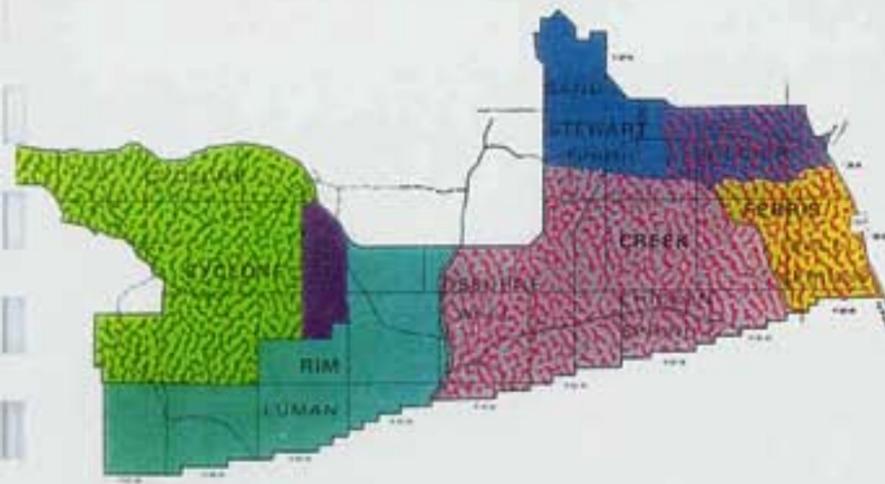
TABLE 1-7
SUMMARY OF PROPOSED GRAZING SYSTEMS

Grazing System	Allotments	Total AUMs*	Total Acres in Allotment
Deferred rotation			
Two-pasture	Ferris	5,246	68,345
Three-pasture	Stewart Creek	<u>17,145</u>	<u>188,991</u>
Subtotal		22,391	257,336
Seasonal discontinuous			
Three-pasture	Cyclone Rim	<u>34,267</u>	<u>255,518</u>
Total		56,658	512,854

*AUMs proposed to be used by livestock, wild horses, and big game species, expressed on a winter sheep basis (see Appendix B-2-7).

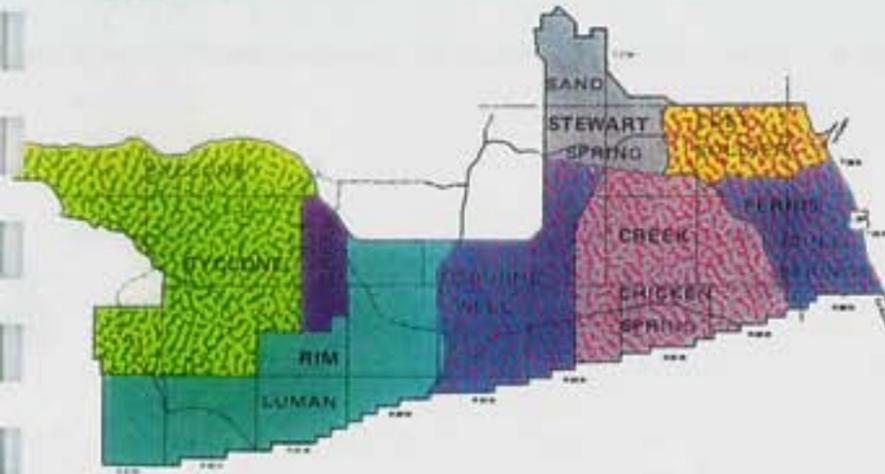
TABLE 1-8
PHENOLOGY OF KEY FORAGE SPECIES BY ALLOTMENT

<u>Allotment</u>	<u>Species</u>	<u>Common Names</u>	<u>Start Growth Date</u>	<u>Flowering Date</u>	<u>Seed Ripe Date</u>
Ferris	<u>Agropyron dasystachyum</u>	Thickspike wheatgrass	4-25	7-5	7-20
	<u>Oryzopsis hymenoides</u>	Indian ricegrass	4-25	6-15	7-5
	<u>Artemisia tridentata</u>	Big sagebrush	No Data	9-15	10-15
Stewart Creek	<u>Agropyron dasystachyum</u>	Thickspike wheatgrass	4-25	7-6	7-19
	<u>Artemisia tridentata</u>	Big sagebrush	No Data	9-15	10-15
	<u>Oryzopsis hymenoides</u>	Indian ricegrass	No Data	No Data	7-12
	<u>Stipa comata</u>	Needle-and-thread grass	No Data	No Data	7-12
Cyclone Rim	<u>Atriplex nuttallii</u>	Nuttall saltbush	4-15	7-1	8-1
	<u>Ceratoides lanata</u>	Winterfat	4-15	7-10	8-15
	<u>Artemisia tridentata</u>	Big sagebrush	4-15	9-15	10-20
	<u>Agropyron spicatum</u>	Bluebunch wheatgrass	4-20	7-1	7-15



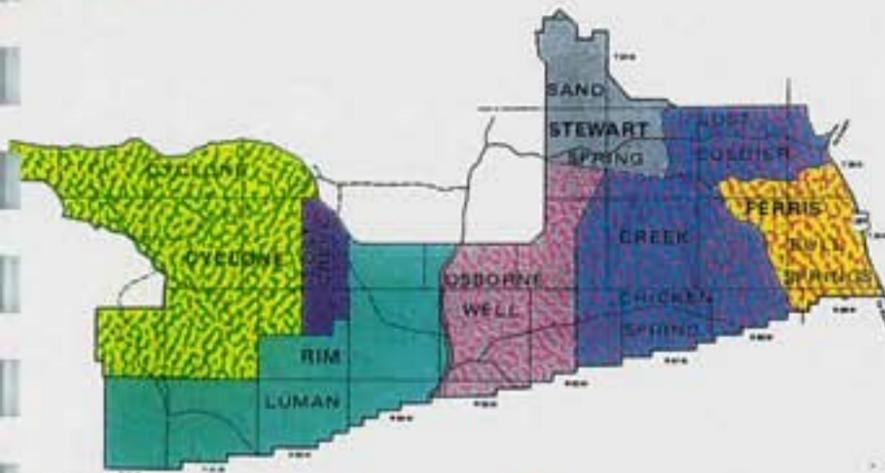
ALLOTMENT	PASTURE	APRIL	MAY	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.	JAN.	FEB.	MARCH	APRIL
FERRIS	LOST SOLDIER													
	BULL SPRINGS													
STEWART CREEK	SAND SPRING													
	OSBORNE WELL													
	CHICKEN SPRING													
CYCLONE RIM	CYCLONE													
	LUMAN													
	LOST CREEK													

FIRST YEAR CYCLE



ALLOTMENT	PASTURE	APRIL	MAY	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.	JAN.	FEB.	MARCH	APRIL
FERRIS	LOST SOLDIER													
	BULL SPRINGS													
STEWART CREEK	SAND SPRING													
	OSBORNE WELL													
	CHICKEN SPRING													
CYCLONE RIM	CYCLONE													
	LUMAN													
	LOST CREEK													

SECOND YEAR CYCLE



ALLOTMENT	PASTURE	APRIL	MAY	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.	JAN.	FEB.	MARCH	APRIL
FERRIS	LOST SOLDIER													
	BULL SPRINGS													
STEWART CREEK	SAND SPRING													
	OSBORNE WELL													
	CHICKEN SPRING													
CYCLONE RIM	CYCLONE													
	LUMAN													
	LOST CREEK													

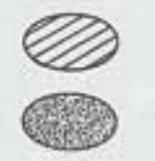
THIRD YEAR CYCLE



ALLOTMENT	PASTURE	APRIL	MAY	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.	JAN.	FEB.	MARCH	APRIL
FERRIS	LOST SOLDIER													
	BULL SPRINGS													
STEWART CREEK	SAND SPRING													
	OSBORNE WELL													
	CHICKEN SPRING													
CYCLONE RIM	CYCLONE													
	LUMAN													
	LOST CREEK													

FOURTH YEAR CYCLE

LEGEND



CATTLE
SHEEP

OVERLAP AREAS OF:



CATTLE AND SHEEP

TREATMENT APPLIED

- TREATMENT A
- TREATMENT B
- TREATMENT C
- TREATMENT D
- TREATMENT E
- TREATMENT F
- TREATMENT G

OVERLAP AREAS OF:

- TREATMENT A AND E
- TREATMENT A AND C
- TREATMENT B AND C
- TREATMENT D AND C

ANNUAL SCHEDULE FOR PROPOSED GRAZING TREATMENTS

Seven Lakes Grazing
Environmental Statement

TABLE 1-9
ANNUAL GRAZING TREATMENTS

Allotment Pasture	Year 1	Year 2	Year 3	Year 4
Ferris				
Lost Soldier	B & C	A & C	B & C	A & C
Bull Springs	A & C	B & C	A & C	B & C
Stewart Creek				
Osborne Well	D & C	B & C	D & C	D & C
Chicken Spring	D & C	D & C	B & C	D & C
Sand Spring	B	D	D	B
Cyclone Rim				
Cyclone	A & E	A & E	A & E	A & E
Lost Creek	F	F	F	G
Luman	G	G	G	G

TABLE 1-10
ACRES PER GRAZING TREATMENT THROUGH ONE
COMPLETE GRAZING CYCLE

Treatment	Acreage			
	Year 1	Year 2	Year 3	Year 4
A	169,061	159,716	169,061	159,716
B	69,147	101,421	116,268	78,492
C	217,689	217,689	217,689	217,689
D	149,344	126,415	102,223	149,344
E	130,216	130,216	130,216	130,216
F	15,508	15,508	15,508	0
G	<u>109,794</u>	<u>109,794</u>	<u>109,794</u>	<u>125,302</u>
TOTAL*	860,759	860,759	860,759	860,759

*The total is greater than the acreage of the ES area because some pastures undergo more than one treatment each year.

DESCRIPTION OF PROPOSED ACTION

throughout the winter season. The two-year cycle would be repeated beginning in the third year.

The proposed Stewart Creek allotment grazing system would be a three-pasture deferred-rotation grazing system with season-long winter sheep grazing in two pastures. Under this system, the allotment would be divided into three pastures of nearly equal carrying capacity. In the first year of full AMP implementation, cattle would be grazed in the Osborne Well and Chicken Spring pastures from May 20 through October 31. On August 1, Sand Spring pasture would be open to grazing and cattle would be driven into it from the other two pastures. All three pastures would be grazed during the August 1 through October 31 period. Sheep would be grazed throughout the winter season (November 1 through March 31) in the Osborne Well and Chicken Spring pastures. No winter use would be made of Sand Spring pasture because heavy snows normally make it inaccessible to livestock. In the second year, the system would be the same as the first year except that grazing in the Osborne Well pasture would be deferred until August 1, and the Sand Spring and Chicken Spring pastures would be grazed from May 20 to October 31. In the third year, the system would be the same as the first year except that grazing in the Chicken Spring pasture would be deferred until August 1, and the Sand Spring and Osborne Well pastures would be grazed from May 20 to October 31. The three-year cycle would be repeated beginning with the fourth year.

The grazing system proposed for the Cyclone Rim allotment would be based upon the need to move livestock from higher to lower elevations as winter snows deepen. It can be characterized as a three-pasture seasonal discontinuous system. The allotment would be divided into three pastures. Two of the pastures, Cyclone and Luman, are of approximately equal carrying capacity. The third pasture, Lost Creek, is smaller than the other two and would have no livestock grazing initially so that the riparian habitat would be protected.

The grazing system in the Cyclone Rim allotment would be the same every year starting with year 4. Summer use would consist of sheep grazing from May 1 to July 15 in the Cyclone pasture. Neither Lost Creek pasture nor Luman pasture would be grazed during the summer. In the winter, the Cyclone pasture would be grazed by sheep from November 1 to January 15, and by cattle from October 1 to December 15. Luman and Lost Creek pastures would be grazed by sheep from January 16 to March 31 and by cattle from December 16 to March 31. The grazing system in the Cyclone Rim allotment for years 1-3 would differ from that beginning in year 4 only in that Lost Creek pasture would be rested year-round for the first 3 years.

Management of the Grazing Systems. In the proposed systems, livestock grazing areas would be controlled by fencing, herding, or limiting available water. Water would be limited by shutting off wells and fencing reservoirs and well sites.

Individual operators would move livestock from pasture to pasture by allowing natural drifting and by herding within the time frames prescribed for each grazing

treatment. Livestock would be brought to the Seven Lakes area from other range or ranch property in the spring either by trailing through allotments or by truck. Livestock would be brought to the Seven Lakes area in the fall by the same methods, and at the conclusion of each grazing season, would be moved back to other range or ranch property.

BLM would ensure compliance with the system and monitor the impacts of the system. BLM would issue licenses in accordance with the grazing regulations (43 CFR 4130) for grazing livestock on each allotment within the framework of the grazing system. The grazing license would specify the grazing area, livestock numbers and class, and season of use and AUMs to which the licensee is entitled. BLM employees would make routine allotment inspections to ensure that livestock numbers and time of grazing for each pasture comply with that authorized by the license. In accordance with 43 CFR 4110.3-2(a), grazing privileges would be reduced in whole or in part for as long as necessary when the range is depleted from drought or other causes. BLM would also control livestock trespass in accordance with the grazing regulations (43 CFR 4140).

BLM would also conduct studies to provide data for analysis of the plan (see Chapter 4). These studies would include but are not limited to climate, trend, utilization, and actual use. BLM Manual 4412 describes study methods in detail. In addition, the Bureau would study wildlife habitat, aquatic habitat, wild horse habitat and numbers, and watershed conditions. These studies would be designed to monitor progress toward meeting the AMP, wildlife habitat management plan, and wild horse herd management area plan objectives.

If the monitoring studies indicate that specific objectives are not being met, the AMPs would be modified. Modification may include changes in the grazing system, increasing or decreasing the amount of use by livestock, wildlife and/or wild horses, changing the season of use, or any combination of these deemed necessary to achieve the management objectives. If properly usable livestock forage increases over the proposed level (see Chapter 4 for details of the monitoring studies that would measure the increase), the increase would be licensed proportionately to the existing livestock operators in the allotment where the increase occurs. Environmental assessments would be conducted as necessary prior to any modifications outside the scope of this statement.

Range Improvements

Facilities which provide for improved distribution of rangeland livestock, and hence, lead to improved range management, are known collectively as range improvements. Stockwater developments and fences are common range improvements.

Table 1-11 shows the proposed range improvements by allotment for the Seven Lakes ES area. These improvements are needed to implement the AMPs, achieve better distribution of livestock, and increase livestock production by achieving proper utilization of forage over the entire range, as well as to improve the grazing distri-

TABLE 1-11
PROPOSED RANGE IMPROVEMENTS BY ALLOTMENT

Type Improvement	Allotment			Total
	Ferris	Stewart Creek	Cyclone Rim	
Spring Development (number)	0	0	1	1
Type 1 Fence* (miles)	2.4	8.4	5.5	16.3
Let-Down Fence* (miles)	1.4	17.2	9.2	27.8
Cattleguard* (number)	1	2	1	4
Water Well Developments (number)	3	22	10	35
Pasture Boundary Signing (miles)	8	21	35	64
Reservoir Repair	1	0	0	1
Reservoir Fencing (miles)	.3	.8	0	1.1
Water Pipelines (est. miles)	0	12	0	12

*These improvements are shared between allotments and are shown in this table as split between two allotments.

DESCRIPTION OF PROPOSED ACTION

bution of wild horses and to make new areas suitable for wildlife use. Table 1-12 lists the construction and manpower requirements, by year, for the proposed range improvement projects. Map 1-2 depicts locations of all proposed improvements, by allotment and pasture.

All maintenance would be the responsibility of BLM. Wells and springs would be inspected at least annually. In addition, they would be routinely inspected throughout the grazing season as a part of normal use supervision, and maintained as needed. Reservoirs and fences would be inspected at 5-year intervals; in addition, the let-down fences would be inspected twice annually and all fences would be maintained as needed. Cattleguards and pipelines would be inspected annually. Pipelines would be drained in the fall. Table 1-13 depicts annual maintenance costs by type of improvements.

In compliance with legislative mandates (see Appendix B-1-2), the BLM would conduct intensive, Class III, cultural resource inventories (see Glossary) prior to the construction of proposed range improvements. These inventories would include the area within a 600-foot radius of all water improvements, 25 feet either side of all fences and access routes, and 30 feet either side of all pipelines. If cultural materials are found during these inventories, the facility would be relocated to avoid impacts to the resource. If relocation were unfeasible, appropriate mitigation would be developed in consultation with the State Historic Preservation Officer (SHPO) and the President's Advisory Council on Historic Preservation. To provide for consideration of cultural resources not evident during intensive inventories, it would be stipulated for each construction project that if cultural values were located during construction, the BLM District Manager would be contacted to determine the action necessary for protection or salvage of these cultural materials.

In order to minimize environmental impacts and due to weather conditions in the area, water developments and other range improvements will be built from May to October.

Access. Access to sites of proposed range improvements would not require the construction of any bladed roads; however, where there is no existing road, vehicular traffic would create 88 miles of two-track trails (Figure 1-4). These trails would be used for access during construction and maintenance. Once created, these trails could be reasonably expected to sustain frequent enough use to keep them active.

Springs. A spring development is proposed for Kinch-McKinney Springs in the Cyclone Rim allotment. A concrete spring box would be constructed over the spring. Water would be collected among large stones and be piped from the box, about 80 feet via a 1½ inch plastic pipe buried at least 3 feet deep, to a standard cattle trough (Figure 1-5). The trough is typically 2 feet wide, 14 feet long, and less than 20 inches in height. Normally, it is set on a firm base, and overflow is piped back to the draw in which the spring originates. Small animal escape ramps would also be installed.

The immediate area surrounding the spring would be fenced to prevent livestock from trampling and compact-

ing the wet soil. This three-strand fence would enclose an area approximately 100 by 150 feet.

Construction of this spring development would entail some excavation work using a backhoe tractor, both for building the water collection system and for burying the plastic pipe.

Fences. The proposed boundary fence between the Seven Lakes ES area and the Arapahoe Creek allotment would be 32 miles long (Map 1-2). Approximately 11 miles of the boundary between the Arapahoe Creek and Cyclone Rim, and between Arapahoe Creek and Stewart Creek allotments, and approximately 5 miles of the north and west boundaries of the Ferris allotment would be fenced with a BLM Type 1 cattle fence (Figure 1-6). This fence would have three wires. The bottom wire would be twisted barbless and would be at least 16 inches above the ground. The remaining two wires would be barbed and spaced at 27 inches and 38 inches respectively above the ground level. Wooden fence posts would be set at least 2 feet into the ground, in line with one another, and 16½ feet apart. Ideally, the fence posts would protrude only 44 inches above the ground level. The remaining estimated 25 miles of boundary fencing between the Arapahoe Creek allotment and its two neighboring allotments to the south are proposed to be built as a let-down fence. This fence would be let down by BLM personnel starting each October 20, and re-erected by the same starting each May 20. Letting the fence down would allow the annual migration of the Seven Lakes pronghorn herd.

The let-down fence would be built to the same specifications as described previously. The three wires would be attached to wooden posts, the top of which would be 44 inches high. The proposed fence could be let down by releasing the top two wires and letting them fall to the level of the bottom wire. The fence would be put back up by raising the top two wires and attaching them back to the post.

Of the 7 miles of fencing proposed to separate the Ferris allotment from the Stewart Creek allotment, 2.75 miles would be of the let-down type. One mile of let-down fence would be located just north of the Bairoil-Crooks Gap road on the boundary line. A second mile of let-down fence would be located immediately south of this same road. One-half mile of let-down fence would be located along the boundary line in the SW¼ of Section 23, T.26N., R.91W. The remaining one-quarter mile of let-down fencing would be placed on the boundary line in the E½ of Section 5, T.25N., R.90W., where the fence crosses Rocky Draw.

Construction of the proposed Type 1 and let-down fences would require about four persons and two four-wheel drive vehicles. One vehicle would be equipped with an auger for digging fencepost holes.

In most cases, a two-track vehicle trail develops on both sides of a fence, starting with its construction. Gates would be put in the fence every 1.5 miles or at needed road crossings. Four cattleguards would be installed where main roads cross the proposed fences. Two would be placed on the Bairoil-Crooks Gap Road, one at Bull Springs, and one on the Wamsutter-Crooks Gap Road

TABLE 1-12
CONSTRUCTION AND MAN-POWER REQUIREMENTS
FOR THE PROPOSED RANGE IMPROVEMENT PROJECTS

Year	Project	Units	Cost ¹	Total
1	Type 1 Fencing ²	16.3 miles	\$1,600/mile	\$ 26,080
	Let-Down Fencing ³	27.8 miles	\$2,500/mile	\$ 69,500
	Cattleguards ⁴	4	\$2,400/2-lane unit	\$ 9,600
	Pasture Boundary Signing ⁵	64 miles	\$45/mile	\$ 2,880
	Spring Development ⁶	1	\$1,500 each	\$ 1,500
	Water Well Developments ⁷	13	\$13,570 each	\$176,410
2	Water Well Developments	9	\$13,570 each	\$122,130
3	Water Well Developments	13	\$13,570 each	\$176,410
	Water Pipelines ⁸	12 miles	\$1,300/mile	\$ 15,600
4	Reservoir Fencing ⁹	1.1 miles	\$1,600/mile	<u>\$ 1,760</u>
	TOTAL			\$601,870

- 1 includes labor and material
- 2 1 man; 1 mile per day
- 3 2 men; ½ mile per day
- 4 2 men; 2 days per cattleguard
- 5 2 men; 10 miles per day
- 6 2 men; for 10 days each
- 7 4 men; for 14 days each
- 8 2 men; 6 miles per day
- 9 2 men; ¾ mile per day

1 CYCLONE RIM ALLOTMENT
255,518 Acres

2 STEWART CREEK ALLOTMENT
188,991 Acres

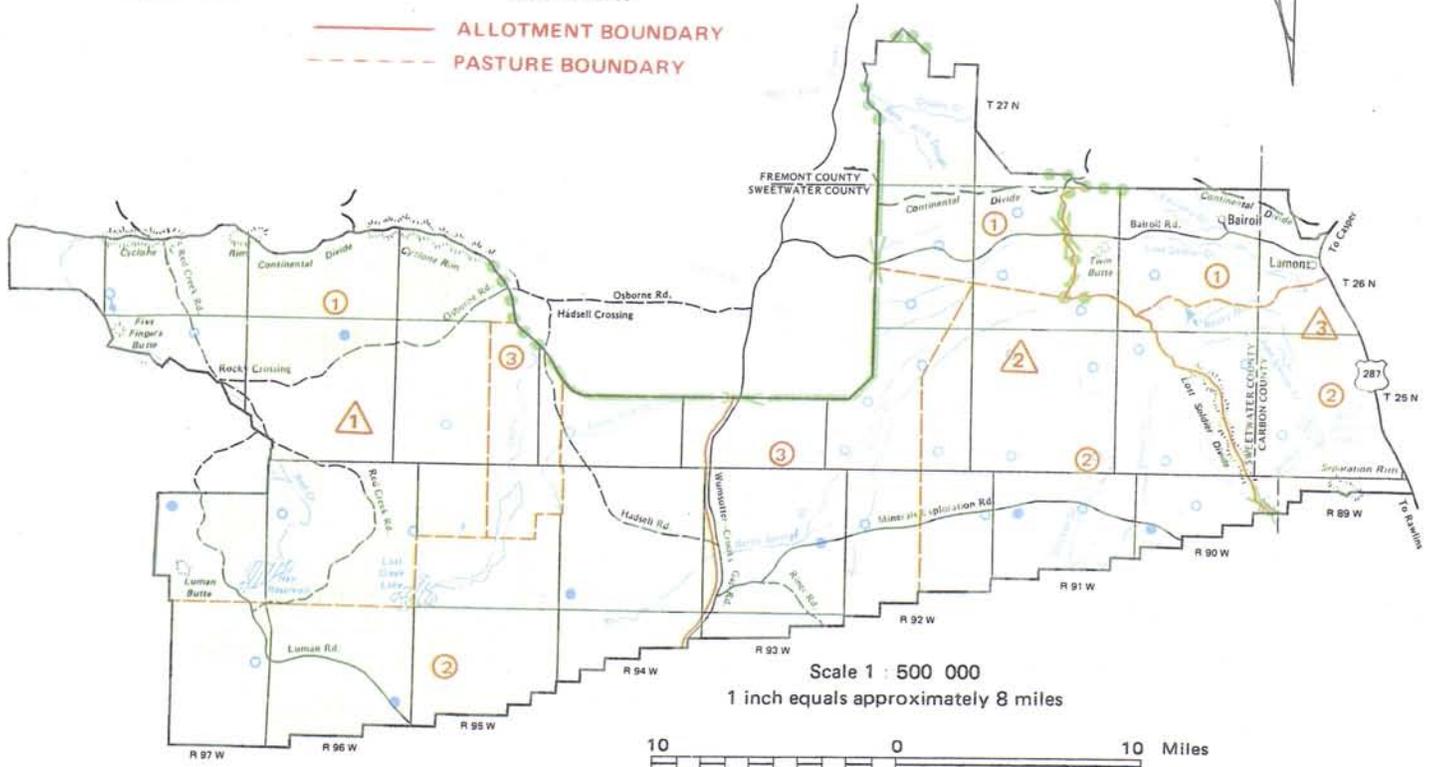
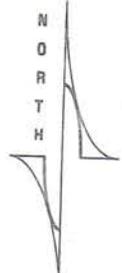
3 FERRIS ALLOTMENT
68,345 Acres

PASTURES
1 CYCLONE
130,216 acres
2 LUMAN
109,794 acres
3 LOST CREEK
15,508 acres

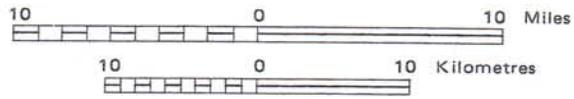
PASTURES
1 SAND SPRING
39,647 acres
2 CHICKEN SPRING
86,768 acres
3 OSBORNE WELL
62,576 acres

PASTURES
1 LOST SOLDIER
29,500 acres
2 BULL SPRINGS
38,845 acres

—— ALLOTMENT BOUNDARY
 - - - PASTURE BOUNDARY



Scale 1 : 500 000
1 inch equals approximately 8 miles



LEGEND

- THREE WIRE FENCE
- LET DOWN FENCE
- CATTLE GUARD
- SPRINGS
- WELLS
- EXISTING WELLS
- ▲ RESERVOIR

TABLE 1-13
 MAINTENANCE OF PROPOSED RANGE IMPROVEMENTS

Improvement	Number of Units	Annual Maintenance Cost/Unit	Total Annual Maintenance Cost	Estimated Life of Improvements
Spring	1	\$100	\$ 100	20+ years
Wells	35	200	7,000	20+
Pipelines	12 (miles)	50	600	20+
Reservoirs	4	100	400	20+
Type 1 Fence	16.3 (miles)	20	326	20+
Let-Down Fence	27.8 (miles)	160	4,448	20+
Cattleguards	4	25	100	20+
Pasture Boundary Signs	64 (miles)	5	<u>320</u>	20+
TOTAL			13,294	

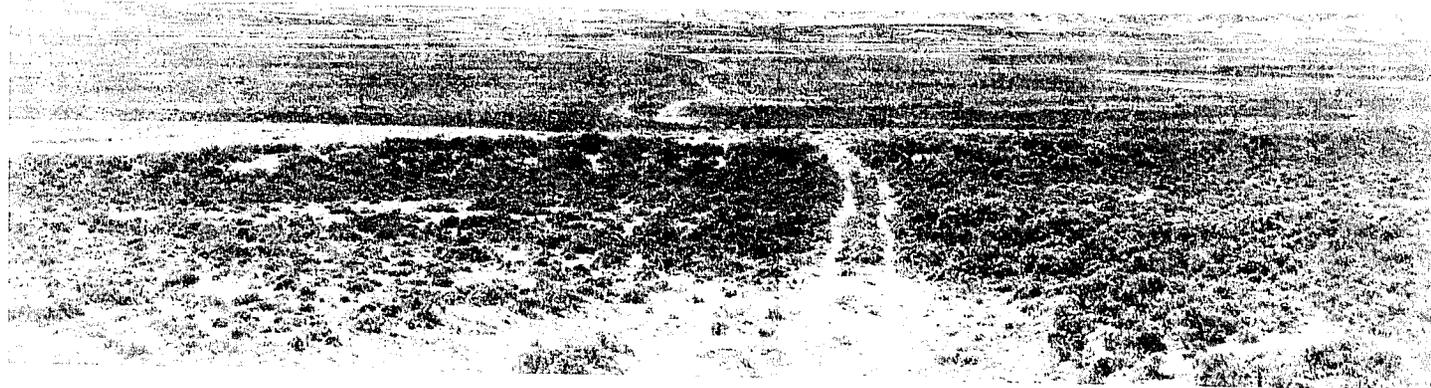


Figure 1-4
TWO-TRACK TRAIL TYPICAL OF THOSE
FOUND IN THE SEVEN LAKES ES AREA

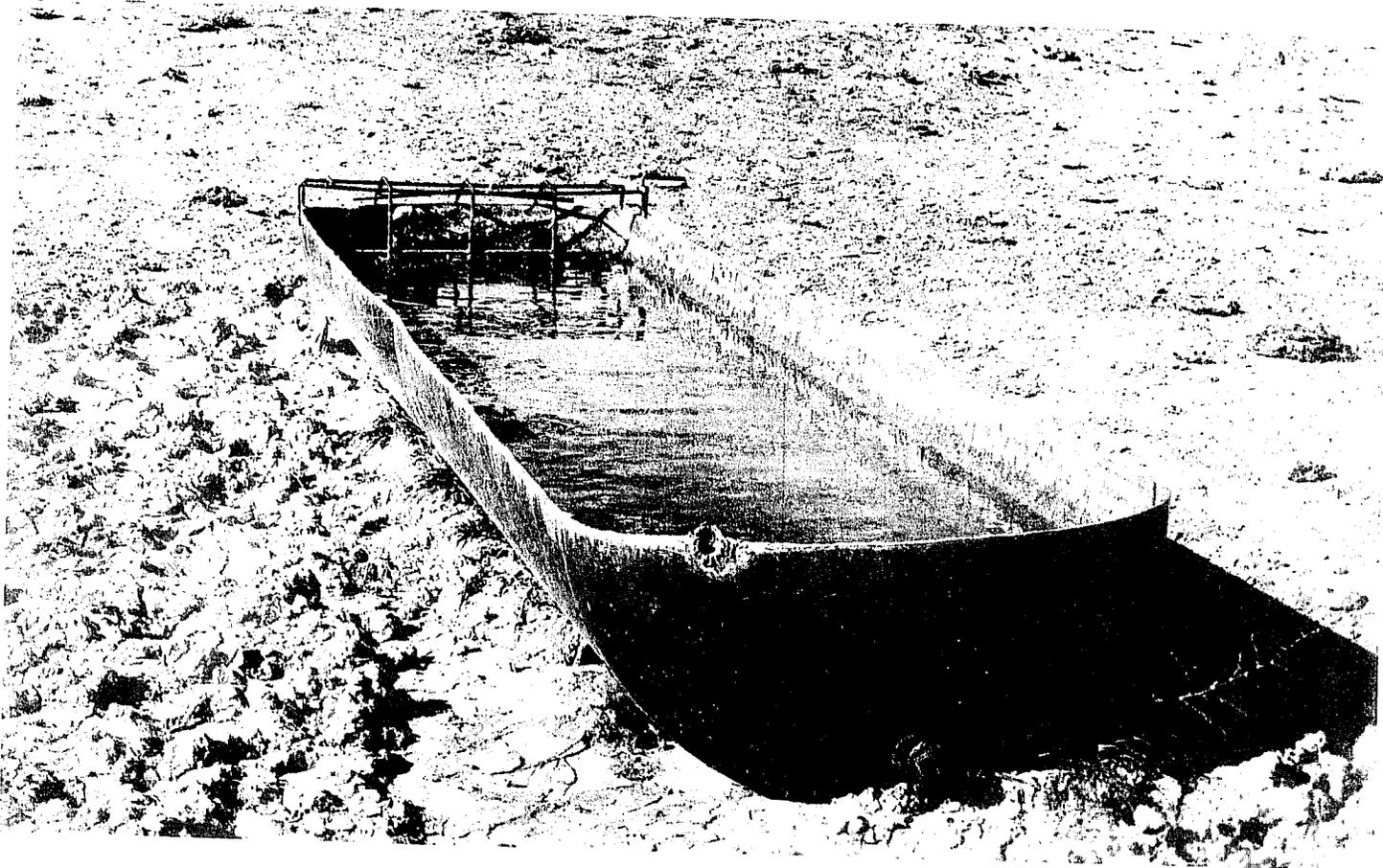
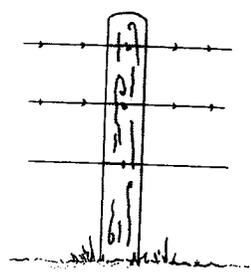
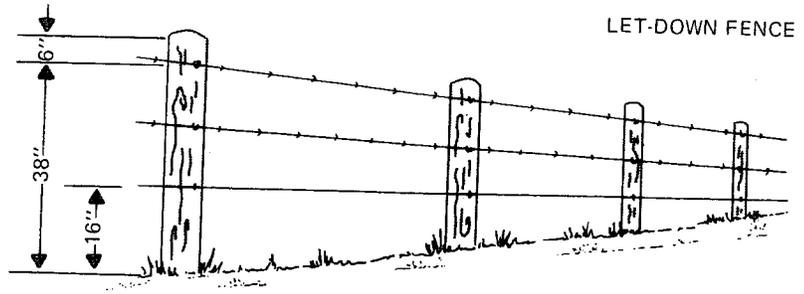
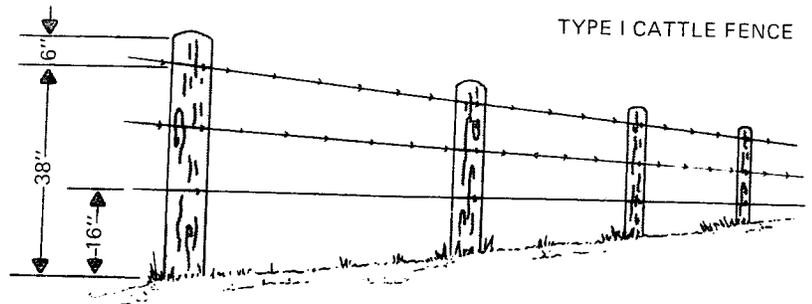
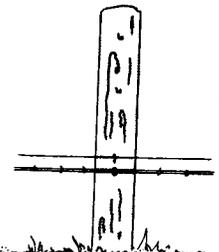


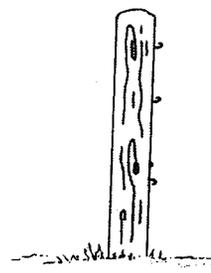
Figure 1-5
STANDARD CATTLE TROUGH



Shown in up position



Shown in let-down position



Shown from side view

Figure 1-6
TYPE I AND "LET DOWN" FENCE

DESCRIPTION OF PROPOSED ACTION

approximately 2 miles east of Eagle's Nest Draw Reservoir No. 1.

Because these are heavily used roads, two 10 by 6 foot cattleguards would be laid end to end to make one 20 by 6 foot cattleguard at each location. They would have concrete bases at each end, and be set over a trench approximately 3 feet deep dug across the width of the roadbed. Wings would be constructed to connect the cattleguards to the fences. The cattleguards would be placed within existing bladed road rights-of-way. A wire fence gate would be included in the fence adjacent to each cattleguard.

Water Wells. Thirty-five water developments consisting of a windmill (12 foot mill), enclosed steel storage tank (7,500 gallon), a cattle trough (2 x 14 feet), and an earthen overflow pit (30 x 40 feet) have been proposed (Map 1-2 and Figure 1-7). The entire water development site would be enclosed with a BLM Type 1 cattle fence and a gate in order to defer the area from cattle use when necessary in accordance with the AMPs. The gate may be open or closed depending on whether livestock are authorized to be in the allotment.

Normally, construction of water developments would entail first drilling a 4 inch uncased core-type test hole to check for reliable water. Then, if the test is successful, a 6 inch well would be drilled and cased. A service truck and a drill rig would be used.

A large tractor-trailer would be needed to bring the storage tank and parts of the windmill to 35 water development sites. Concrete for the base of the windmill and for supports for the storage tank would be brought in by concrete mixer truck.

The earthen pit would be built using a bulldozer (crawler tractor). The same machine, if equipped with a ripper blade, would lay and bury the plastic pipe connecting the tank, trough, and pit.

A ripper blade is a large curved metal tooth about 3 feet long and about 4 inches wide mounted on the back of the tractor. As it is pulled through the ground, it heaves the soil upward; the plastic pipe is fed through a tube behind the ripper and laid in the ground; the soil falls back, covering the pipeline. A pickup truck would follow behind with one wheel used to compress and compact the soil back to its original level.

Several water developments would be constructed during the same construction season. It would take about 10 weeks to complete five developments and require approximately four workers with two pickups.

The storage tanks would have a storage capacity of 7,500 gallons. When full, discounting evaporative loss from the trough and leaks, a tank would supply 75 cattle with water for about 10 days.

If dry holes are encountered, accessory pipelines would be needed to transport water from a reliable water source in one water development site to another site. These pipelines would be approximately 4 miles long and run downslope. Their locations cannot be determined until the well holes are test drilled. Construction would be accomplished as previously described. All water developments would be fenced with a three-wire fence, which would enclose .22 acres per development.

Pasture Boundaries. Pasture lines would be defined in all proposed allotments by setting posts with attached signs approximately one-quarter mile apart. The Ferris allotment would require 8 miles of pasture boundary marking, the Stewart Creek allotment would require 21 miles, and the Cyclone Rim allotment would need 35 miles.

Six foot steel posts would be driven into the ground with a simple post driver or sledge hammer. A sign explaining that this is a pasture boundary would be attached to each post.

Two persons, equipped with a four-wheel drive truck, could delineate about 10 miles of pasture lines per day.

Reservoir Repair. Whitewater reservoir (Ferris allotment), which is proposed to be repaired and fenced, is inoperable because the dam is washed out. Repair would be effected by installing 18-inch diameter pipe through the dam at the desired water level. The height of the dam would then be raised using a bulldozer pulling a "can" or wheeled scraper-carrier designed to scrape up 15 to 20 yards of soil and spread it where needed. Compaction would be accomplished by repeatedly driving the bulldozer along the top of the dam. A spillway would be constructed at one end of the dam. The bottom of the spillway would be 4 feet above the level of the draw-down pipe.

Whitewater reservoir and three other existing reservoirs in the Stewart Creek allotment would be fenced with Type 1 fence in a rectangular configuration approximately 200 feet by 400 feet. This rectangle would have an interior cross fence that would divide it into two equal parts. One part would enclose the upstream half of the reservoir and would be left closed at all times. The other part would enclose the downstream half of the reservoir and would have a gate that would be left open when livestock were in the pasture and would be kept closed when livestock were not supposed to be in the pasture (see Figure 1-8).

Implementation

The AMPs would be implemented administratively either by agreement with the operators or by the District Manager's decision. Should the operator decline to accept and sign an AMP, it would be implemented by the District Manager's decision, which is subject to appeal in accordance with the grazing regulations (43 CFR 4160.4). Table 1-14 depicts the AMP implementation schedule.

The AMPs would be fully implemented (all range improvements complete and all grazing systems operational) in the 5th year. Order of implementation is determined by the length of time required to complete the needed range improvement projects.

INTERRELATIONSHIPS

This section describes how the proposed action relates to existing or proposed federal, state, local, and private projects, plans, and policies in the area of influence. The

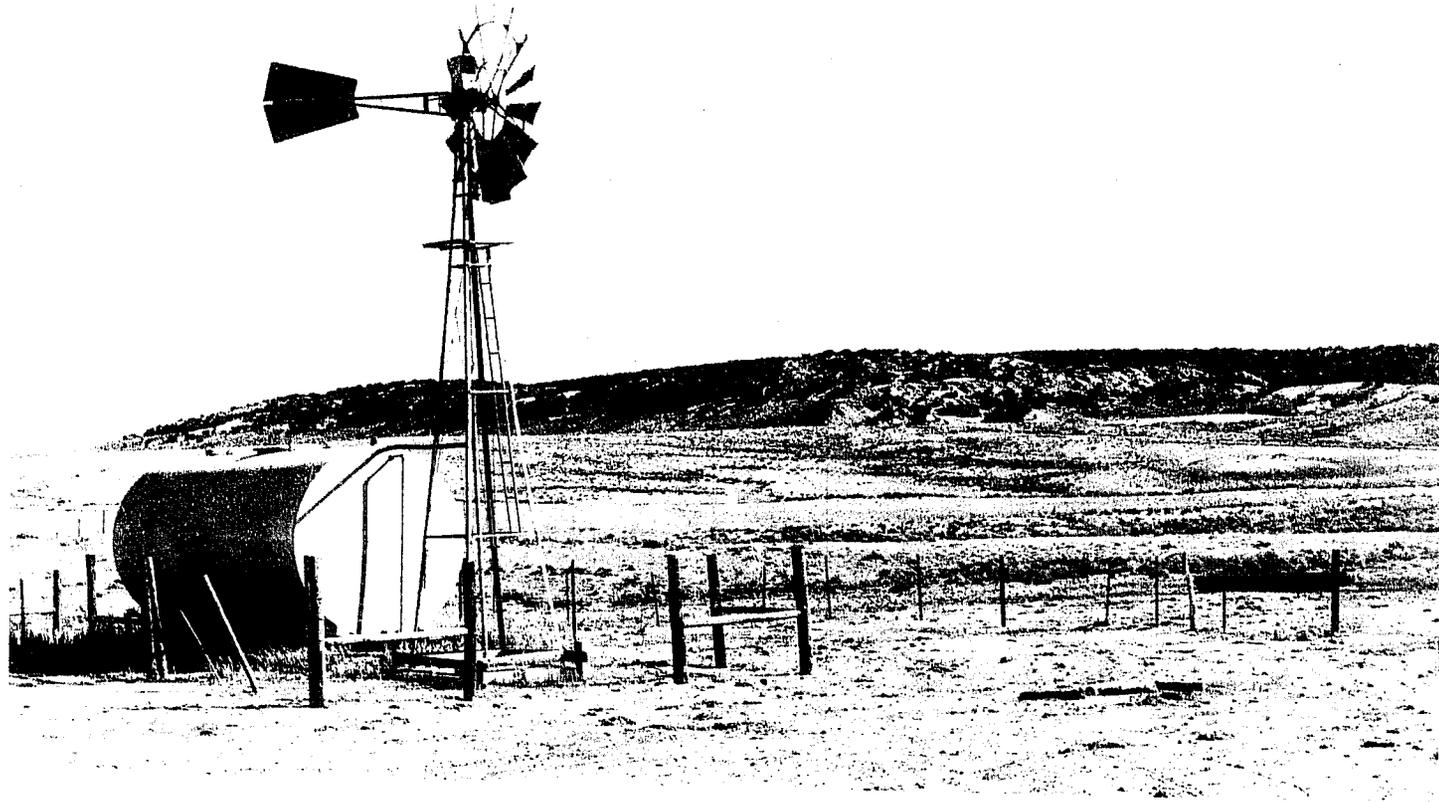


Figure 1-7
BLM WATER DEVELOPMENT SIMILAR
TO WHAT IS PROPOSED FOR THE
SEVEN LAKES ES AREA

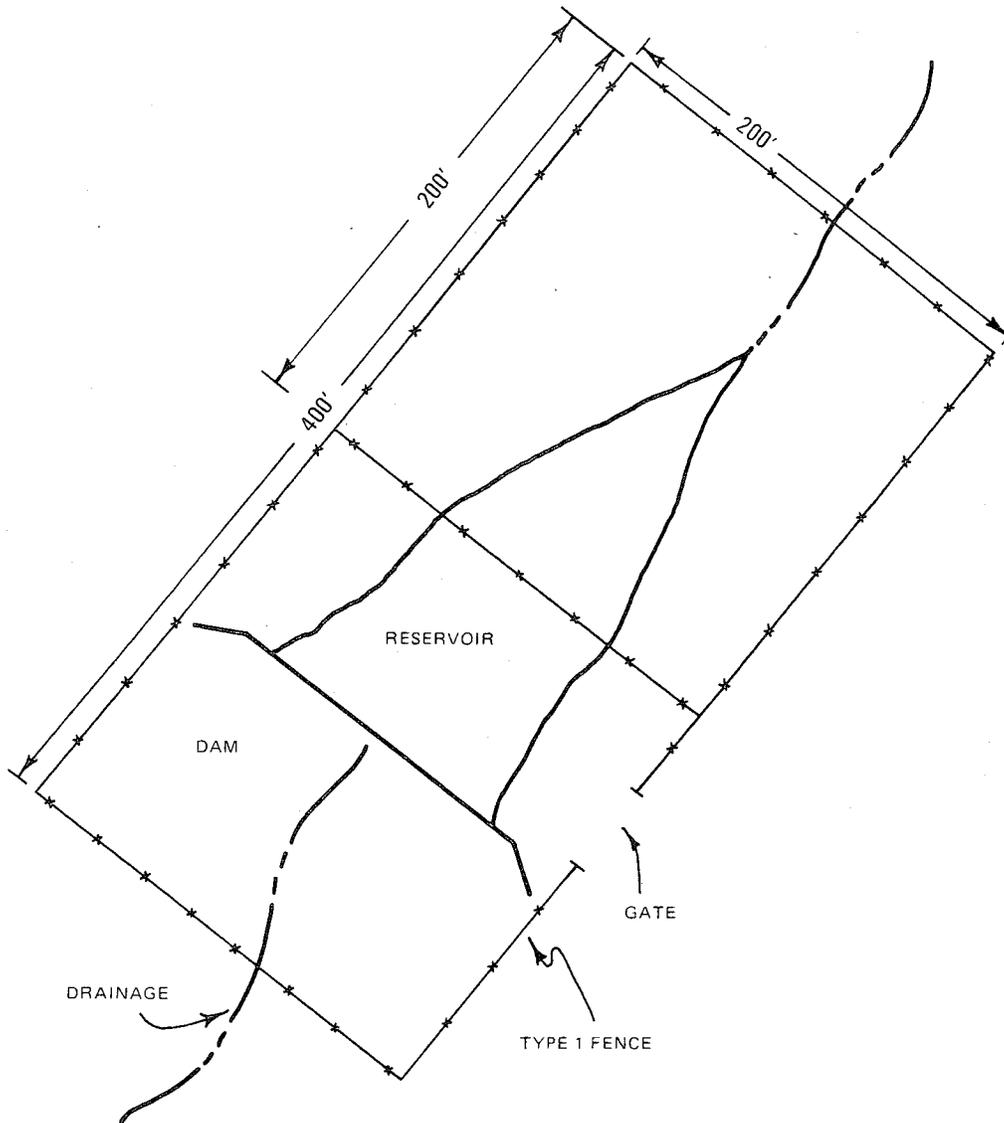


FIGURE 1-8
PROPOSED RESERVOIR FENCING

TABLE 1-14
AMP IMPLEMENTATION SCHEDULE

<u>YEAR</u>	<u>Ferris</u>	<u>ALLOTMENT</u> Cyclone Rim	Stewart Creek
1	Construct two cattleguards (shared with Stewart Creek allotment). Construct all allotment boundary fencing. Stake all pasture boundaries. Develop three water wells. Repair one reservoir.	Develop five water wells. Complete all allotment boundary fencing. Stake all pasture boundaries. Construct one cattleguard (shared with Stewart Creek allotment).	Construct one cattleguard. Complete all allotment and pasture boundary fencing. Construct six water developments.
2	Allow all proposed conversions from sheep use to cattle use.	Develop one spring and five water wells. Allow one-third of proposed conversions from sheep use to cattle use.	Allow one-third of proposed conversions from sheep use to cattle use. Construct six water developments.
3	Fully implemented.	Allow one-third of proposed conversions from sheep use to cattle use.	Allow one-third of proposed conversions from sheep use to cattle use. Construct ten water developments.
4		Allow one-third of proposed livestock conversion from sheep use to cattle use.	Fence three reservoirs. Allow one-third of proposed conversions from sheep use to cattle use.
5		Fully implemented.	Fully implemented.

DESCRIPTION OF PROPOSED ACTION

purpose is to examine how the proposed action fits into the overall planning for the entire area.

Other land and forage use proposals that conflicted with livestock grazing are shown in Table 1-16.

Federal

Bureau of Land Management's Planning System

The Bureau of Land Management's land use planning documents for the Seven Lakes area were updated during 1976-1977, in accordance with BLM Manuals 1601-1608. The planning system provides guidance for land uses on public lands.

Inventory data on land and resource conditions and capabilities are recorded and analyzed in a document called a unit resource analysis (URA). The data gathered during the URA process are then used as the basis for developing a land use plan called a management framework plan (MFP).

Throughout the planning process, public and private groups, individuals, and government organizations interested in the planning unit are involved to assure understanding and consideration of their interests.

Specific resource management plans are prepared within the constraints established by the MFP. The proposed action represents specific resource management plans called allotment management plans (AMPs) for domestic livestock grazing in the Seven Lakes area. These draft plans were developed with consideration given to wild horses, wildlife, other multiple uses, and the livestock operators' needs.

Two other draft resource management plans have also been developed for the Seven Lakes area: one herd management area plan (HMAP) for wild horses, and one habitat management plan (HMP) for wildlife. Both of these plans are available for review at the Rawlins District Office.

The draft HMAP objectives call for (1) reducing the wild horse population from the present average level of approximately 240 to an average level of 95, and (2) managing for an average of 95 wild horses with a minimum of 66 horses and a maximum of 135 in the ES area. The objectives were established through consideration of resource production, other competing land uses, and public input in the planning process.

The draft HMP identifies objectives for pronghorn, mule deer, sage grouse, raptors, waterfowl and aquatic habitat, nongame birds, and mammals. The objectives were developed in cooperation with the Wyoming Game and Fish Department. The U. S. Fish and Wildlife Service provided guidance on endangered species and raptors. The draft HMP was developed in concert with the draft AMPs.

Management framework plan proposals for the Seven Lakes ES area addressed establishment of three new allotments (from the two existing allotments), changes in class of livestock from sheep to cattle, water development, and limited fencing. The MFP also addresses wildlife and wild horse populations and forage allocations. A summary of the proposals in the management framework plan affecting livestock grazing is found in Table 1-15.

U. S. Forest Service

The U. S. Forest Service administers lands to the south of the ES area in the Medicine Bow National Forest in Wyoming and in the Routt National Forest in northern Colorado.

Six of the fifteen livestock operators who use the Seven Lakes ES area also graze livestock in the national forests. Five livestock operators run summer sheep and/or summer cattle in the Medicine Bow National Forest. The Forest Service is in the process of converting one operator's use from summer sheep to summer cattle. Sheep use is from June through October and cattle use is from July through September. One livestock operator runs sheep on the Routt National Forest. The period of use is from about the middle of July to the middle of September. Livestock operators use Forest Service lands in conjunction with BLM, state, and private lands to support a 12 month livestock grazing operation.

U. S. Fish and Wildlife Service

The U. S. Fish and Wildlife Service is conducting predator control in the western half of the Seven Lakes ES area. The only control is on coyotes and takes place yearlong, but mostly during the spring and early summer months. The control is done through aerial shooting and limited trapping. No chemical toxicants are used.

State and Private

Wyoming Board of Land Commissioners

The Wyoming Board of Land Commissioners administers 26,076 acres of granted state land in the Seven Lakes ES area which contains 2,421 AUMs (4% of the total AUMs). The Board leases the surface to livestock operators for grazing on a 10-year term. The lessee manages the lands. Forage production on these lands is determined by BLM in order to calculate the appropriate AUMs for exchange-of-use licenses for the operator in that allotment. The Board also retains the right to allow anyone to fish and hunt on the land under applicable state and federal laws. In addition, the Board may grant rights-of-way across the land. State leases allow the lessee to make improvements necessary for the operation of the grazing lease. The lessee may sublease the lands, provided he has acquired prior Land Board approvals. The Board retains the right to lease the lands for other purposes such as timber harvest and mineral extraction.

Wyoming Game and Fish Department

"The Wyoming Game and Fish Department, under the direction of the Game and Fish Commission, is charged

TABLE 1-15
MFP PROPOSALS AFFECTING LIVESTOCK GRAZING*

MFP Step One Recommendations
for Livestock Grazing

MFP Step Three Proposals
for Livestock Grazing

Reasons for Reduction

Range Management

1. Reserve the grazing privileges for wildlife held by the Wyoming Game and Fish Commission in the Seven Lakes ES area. The animal unit months (AUMs) are as follows:
Seven Lakes uncommon allotment - 2,709 AUMs
Ferris uncommon allotment - 725 AUMs

1. Reserve the grazing privileges for wildlife held by the Wyoming Game and Fish Commission in the Seven Lakes and Ferris uncommon allotments. The animal unit months (AUMs) are as follows:
Seven Lakes uncommon allotment - 2,709 AUMs
Ferris uncommon allotment - 725 AUMs

1. No reduction.

2. Establish three allotments from the Seven Lakes uncommon allotment to achieve better livestock distribution and control. AMPs will be developed on two of these three allotments plus the Ferris uncommon allotment immediately after the final MFP decision.

2. Establish three allotments from the Seven Lakes uncommon allotment to achieve better livestock distribution and control. AMPs will be developed on two of these three allotments plus the Ferris uncommon allotment immediately after the final MFP decision.

2. No reduction.

3. Approve seven requests for a change in class of livestock in the Seven Lakes uncommon allotment and Ferris allotment.

3. Approve seven requests for a change in class of livestock in the Seven Lakes uncommon allotment and Ferris allotment.

3. No reduction.

4. Construct fences to facilitate proper livestock use of the Seven Lakes following order of priority (see Map 1-3 for locations):
a. First priority is fence C.
b. Second priority are fences D, E, & F.
c. Third priority are the remaining fences (G, H, & J).

4. Fence the north and east boundaries of the Stewart Creek allotment.

4. To prevent conflict with migrating pronghorn and to maintain open space character.

TABLE 1-15 (CONTINUED)
MFP PROPOSALS AFFECTING LIVESTOCK GRAZING

MFP Step One Recommendations for Livestock Grazing	MFP Step Three Proposals for Livestock Grazing	Reasons for Reduction
<p>5. Develop water throughout the Seven Lakes Unit.</p> <p>The following constraints would apply:</p> <p>Area 1: (Approximately the north two-thirds of the Stewart Creek allotment.) Develop water on an intensive basis for summer livestock use and management. There would be no restrictions on other seasonal or class of animal usage.</p> <p>Area 2: (Approximately the south one-third of the Stewart Creek allotment and basically all of the Cyclone Rim allotment.) Develop water for winter livestock and wildlife use. Water will not be available for livestock use from May 1 to October 31 annually.</p> <p>Area 3: (Ferris allotment.) There will be minimal water development to aid in distribution of winter sheep and in summer cattle management.</p> <p>Area 4: (This area is basically a corridor along the Crooks Gap-Wamsutter Road.) There will be no water development by BLM.</p>	<p>5. Develop water throughout the Seven Lakes Unit.</p> <p>The following constraints would apply:</p> <p>Area 1: (Approximately the north two-thirds of the Stewart Creek allotment.) Develop water on an intensive basis for summer livestock use and management. There would be no restrictions on other seasonal or class of animal usage.</p> <p>Area 2: (Approximately the south one-third of the Stewart Creek allotment and basically all of the Cyclone Rim allotment.) Develop water for winter livestock and wildlife use. Water will not be available for livestock use from May 1 to October 31 annually.</p> <p>Area 3: (Ferris allotment.) There will be minimal water development to aid in distribution of winter sheep and in summer cattle management.</p> <p>Area 4: (This area is basically a corridor along the Crooks Gap-Wamsutter Road.) There will be no water development by BLM.</p>	<p>5. No reduction.</p>

*MFP step 1 includes recommendations for a particular land use such as livestock grazing. MFP step 2 (not included in this table) provides for an analysis of resource conflicts between competing land uses and development of multiple use recommendations. MFP step 3 presents the multiple use management proposals.

1 CYCLONE RIM ALLOTMENT
255,518 Acres

2 STEWART CREEK ALLOTMENT
188,991 Acres

3 FERRIS ALLOTMENT
68,345 Acres

PASTURES

- ① CYCLONE
130,216 acres
- ② LUMAN
109,794 acres
- ③ LOST CREEK
15,508 acres

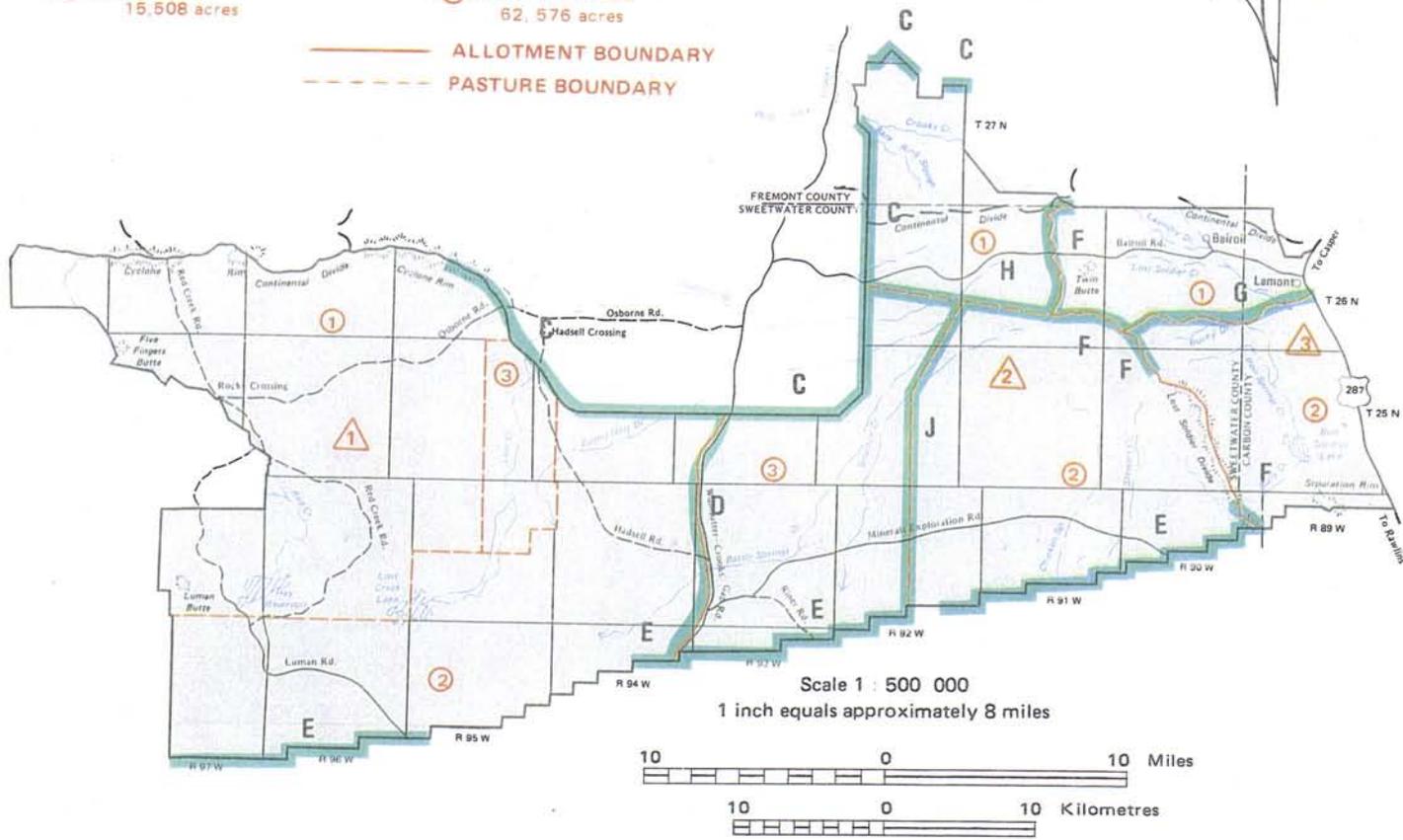
PASTURES

- ① SAND SPRING
39,647 acres
- ② CHICKEN SPRING
86,768 acres
- ③ OSBORNE WELL
62,576 acres

PASTURES

- ① LOST SOLDIER
29,500 acres
- ② BULL SPRINGS
38,845 acres

—— ALLOTMENT BOUNDARY
- - - PASTURE BOUNDARY



LEGEND

PRIORITY FOR CONSTRUCTION

- 1st. C
- 2nd. D, E, F
- 3rd. G, H, J

—— AREAS OF FENCE CONSTRUCTION
PROPOSED IN MFP STEP 1

**FENCE CONSTRUCTION PRIORITIES
AS OUTLINED BY MFP - 1**

Seven Lakes Grazing
Environmental Statement

TABLE 1-16
OTHER LAND AND FORAGE USE PROPOSALS THAT CONFLICT
WITH LIVESTOCK GRAZING

MFP Step One Recommendations

MFP Step Three Proposals

Nature of Conflict With Grazing

Watershed

1. Protect present water developments or water sources. Areas of concern are springs and flowing water wells. The springs and flowing wells need fencing, cleaning, and water troughs or tanks. Pits or reservoirs adjacent to springs and wells need partial enclosures and maintenance (map 2-3).

1. In conjunction with AMP, HMP, and HMAP development, protect present water developments or water sources. Areas of concern are springs and flowing wells which need fencing, cleaning, and water troughs or tanks. Pits or reservoirs adjacent to springs and wells need partial enclosures and maintenance.

1. Slight reduction in forage. (Less than 1 AUM per water source)

Lands

1. Make approximately 20 acres available for a sanitary landfill in the N $\frac{1}{2}$ of Section 20, T.26N., R.90W.

1. Make approximately 20 acres available for a sanitary landfill in the N $\frac{1}{2}$ of Section 20, T.26N., R.90W.

1. A loss of 1.5 AUMs in forage for the site and the half-access road.

Wild Horses

1. Maintain approximately 180 wild horses in the Seven Lakes Planning Unit outside the Ferris uncommon allotment. Maintain approximately 150 wild horses within the Ferris uncommon allotment which would be managed with primary emphasis on wild horses.

1. Manage the planning unit under multiple use for an average population of 130 horses with actual numbers ranging from 90 to 185 horses. For the ES area (map 2-19), this computes to an average population of 95 horses with actual numbers ranging from 66 to 135 horses.

1. Loss of forage which has been allocated for wild horses within the ES area. (464 winter sheep AUMs)

TABLE 1-16 (CONTINUED)
 OTHER LAND AND FORAGE USE PROPOSALS THAT CONFLICT
 WITH LIVESTOCK GRAZING

MFP Step One Recommendations

MFP Step Three Proposals

Nature of Conflict With Grazing

Wildlife

1. Designate the Seven Lakes Planning Unit as the Red Desert Antelope and Wild Horse Habitat Management Area and manage the area with wildlife as the highest priority. Management objectives for the area will be to support 5,000 winter and 1,800 summer antelope.

2. Protect all important water sources and wet meadow areas from destruction or harmful alterations by other activities, particularly mining and excessive grazing.

3. Reserve a sufficient amount of forage to support 300 deer in those areas identified as crucial winter ranges (map 2-14).

4. Protect ponds, reservoirs, streams and wetlands providing good potential for waterfowl nesting from excessive livestock use by fencing. Additional areas may be identified in the HMP for development.

1. Manage the unit under the multiple use concepts, providing habitat for 5,000 winter and 1,800 summer antelope (approximately 1,339 summer antelope in the Seven Lakes ES area) (Allocate 3,434 winter sheep AUMs within the ES area).

2. In conjunction with AMP, HMP, or HMAP development, protect all important water sources and wet meadow areas from destruction or harmful alterations by other activities, particularly mining and excessive grazing by fencing, livestock distribution and controlling access.

3. Reserve a sufficient amount of forage to support 300 deer in those areas identified as crucial winter ranges (map 2-14).

4. In conjunction with AMP, HMP, or HMAP development, protect ponds, reservoirs, streams, and wetlands providing good potential for waterfowl nesting from excessive livestock use, usually by fencing. Additional areas for development may be identified in the HMP.

1. Allocation of 3,434 winter sheep AUMs of forage for wildlife which will not be available for livestock use.

2. Loss of 3 winter sheep AUMs of forage.

3. Loss of winter sheep AUMs of forage in wildlife allocation.

4. Loss of approximately 2 winter sheep AUMs.

TABLE 1-16 (CONTINUED)
 OTHER LAND AND FORAGE USE PROPOSALS THAT CONFLICT
 WITH LIVESTOCK GRAZING

MFP Step One Recommendations

5. Prevent the destruction of any active beaver ponds or the adjacent food supply on Crooks Creek, Lost Soldier Creek and Arapahoe Creek. Transplant beaver to these areas where the habitat is available and an insufficient number are present.

6. Avoid any action which may be detrimental to the stream fisheries habitat in Crooks Creek, Arapahoe Creek, Alkali Creek and Lost Soldier Creek.

MFP Step Three Proposals

5. Prevent the destruction of any active beaver ponds on public land or on the adjacent food supply if it too is located on public land, through livestock distribution or fencing.

6. Avoid destruction of any stream fisheries habitat of Crooks Creek through livestock distribution or fencing.

Nature of Conflict with Grazing

5. Loss of less than 3 winter sheep AUMs of forage.

6. Loss of less than 1 winter sheep AUM.

DESCRIPTION OF PROPOSED ACTION

with the management of the state wildlife for the benefit of the public . . . Implicit in this charge is the responsibility of the Department to provide the public with optimum benefits from the available wildlife resource" (Wyoming Game and Fish Department 1976).

Through interagency cooperative efforts, Wyoming Game and Fish Department (WG&F) has participated extensively in planning for the Seven Lakes area by:

(1) written comments, (2) personal meetings, and (3) public meetings. This input was carried forth in AMP development. The wildlife population levels provided by WG&F were used to estimate the adequacy of the forage reservations for wildlife.

The Wyoming Game and Fish Department manages 30,436 acres of private property plus three state sections (1,920 acres) south of the ES area. This property used to serve as base property for livestock grazing privileges

within the ES area, but now through an understanding between the Department and BLM, these AUMs are reserved for wildlife.

Private

The private lands in the Seven Lakes ES area contain 104 AUMs (less than 1% of the total AUMs). They are primarily owned by the livestock operators in the area. Forage production on these lands is determined by the BLM in order to provide the basis for issuance of an exchange-of-use license.

CHAPTER 2

DESCRIPTION OF THE ENVIRONMENT

The description of the existing environment covers the following resources or land uses: climate, air quality, paleontology, topography, soils, water resources, vegetation, animals (terrestrial, aquatic, wild horses), cultural resources, visual resources, recreation, livestock grazing, mineral resources, transportation, and socioeconomic conditions. The degree of detail in the description of each resource or land use relates directly to the degree of anticipated impacts. The concluding section of this chapter describes the anticipated future environment if the proposed action is not implemented.

EXISTING ENVIRONMENT

CLIMATE

The Seven Lakes ES area has a semiarid climate (Hunt 1974). This means that the potential evaporation and transpiration from soil and vegetation exceeds the average annual precipitation.

There are no long-term climatic records within the ES area, but three nearby towns do have climatic records. Wamsutter is approximately 30 miles south, Rawlins is 20 miles southeast, and Muddy Gap is about 10 miles northeast of the area. These climatic records are summarized in Table 2-1.

Precipitation

As indicated by the records of Wamsutter, Rawlins, and Muddy Gap, mean annual precipitation ranges from 5.78 inches to 9.51 inches (Table 2-1). April, May and June are the peak precipitation months. The lowest annual precipitation at Wamsutter has been as low as 3.82 inches (1976). Generally, the northern part of the ES area receives more precipitation than the southern part.

Snowfall commonly occurs from November through April and averages 27 inches at Wamsutter and 53 inches at Muddy Gap (U.S. Department of Commerce 1965). Topography and vegetation are the major influences on snow distribution. Due to high winds, a continuous cover of snow only occurs behind breaks in topography and brush stands. The exposed slopes and ridges usually blow free of snow after storms, enabling wildlife and sheep to forage.

Temperature

Temperatures of the area vary widely with the seasons, and freezing temperatures may occur in any month. Wind chill factors greatly reduce the measured temperatures as sensed by living organisms.

Frost-free periods around the ES area range from 90 days in Wamsutter to 106 days in Muddy Gap. The northeastern portion of the ES area has a slightly longer growing season than the other portions.

Wind

As is shown in Table 2-2, winds are usually from the southwest and the west-southwest, and average wind velocity is near 12 miles per hour.

AIR QUALITY

The air quality of the Seven Lakes ES area is good, since the recorded air pollution levels are well below federal and state standards. Sampling at the Minerals Exploration Co. Mine site (T.24N., R.93W.) over a 1 month period showed suspended particulate matter 24-hour concentrations to range from 4 to 90 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) (Woodward-Clyde 1976), which is well below the 150 $\mu\text{g}/\text{m}^3$ federal secondary and state standards (Schick 1976). Sampling of suspended particulates at Rawlins for the last 6 months of 1975 showed a geometric mean of 16 $\mu\text{g}/\text{m}^3$, which is well below the annual allowable mean of 60 $\mu\text{g}/\text{m}^3$ (Schick 1976). Additional samplings at the Sweetwater Uranium Project found maximum 3 hour concentrations of sulphur dioxide (SO_2) to be .013 parts per million (ppm), and maximum 1 hour concentrations of nitrogen dioxide (NO_2) to be .075 ppm (Woodward-Clyde 1976). The federal and state standard for SO_2 is .5 ppm which is much higher than was measured. The 1 hour concentration of NO_2 is not comparable to the annual mean standard of .05 ppm, but the mean of the period of sampling at the mine site would indicate levels below the standards.

PALEONTOLOGICAL RESOURCES

The Seven Lakes ES area has no identified paleontological resources of National Landmark significance. The Red Desert and Great Divide Basins have been evaluat-

TABLE 2-1
 PRECIPITATION AND TEMPERATURE MEANS
 AND EXTREMES (1951 to 1976)*

Month	<u>Rawlins</u>		<u>Muddy Gap</u>		<u>Wamsutter</u>	
	Mean Precipitation (inches)	Mean Temperature (°F)	Mean Precipitation (inches)	Mean Temperature (°F)	Mean Precipitation (inches)	Mean Temperature (°F)
January	.46	21.2	.30	21.9	.14	17.9
February	.55	23.5	.46	25.4	.22	21.8
March	.67	28.1	.52	30.0	.28	27.7
April	1.05	38.8	1.19	41.1	.55	38.8
May	1.09	49.9	1.92	51.5	.81	50.0
June	.92	59.2	1.13	61.0	.83	58.6
July	.69	67.2	.91	68.7	.56	65.9
August	.61	65.1	.61	66.9	.73	64.0
September	.81	54.7	.72	56.8	.57	54.9
October	.83	43.7	.79	46.5	.56	44.2
November	.49	30.5	.41	32.4	.26	29.5
December	.54	23.0	.55	23.9	.27	20.4
Annual Mean	8.71	42.1	9.51	43.8	5.78	41.2
Highest Annual Precipitation	11.72 (1965)		17.10 (1957)		9.43 (1957)	
Lowest Annual Precipitation	4.90 (1954)		4.54 (1969)		3.82 (1976)	
Highest Temp. °F.		98 (July)		100 (July)		97 (June)
Lowest Temp. °F.		-36 (Jan.)		-34 (Jan.)		-37 (Jan.)
Frost Free Days** (32° F or above)	103 (6/3 to 9/14)		106 (5/29 to 9/12)		90 (6/7 to 9/5)	

*Source: U.S. Department of Commerce, Annual Summaries of Climatological Data, National Oceanographic and Atmospheric Administration Environmental Data Service.

**1961 to 1976.

TABLE 2-2
 ANNUAL PERCENT FREQUENCY OF WIND SPEED AND DIRECTION
 RAWLINS, WYOMING*
 (1960-1964)

Direction	Speed Groups in MPH							Total
	0-5	6-12	13-15	16-24	25-31	32-38	39 & Greater	
N	.15	1.38	.28	.42	.03			2.26
NNE	.04	.70	.19	.32	.01			1.26
NE	.12	1.72	.44	.71	.04	.002		3.03
ENE	.09	1.31	.33	.60	.02			2.35
E	.11	1.14	.23	.35	.02			1.85
ESE	.07	.49	.05	.07	.002			.68
SE	.05	.50	.04	.05				.65
SSE	.03	.19	.04	.04	.002			.30
S	.09	.62	.11	.23	.01			1.06
SSW	.04	.78	.26	.89	.16	.04	.002	2.17
SW	.22	6.03	2.21	7.84	1.22	.31	.06	17.90
WSW	.25	8.92	3.95	12.29	1.43	.33	.02	27.19
W	.12	3.62	1.31	3.97	.36	.05	.01	9.44
WNW	.07	1.16	.41	1.15	.09	.01		2.89
NW	.16	1.58	.28	.40	.02	.005		2.44
NNW	.10	1.01	.12	.22	.02			1.47
CALM	23.07							23.07
PERCENT	24.78	31.15	10.25	29.55	3.43	.74	.09	100.00

*U. S. Department of Commerce National Climatic Center, Asheville, N.C., 1975.

DESCRIPTION OF ENVIRONMENT—EXISTING

ed as large areas of considerable paleontological potential. All exposures of the Wasatch Formation throughout the ES area could potentially reveal vertebrate fossil deposits. The small collections made thus far from Wasatch exposures in the Red Desert and Great Divide Basins indicate an Early to late Early Eocene age. These collections add to knowledge of the composition of Early Eocene faunas. Their significance will be greatly enhanced once additional stratigraphically documented collections can be made and published.

TOPOGRAPHY

The Seven Lakes ES area lies within the Great Divide Basin of central Wyoming. The area consists of large expanses of flat basins and gently rolling hills (Map 2-1). The elevation of the area ranges from 6,480 feet at Circle Bar Lake to 8,140 feet on Stratton Rim, with an average elevation of 6,800 feet. Except for a few ridges—Cyclone Rim, Lost Soldier Divide, Bull Spring Rim—the average slope is less than 4%.

The area is covered with sediment gravels with little exposed bedrock. The age of the rocks ranges from recent gravels to Cretaceous sandstones and shales.

SOILS

Soils in the Seven Lakes ES area are developing in a semi-arid environment. The low precipitation, high evaporation rates, and sparse vegetative cover reflect a soil which has a light colored surface with light brown subsoils and white powdery carbonate accumulations in the substrata.

The soils in this area can be grouped into four general categories: saline, alluvium, sand dunes, and shallow (Map 2-2). Each group contains inclusions of soils which do not have the properties or support the vegetation of the generalized group. A brief characterization of each group, the soil mapping unit number from field sheets, the associated vegetation types, and inclusions follow.

1. Saline soils (214, 301, 310, 311, 316, 319, 320)

Saline soils are characterized as having large quantities of alkali present in the upper soil profile. They comprise 36% (183,026 acres) of the Seven Lakes ES area. These soils are generally highly susceptible to crusting, difficult to revegetate, and provide poor to fair sites for construction of roads or reservoirs. Inclusions in this group consist of rock outcrops and non-saline (alluvium, sand dunes, and shallow) soils. Vegetation normally associated with this soils group includes greasewood, saltbush, meadow, and waste area types (see Vegetation section).

2. Alluvium (202, 204-208, 303-308, 313, 314, 317, 318)

The soils in this group comprise 57% (289,947 acres) of the ES area and consist of soils developing in alluvium. Soil textures normally range from sandy loam to sandy clay loam. Revegetation potential for this group is fair to good, and the soils are normally suitable for construction of roads and reservoirs. Inclusions in this group consist of saline soils in some of the drainages, stony alluvium or glacial till located primarily along Separation Rim and the footslopes of Whiskey Mountain, and rock outcrops. Vegetation normally associated with this group includes the sagebrush and grass types (see Vegetation section).

3. Sand dunes (209, 321)

This group is characterized by sandy textured soils deposited by wind action. It comprises 2% (12,290 acres) of the ES area. The area located in the southwest corner of the ES area (Soil Map Unit 321) is dominated by saline soils, but the sand dunes set the character of the area. Soils in this group generally have low water holding capacities, are difficult to revegetate, are highly susceptible to wind erosion when disturbed, and are generally unsuitable for construction uses. Inclusions consist primarily of sandy soils overlying bedrock and saline soils between the dunes. Vegetation normally associated with this group includes grass and sagebrush types (see Vegetation section).

4. Shallow soils (302, 312)

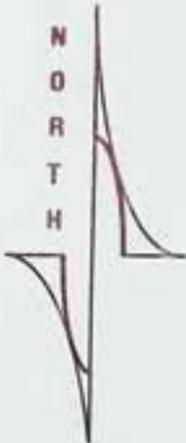
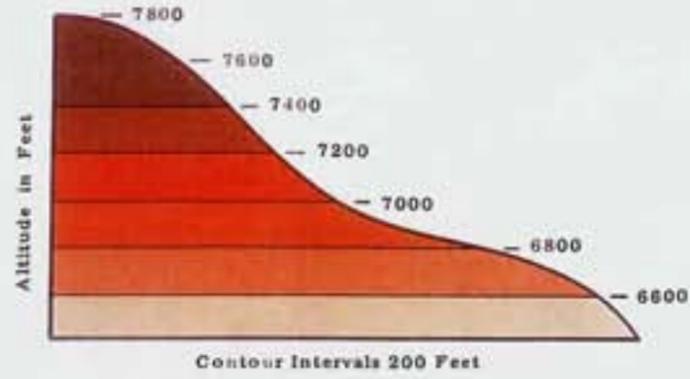
Shallow soils comprise 5% (27,591 acres) of the Seven Lakes ES area. They are less than 20 inches deep, droughty, and variable as to soil texture, salt content, percentages of stone, and susceptibility to crusting. They are generally unsuitable for construction purposes. Inclusions consist of moderately deep soils in drainages and rock outcrops. Vegetation normally associated with this group includes sagebrush and saltbush types (see Vegetation section).

The generalized soils map (Map 2-2) does not match exactly with the generalized vegetation type lines (Map 2-4) in all instances for the following reasons:

1. The class of livestock and the season of use on an area can change the vegetation composition on a particular soil. For example, the E $\frac{1}{2}$ T.24N., R.93W. has been historically used as winter sheep range and has resulted in a change of the dominant vegetative composition from shrub to grass.

2. Area on the leeward (east side) of the playas receive salts removed by wind action; however, the distribution of these salts is not uniform. Generally species which can stand relatively high concentrations of salt will dominate the vegetative community on these inclusions (for example nuttall saltbush and western wheatgrass).

LEGEND

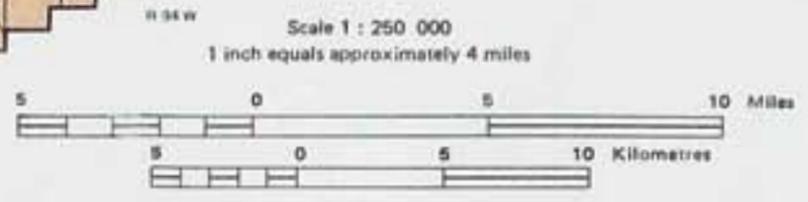
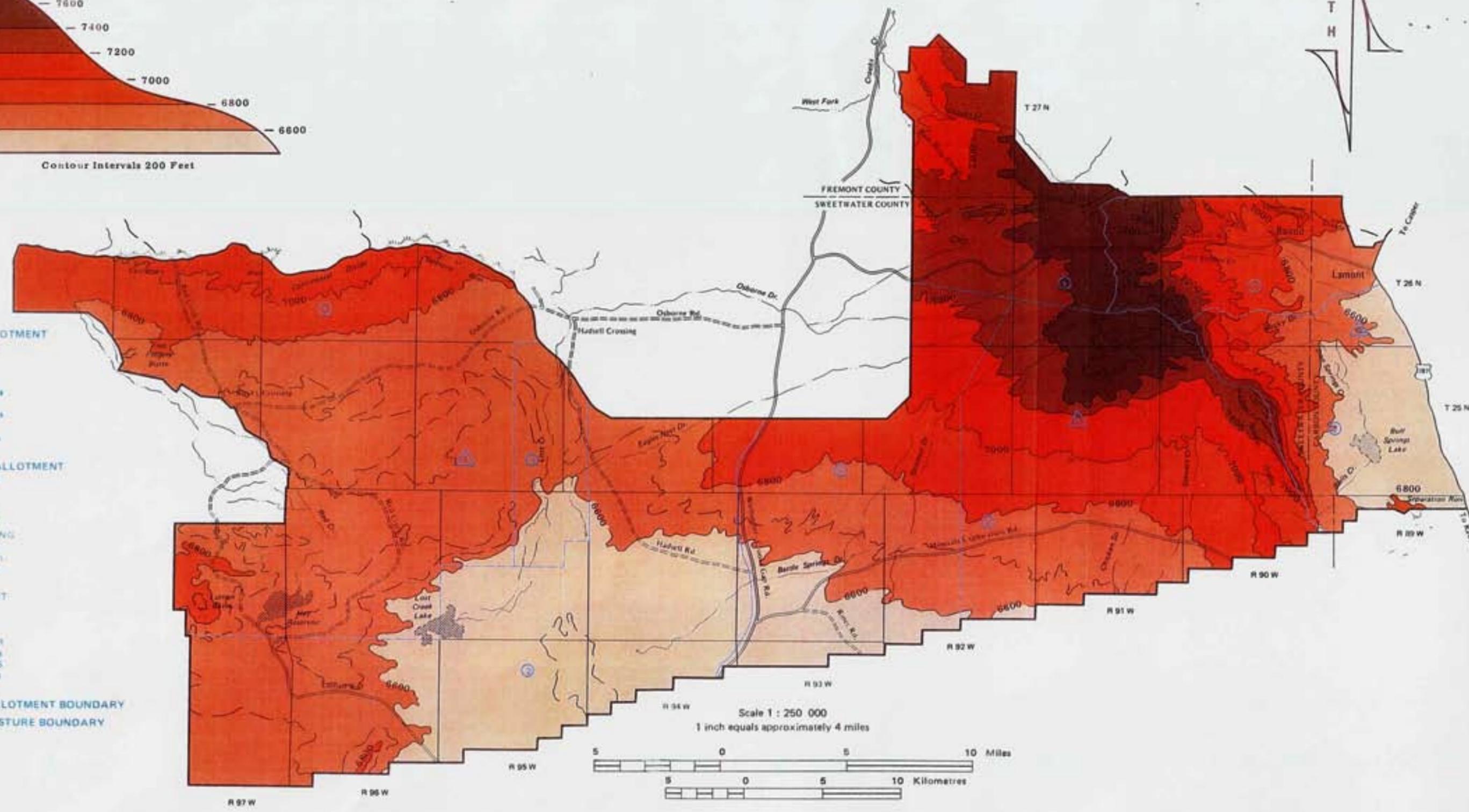


- ▲ CYCLONE RIM ALLOTMENT
255,518 Acres
- PASTURES
 - ① CYCLONE
130,216 acres
 - ② LUMAN
100,794 acres
 - ③ LOST CREEK
15,508 acres

- ▲ STEWART CREEK ALLOTMENT
188,991 Acres
- PASTURES
 - ① SAND SPRING
39,647 acres
 - ② CHICKEN SPRING
80,758 acres
 - ③ OSBORNE WELL
62,975 acres

- ▲ FERRIS ALLOTMENT
69,342 Acres
- PASTURES
 - ① LOST SOLDIER
29,500 acres
 - ② BULL SPRINGS
39,842 acres

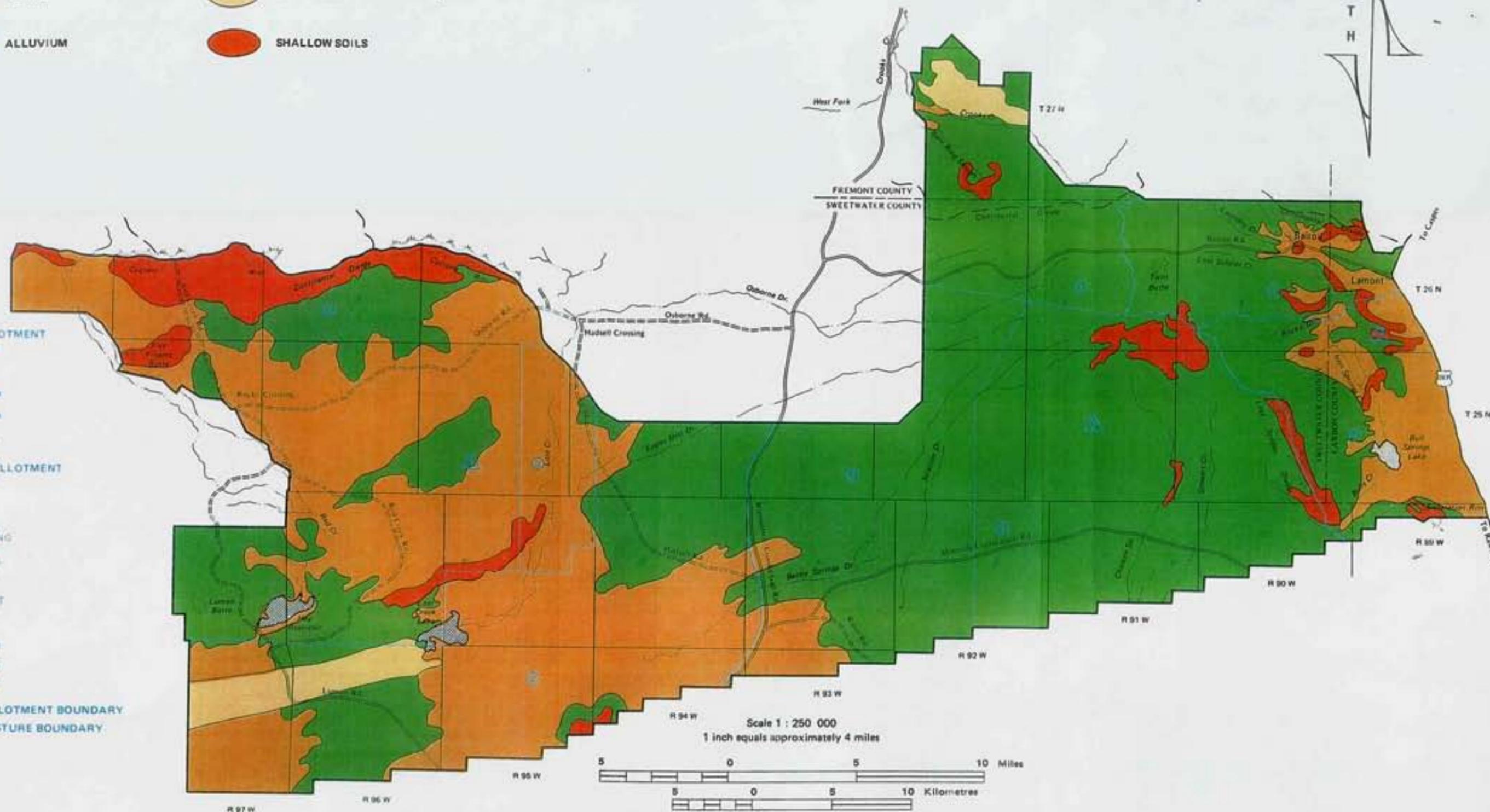
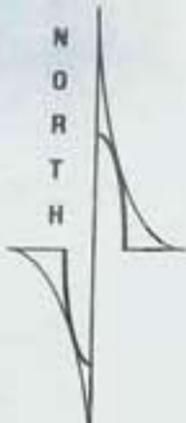
— ALLOTMENT BOUNDARY
- - - PASTURE BOUNDARY



TOPOGRAPHIC RELIEF
Seven Lakes Grazing
Environmental Statement
Map 2-1

LEGEND

- SALINE
- SAND DUNES
- ALLUVIUM
- SHALLOW SOILS



▲ **CYCLONE RIM ALLOTMENT**
255,518 Acres

- PASTURES**
- ① CYCLONE
130,210 acres
 - ② LUMAN
109,794 acres
 - ③ LOST CREEK
15,508 acres

▲ **STEWART CREEK ALLOTMENT**
188,951 Acres

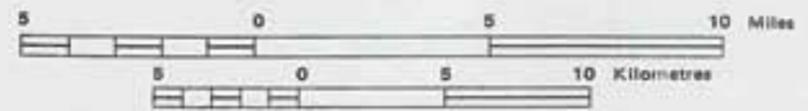
- PASTURES**
- ① SAND SPRING
39,647 acres
 - ② CHICKEN SPRING
86,788 acres
 - ③ OSBORNE WELL
62,516 acres

▲ **FERRIS ALLOTMENT**
83,740 Acres

- PASTURES**
- ① LOST SOLDIER
29,500 acres
 - ② BULL SPRINGS
38,845 acres

—— ALLOTMENT BOUNDARY
- - - PASTURE BOUNDARY

Scale 1 : 250 000
1 inch equals approximately 4 miles



**GENERALIZED
SOIL GROUPS**
Seven Lakes Grazing
Environmental Statement
Map 2 - 2

DESCRIPTION OF ENVIRONMENT—EXISTING

3. There are many areas which are covered by sand dunes. The vegetation supported by this soil inclusion is not the same as that supported by the dominant soils of the area. For example, many small sand dunes near Highway 287 support vegetation similar to that produced on the general sand dunes soils group (normally grass and sagebrush types—see Vegetation section).

that soils will erode are in Appendix B-2-4. Appendix B-2-4 has a detailed description of soil and wind erodibility criteria. Studies to determine the actual amount of wind erosion have not been conducted. Therefore, erosion rates by wind are not known at this time.

WATER RESOURCES

Soil Inventory

A reconnaissance soil survey at the phases of soil families level was conducted during the summer of 1976 to determine the location and extent of soils in the Seven Lakes ES area. A soils map showing map unit locations and soil groups is available in the Rawlins District Office. Soil map units were established by outlining geomorphological features on 2 inches/mile aerial photographs. The information on the aerial photographs was transferred to USGS topographical maps using a zoom transfer scope. The soils within the outlined areas were looked at on the ground (by digging soil pits) to determine soil type and from the air to determine types and the percentage of each soil type within a mapping unit, respectively.

The soil survey was conducted to obtain information for general planning purposes. Areas where site specific projects are anticipated would need additional survey work. The survey identified the major soils in the area and their locations. Appendix B-2-20 presents the mapping units for the ES area. Appendix B-2-21 presents some of the important properties of each mapping unit.

Erosion

Sediment yield was determined using the Pacific Southwest Inter-Agency Committee (see Appendix B-2-18) method. Sediment is being removed from the soil surface (sheet and rill erosion) and gullies (gully erosion) at a rate of approximately 121 acre feet per year within the ES area and is deposited in the stream channels and lake basins downstream. Table 2-3 gives present sediment yield in each allotment by soil map unit. Erosion classes are defined (USDI, BLM 1976) from the Sediment Yield Rating System in acre feet per square mile per year (ac ft/sq mi/yr) as follows:

Erosion Class (ac ft/sq mi/yr)

Low 0-0.3

Mod. 0.3-0.9

High 0.9 or greater

Approximately 97% (497,881 acres) of the soils are classed low and 3% (14,973 acres) are classed moderate. There are no soils in the Seven Lakes ES area that are classed high.

Wind Erosion

The wind erosion potential varies with soil type. Wind erodibility group ratings which show the relative rates

Water Use

The total consumptive water use by wild horses and wildlife is approximately 5 acre-feet per year (ac ft/yr), while livestock use is 14 ac ft/yr (Table 2-4).

Since most of the area is without perennial surface water, stock reservoirs have been developed to store spring runoffs for use later in the summer (see Map 2-3). Evaporation losses from the sixteen BLM reservoirs that provide livestock water is approximately 87 ac ft/yr (Table 2-4). The evaporation estimate is based on a net evaporation of 47 inches per year (Smith 1974). Storage capacity of the sixteen reservoirs is 88 acre-feet. This shows that nearly all water in reservoirs would evaporate if not consumed by animals, thus the amount evaporated is actually less than calculated. There are also about twenty private reservoirs which also provide stockwater.

There is no other agricultural or domestic use of water in the Seven Lakes ES area. Water in the area is often used for mineral exploration activities, but the amount used is not known. Stream fisheries within the ES area are very limited (Animals Chapter 2).

Waste water discharges within the ES area include a discharge from a separation plant at Bairoil into Abel Creek, and one by a restaurant at Lamont into an unnamed draw. Another discharge into a tributary of Osborne Draw at T.26N., R.91W., Section 10 is excess water that cannot be used in an oil field injection system. It is of very good quality, but is creating head cutting and erosion problems in the previously dry draw.

Surface Water

The Seven Lakes ES area lies almost entirely (95%) within the Great Divide Basin, a topographically closed basin with no drainage out of it. The remaining 5% of the area is drained by Crooks Creek which is in the North Platte River drainage and is the only stream to leave the ES area. The major streams within the Great Divide Basin portion are Lost Soldier Creek, Bulls Creek, Stewart Creek, Eagles Nest Draw, Lost Creek, and Red Creek. All of these streams drain into playa type lakes or infiltrate into their channels within the ES area. No continuous streamflow gaging stations have been operated within the area.

The streams of the Seven Lakes ES area are ephemeral or intermittent, except for short distances below springs and except for Crooks Creek and Lost Soldier Creek which are the only two streams which can be

TABLE 2-3
PRESENT SEDIMENT YIELD

Soil Map Unit Number	<u>Ferris</u>			<u>Allotment Stewart Creek</u>			<u>Cyclone Rim</u>		
	<u>Acres</u>	<u>Sediment Yield</u>		<u>Acres</u>	<u>Sediment Yield</u>		<u>Acres</u>	<u>Sediment Yield</u>	
		<u>Mean*</u>	<u>(ac ft/yr)</u>		<u>Mean*</u>	<u>(ac ft/yr)</u>		<u>Mean*</u>	<u>(ac ft/yr)</u>
202	2,818	.10	.44	618	.10	.10			
204	5,783	.16	1.45	1,251	.16	.31			
205	225	.16	.06	1,825	.16	.46			
206	1,997	.18	.56	321	.18	.09			
207	1,948	.19	.58	4,805	.19	1.43			
208				4,732	.19	1.40			
209				3,506	.15	.82			
214				344	.12	.06			
301	24,264	.12	4.55	3,571	.12	.67	45,340	.12	8.50
302	1,667	.21	.55	2,081	.21	.68	818	.21	.27
303	4,799	.37	2.77				10,174	.37	5.88
304	722	.20	.23	1,687	.20	.53			
305				66,679	.11	11.46	21,976	.11	3.78
306	3,844	.27	1.62				36,326	.27	15.33

TABLE 2-3 (CONTINUED)
PRESENT SEDIMENT YIELD

Soil Map Unit Number	Acres	Ferris		Allotment Stewart Creek			Cyclone Rim		
		Sediment Yield		Acres	Sediment Yield		Acres	Sediment Yield	
		Mean*	(ac ft/yr)		Mean*	(ac ft/yr)		Mean*	(ac ft/yr)
307	1,825	.09	.26	46,458	.09	6.53	1,390	.09	.20
308	297	.15	.07	42,555	.15	9.97	1,851	.15	.43
310				3,903	.12	.73	43,662	.12	8.19
311							10,742	.25	4.20
312	2,546	.14	.56	4,402	.14	.96	16,077	.14	3.52
313	3,329	.21	1.09	253	.21	.08			
314	3,274	.14	.72						
316							13,445	.18	3.78
317	6,461	.18	1.82						
318	2,546	.10	.40				7,147	.10	1.12
319							10,127	.17	2.69
320							27,658	.15	6.48
321							8,785	.18	2.47
TOTAL	68,345		17.73	188,991	36.28		255,518		66.84

* Mean Sediment Yield - refers to the average sediment yield rate in acre feet per square mile per year.

TABLE 2-4
PRESENT WATER CONSUMPTION

	Animal Months	Gallons/ Animal Month	Acre-Feet/Year
Wild Horses	2,880	300*	3
Mule Deer	2,100	12*	< 1
Pronghorn	47,328	12**	2
Cattle	4,669	300*	4
Sheep	107,180	30*	10
Evaporation, (Reservoir)	16 reservoirs	5.4 ac ft/yr***	<u>87</u>
Total			106

*Stoddart, Smith and Box 1975

**BLM Manual 1605, Illustration 12

***Appendix B-2-5

1 CYCLONE RIM ALLOTMENT
255,518 Acres

- PASTURES**
- ① CYCLONE
130,216 acres
 - ② LUMAN
109,794 acres
 - ③ LOST CREEK
15,508 acres

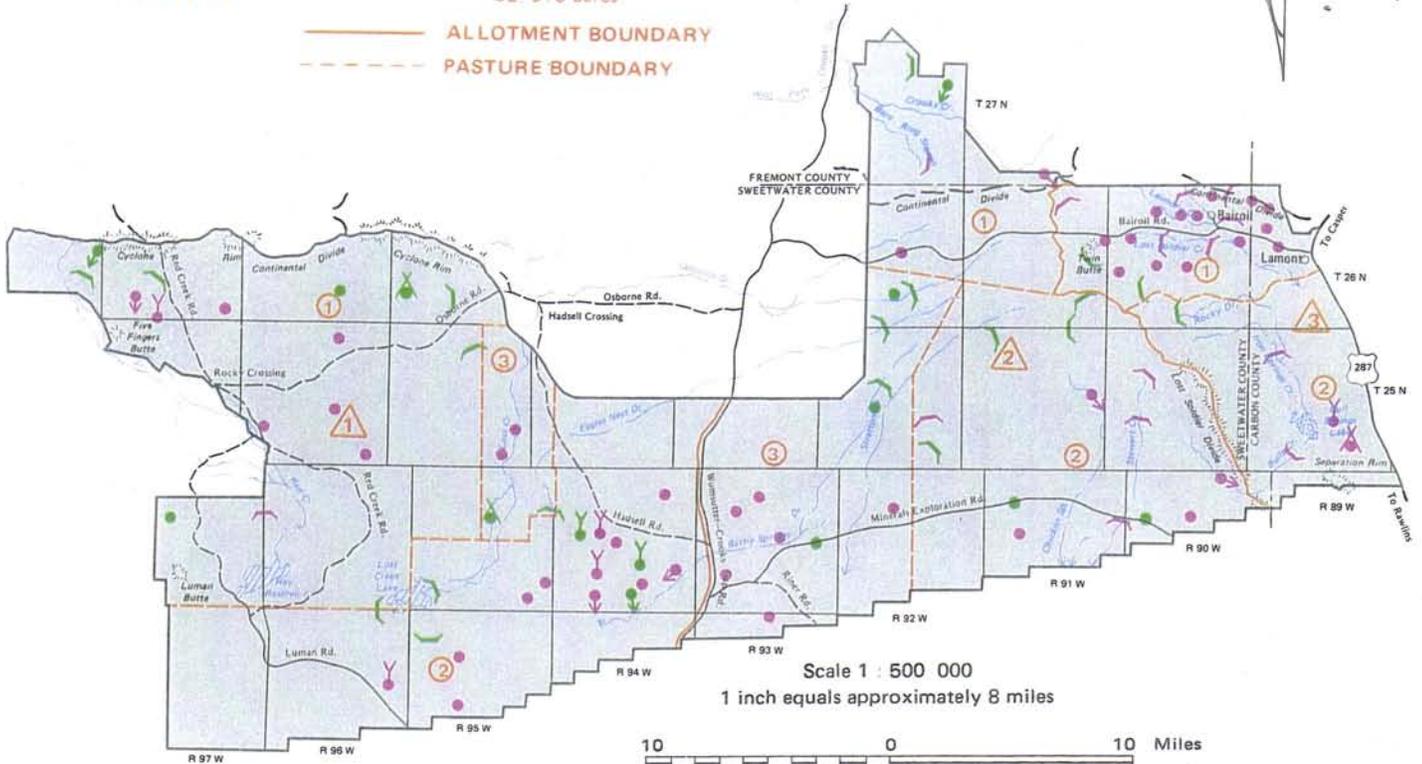
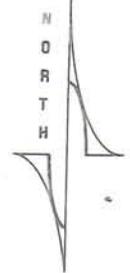
2 STEWART CREEK ALLOTMENT
188,991 Acres

- PASTURES**
- ① SAND SPRING
39,647 acres
 - ② CHICKEN SPRING
86,768 acres
 - ③ OSBORNE WELL
62,576 acres

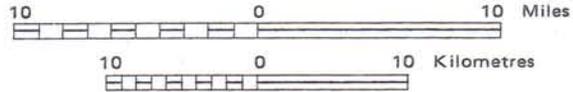
3 FERRIS ALLOTMENT
68,345 Acres

- PASTURES**
- ① LOST SOLDIER
29,500 acres
 - ② BULL SPRINGS
38,845 acres

———— ALLOTMENT BOUNDARY
- - - - - PASTURE BOUNDARY



Scale 1 : 500 000
1 inch equals approximately 8 miles



LEGEND

PRIVATE OR STATE

- RESERVOIR
- WELL
- ARTESIAN WELL
- SPRING
- WINDMILL

FEDERAL

- RESERVOIR
- WELL
- ARTESIAN WELL
- SPRING
- WINDMILL

FOOTNOTE :

Indication of a water development does not mean water is available for use. Most indicated wells do not have pumps. Many reservoirs and springs are not maintained and are ineffective in providing water for livestock or wildlife.

EXISTING WATER DEVELOPMENTS

Seven Lakes Grazing
Environmental Statement

DESCRIPTION OF ENVIRONMENT—EXISTING

classified as perennial. The other streams flow in response to snowmelt and intense rainstorms. The runoff of the area is highly variable and dependent on snowpack distribution, depth, and density. Snow in the area is subject to high sublimation rates, so in exposed areas wind either blows the snow cover to a nearby deposition area or the snow sublimates (Sturges 1975). Temperature, solar radiation, and humidity are important factors in determining the timing and amount of snowmelt runoff. However, winds during winter snowfalls also play an important role in the amount of snowmelt by redeposition of snow into draws and on the lee side of ridges, and vegetation.

Expected peak flows of the ES area are generally low. Some peak flows determined by channel geometry relationships are presented in Table 2-5.

Water Quality

Since there has been no continuous sampling of water in the Seven Lakes ES area, the only water quality information is from the USGS samples taken during the snowmelt runoff of 1976 (USGS 1976). Although the data may not be representative of average year-round conditions, they may be indicative of the spring runoff which is when the greatest amount of runoff occurs each year. The spring runoffs normally fill most stockwater reservoirs each year.

It was found by the USGS (1976) that total dissolved solids ranged from less than 100 to 1,000 milligrams per liter (mg/l). It was found that, due to flushing action, the highest specific conductance (which indicates total dissolved solids) occurred near the leading edge of the flow in the previously dry channels. Some of the typical sample results are shown in Table 2-6. The USGS (1976) found that Red Creek and Lost Creek had similar composition of major ions, while Lost Soldier Creek had lower sodium and higher chloride concentrations.

The waste water discharged into Abel Creek has a significant impact on water in the creek and Lost Soldier Creek into which it flows. The Bureau of Land Management found the draw below the discharge to have a specific conductivity greater than 5,000 micromhos, and found the flow in Lost Soldier Creek, 2 miles downstream, still exceeding 5,000 micromhos (USDI, BLM 1977). Conductance at Abel Springs above the discharge was measured at 320 micromhos by BLM. Because of this high level of conductance the discharge may make the water unfit for wildlife and livestock consumption.

Sediment yields for the Seven Lakes ES area are generally very low, and are presented in the Soils Section of Chapter 2.

The USGS collected no fecal coliform data during their study. While monitoring the leading edge of streamflow, livestock and wildlife feces were observed being carried along by the flow. Livestock and wildlife are usually concentrated around surface waters; so fecal coliform levels are expected to be high.

The chemical, biological, and physical characteristics of water affect the use. There are no quality standards

for wildlife and livestock consumption, but adverse levels have been determined (McKee and Wolfe 1963). Surface waters of the Seven Lakes ES area are well below these adverse levels and satisfactory for livestock and wildlife watering.

Groundwater

There are indications of an abundant groundwater supply in the Seven Lakes ES area (Welder and McGreevy 1966). Since the Great Divide Basin is closed topographically, surface water eventually evaporates or percolates into subsurface aquifers. Artesian flows exist in the southwestern portion of the ES area. The area is not underlain by a single large aquifer, but by many small, and interconnected aquifers (Welder and McGreevy 1966). Yields of the area wells range from less than 10 to 250 gallons per minute (gpm); a maximum expected yield could be 1,000 gpm or more (Welder and McGreevy 1966). The Battle Springs Formation has been identified as a future source of groundwater by the Wyoming State Engineer (1973). The Battle Springs Formation has an annual recharge of about 20,000 ac ft/yr (Wyoming State Engineer 1973); thus that amount could be pumped from it each year with no net depletion of water from the aquifer.

The quality of groundwater is satisfactory for livestock water (USGS 1976). Groundwater in the vicinity of Bull Springs (T.24N., R.90W., Section 11) is high in uranium and radioactivity, but should be safe for livestock (USGS 1976).

VEGETATION

Vegetation Types

The Seven Lakes ES area has seven major vegetation types: sagebrush, greasewood, grass, saltbush, mountain shrub, meadow, and waste types (Table 2-7) (see Map 2-4 for locations of each vegetation type). Each vegetation type is based upon significant differences in the proportions and kind of native plant species that are predominant over an area. The Seven Lakes ES area vegetation types are based on data from the 1975-1976 Seven Lakes range survey, which is available for review in the Raylins District Office.

Several parameters are considered in the description of each type:

1. Percent composition—the proportions of various plant species in relation to the total on a given area. The percent composition of the vegetation types was estimated on a dry weight basis during the 1975-1976 survey.
2. Ground cover—or the amount of ground surface covered by living or dead organic matter on the ground surface and small and large stones. BLM personnel conducted a survey in the fall of 1976. The Wyoming Integrated Study Procedure outlined in BLM Instruction Memo WSO-75-31 was used to determine ground cover

TABLE 2-5
 PEAK FLOWS AS DETERMINED BY CHANNEL GEOMETRY*

<u>Allotment and Stream</u>	<u>Peak Flows in ft³/sec</u>	
	<u>2 year</u>	<u>5 year</u>
Ferris		
Lost Soldier Creek	200	450
Stewart Creek		
Spring Creek	20	60
Battle Springs Draw	10	40
Cyclone Rim		
Eagles Nest Draw	10	40

* Measurements by BLM personnel and applied to relationships in Techniques for Estimating Flow Characteristics of Wyoming Streams, by H.W. Lowham 1976.

TABLE 2-6
WATER QUALITY*

Location	Date	Instantaneous Discharge (cfs)	Suspended Sediment (mg/l)	Turbidity (JTU)	Alkalinity as CaCO ₃ (mg/l)	Bicarbonate (mg/l)	Total dissolved Solids (mg/l)	Specific Conductance (micromhos)	pH
Lost Soldier Creek above Lost Soldier Lake	4/6/76	3	6,960	1,200	207	252	1,160	2,200	---
	4/12/76	3.8	4,480	600	171	209	423	780	---
Lost Creek above Lost Lake	4/11/76	15	---	280	75	92	194	327	---
Lost Creek below Eagles Nest Spring	4/2/76	3	1,620	---	133	162	398	610	---
Hay Reservoir	3/25/76	--	---	---	---	274	634	1,020	8.6
Red Creek above Hay Reservoir	3/25/76	20	---	---	105	128	239	295	8.6
	3/25/76	8	1,020	600	107	130	223	440	7.2
Red Creek at Rocky Crossing	3/25/76	19	1,450	600	92	112	158	270	8.6
	4/1/76	7	1,040	700	103	125	222	395	7.2
	4/11/76	7	2,940	1,100	100	122	185	270	---
Red Creek near Five Finger Butte	4/1/76	9.6	1,830	1,100	98	120	201	335	8.1

*Data from USGS Study 1976.

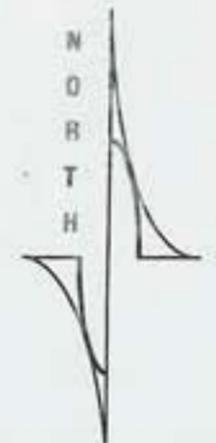
TABLE 2-7
ACREAGE AND PERCENTAGE OF VEGETATION TYPES BY ALLOTMENT AND PASTURE

Allotment and Pasture	Sagebrush		Greasewood		Grass		Saltbush		Mountain Shrub		Meadow		Waste Area		Total Acres
	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres*	%	
Ferris															
Bull Springs	7,816	20	12,721	33	12,892	33	483	1	866	2	2,860	7	1,207	3	38,845
Lost Soldier	16,229	55	0	0	10,039	34	1,345	5	732	2	315	1	840	3	29,500
Total	24,045	35	12,721	19	22,931	34	1,828	3	1,598	2	3,175	5	2,047	3	68,345
Stewart Creek															
Sand Springs	39,252	99	0	0	0	0	0	0	0	0	276	1	119	<1	39,647
Osborne Well	32,293	52	830	1	29,414	47	0	0	0	0	0	0	39	<1	62,576
Chicken Springs	82,541	95	842	1	3,333	4	0	0	0	0	52	<1	0	0	86,768
Total	154,086	82	1,672	1	32,747	17	0	0	0	0	328	<1	158	<1	188,991
Cyclone Rim															
Lost Creek	8,394	54	1,548	10	660	4	4,906	32	0	0	0	0	0	0	15,508
Luman	31,720	29	40,786	37	32,667	30	3,996	4	0	0	0	0	625	1	109,794
Cyclone	52,725	40	14,970	11	33,897	26	27,057	21	0	0	0	0	1,567	1	130,216
Total	92,839	36	57,304	22	67,224	26	35,959	14	0	0	0	0	2,192	1	255,518
ES TOTAL	270,970	53	71,697	14	122,902	24	37,787	7	1,598	<1	3,503	1	4,397	1	512,854

*Waste areas include excessively steep slopes and sites without vegetation suitable for livestock (e.g. dry lake beds and Opuntia dominated sites).

LEGEND

- | | | | |
|---|----------------|---|------------|
|  | GRASS |  | WASTE AREA |
|  | MOUNTAIN SHRUB |  | SALTBUSH |
|  | SAGEBRUSH |  | GREASEWOOD |
|  | MEADOW | | |



△ CYCLONE RIM ALLOTMENT
285,012 Acres

- PASTURES**
- ① CYCLONE 130,216 acres
 - ② LUMAN 100,794 acres
 - ③ LOST CREEK 15,808 acres

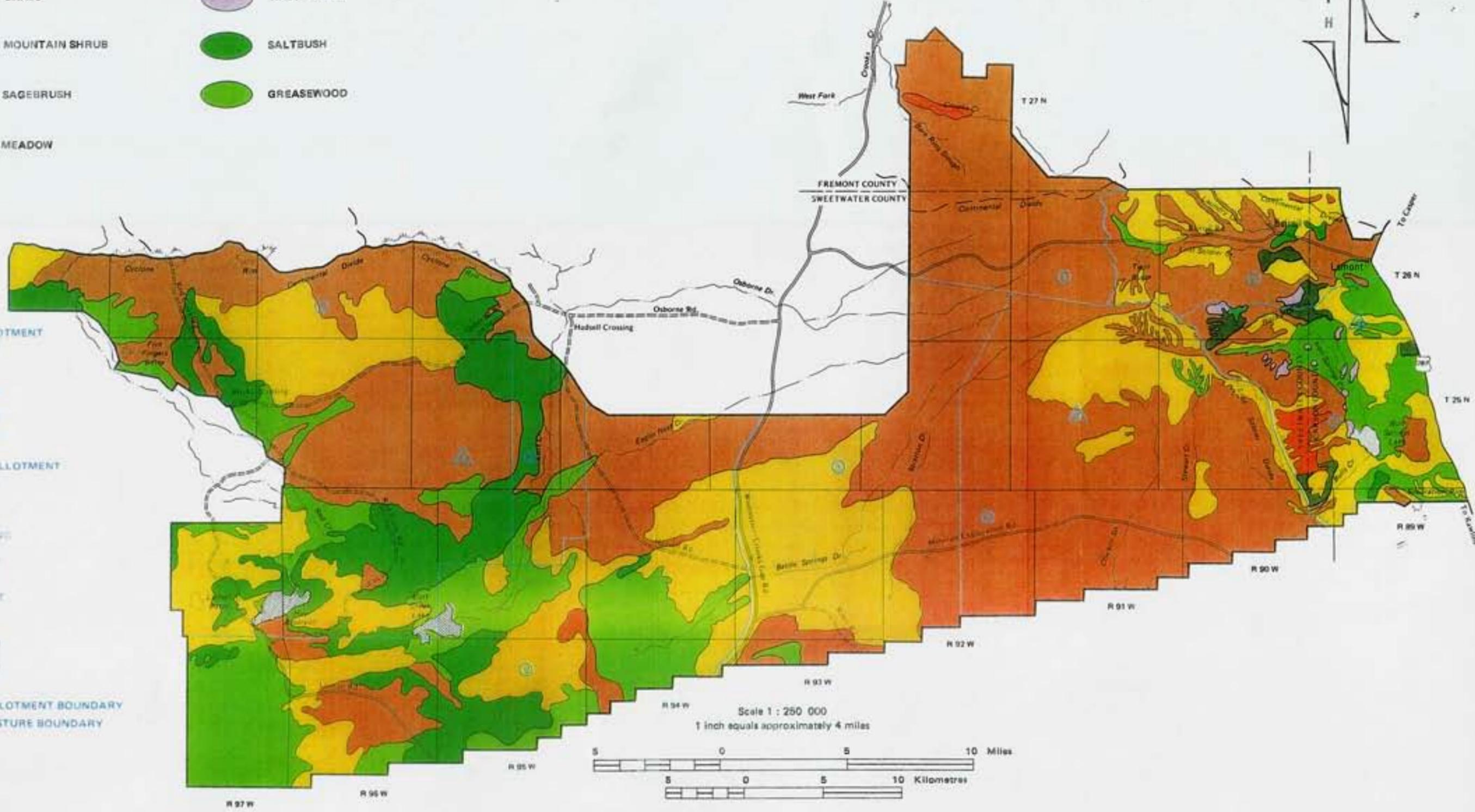
△ STEWART CREEK ALLOTMENT
188,951 Acres

- PASTURES**
- ① SAND SPRING 39,647 acres
 - ② CHICKEN SPRING 89,708 acres
 - ③ OSBORNE WELL 52,515 acres

△ FERRIS ALLOTMENT
89,341 Acres

- PASTURES**
- ① LOST SOLDIER 29,300 acres
 - ② BULL SPRINGS 38,845 acres

— ALLOTMENT BOUNDARY
- - - PASTURE BOUNDARY



VEGETATION TYPES
Seven Lakes Grazing
Environmental Statement
Map 2-4

DESCRIPTION OF ENVIRONMENT—EXISTING

(BLM Instruction Memo WSO-75-31 is available for review at the Rawlins District Office).

3. Percent vegetative cover—the amount of ground surface covered by the aerial portions of the vegetation. This information was obtained from the survey mentioned in 2 above.

4. Production—the number of acres required to support one animal unit for one month. This information was obtained from the 1975-1976 range survey. The percent ground cover and percent vegetative cover with present production in terms of acres per AUM are listed in Table 2-8 by vegetation type.

Sagebrush Type

The Seven Lakes ES area is dominated by the sagebrush type which covers 270,970 acres or 53% of the area (Table 2-7). This type extends throughout the ES area. Eighty-two percent (154,086 acres) of the Stewart Creek allotment is sagebrush type; while 35% (24,045 acres) and 36% (92,839 acres) respectively of the Ferris and Cyclone Rim allotments are dominated by sagebrush.

The average species composition for the sagebrush vegetation type is 46%, 7%, and 47% for grass, forbs, and shrubs, respectively. Plants commonly found in this type are listed in Table 2-9 (Refer to Appendix B-2-17 for a complete vegetative species list).

Big sagebrush (*Artemisia tridentata*) is the most common constituent of the sagebrush type. Predominant subtypes include black sagebrush (*Artemisia nova*), bud sagebrush (*Artemisia spinescens*), and birdfoot sagebrush (*Artemisia pedatifida*). Also included in the sagebrush type is the rabbitbrush subtype which consists mainly of Douglas rabbitbrush (*Chrysothamnus viscidiflorus*) and rubber rabbitbrush (*Chrysothamnus nauseosus*). The majority of the forage for the livestock and most preferred when accessible, is the understory vegetation. The major grass species in the understory are Indian ricegrass (*Oryzopsis hymenoides*), thickspike wheatgrass (*Agropyron dasystachyum*), Sandberg bluegrass (*Poa secunda*), needle-and-thread (*Stipa comata*), bluebunch wheatgrass (*Agropyron spicatum*), and western wheatgrass (*Agropyron smithii*). On summer ranges or when there is an abundance of other forage plants, sagebrush is sometimes considered to be a nuisance to livestock grazing.

Greasewood Vegetation Type

This vegetation type comprises 14% (71,697 acres) of the ES area. The greasewood vegetation type contributes 19% (12,721 acres) of the acreage of the Ferris allotment, 1% (1,672 acres) to the Stewart Creek allotment and 22% (57,304 acres) to the Cyclone Rim allotment. This type is normally located in narrow gulches and low flats which are heavily impregnated with alkali.

Shrubs, ranging from 42% to 100%, dominate the composition of this vegetation type. The average shrub composition of this vegetation type is 68%. The average grass and forb compositions are 28% and 4%, respective-

ly. Table 2-10 lists the species commonly found within the greasewood vegetation type.

Grass Vegetation Type

This vegetation type contributes 24% (122,902 acres) to the vegetation of the Seven Lakes ES area. The grass vegetation type furnishes 34% (22,931 acres) of the area in the Ferris allotment and 17% (32,747 acres) of the area in the Stewart Creek allotment. Twenty-six percent (67,224 acres) of the vegetation in the Cyclone Rim allotment is the grass type.

Within the grass vegetation type, grass species composition ranges from 19% to 100%, averaging 62% for the entire grass vegetation type. Forbs and shrubs average 8% and 30%, respectively, in the grass vegetation type. Table 2-11 lists the common species found within the grass vegetation type.

Saltbush Vegetation Type

The saltbush vegetation type covers 7% or 37,787 acres of the ES area. Three percent (1,828 acres) of the Ferris allotment is the saltbush vegetation type. There is no saltbush vegetation type within the Stewart Creek allotment and 14% (35,959 acres) of the area in the Cyclone Rim allotment is saltbush. This type is usually confined to long valleys and low alkali flats which are common in the Cyclone Rim allotment.

The average composition of this vegetation type is 40%, 1%, and 59% for grass, forb, and shrub species, respectively. Table 2-12 shows species found within this vegetation type.

Mountain Shrub Vegetation Type

The mountain shrub vegetation type contributes 1,598 acres (less than 1%) to the ES area. All of the mountain shrub vegetation type is found within the boundaries of the Ferris allotment.

The composition of the mountain shrub vegetation type averages 60% shrubs, 34% grass, and 6% forbs. This vegetation type is represented mainly by antelope bitterbrush and is associated with big sagebrush. Table 2-13 shows the species commonly found in the mountain shrub vegetation type.

Meadow Vegetation Type

The meadow vegetation type makes up 1% or 3,503 acres of the ES area. No meadow vegetation is found within the Cyclone Rim allotment; 328 acres are found in the Stewart Creek allotment; and 3,175 acres are found in the Ferris allotment. Both wet and dry meadows have been grouped in this type. The dry site shrubs such as sagebrush and rabbitbrush are more abundant than the wet meadow type. The dry meadow subtype is found around intermittent streams. The wet meadow subtype is found around Crooks Creek in the Stewart Creek

TABLE 2-8
 PRESENT VEGETATION COVER, GROUND COVER, AND PRODUCTION
 BY VEGETATION TYPE FOR THE ES AREA

Vegetation Type	Vegetative Cover* (%)	Ground Cover** (%)	Present Production (Acres per AUM)	
			Cattle	Sheep
Sagebrush	25	57	27	13
Greasewood	17	32	18	9
Grass	23	51	17	8
Saltbush	16	37	16	10
Mountain Shrub	44	60	58	16
Meadow	44	16	9	9

*Vegetation cover is defined as the amount of ground surface covered by the aerial portions of the vegetation.

**Ground cover includes live and dead organic matter, small and large stones.

TABLE 2-9
PLANTS COMMONLY FOUND IN SAGEBRUSH TYPE

<u>Grasses</u>	<u>Forbs</u>	<u>Shrubs</u>	<u>Soil Mapping Units</u> (see Soils section)
Sandberg bluegrass	Phlox	Big sagebrush	
Thickspike wheatgrass	Wild buckwheat	Nuttall saltbush	
Bluebunch wheatgrass	Yellow owlclover	Greasewood	202
Indian ricegrass		Douglas rabbitbrush	204
Needle-and-thread		Rubber rabbitbrush	205
Bottlebrush squirreltail		Black sagebrush	206
Western wheatgrass			207
			208
			209
			302
			303
			304
			305
			307
			308
			312
			313
			314
			317
			321

TABLE 2-10
PLANTS COMMONLY FOUND IN GREASEWOOD TYPE

<u>Grasses</u>	<u>Forbs</u>	<u>Shrubs</u>	<u>Soil Mapping Units</u> (see Soils section)
Thickspike wheatgrass	Phlox	Big sagebrush	
Western wheatgrass	Wild buckwheat	Douglas rabbitbrush	
Indian ricegrass		Nuttall saltbush	214
Sandberg bluegrass		Greasewood	301
Bottlebrush squirreltail		Bud sagewort	308
			310
			311
			316
			318
			319
			320

TABLE 2-11
PLANTS COMMONLY FOUND IN GRASS TYPE

<u>Grasses</u>	<u>Forbs</u>	<u>Shrubs</u>	<u>Soil Mapping Units</u> (see Soils section)
Indian ricegrass	Phlox	Birdfoot sagewort	
Bottlebrush squirreltail	Stemless goldenweed	Nuttall saltbush	
Sandberg bluegrass	Wild buckwheat	Big sagebrush	204
Thickspike wheatgrass		Shadscale saltbush	207
Needle-and-thread		Winterfat	209
Bluebunch wheatgrass		Douglas rabbitbrush	303
			304
			305
			307
			308
			313
			314
			317
			318
			321

TABLE 2-12
PLANTS COMMONLY FOUND IN SALTBUH TYPE

<u>Grasses</u>	<u>Forbs</u>	<u>Shrubs</u>	<u>Soil Mapping Units</u> (see Soils section)
Bottlebrush squirreltail	Phlox	Nuttall saltbush	
Needle-and-thread		Birdfoot	
Thickspike wheatgrass		Big sagebrush	214
Bluebunch wheatgrass		Bud sagewort	301
		Winterfat	302
			310
			311
			312
			313
			316
			319
			320

TABLE 2-13
PLANTS COMMONLY FOUND IN MOUNTAIN SHRUB TYPE

<u>Grasses</u>	<u>Forbs</u>	<u>Shrubs</u>	<u>Soil Mapping Units</u> (see Soils Section)
Sandberg bluegrass	Stemless goldenweed	Big sagebrush	
Thickspike wheatgrass	Wild buckwheat	Douglas rabbitbrush	
Needle-and-thread		Bud sagewort	202
		Antelope bitterbrush	204
			303
			304
			306
			312
			313
			317
			318

TABLE 2-14
PLANTS COMMONLY FOUND IN MEADOW TYPE

<u>Grasses and Grasslike Plants</u>	<u>Forbs</u>	<u>Shrubs</u>	<u>Soil Mapping Units</u> (see Soils section)
Needle-and-thread	Phlox	Big sagebrush	
Indian ricegrass	Western yarrow	Fringe sagebrush	
Prairie junegrass		Douglas rabbitbrush	214
Thickspike wheatgrass			301
Kentucky bluegrass			310
Sandberg bluegrass			311
Rushes			316
Sedges			319
			320

DESCRIPTION OF ENVIRONMENT—EXISTING

allotment and Lost Soldier Creek in the Ferris allotment. Due to the location of existing water sources, these wet meadow areas have received excessive use by cattle. Figure 2-1 shows a comparison of a wet meadow that has been excessively grazed and a wet meadow which has not been overgrazed. It should be noted that riparian habitat has been included within the wet meadow sub-type.

Grass and grasslike plants make up the majority (an average of 84%) of the vegetation within the meadow type. Forbs comprise approximately 6%, while shrubs contribute 10% to the vegetation in the meadow type. Table 2-14 shows the species commonly found in the meadow vegetation type.

Poisonous Plants

There are six genera of poisonous plants in the Seven Lakes ES area. These genera are greasewood, halogeton (*Halogeton glomeratus*), lupine (*Lupinus* spp.), locoweed (*Astragalus*), arrowgrass (*Triglochin maritima*), and horsebrush species (*Tetradymia glabrata*, *T. canescens*, and *T. spinosa*).

Greasewood, halogeton, and lupine are known to affect sheep and occasionally cattle. Arrowgrass affects both sheep and cattle, while locoweed and horsebrush affect all classes of livestock. Most poisonous species kill animals only if eaten in large amounts—often almost a straight diet of the poisonous plants (Stoddart, Smith, and Box 1975). The poisonous plants listed above are present throughout the ES area. Problems from poisonous plants are minimal because of the scanty distribution and lack of local concentrations.

Threatened or Endangered Species

During the summer of 1977, the Seven Lakes ES area was surveyed for threatened or endangered vegetative species. The survey did not locate any threatened or endangered species within the ES area and none are known to exist.

Three vegetation species on the federal list of proposed threatened or endangered species (*Federal Registers*, July 1, 1975 and June 16, 1976) are thought to have a good possibility of occurring in the ES area. These three species are *Lesquerella macrocarpa*, *Physaria condensata*, and *Townsendia spathulata*.

Lesquerella macrocarpa is known to exist at one site located approximately 20 miles west of the Seven Lakes ES area and may occur in western portions of the ES area.

Physaria condensata has been located less than 10 miles from the Seven Lakes ES area, growing on limestone ridges near Muddy Gap, Wyoming. *Physaria condensata* in the Muddy Gap region was accessible to livestock and wildlife but did not receive any use. Similar limestone ridges are located within the ES area; therefore, it would be possible for *Physaria condensata* to exist within the Seven Lakes ES area. Use of *Physaria condensata* by live-

stock, wild horses, and wildlife, if it were found in the ES area, would be the same as on the Muddy Gap population.

Townsendia spathulata has been located approximately 25 miles north of the Seven Lakes ES area on limestone ridges. Similar limestone ridges are located within the ES area; therefore, it is possible for *Townsendia spathulata* to occur within the Seven Lakes ES area. The limestone ridges within the ES area have not specifically been checked for *Townsendia spathulata*.

In the areas located, *Townsendia spathulata* was accessible to livestock and wildlife but did not show any evidence of grazing pressure. *Townsendia spathulata*, if found within the ES area, would be expected to receive the same amount of use as mentioned above.

Townsendia spathulata has been found to be more common in Wyoming than formerly believed, and it has been suggested by Dr. Robert Dorn (a recognized authority on threatened and endangered vegetative species in Wyoming) that this species be removed from the threatened list.

Three additional threatened or endangered species may occur in the ES area, but their occurrence is considered unlikely. *Antennaria arcuata* has been found just northwest of the Cyclone Rim allotment on wet sedge hummocks. *Lesquerella fremontii* has been collected on calcareous gravel ridges above 7,500 feet in elevation in the foothills scrub zone approximately 20 miles north of the northwest corner of the Cyclone Rim allotment. *Artemisia porteri* has been located on several sites north of the ES area in Fremont County (personal communication, Robert Dorn).

Production

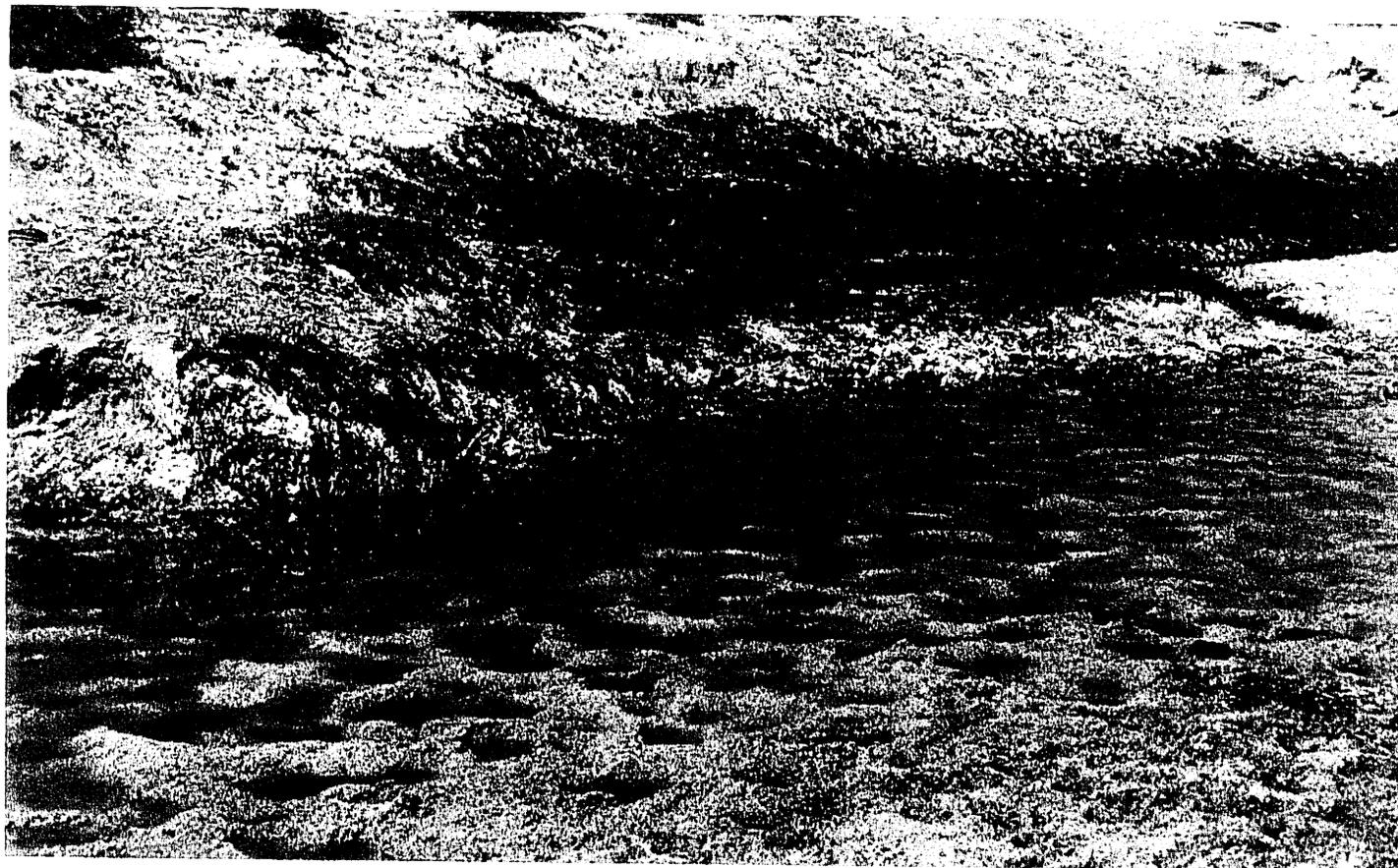
Table 2-15 shows the present total production of vegetation in pounds for each allotment. These figures were determined by multiplying the number of acres in each range survey write-up type by the pounds of vegetation (dry weight) per acre determined from the Seven Lakes range survey. The products of this multiplication are grouped by vegetation type and added. This gives the number of pounds for that vegetation type (refer to Appendix B-2-7).

Also shown in Table 2-15 are the present production and maximum potential production of properly usable winter sheep AUMs. The maximum potential production was calculated through using the Soil Conservation Service method described in *the National Range Handbook* (see Appendices B-2-2 and B-2-22).

Trend

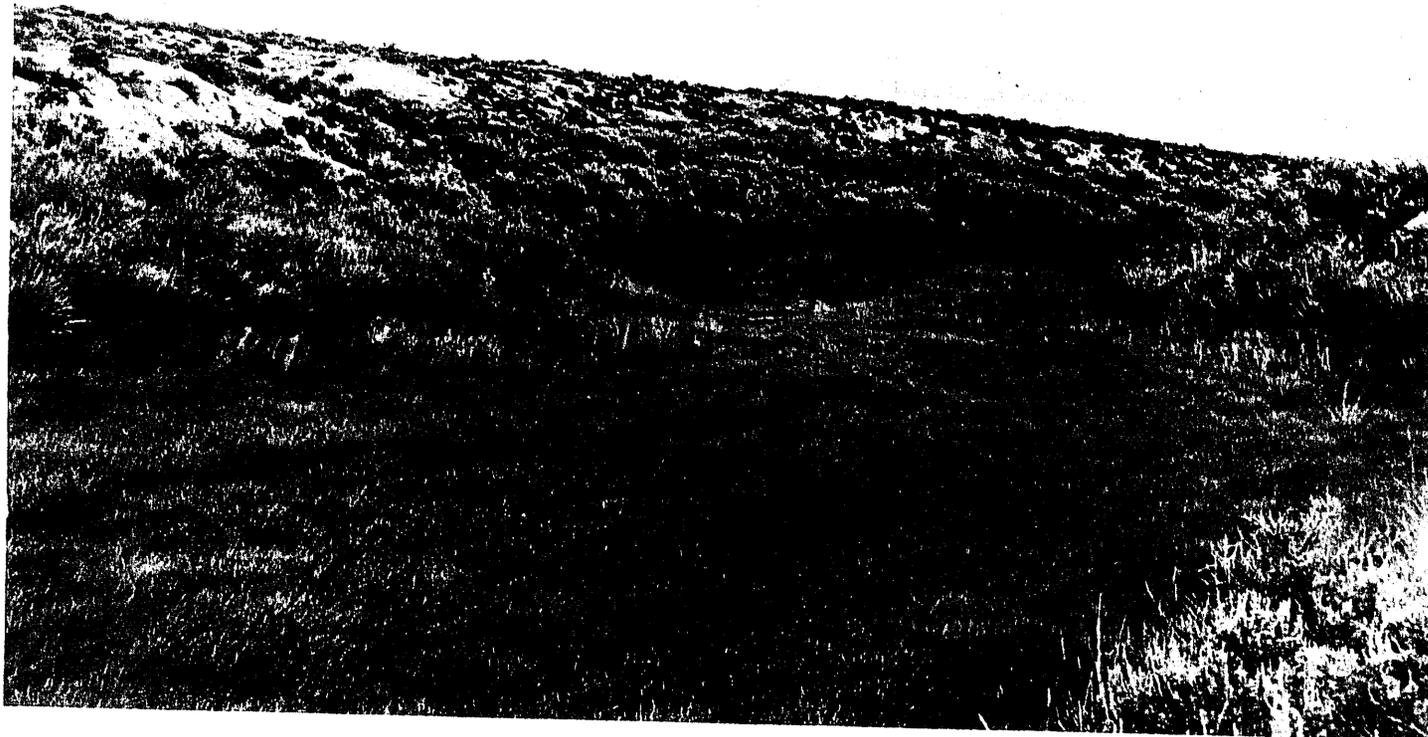
Range trend refers to change in vegetation and soil characteristics resulting directly from environmental factors, primarily climate and grazing.

During the last week of October and the first week of November of 1976, 46 transects were run to determine



OVERGRAZED
MEADOW

Figure 2-1
COMPARISON OF AN OVERGRAZED MEADOW
TO ONE THAT IS NOT OVERGRAZED



MEADOW NOT
OVERGRAZED

Figure 2-1
COMPARISON OF AN OVERGRAZED MEADOW
TO ONE THAT IS NOT OVERGRAZED

TABLE 2-15
PRESENT AND POTENTIAL PRODUCTION BY ALLOTMENT¹

Allotment	Present Total Production of Vegetation (Pounds Air Dry) ²	Present Production of Forage in Terms of Properly Usable Winter Sheep AUMs and lbs ³		Maximum Potential Production of Forage in Terms of Winter Sheep AUMs and lbs ⁴	
		AUMs	Pounds	AUMs	Pounds
Ferris	11,335,146	5,625	2,531,250	12,766	5,744,700
Stewart Creek	31,958,032	19,710	8,869,500	38,887	17,499,150
Cyclone Rim	<u>57,171,853</u>	<u>35,285</u>	<u>15,878,250</u>	<u>46,804</u>	<u>21,061,800</u>
TOTAL	100,465,031	60,620	27,279,000	98,457	44,305,650

Present Consumptive Use
AUMs/Pounds

Allotment	Livestock ⁵				Summer Sheep		Wildlife ⁶		Wild Horses ⁷		Total	
	Summer AUMs	Cattle Pounds	Winter AUMs	Sheep Pounds	AUMs	Pounds	AUMs	Pounds	AUMs	Pounds	AUMs	Pounds
Ferris	209	163,020	3,335	1,500,750	-	-	155	458,568	90	280,800	3,789	2,403,138
Stewart Creek	1,115	869,700	1,626	731,700	-	-	304	958,716	627	1,965,600	3,672	4,525,716
Cyclone Rim	<u>3,345</u>	<u>2,609,100</u>	<u>14,637</u>	<u>6,586,650</u>	<u>1,838</u>	<u>1,378,500</u>	<u>304</u>	<u>958,716</u>	<u>110</u>	<u>345,600</u>	<u>20,234</u>	<u>11,878,566</u>
Total	4,669	3,641,820	19,598	8,819,100	1,838	1,378,500	763	2,376,000	827	2,592,000	27,695	18,807,420

TABLE 2-15 (CONTINUED)
PRESENT AND POTENTIAL PRODUCTION BY ALLOTMENT

- 1 The Stewart Creek and Cyclone Rim allotments listed in the table are presently a portion of the existing Seven Lakes incommon allotment.
- 2 From 1975-1976 weight estimate survey. See Appendix B-2-7 for methodology.
- 3 The pounds of forage displayed in this column are not comparable to the proposed pounds of forage consumption shown in Table 1-4. The present production shown above is in terms of winter sheep use, and the proposed pounds of forage consumption in Table 1-4 are in terms of actual forage consumed by the various kinds of grazing animals.
- 4 From Soil Conservation Service method described in National Range Handbook (refer to Appendix B-2-22 for the methodology used in calculating the maximum potential production by allotment).
- 5 Livestock use is the average active use over the last 5 years, both authorized and estimated unauthorized drift. The amount of forage to sustain 1 cow approximates the amount required for 9 sheep.
- 6 Based upon population numbers in Table 2-19 and methodology in Appendix B-1-1. AUMs are on a winter sheep basis (refer to Appendix B-2-7).
- 7 On August 17, 1977, an aerial inventory of wild horses showed 26 in the Ferris allotment, 182 in the Stewart Creek allotment, and 32 in the Cyclone Rim allotment. AUMs are on a winter sheep basis.

DESCRIPTION OF ENVIRONMENT—EXISTING

range condition and apparent range trend. Fifteen of the 46 transects were permanently marked (refer to Map 2-5). The transects will be read once every 3 years. The transects were located to obtain the condition and apparent trend information from the entire ES area.

The apparent range trend was scored using a special form (refer to Appendix B-2-9) which was prepared for the Seven Lakes ES area.

Of the 46 transects run in the ES area, 41 were scored in a stable trend, 4 in an upward trend, and 1 was scored downward (refer to Appendix B-2-19). The trend data, when analyzed, showed 90% of the transects are stable, 8% improving, and 2% declining in trend.

Condition

Range condition is the present state of vegetation of a range site in relation to the climax (natural potential) plant community for that site. It is an expression of the relative degree to which the kinds, proportions, and amounts of plants in a plant community resemble the climax community for the site. Range condition is basically an ecological rating of the plant community.

The vegetation range condition in the ES area is depicted on Map 2-6. Table 2-16 lists total acreage by condition classes by pasture for each allotment (refer to Appendix B-2-10 for a discussion of the method used to assign range condition classes in the ES area). For vegetation condition for wildlife, refer to the Animals section.

ANIMALS

Terrestrial Wildlife

Forage Allocations

Presently, there are 6,688 animal unit months (AUMs) allocated for wildlife in the ES area (Table 2-17). These AUMs come from two sources. First, a 1958 adjudication allowed wildlife 5% of the AUMs (358 AUMs) in the Ferris allotment and 4% of the AUMs (2,379 AUMs) in the Seven Lakes allotment. Second, as a result of the Wyoming Game and Fish Commission's purchase of private property south of the ES area, wildlife has another 1,000 AUMs in the Ferris allotment, and 2,951 AUMs in the Seven Lakes allotment. These 3,951 AUMs were federal grazing privileges attached to the private property south of the ES area. Thus, the present total allocation for wildlife is 1,358 AUMs in the Ferris allotment, and 5,330 AUMs in the Seven Lakes allotment, for a total allocation of 6,688 AUMs.

However, with the extensive livestock nonuse, there are 1,991 AUMs in the Ferris, and 31,697 AUMs in the Seven Lakes which are available for wildlife use. This represents a total of 33,688 AUMs available for wildlife (Table 2-18). Since management objectives for pronghorn and mule deer in the area require only 2,152 AUMs

(Table 1-4), there are presently 31,536 AUMs available for wildlife other than pronghorn and mule deer.

Pronghorn

Populations. The pronghorn (*Antilocapra americana*) is presently the most conspicuous wildlife species in the Seven Lakes ES area. This herbivore is highly specialized for living in open country (Kitchen 1974) such as the Red Desert.

Fluctuations in pronghorn populations have historically and presently still do occur (Yoakum 1968 and Allred 1943). A severe snow storm during the 1971-1972 winter, combined with natural losses and fences caused the mortality of an estimated 62% of the pronghorn in the Wamsutter area (Riddle and Oakley 1972). Since that severe winter, pronghorn numbers in the ES area have been increasing. From the 1976 pre-season herd composition data, a 54 fawns per 100 adult ratio was estimated for the Chain Lakes Management area (Figure 2-2). This is indicative of an increasing population.

Presently, there are an estimated 3,610 wintering pronghorn and 4,280 summering pronghorn in the ES area, about 95% of the pre-1971 storm winter carrying capacities (Wyoming Game and Fish Department). Wyoming Game and Fish Department's management objectives are to recover and maintain the population to the pre-1971 level of 3,800 wintering and 4,500 summering pronghorn. Table 2-19 presents the present estimates and future objectives for pronghorn populations in the ES area. These objectives were used in the land use planning effort for the area and the impact analysis in Chapters 3 and 8.

The Wyoming Game and Fish Department has established three pronghorn hunt areas which partially lie within the ES area. These areas, 60, 61, and 64 (Figure 2-2) are the management units by which the Wyoming Game and Fish Department manages the pronghorn populations through hunter harvest.

Food and Cover. Several studies have been conducted in Wyoming's Red Desert to determine the food habits of the pronghorn in that region. Rumen analysis conducted by Severson (1966) indicated that Douglas rabbitbrush (*Chrysothamnus viscidiflorus*) and Big sagebrush (*Artemisia tridentata*) accounted for a yearly average of 17% and 73% of diet, respectively (Table 2-20). Forbs and grasses accounted for a combined 7.9% of the yearly diet for the year. Taylor (1975) found that pronghorn in or near the ES area (Lamont, Riner, and Seminoe areas) consumed 75.8% browse, 17.1% forbs, and 7.1% grass on a yearly average (Table 2-21). Comparisons between food habits and seasonal plant availability were also made (Figure 2-3). These data indicate that pronghorn food consumption is influenced by both availability and preference (Taylor 1975). As forbs and grasses become more available in the spring and summer, they appear as a greater portion of the diet.

The diet similarity index comparing pronghorn to cattle, sheep and wild horses is presented in Tables 2-22, 2-22a, and 2-22b. These figures in Table 2-22 are derived from fecal analysis studies (Hansen 1975) conducted

1 CYCLONE RIM ALLOTMENT
255,518 Acres

2 STEWART CREEK ALLOTMENT
188,991 Acres

3 FERRIS ALLOTMENT
68,345 Acres

PASTURES

- 1** CYCLONE
130,215 acres
- 2** LUMAN
109,794 acres
- 3** LOST CREEK
15,508 acres

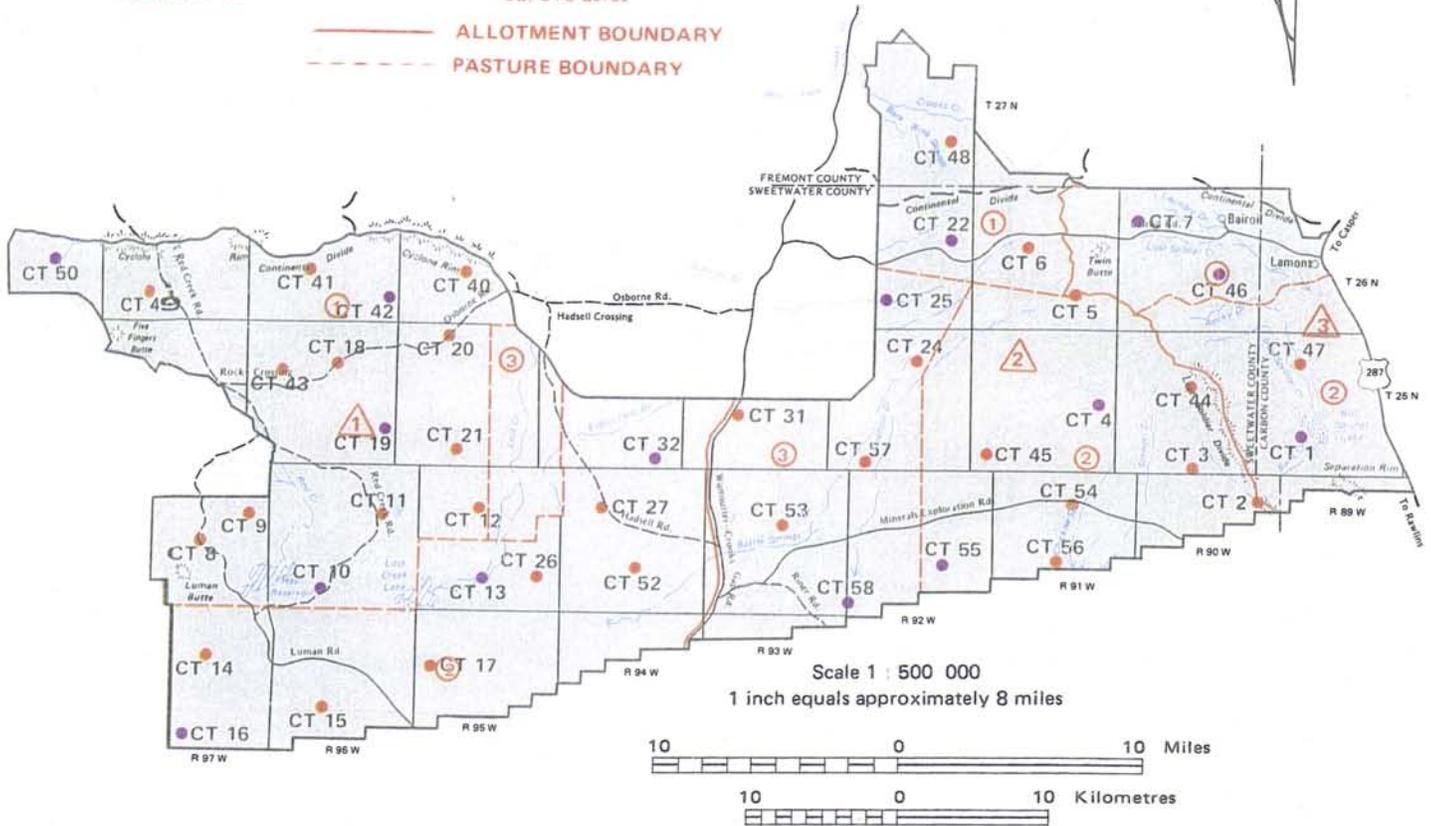
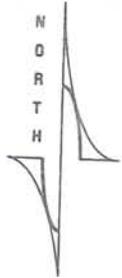
PASTURES

- 1** SAND SPRING
39,647 acres
- 2** CHICKEN SPRING
86,768 acres
- 3** OSBORNE WELL
62,576 acres

PASTURES

- 1** LOST SOLDIER
29,500 acres
- 2** BULL SPRINGS
38,845 acres

—— ALLOTMENT BOUNDARY
- - - PASTURE BOUNDARY



LEGEND

- TEMPORARY TRANSECT
- PERMANENT TRANSECT

LOCATION OF CONDITION

TREND TRANSECTS

Seven Lakes Grazing

Environmental Statement

LEGEND

RANGE CONDITION CLASSES

- EXCELLENT
- GOOD
- FAIR
- POOR
- WASTE AREA

PERCENTAGE OF PRESENT PLANT COMMUNITY THAT IS CLIMAX FOR THE RANGE SITE

- 76 - 100
- 51 - 75
- 26 - 50
- 0 - 25



△ CYCLONE RIM ALLOTMENT
355,518 Acres

- PASTURES**
- ① CYCLONE
130,216 acres
 - ② LUMAN
109,794 acres
 - ③ LOST CREEK
15,508 acres

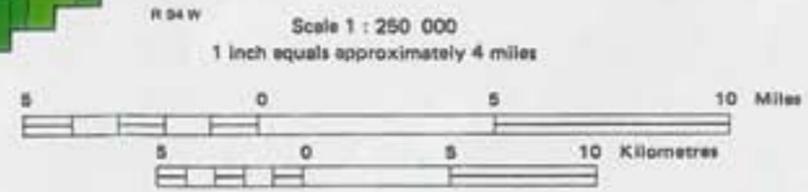
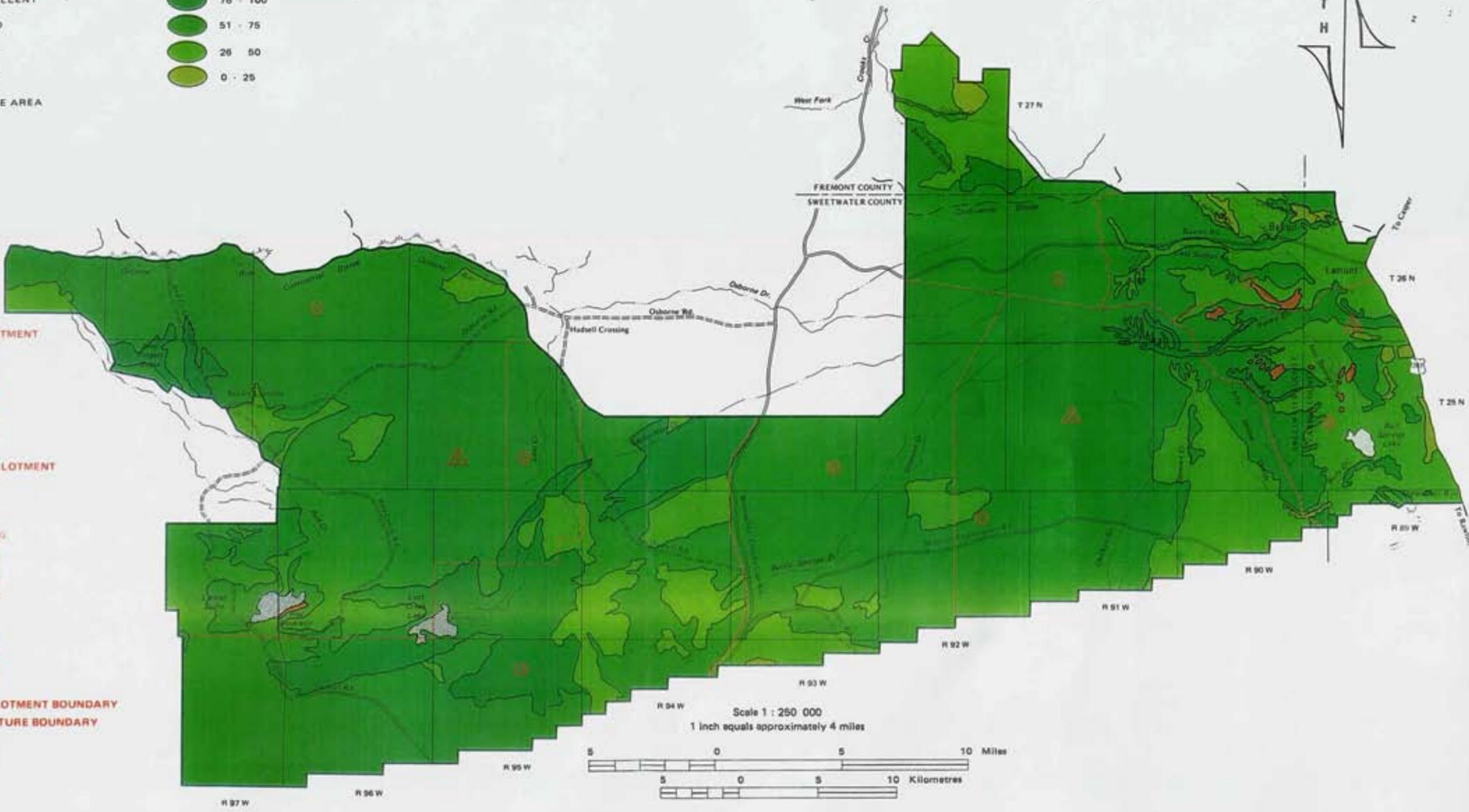
△ STEWART CREEK ALLOTMENT
188,991 Acres

- PASTURES**
- ① SAND SPRING
38,047 acres
 - ② CHICKEN SPRING
86,768 acres
 - ③ OSBORNE WELL
62,576 acres

△ FERRIS ALLOTMENT
68,345 Acres

- PASTURES**
- ① LOST SOLDIER
29,500 acres
 - ② BULL SPRINGS
38,845 acres

— ALLOTMENT BOUNDARY
- - - PASTURE BOUNDARY



**VEGETATION
RANGE CONDITION**
Seven Lakes Grazing
Environmental Statement
Map 2 - 6

TABLE 2-16
ACREAGE IN EACH VEGETATION CONDITION
CLASS BY ALLOTMENT AND PASTURE*

Allotment & Pasture Name	Poor	Fair	Good	Excellent
Ferris				
Lost Soldier	1,007	12,818	14,032	488
Bull Springs	1,379	21,148	14,337	774
Stewart Creek				
Osborne Well	199	7,922	54,416	0
Sand Springs	1,612	9,885	24,189	3,812
Chicken Springs	108	16,611	68,925	1,115
Cyclone Rim				
Cyclone	0	10,592	99,462	18,586
Luman	0	14,927	71,444	22,367
Lost Creek	0	2,393	10,907	2,208
TOTAL**	4,305	96,296	357,712	49,350

*

<u>Range Condition Class</u>	<u>Percentage of Present Plant Community that is Climax for the Range Site</u>
Excellent	76-100
Good	51-75
Fair	26-50
Poor	0-25

Excellent
Good
Fair
Poor

76-100
51-75
26-50
0-25

Appendix B-2-10 indicates how the condition classes were determined.

**The total acreage by condition class does not equal the ES area total acreage because field write-ups were not completed for several waste areas and, therefore, the condition could not be determined on those areas.

TABLE 2-17
FORAGE ALLOCATED FOR WILDLIFE IN ES AREA

Allotment	Allocation by Percent of Available Forage	Allocation to Wildlife from Percentages	Allocations from Base Property	Total
Ferris uncommon	5%	358 AUMs	1,000 AUMs	1,358 AUMs
Seven Lakes uncommon	4%	2,379 AUMs	2,951 AUMs	<u>5,330 AUMs</u>
Total				6,688 AUMs

TABLE 2-18
FORAGE PRESENTLY AVAILABLE FOR WILDLIFE*

	Present Production	Present Livestock and Wild Horse Use	Forage Available to Wildlife**
Ferris	5,625	3,634	1,991
Seven Lakes	<u>54,995</u>	<u>23,298</u>	<u>31,697</u>
TOTAL ES AREA, EXCLUDING FERRIS ALLOTMENT	60,620	26,932	33,688

*All figures are expressed in AUMs from Table 2-15.

**Forage available = Present production - present livestock and wild horse use.

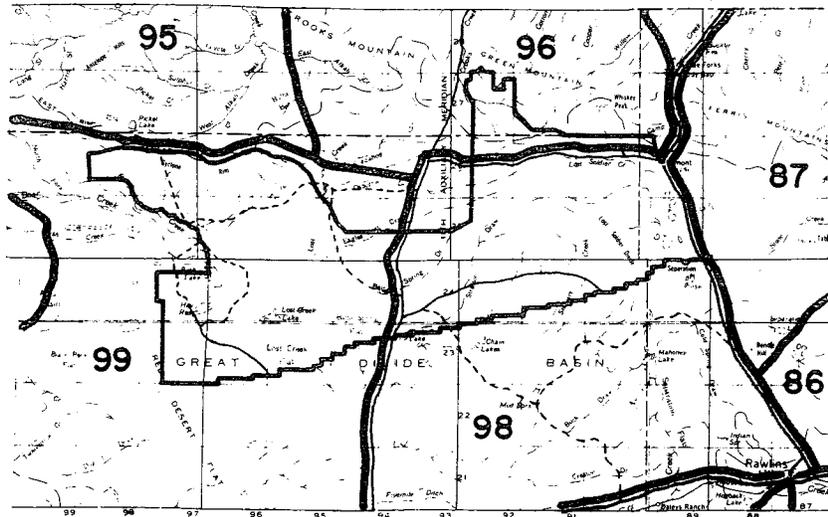
TABLE 2-19
PRESENT ESTIMATES AND FUTURE OBJECTIVES
FOR PRONGHORN POPULATIONS

	<u>Winter*</u>		<u>Summer**</u>	
	Present	Future***	Present	Future***
Ferris	1,230	1,300	1,580	1,665
Stewart Creek	1,190	1,250	1,800	1,890
Cyclone Rim	<u>1,190</u>	<u>1,250</u>	<u>900</u>	<u>945</u>
TOTALS	3,610	3,800	4,280	4,500

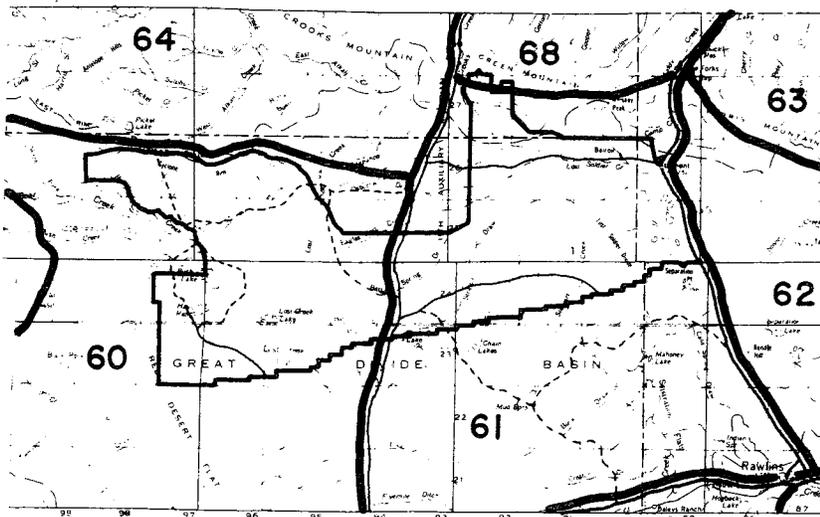
*October 1 to March 31

**April 1 to September 31

***1980 Wyoming Game and Fish Department's Management Objectives as calculated by Game and Fish Biologist Chuck Oakley



MULE DEER HUNT AREAS



ANTELOPE HUNT AREAS

LEGEND

- 60 TABLE ROCK MANAGEMENT UNIT
- 61 CHAIN LAKES MANAGEMENT UNIT

Figure 2 - 2
**HUNT AREAS FOR ANTELOPE AND MULE DEER
 IN THE SEVEN LAKES**

TABLE 2-20
 SEASONAL FORAGE CONSUMPTION BY ANTELOPE
 DETECTED BY STOMACH CONTENT ANALYSIS,
 1964 AND 1965.* (Percent by volume)

Species	Summer 1964	Summer**** 1965	Fall 1964	Fall 1965	Winter 1964	Winter 1965	Year Average 1964	Year Average 1965*****
Douglas rabbitbrush	29.9		22.6	33.0	7.3	17.2	17.0	
Big sagebrush	54.7		57.9	39.8	90.4	65.2	73.0	
Winterfat	Trace		1.7	1.2	0.6	1.9	0.8	
Brown sagebrush (Birdfoot sagewort)	3.7		Trace	.0	Trace	0.1	1.3	
Forbs**	4.9		16.8	1.8	Trace	1.7	4.7	
Grasses and Sedges***	6.8		1.0	9.8	1.7	3.9	3.2	
Unidentified Material	.0		.0	14.3	.0	9.9	.0	
TOTAL	100.0		100.0	100.0	99.9	100.0		

*Averages derived from 34 stomachs: 8 for Summer, 1964; 4 for Fall, 1964; 2 for Fall, 1965; 12 for Winter, 1964; and 8 for Winter, 1965.

**Included cushion eriogonum, Hood's phlox, rockcress, pursh loco, Russian thistle, sand penstemon, and unidentified forbs.

***Included Sandberg bluegrass, bottlebrush squirreltail grass, western wheatgrass, needle-and-thread, Indian ricegrass, and obtuse sedge.

****None collected.

*****No data (summer samples not collected).

From Severson (1966)

TABLE 2-21
PERCENT OF PLANTS IN THE DIET OF PRONGHORNS
ON THE RED DESERT

Forage Class	Plant	Season				Weighted Average*
		Spring	Summer	Fall	Winter	
Browse	Big sagebrush	25.2	21.6	51.0	69.1	49.3
	Rabbitbrush	4.8	18.9	11.0	8.6	10.3
	Nuttall saltbush	0.6	0.7	9.1	12.8	7.8
	Birdfoot sagewort	9.7	10.2	3.6	0.9	4.6
	Black greasewood	0.9	4.4	0.8	0.0	1.1
	TOTAL	48.0	59.8	78.2	91.8	75.8
Forbs	Plains pricklypear	T**	4.3	7.8	0.1	2.7
	Woody aster	0.7	8.5	2.4	T	2.1
	Bushy birdbeak	0.7	5.2	3.6	0.0	1.9
	Penstemon	7.3	2.6	0.3	T	1.7
	Ballhead sandwort	9.8	T	0.0	0.0	1.6
	Thistle	1.7	2.3	1.0	T	0.9
	TOTAL	34.6	38.4	17.6	1.3	17.1
Grass		17.4	1.8	4.2	6.9	7.1

*Weighted to 2 months spring, 2 months summer, 3 months fall, and 5 months winter.

**T is less than .01. Only the twelve important plants are listed by species, but totals for each class include the amount of all plants in the diet.

From: Wildlife Technical Report #3 Elroy Taylor (1975).

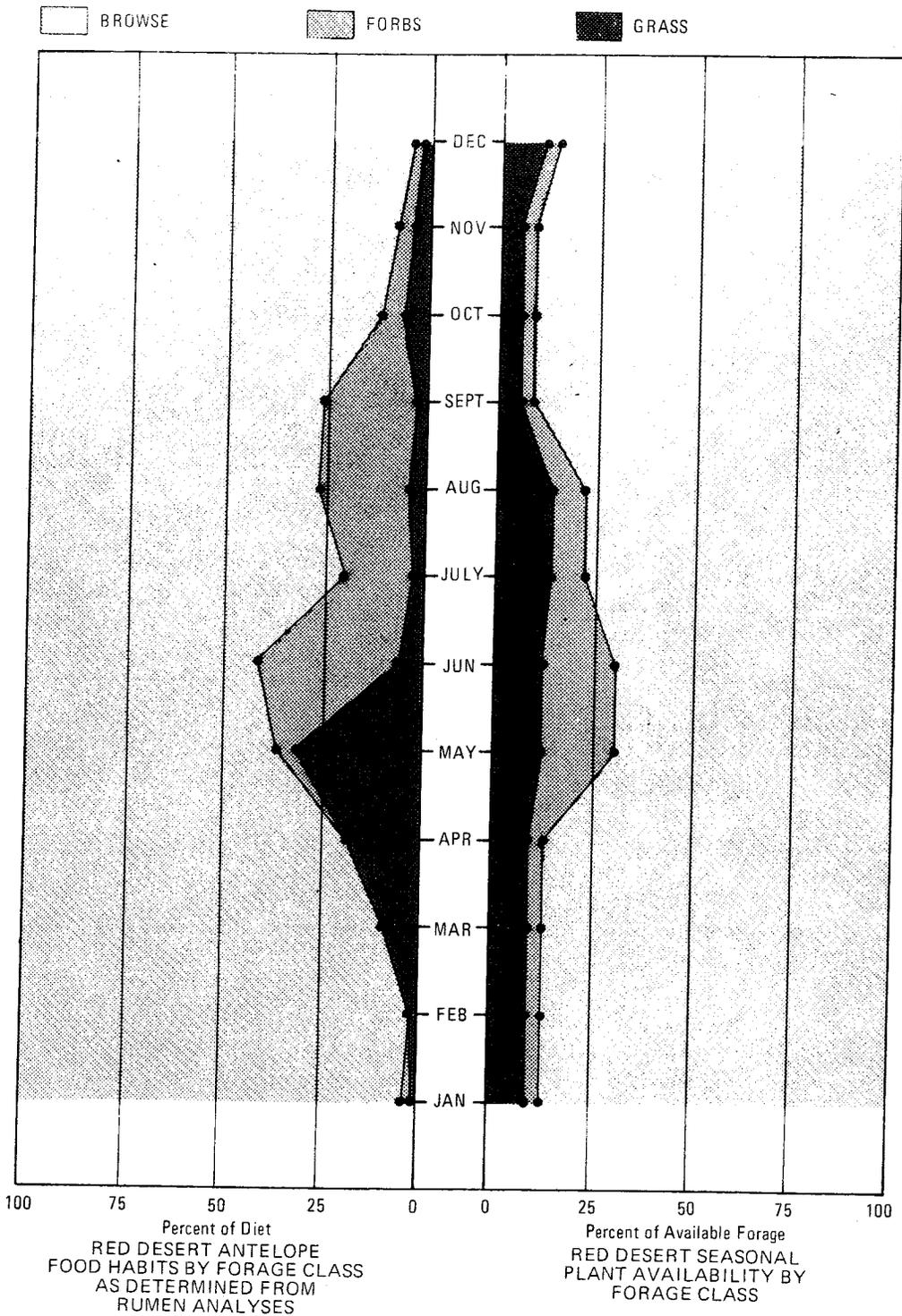


Figure 2 - 3

COMPARISON BETWEEN FOOD HABITS AND PLANT AVAILABILITY

TABLE 2-22
DIET SIMILARITY INDEX BETWEEN PRONGHORN AND LIVESTOCK*

<u>Cattle</u>				
Yearlong pronghorn	Spring	Summer	Fall	Weighted Average
	5.3(1)**	4.0(2)	15.4(1)	7.2
	Fall	Winter	Spring	Weighted Average
	15.4(1)	5.2(2)	5.3(1)	7.8
<u>Sheep</u>				
Yearlong pronghorn	Spring	Summer	Fall	Weighted Average
	12.1(1)	7.3(2)	8.0(1)	8.7
	Fall	Winter	Spring	Weighted Average
	8.0	9.6(2)	12.1(1)	9.8

*Expressed as a percentage

**The numbers in parentheses indicate the weight given to each season listed. Spring and fall each represent a 2-month period, and summer and winter each represent a 4-month period within the grazing season.

Source: Hansen 1975.

TABLE 2-22a
 PERCENT OVERLAP BETWEEN ANTELOPE AND SHEEP DIETS
 IN THE RED DESERT DURING THREE SEASONS

Plant Species	Season			Weighted Average*
	Spring	Fall	Winter	
Big sagebrush	0.0	13.6***	25.8	17.0
Nuttall saltbush	0.6	6.8	11.9	8.1
Sandberg bluegrass	3.4	4.2	6.8	5.3
Birdfoot sagewort	2.3	0.9	0.9	1.2
Rabbitbrush	0.0	1.2	1.6	1.2
Plains pricklypear	0.0	0.6	0.1	0.2
Common winterfat	0.0	0.0	0.1	0.1
Thistle	0.0	0.7	T	T
Bud sagewort	0.0	T**	0.0	T
TOTAL	6.3	28.0	47.2	33.2

*Weighted to 2 months spring, 3 months fall, and 5 months winter.

**T < .01

***Higher diet similarity indices indicate a greater diet overlap between competing animals than the lower indices. Defined as the overlap of habitat requirements.

Source: Taylor 1975.

TABLE 2-22b
 PERCENT OVERLAP BETWEEN ANTELOPE AND CATTLE DIETS
 IN THE RED DESERT DURING THREE SEASONS

Plant Species	Season			Weighted Average*
	Spring	Fall	Winter	
Rabbitbrush	0.0	2.0***	8.7	4.9
Nuttall saltbush	0.0	9.1	3.0	4.2
Sandberg bluegrass	14.7	3.5	0.0	4.0
Big sagebrush	0.0	0.3	7.1	3.7
Birdfoot sagewort	0.0	1.7	0.9	1.0
Bud sagewort	0.0	T**	0.0	T
TOTAL	14.7	16.6	19.7	17.8

*Weighted to 2 months spring, 3 months fall, and 5 months winter.

**T < .01

***Higher diet similarity indices indicate a greater diet overlap between competing animals than the lower indices. Defined as the overlap of habitat requirements.

Source: Taylor 1975.

DESCRIPTION OF ENVIRONMENT—EXISTING

within the Red Desert region in the Rock Springs BLM District.

This data was used by the BLM in the forage allocations and this ES analysis. However, the Wyoming Game and Fish Department prefers to use and accept the data collected by Taylor (1975) which is presented in Tables 2-22a and 2-22b. These figures are the results of his research conducted in the Lamont, Riner and Seminole areas in and near the ES area. Taylor's overlaps between livestock and pronghorn diets were calculated by analyzing the rumen contents of collected pronghorn and by estimating the plants used by livestock at their feeding sites. These values (both Taylor's and Hansen's), represent the portion of the pronghorn diet which is common to the animals. This overlap is an indicator of the amount of forage competition that would occur when the two animals occupy the same range during the same or different seasons. It should be noted that there is a great difference between the Hansen (1975) 9.6 and the Taylor (1975) 47.2 dietary overlap calculations between pronghorn and sheep during the winter months.

The sagebrush, open grasslands, greasewood, and saltbush of the Seven Lakes (98%—503,356 acres) ES area appear to meet the cover requirements for successful pronghorn populations. During the summer and fall seasons, most open habitats afford the cover needed for these animals. However, in the spring on fawning ranges (Table 2-23), sagebrush becomes an important cover plant to conceal fawns and those does in parturition, while forbs and grasses are used as important food items.

Winter is a critical period for the area pronghorn. Severe weather forces these animals to distribute themselves according to food and cover availability (Taylor 1975). During this period, sagebrush becomes an important plant affording pronghorn both food and cover. Bare windswept ridges offering available forage are often concentration points. Forage height becomes an important plant characteristic of food availability depending on snow depth and wind conditions. Some 155,129 acres (Table 2-23) are classified as crucial winter ranges.

The ES area appears to be able to adequately supply the necessary food and cover required for both the wintering and summering pronghorn. The condition of the vegetation in the ES area was rated as to its ability to meet these requirements (Appendix B-2-8). On the summer range (the whole ES area), 41,137 acres (8% of the ES area) were rated as in good vegetative condition; 358,159 acres (70%) were rated in fair condition; and 113,558 acres (22%) were rated in poor condition. On the winter ranges (refer to Pronghorn Distributions and Migrations), 14,751 acres (9% of the winter range) were rated in good vegetative condition; 130,666 acres (82%) were rated in fair condition; and 15,393 acres (9%) were rated as in poor condition. Table 2-24 and Maps 2-7 and 2-8 present this data.

The apparent trend (Appendix B-2-16) of the vegetation to meet the requirements of pronghorn is shown on Map 2-9. Two sites appeared to be in an improving trend, 21 appeared to be stable, and 12 appeared to be in a downward trend.

Water. During the later portion of the summer, water may be the major environmental factor determining the distribution of pronghorn in the ES area. Sundstrom (1967) found that 95% of the Red Desert pronghorn were within 3 to 4 miles of water. Water was a critical factor from early July until the beginning of October. During the spring and early summer, water is not critical since it is largely available over the entire area.

Using Sundstrom's (1967) 4-mile radius from water for summer range suitability, there are presently large areas in the Stewart Creek and Cyclone Rim allotments where water may be a limiting factor in the summer distribution of pronghorn (Map 2-10). In the Stewart Creek allotment, there are approximately 92,700 acres which are unavailable for pronghorn use during the late summer and early fall due to a lack of water. In the Cyclone Rim allotment, there are about 119,800 acres lacking water for pronghorn use. The Ferris uncommon allotment has adequate year round water.

Distributions and Migrations. The most unique characteristic of the ES area pronghorn is their migratory nature. The Red Desert herd is reported to be the world's largest herd of migratory pronghorn (personal communication Wyoming Game and Fish Department 1977). Yearly spring and fall migrations occur between winter and summer ranges. Distances of up to 40 miles have been recorded for some marked animals (Wyoming Game and Fish Department 1967). The ES area presently does not have any interior fences which restrict the movement of these animals within the area. There are, however, boundary fences which need modification. These fences (Map 2-11) presently hinder the movement of pronghorn into and out of the ES area and cause mortality. Pronghorn have been observed to be restricted by these fences, (especially the woven-wire fence on U. S. Highway 287), and even found dead along the fencelines.

During the winter, several thousand pronghorn concentrate in the ES area. The two major crucial winter ranges are in the Ferris uncommon area, east of Lost Soldier Divide, and in the area from the Chain Lakes to the south end of Lost Creek (Map 2-12). These two areas of approximately 161,000 acres (Table 2-23) may support approximately 1,300 and 2,500 wintering pronghorn, respectively (Wyoming Game and Fish Department 1978). Cover, food availability, snow, and weather patterns largely govern the winter distributions. During mild winters, the animals may winter from the Chain Lakes north to the Antelope Hills.

In severe winters (such as 1972) they are forced out of the ES area and concentrate just north of Interstate 80 from Wamsutter to Rawlins (Riddle and Oakley 1972). The identified crucial winter ranges in the Ferris and Chain Lakes areas are most important in years of normal snowfall, but the Chain Lakes may not be usable during abnormally severe winter conditions.

Spring migrations are highly dependent on the weather conditions and forage availability. As snow melts and forbs and grasses become available for consumption, the pronghorn move out of winter areas onto summer ranges throughout the ES area, and the summer ranges near the Sweetwater River. Several thousand animals may mi-

TABLE 2-23
 SELECTED PRONGHORN HABITAT BY PASTURE

	Pronghorn Crucial Winter		Pronghorn Fawning	
	Acres	Percent*	Acres	Percent*
Ferris Allotment				
Bull Springs	35,188	91	1,880	5
Lost Soldier	<u>26,669</u>	91	<u>5,040</u>	17
Allotment	61,857	90	6,920	10
Stewart Creek				
Chicken Springs			17,880	21
Sand Springs			10,800	27
Osborne Well	<u>24,987</u>	40	<u>17,880</u>	29
Allotment	24,987	13	46,560	25
Cyclone Rim				
Luman	46,601	42	10,960	10
Cyclone	19,870	14	4,400	3
Lost Creek	<u>7,495</u>	46	<u>6,200</u>	40
Allotment	73,966	28	21,560	8
ES Total	160,810	31	75,040	15

*The percent of the total pasture or allotment acreage.

TABLE 2-24
PRONGHORN HABITAT CONDITION*

	Pronghorn Crucial Winter						Pronghorn Summer (Entire ES Area)					
	<u>Good</u>		<u>Fair</u>		<u>Poor</u>		<u>Good</u>		<u>Fair</u>		<u>Poor***</u>	
	Acre	%**	Acre	%**	Acre	%**	Acre	%**	Acre	%**	Acre	%**
<u>Ferris Allotment</u>												
Bull Springs	4,127	(12)	26,567	(76)	4,494	(13)	1,246	(3)	21,435	(55)	16,164	(42)
Lost Soldier	10,624	(40)	15,523	(58)	522	(2)	264	(1)	18,501	(63)	10,735	(36)
TOTAL	14,751	(24)	42,090	(68)	5,016	(8)	1,510	(2)	39,936	(58)	26,899	(39)
<u>Stewart Creek</u>												
Chicken Spring	0		0		0		21,324	(25)	53,836	(62)	11,608	(13)
Sand Spring	0		0		0		3,764	(9)	35,764	(91)	119	(<1)
Osborne Well	0		23,603	(94)	1,384	(6)	8,717	(14)	50,462	(81)	3,397	(5)
TOTAL	0		23,603	(94)	1,384	(6)	33,805	(18)	140,062	(74)	15,124	(8)
<u>Cyclone Rim</u>												
Cyclone	0		15,370	(77)	4,500	(23)	5,822	(4)	101,091	(78)	23,303	(18)
Lost Creek	0		6,695	(89)	800	(11)	0		8,503	(55)	7,005	(45)
Luman	0		42,908	(92)	3,693	(8)	0		68,567	(62)	41,227	(38)
TOTAL	0		64,973	(88)	8,993	(12)	5,822	(2)	178,161	(70)	71,535	(28)
ES Total	14,751	(9)	130,666	(82)	15,393	(9)	41,137	(2)	358,159	(70)	113,558	(22)

*See Appendix B-2-8 for methodology.

**Percent of habitat of pasture, allotment, or ES area in that condition class.

***Includes dry lake beds.

Good - a vegetative type where the plant community provides pronghorn with the best possible plant conditions and components to meet their habitat needs.

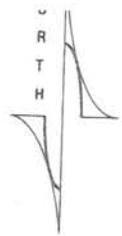
Fair - a vegetative type where the plant community provides pronghorn with the majority of habitat needs but not at the optimum.

Poor - a vegetative type where the plant community does not provide pronghorn with a majority of their habitat needs or the community lacks an important component to support pronghorn.

- PASTURES**
- ① CYCLONE
130,216 acres
 - ② LUMAN
109,794 acres
 - ③ LOST CREEK
15,508 acres

- PASTURES**
- ① SAND SPRING
39,647 acres
 - ② CHICKEN SPRING
86,768 acres
 - ③ OSBORNE WELL
62,576 acres

- PASTURES**
- ① LOST SOLDIER
29,500 acres
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38,845 acres

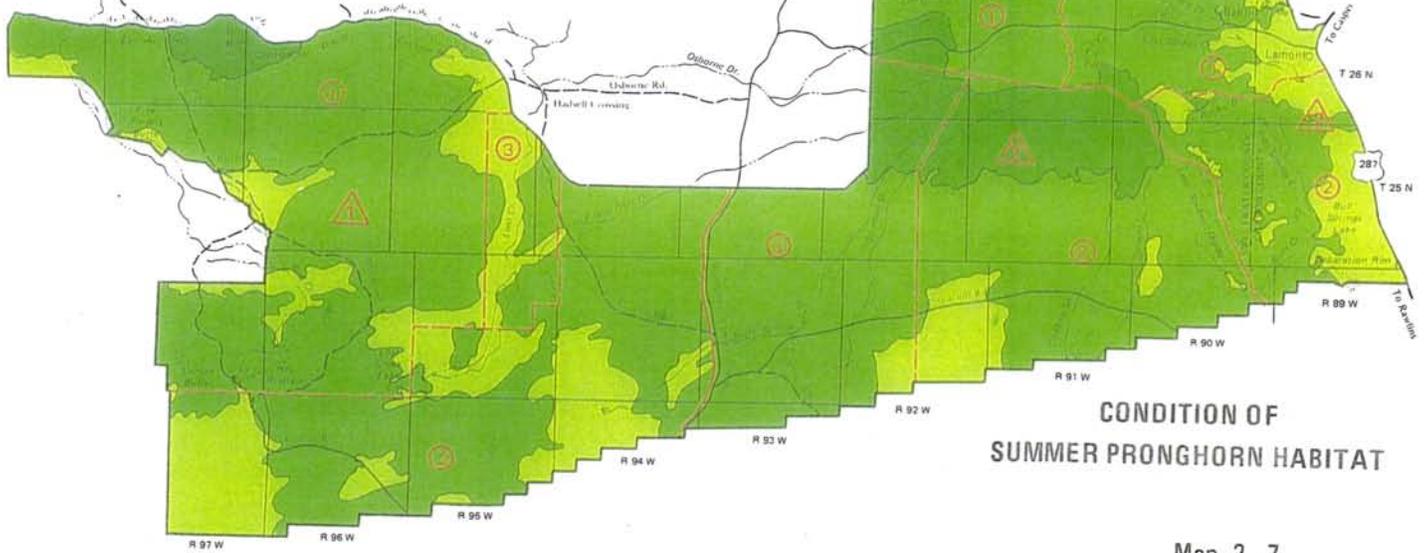


LEGEND

- GOOD CONDITION
- POOR CONDITION
- FAIR CONDITION

- ALLOTMENT BOUNDARY
- PASTURE BOUNDARY

Entire area summer habitat



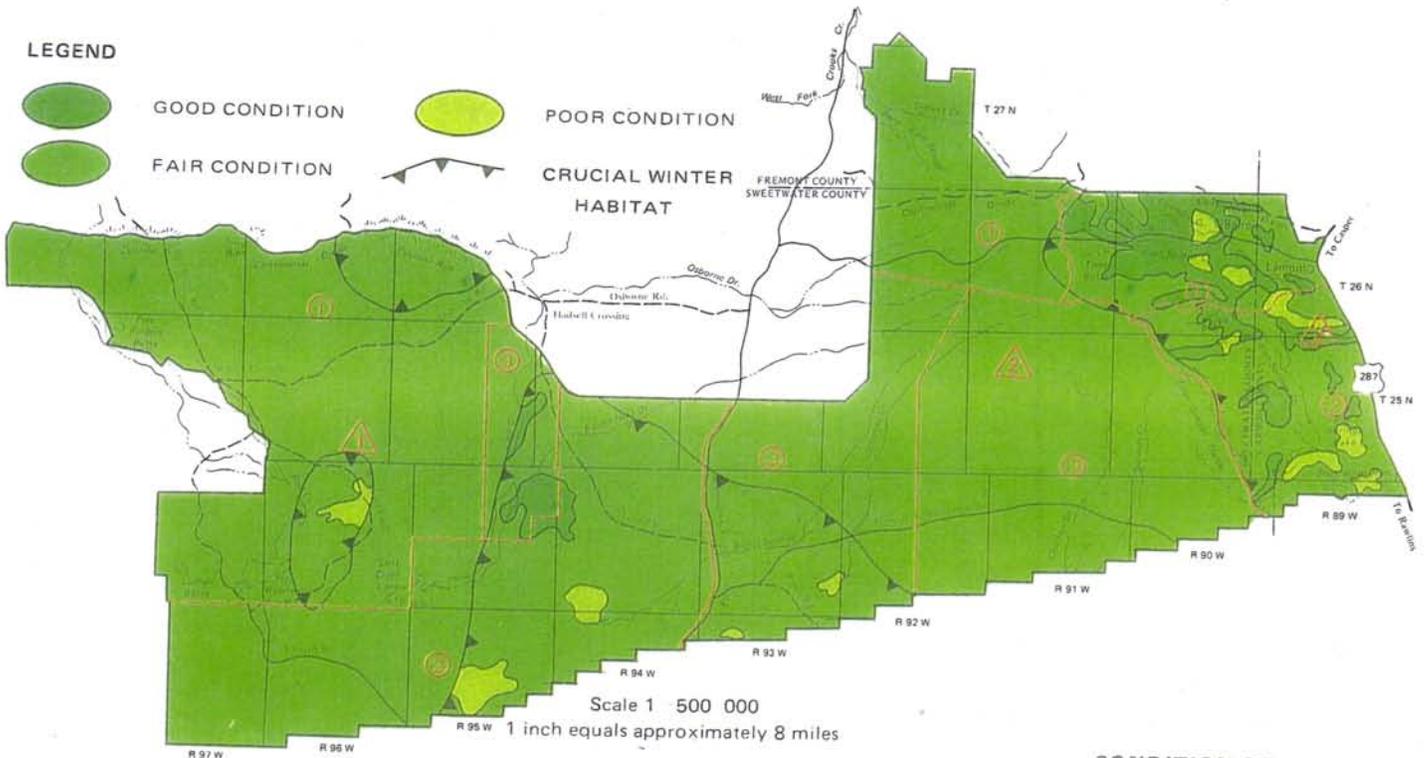
**CONDITION OF
SUMMER PRONGHORN HABITAT**

Map 2 - 7

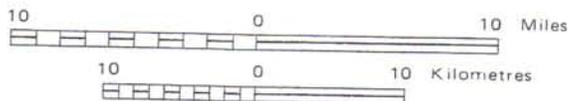
LEGEND

- GOOD CONDITION
- POOR CONDITION
- FAIR CONDITION

CRUCIAL WINTER HABITAT



Scale 1 : 500 000
1 inch equals approximately 8 miles



**CONDITION OF
WINTER PRONGHORN HABITAT**

Seven Lakes Grazing
Environmental Statement

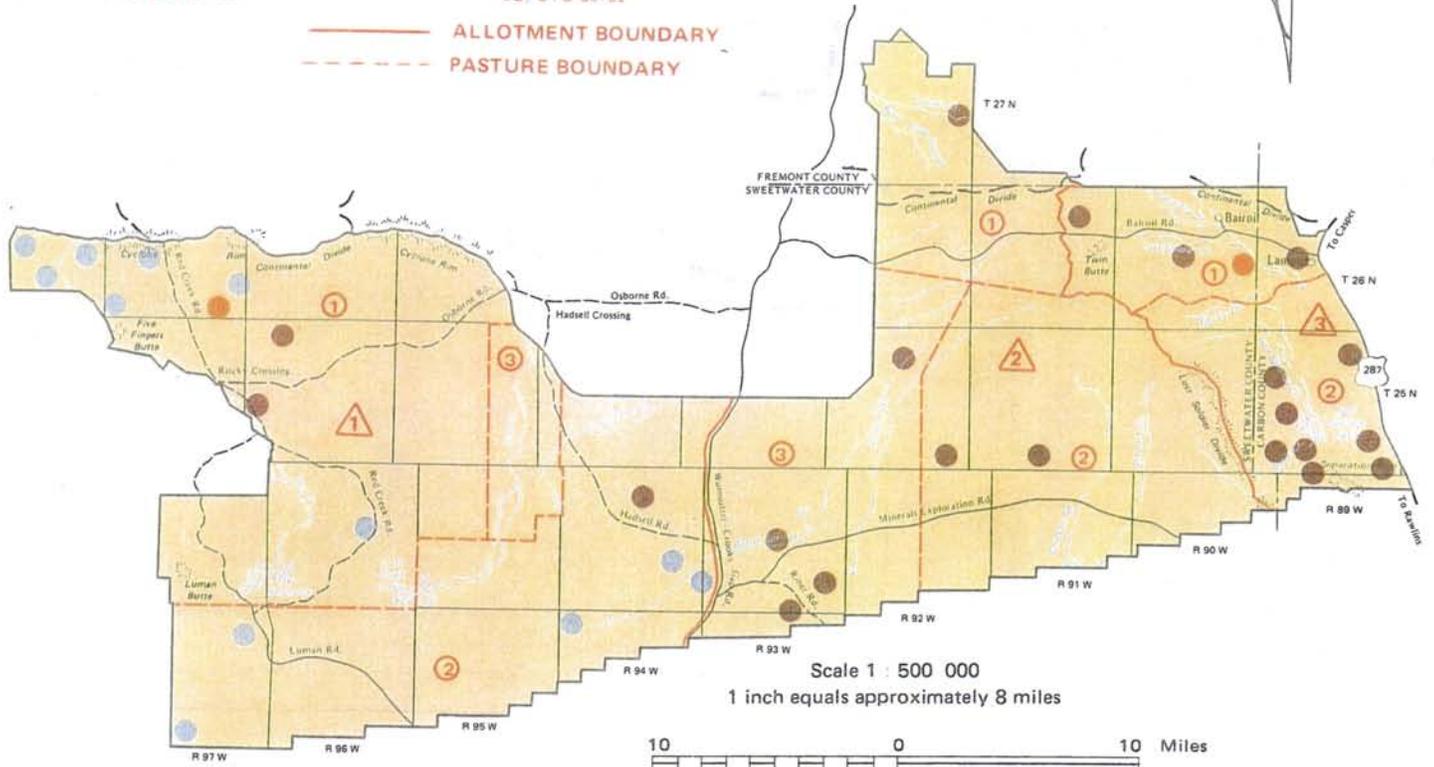
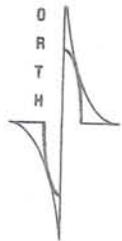
Map 2 - 8

- PASTURES**
- ① CYCLONE
130,216 acres
 - ② LUMAN
109,794 acres
 - ③ LOST CREEK
15,508 acres

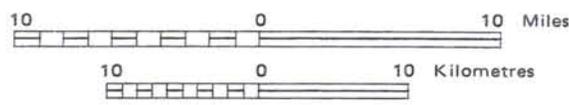
- PASTURES**
- ① SAND SPRING
39,647 acres
 - ② CHICKEN SPRING
86,768 acres
 - ③ OSBORNE WELL
62,576 acres

- PASTURES**
- ① LOST SOLDIER
29,500 acres
 - ② BULL SPRINGS
38,845 acres

—— ALLOTMENT BOUNDARY
- - - PASTURE BOUNDARY



Scale 1 : 500 000
1 inch equals approximately 8 miles



LEGEND

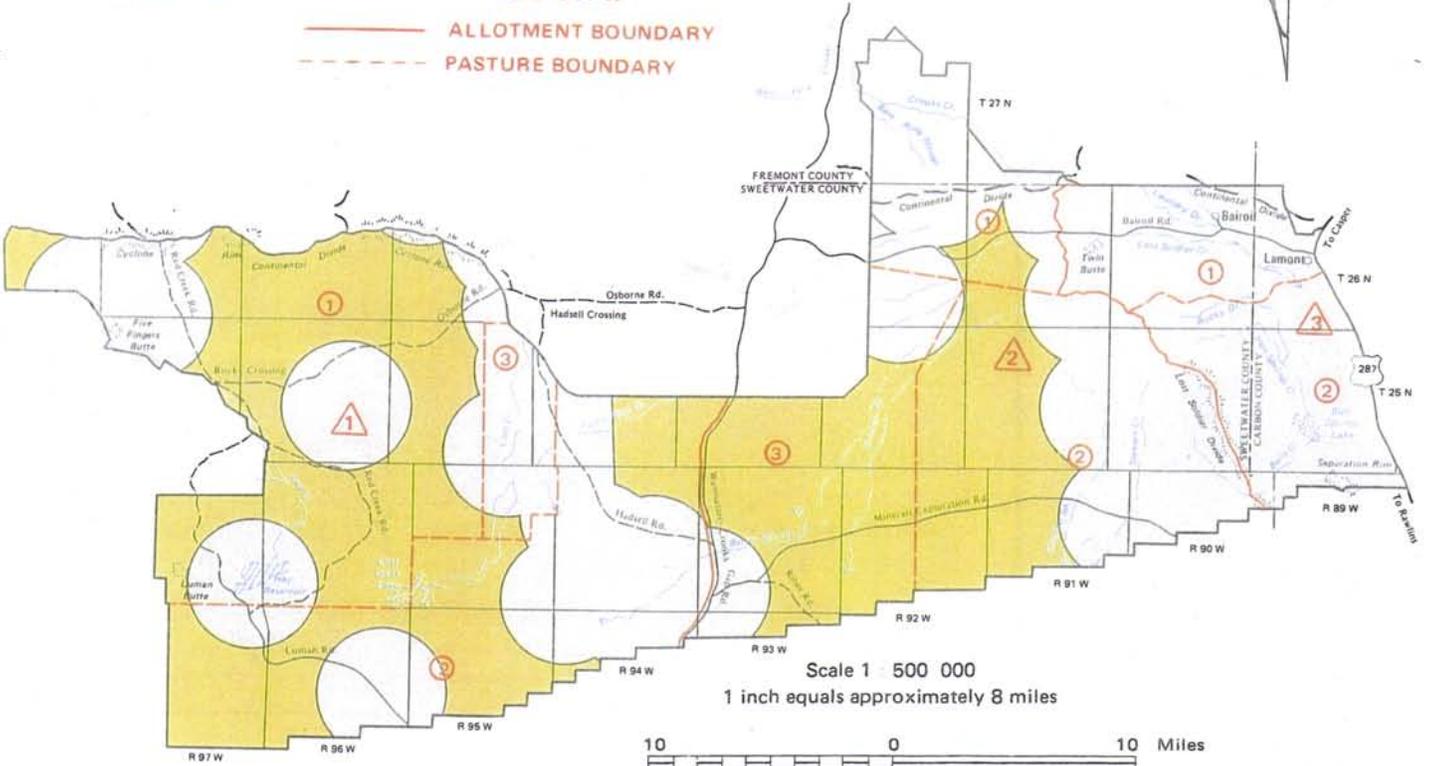
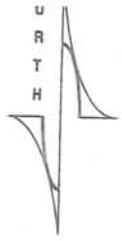
- UPWARD
- STABLE
- DOWNWARD

- PASTURES**
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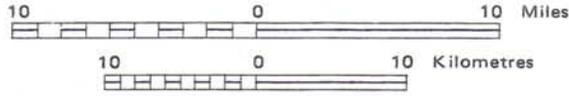
- PASTURES**
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———— ALLOTMENT BOUNDARY
 - - - - PASTURE BOUNDARY



Scale 1 : 500 000
 1 inch equals approximately 8 miles



LEGEND

RANGE PRESENTLY UNUSABLE FOR SUMMER PRONGHORN USE

**RANGE NOT USABLE AS PRONGHORN
 HABITAT BECAUSE OF LACK OF WATER**

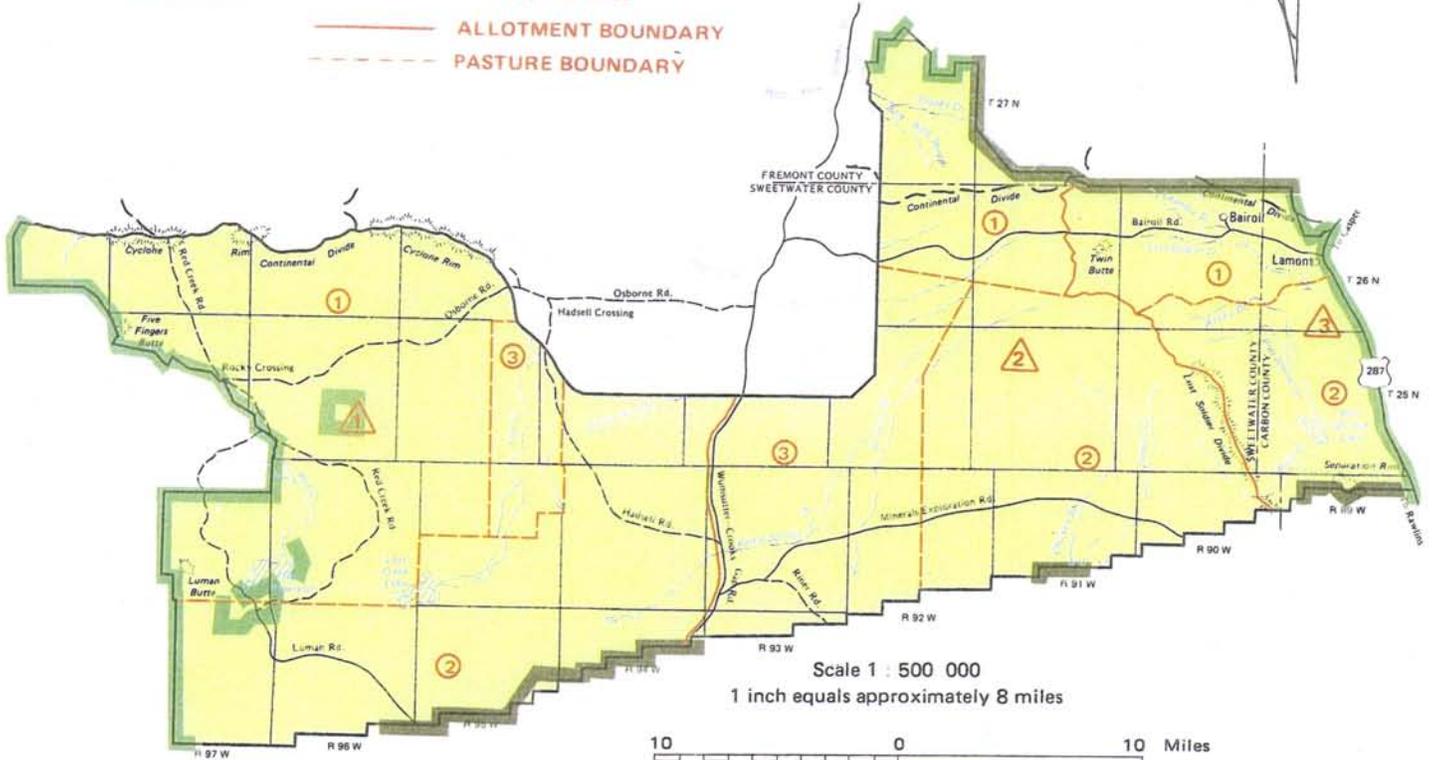
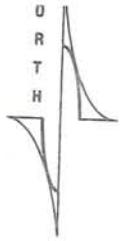
Seven Lakes Grazing
 Environmental Statement

PASTURES
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 130,216 acres
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 109,794 acres
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 15,508 acres

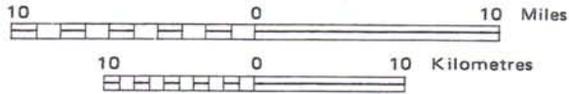
PASTURES
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 62,576 acres

PASTURES
 ① LOST SOLDIER
 29,500 acres
 ② BULL SPRINGS
 38,845 acres

— ALLOTMENT BOUNDARY
 - - - PASTURE BOUNDARY



Scale 1 : 500 000
 1 inch equals approximately 8 miles



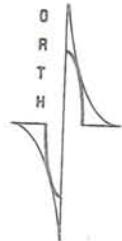
LEGEND

- EXISTING FENCING
- EXISTING FENCING NEEDING MODIFICATION

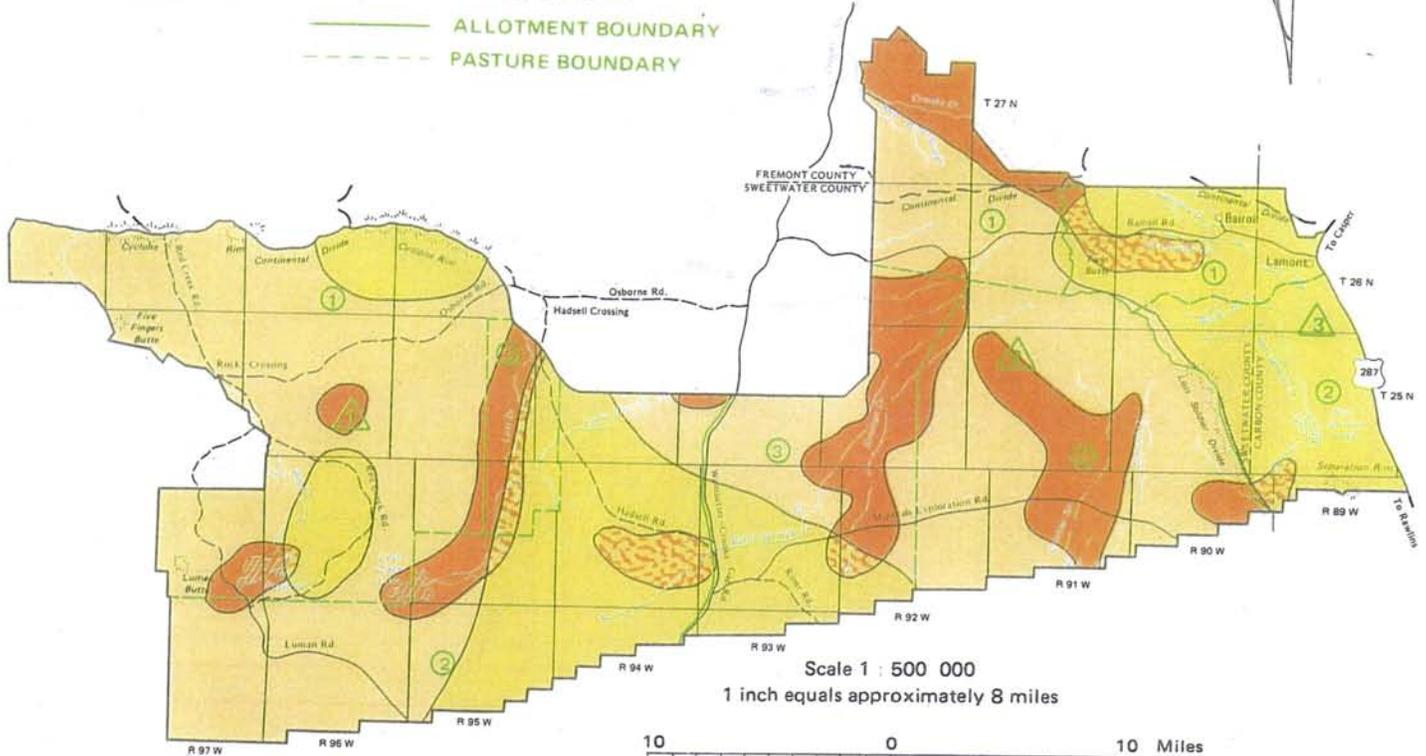
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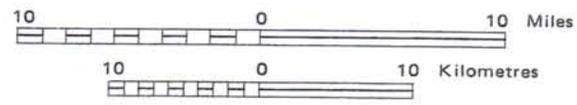
- PASTURES**
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29,500 acres
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38,845 acres



———— ALLOTMENT BOUNDARY
 - - - - PASTURE BOUNDARY



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 1 inch equals approximately 8 miles



LEGEND

- PRONGHORN CRUCIAL WINTER AREA
- PRONGHORN FAWNING AREA
- OVERLAP OF FAWNING AND CRUCIAL WINTER AREAS

DESCRIPTION OF ENVIRONMENT—EXISTING

grate from the Chain Lakes up to the Antelope Hills summer ranges.

In the spring and early summer, the pronghorn are evenly distributed over the area, with does concentrating in fawning areas (Map 2-12). As summer progresses the animals are dependent on water for their distribution (Sundstrom 1967).

In the later fall, inclement weather forces the animals back to the winter ranges along established migration corridors (Map 2-13). The time and intensity of the migrations are governed by the amount and distributions of snow and weather patterns (Wyoming Game and Fish Department). It is not possible to predict the exact time the migrations would occur, or the distributions of the animals on the winter ranges.

Mule Deer

Populations. Mule deer (*Odocoileus hemionus*) populations are relatively low in the Seven Lakes ES area. These animals are largely confined to the south slopes of Green Mountain, along Lost Soldier Divide, and an area west of the Luman Ranch (Map 2-14). Present populations and Wyoming Game and Fish Department's population management objectives are for approximately 25 mule deer in the Ferris allotment, 75 in the Stewart Creek, and 75 in the Cyclone Rim (Table 2-25).

The Wyoming Game and Fish Department has established three mule deer hunt areas which partially lie within the ES area. These areas, 96, 98, and 99, (Figure 2-2) are the management units by which the Department determines and controls mule deer populations through hunter harvest.

Food and Cover. The area offers limited or marginal habitat for deer since mule deer prefer areas of adequate forest or brush cover with uneven topography. Often, the distribution of cover may be more important in determining the distribution of mule deer than the vegetative type used for feeding (Hanson 1976). Because of this, mule deer in the ES area are restricted to the areas mentioned earlier and in a few scattered draws where sagebrush cover is rather dense and meadows are nearby. Approximately 129,000 acres of suitable crucial winter and yearlong habitat are available for mule deer use. These acres (Table 2-26), or 25% of the ES area is winter range, with about 24,719 acres in the Luman and Cyclone pastures considered crucial winter range for about 75 mule deer. The conditions of these areas are presented in Table 2-27.

Food preferences of mule deer vary considerably by season. Winter diets characteristically contain 74% shrubs and trees, 15% forbs, and 11% grasses, while summer diets may contain 49% shrubs, 46% forbs, and 3% grasses (Kufeld et al. 1973). In Montana, Mackie (1970) found that big sagebrush was the primary winter forage of deer on all types combined. Rubber rabbitbrush was the second most important food in the winter period, while forbs had little importance and grass use was minor. Food habit studies have not been conducted in the ES area to determine if the mule deer forage use is similar for this area.

Water. In the Seven Lakes ES area, deer populations are limited by intermittent water sources or the sparse distributions of water throughout the area.

Distributions and Migrations. The ES area mule deer are largely confined to those areas shown in Map 2-14. The distribution of deer on the winter ranges is largely dependent on topography, microclimate, and vegetation. Deer are usually found on south-facing slopes where wind speed is slow, temperatures are more moderate, vegetation is exposed and available, and sunlight is more direct (Wyoming Game and Fish Department).

Mule deer migrations are minor in this area. Deer are known to move to Green Mountain in the summer, and return to the lower areas during the winter. Some movements may occur along Lost Soldier Divide. The deer in the Luman Ranch area are believed to be sedentary.

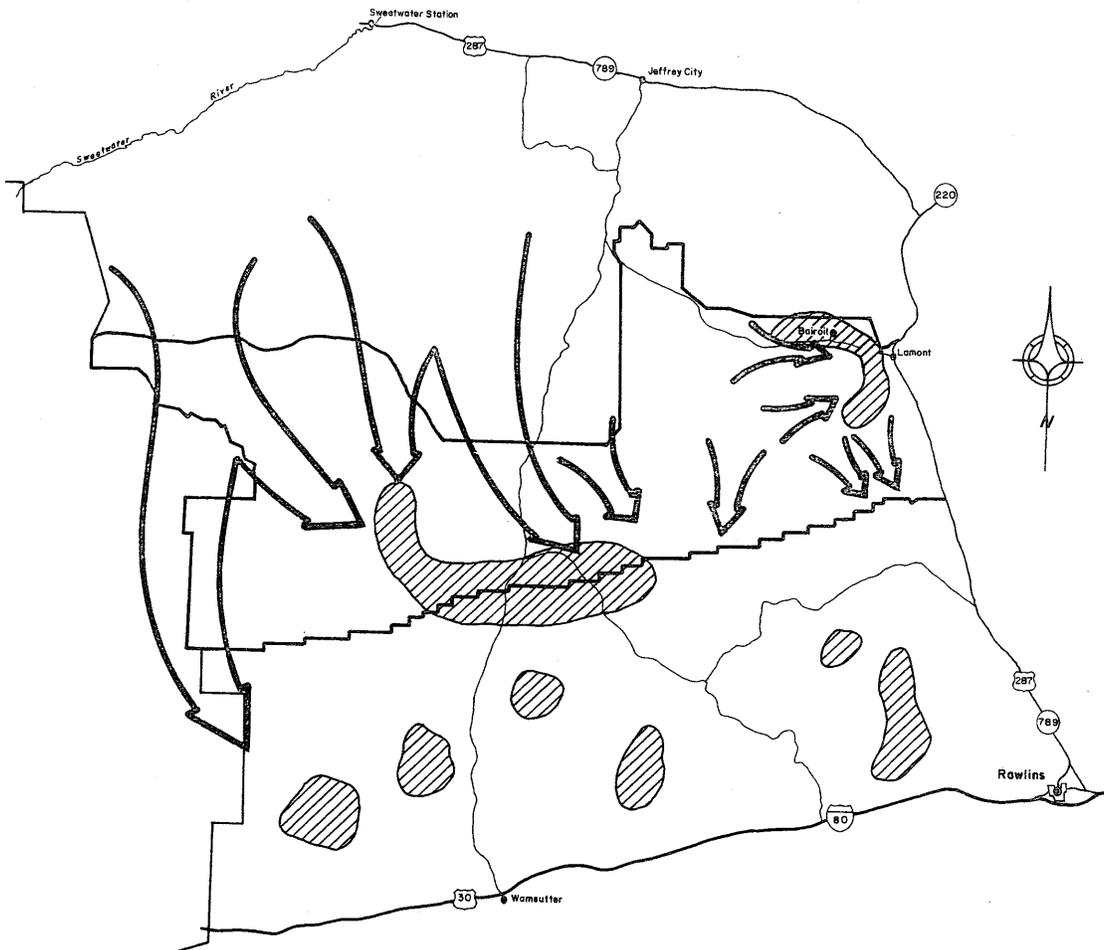
Sage Grouse

Populations. Sage grouse (*Centrocercus urophasianus*) is the most abundant game bird in the ES area. Although intensive population inventories are lacking, counts of male birds on some identified strutting grounds have indicated an estimated population of over 5,000 birds. In 1969, the sage grouse populations in the Red Desert were indicated as stable with only normal population fluctuations (June 1969a). Habitat loss from ongoing energy development and exploration is occurring, which may offset population levels.

Food and Cover. Studies on sage grouse have consistently shown that these birds are greatly dependent on sagebrush for both food and cover during much of the year. Patterson (1952) concluded that the sage grouse in southwest Wyoming are solely dependent on sagebrush for food and cover during the winter, and rely on it for the bulk of their diet during the other seasons. Studies in the Montana sagebrush communities by Wallstad and Schladweiler (1974), and Wallstad and Pyrah (1974), indicated the importance of sagebrush for winter cover, strutting ground cover, nesting cover, and brooding cover.

Patterson (1952) found an adult sage grouse's year round diet is comprised of 96% plant material and the remainder insects. Juvenile grouse diets may contain 75% insects early in the summer, dropping to less than 10% by fall. Sagebrush ranges from 99.7% of the diet of adult sage grouse during the winter, to 44.9% in the summer.

The cover requirements for sage grouse vary between the seasons. During the winter, dense stands of exposed sagebrush offer the best cover (Johnsgard 1973). However, during the strutting season, open areas with little sagebrush are used by displaying males on the strutting grounds. The common locations are open knolls and ridges in sagebrush, open spots on level land, and alkali flats (Edminster 1954). Nesting cover is predominantly sagebrush. Patterson (1952) found that 92% of the nesting hens located their nests under sagebrush. Eighty-two percent of all nests observed were under sagebrush 10 inches to 20 inches tall; the average height was 14 inches. During the brooding of young, open stands of sagebrush and meadow area, rich in insects, are used by fe-



Legend
 Normal migration routes
 Normal winter distribution

NORMAL MIGRATION ROUTES AND NORMAL WINTER DISTRIBUTION OF PRONGHORN

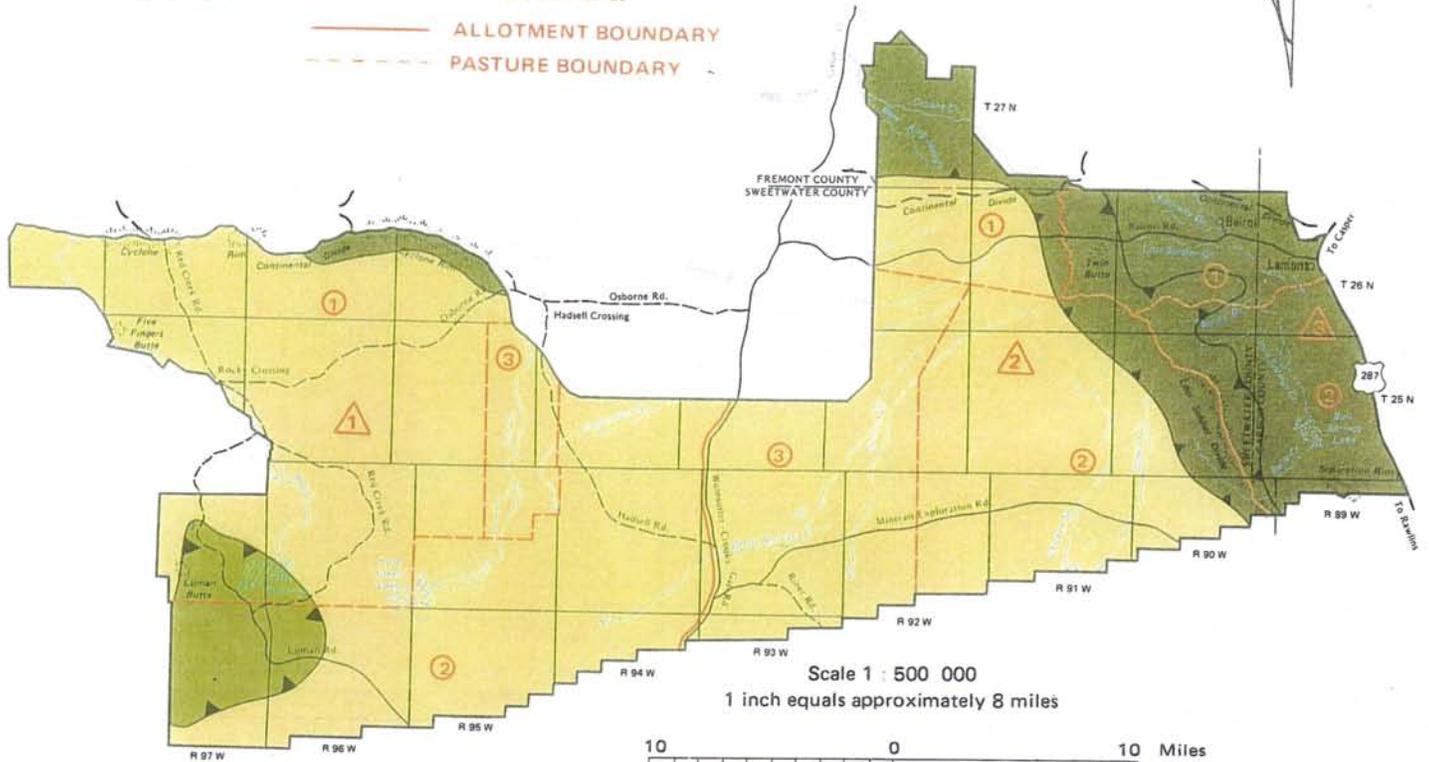
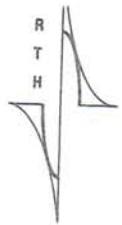
Seven Lakes Grazing
 Environmental Statement
 Map 2 - 13

- ① CYCLONE
130,216 acres
- ② LUMAN
109,794 acres
- ③ LOST CREEK
15,508 acres

- ① SAND SPRING
39,647 acres
- ② CHICKEN SPRING
86,768 acres
- ③ OSBORNE WELL
62,576 acres

- PASTURES
- ① LOST SOLDIER
29,500 acres
- ② BULL SPRINGS
38,845 acres

— ALLOTMENT BOUNDARY
- - - PASTURE BOUNDARY



LEGEND

-  MULE DEER WINTER AREA
-  MULE DEER CRUCIAL WINTER RANGE
-  MULE DEER YEAR LONG AREA

TABLE 2-25
PRESENT ESTIMATES AND FUTURE OBJECTIVES*

<u>Mule Deer</u>	<u>Yearlong</u>	
	Present	Future
Ferris	25**	25
Stewart Creek	75	75
Cyclone Rim	<u>75</u>	<u>75</u>
TOTALS	175	175

*Wyoming Game and Fish Department 1980 management objectives as developed by Wyoming Game and Fish biologists.

**Numbers of mule deer.

TABLE 2-26
MULE DEER HABITAT BY PASTURE

	Crucial Winter		Yearlong*	
	acres	percent**	acres	percent*
Ferris Allotment				
Bull Springs	0	0	38,845	100
Lost Soldier Allotment	0	0	<u>29,500</u>	<u>100</u>
			68,345	100
Stewart Creek				
Chicken Springs	0	0	11,988	14
Sand Springs	0	0	21,710	55
Osborne Well Allotment	0	0	<u>0</u>	<u>0</u>
			33,698	18
Cyclone Rim				
Luman	16,115	15	0	0
Cyclone	8,604	7	2,120	2
Lost Creek Allotment	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
	24,719	10	2,120	1
ES Area	24,719	5	104,163	10

*Includes winter habitat on Map 2-14.

**The percent of the pasture or allotment acreage.

TABLE 2-27
MULE DEER HABITAT VEGETATION CONDITION

	Mule Deer Crucial Winter						Mule Deer Winter-Yearlong					
	Acres	<u>Good</u> %*	Acres	<u>Fair</u> %*	Acres	<u>Poor</u> %*	Acres	<u>Good</u> %*	Acres	<u>Fair</u> %*	Acres	<u>Poor</u> %*
<u>Ferris Allotment</u>												
Bull Springs							4,412**	11.7	28,230	75.0	4,988	13.8
Lost Soldier							<u>11,821</u>	41.2	<u>14,943</u>	52.1	<u>1,098</u>	6.7
TOTAL							16,233	24.5	43,173	65.1	6,086	10.4
<u>Stewart Creek</u>												
Chicken Springs							7,307	61.0	4,641	38.7	40	0.3
Sand Springs							15,529	71.5	6,181	28.5	0	0
Osborne Well							<u>0</u>	0	<u>0</u>	0	<u>0</u>	0
TOTAL							22,836	67.8	10,822	32.1	40	0.1
<u>Cyclone Rim</u>												
Cyclone	1,250	14.5	6,530	75.9	824	9.6	0	0	2,120	100	0	0
Lost Creek	0	0	0	0	0	0	0	0	0	0	0	0
Luman	<u>1,300</u>	8.1	<u>9,941</u>	61.7	<u>4,874</u>	30.2	<u>0</u>	0	<u>0</u>	0	<u>0</u>	0
TOTAL	2,550	10.3	16,471	66.6	5,698	23.1	0	0	2,120	100	0	0
ES TOTAL	2,550	10.3	16,471	66.6	5,698	23.1	39,069	38.3	56,115	54.9	6,126	6.8

*Percent of habitat in that condition class.

**Does not include 2,853 acres of dry lake waste in the Ferris allotment.

Condition classes as determined by methodology in Appendix B-2-8.

Good - A vegetative type where the plant community provides mule deer with the best possible plant conditions and components to meet their habitat needs.

Fair - A vegetative type where the plant community provides mule deer with the majority of habitat needs but not at the optimum.

Poor - A vegetative type where the plant community does not provide mule deer with a majority of their habitat needs or the community lacks an important component to support mule deer.

DESCRIPTION OF ENVIRONMENT—EXISTING

males and young. Adults also consume a large percentage of forbs and require grassy habitats at this time (Patterson 1952).

The ES area provides 87,912 acres of crucial habitat for sage grouse (Table 2-28). The identified strutting-nesting grounds are classified (Appendix B-2-8) as 8,959 acres in good condition; 54,279 acres in fair; and 11,352 acres in poor condition. The crucial wintering areas are classified as 2,142 acres good; 10,180 acres fair; and 1,000 acres poor. The draws and ravines which offer the optimum roosting and loafing cover (Patterson 1952) are classified as 23,240 acres good; 12,207 acres fair; and 4,817 acres poor for the entire ES area (Table 2-29). Table 2-30 presents the condition of sage grouse habitat. In general, the area provides both good food and cover for all phases of the sage grouse life cycle. Some meadows are deteriorated from heavy livestock use, and may be limiting sage grouse production in isolated areas.

Water. Studies on sage grouse in southwest Wyoming and other western states have indicated that sage grouse are closely associated with wetland areas and water developments during the summer and early fall seasons. Patterson (1952) stated that seasonal movements are primarily a result of the wide variations in the nature, amount, and distribution of water, and the availability of sagebrush for food and cover. During the summer months, sage grouse are normally limited to the immediate vicinities of stream courses, isolated desert springs, and water holes. Edminster (1954) noted that although water was not an absolute requirement for brood survival, it was essential for superior brooding areas.

In the Seven Lakes ES area, much of the area has adequate water for sage grouse. However, there are some 200,000 acres lacking water which might be used by sage grouse later in the summer if water was available. These areas (Map 2-10) are essentially the same as those identified as lacking water for pronghorn.

Distributions and Migrations. Sage grouse are social animals, forming large flocks during several periods of the year. Strutting grounds are the central habitat. These areas, varying in size from several hundred feet to several acres (Edminster 1954), are places where male sage grouse gather in late winter and early spring to collectively display to and court females. They are also the general vicinities where females tend to nest. Wallstad and Pyrah (1974) found in Montana that 68% of the hens nested within 1.5 miles of the strutting grounds. Thus, the strutting grounds are not only used for courtship, but are the center of nesting activity. There are three known strutting grounds in the proposed Cyclone Rim allotment, eight in the proposed Stewart Creek allotment, and three in the Ferris uncommon allotment (Map 2-15). However, spring and summer observations indicate additional strutting-nesting complexes are likely to occur along Lost Soldier Creek, Laundry Draw, and Upper Osborne Draw (Wyoming Game and Fish Department 1978).

Brooding habitat and requirements differ greatly from other seasonal requirements. Studies conducted by Klebenow and Gray (1967), Peterson (1970), and Patterson

(1952) showed that grasses and forbs are heavily used by both adults and young during the spring and summer. Meadows are necessary for brooding habitat as indicated by Patterson (1952):

"The reduction and elimination of perennial grasses and forbs will impose serious restrictions upon the normal feeding habitats of females and young birds, particularly during the early stages of development. At this time, they are highly dependent on insect life. In order to obtain this type of food, broods customarily disperse from the individual nest site and concentrate in the vicinity of native grasses and sedge meadows"

The meadows are also used later in the summer when all the birds move from the dry upper range types to the lower mesic bottomlands to feed on succulent vegetation (Peterson 1970). Sage grouse are known to concentrate along Crooks Creek, Stewart Creek, Lost Soldier Creek, Lost Creek, and those springs and reservoirs which support meadow-type vegetation. Many of these areas are also cattle concentration centers, which are in a somewhat poor condition for sage grouse use due to over utilization by livestock.

In Montana, Eng and Schladweiler (1972) found that sage grouse are closely associated with dense stands of sagebrush from early September to early April. They also noted that the birds concentrate more on winter ranges during winter than they concentrate at other times of the year. In the Seven Lakes ES area, winter flocks may range up to several hundred birds. Known winter concentration (Table 2-30) areas are found in the proposed Cyclone Rim and Stewart Creek allotments (Map 2-15). These areas are expected to shift depending on vegetative cover, snow accumulation, and weather conditions.

Waterfowl

Populations. The ES area lies on the eastern boundary of the Pacific Flyway, and is available for waterfowl use during the spring, summer, and fall seasons. Little information exists on either the migrating or nesting populations of waterfowl in the area. However, there are population estimates based on the amount of surface acreage of ponds and miles of live streams. Using the estimates of one pair of ducks for each surface acre of pond, and twelve pairs of ducks per mile of live stream (Wyoming Game and Fish Department), a total of 40 nesting pairs of ducks may occur in the ES area. Use may increase during the migration period.

Observed species include mallards, pintails, gadwalls, wigeon, green-winged teal, and blue-winged teal.

Food and Cover. Waterfowl are largely confined to reservoirs, streams, dugouts, and other impounded water sources. Use of these waters is limited to periods from the spring thaw and runoff, to the early winter freezing dates. Surface acreage, shoreline vegetation, emergent vegetation, nutrients, and waterflows are important criteria for habitat selection by waterfowl (Berg 1956, Lokenmoen 1973). There are few good waterfowl habitats in the ES area due to an overall lack of water and poor

TABLE 2-28
SAGE GROUSE HABITAT BY PASTURE AND ALLOTMENT

Allotment and Pasture	<u>Strutting-Nesting</u>		<u>Crucial Winter</u>	
	Acres	%*	Acres	%*
Ferris				
Bull Springs	12,120	32	0	0
Lost Soldier	<u>5,182</u>	18	<u>0</u>	0
TOTAL	17,302	26	0	0
Stewart Creek				
Osborne Well	13,297	21	0	0
Chicken Springs	21,407	30	6,842	8
Sand Spring	<u>0</u>	0	<u>0</u>	0
TOTAL	34,704	21	6,842	4
Cyclone Rim				
Luman	6,226	6	1,528	1
Lost Creek	920	6	2,552	16
Cyclone	<u>15,438</u>	12	<u>2,400</u>	2
TOTAL	22,584	9	6,480	3
ES TOTAL	74,590	15	13,322	3

*The percent of allotment and pasture.

TABLE 2-29
CONDITION OF DRAW VEGETATION FOR
SAGE GROUSE IN THE ES AREA

	<u>Acres</u>	<u>Percent</u>
Good	23,240	58%
Fair	12,207	30%
Poor	<u>4,817</u>	<u>12%</u>
Total	40,264	100%

- Habitat condition classes as determined by methodology in Appendix B-2-8.
- Good - A vegetative type where the plant community provides sage grouse with the best possible plant conditions and components to meet their habitat needs.
- Fair - A vegetative type where the plant community provides sage grouse with the majority of habitat needs but not at the optimum.
- Poor - A vegetative type where the plant community does not provide sage grouse with a majority of their habitat needs or the community lacks an important component to support sage grouse.

TABLE 2-30
SAGE GROUSE HABITAT VEGETATION CONDITION

	Good		Nesting and Strutting		Fair		Poor		Good		Crucial Winter		Fair		Poor	
	Acres	%Habitat	Acres	%Habitat	Acres	%Habitat	Acres	%Habitat	Acres	%Habitat	Acres	%Habitat	Acres	%Habitat	Acres	%Habitat
Ferris																
Allotment																
Lost Soldier	1,473	28	2,529	49	1,180	23										
Bull Springs	<u>1,112</u>	9	<u>7,453</u>	62	<u>3,555</u>	29										
TOTAL	2,585	15	9,982	58	4,735	27										
Stewart Creek																
Allotment																
Osborne Well	1,600	12	11,697	88												
Chicken Spring	4,774	22	16,633	78												
Sand Spring																
TOTAL	<u>6,374</u>	18	<u>28,330</u>	82			<u>2,142</u>	31.3			<u>4,700</u>	68.7				
							2,142	31.3			4,700	68.7				
Cyclone Rim																
Allotment																
Luman			4,946	79	1,280	21	0	0			1,528	100	0	0		
Lost Creek			640	70	280	30	0	0			2,552	100	0	0		
Cyclone			<u>10,381</u>	67	<u>5,057</u>	33	<u>0</u>	0			<u>1,400</u>	58.3	<u>1,000</u>	41.7		
TOTAL			15,967	71	6,617	29	0	0			5,480	84.6	1,000	15.4		
ES Total	8,959	12	54,279	73	11,352	15	2,142	16.1			10,180	76.4	1,000	7.5		

Habitat condition class was determined by methodology in Appendix B-2-8.

Good - A vegetative type where the plant community provides sage grouse with the best possible plant condition and components to meet their habitat needs.

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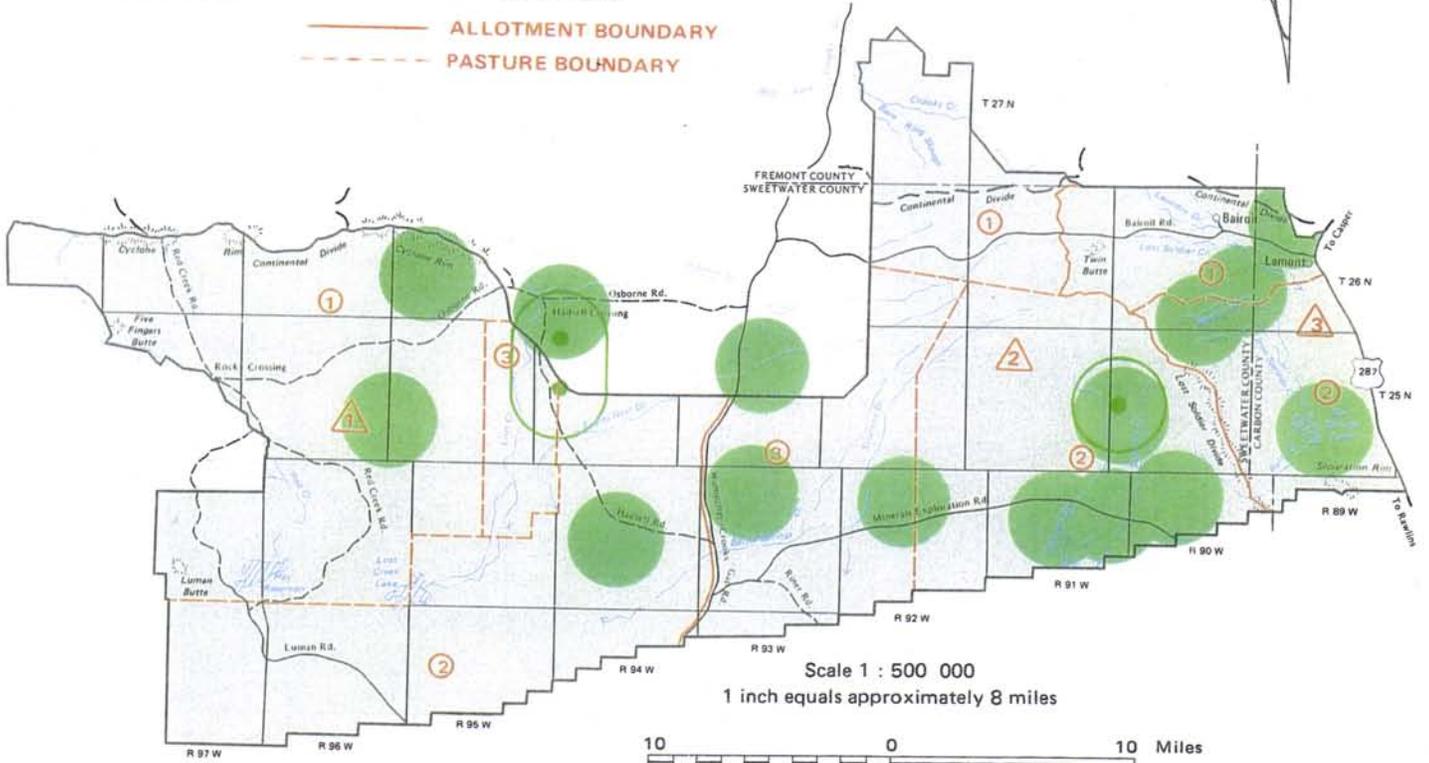
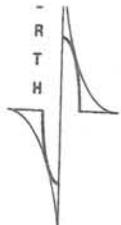
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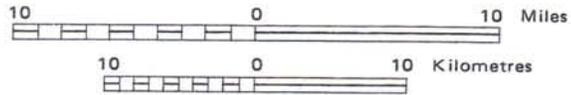
- PASTURES**
- ① SAND SPRING
39,647 acres
 - ② CHICKEN SPRING
86,768 acres
 - ③ OSBORNE WELL
62,576 acres

- PASTURES**
- ① LOST SOLDIER
29,500 acres
 - ② BULL SPRINGS
38,845 acres

—— ALLOTMENT BOUNDARY
- - - - PASTURE BOUNDARY



Scale 1 : 500 000
1 inch equals approximately 8 miles



LEGEND



SAGE GROUSE WINTER
GROUNDS



SAGE GROUSE STRUTTING /
NESTING GROUNDS

DESCRIPTION OF ENVIRONMENT—EXISTING

shoreline vegetation due to heavy livestock use around these areas.

Suitable waters may be unused due to a lack of cover for nesting and brood rearing activities. Most ducks occurring in the ES area are dabblers which prefer dry, upland cover types for nesting. SOWLS (1955) found that ungrazed meadows accommodated 87% of the nests found. He also found that mallards, pintails, and gadwall were more apt to nest at greater distances from water. These species were observed to be most prevalent in the ES area. Cover adjacent to most reservoirs and lakes is extremely poor due to livestock grazing. Thus, poor nesting habitat or subsequent nest predation may be a limiting factor of waterfowl production in the area.

Distributions. Although most impounded waters have some potential for waterfowl use, actual use has been observed on the waters in the ES area shown on Map 2-16. Other waters may receive use during the spring, early summer, or during migration periods depending on water levels and vegetation.

Nongame Wildlife

Nongame wildlife are those species for which there is no hunting season or allowed harvest. Such species include numerous birds, mammals, reptiles, amphibians, and invertebrates. These animals make up a large portion of the fauna in the Seven Lakes ES area and are important in the functioning of the ecosystem.

Studies on nongame species are very limited in the ES area. However, inventories conducted during 1975 and 1976 located numerous raptor nesting areas and prairie dog towns. Also, the occurrence of many nongame species was recorded. A total of 11 species of nongame mammals and 23 species of nongame birds were observed in the ES area (Appendix B-2-11).

Populations. Populations are believed to be stable or within normal fluctuations; however, data have not been gathered to substantiate this. Data have been collected on nesting raptors and prairie dog towns, and this information is available at the Rawlins District Office.

Distributions. Nongame wildlife species are found in all habitats in the Seven Lakes ES area. Little information exists on the habitat requirements and habitat preferences for most of these species. Water sources are believed to be of major importance for many animals and may regulate distributions during the drier parts of the year. Many species may seasonally inhabit the area during migration periods. Many are yearlong residents. Appendix B-2-12 lists some more common species by their preferred habitats.

Aquatic Wildlife

Aquatic wildlife habitat is primarily on the few streams which flow through or into the Seven Lakes ES area (Map 2-16). Only one stream, Crooks Creek, is presently known to support a salmonoid fishery. One other drainage, Lost Soldier Creek, may have some potential

for a sustained fishery, but none is known to exist there presently.

Crooks Creek

Crooks Creek flows through approximately $\frac{1}{2}$ mile of public land and 5 miles of state land within ES boundaries.

A level II inventory of Crooks Creek conducted in 1975 has shown that this drainage is presently in poor to fair condition for salmonoid fisheries. These habitat condition ratios (Appendix B-2-13) were based on summaries of pool-riffle ratios, pool quality, stream bottom, and streambank cover and stability ratings (Duff and Cooper 1976). Although brook and cutthroat trout were stocked in the stream in 1969, 1970, and 1973, little natural reproduction has occurred due to sandy bottoms and existing beaver dams washing out. Electroshocking by the Wyoming Game and Fish Department produced an estimated 106 brook trout per mile (personal communication Chuck Viox), which indicates poor fishery production. Overall, the drainage has poor cover, high temperatures, inadequate flows, high turbidities, and poor spawning habitat. Prior to their introduction by the Wyoming Game and Fish Department, no trout were found in Crooks Creek. Livestock use is light to moderate over most of the drainage, with heavy use around Sand Spring. Streambank damage itself is moderate to heavy due not only to excessive numbers of cattle, but also to the sandy loam bank materials.

Recent exploration and development of uranium ore on Green Mountain is increasing sediment yields into the drainage. Such development is reducing the Crooks Creek salmonoid fishery.

Brook trout have been observed in the confluence of Sand Spring and are known to exist along the drainage. Beaver dams are found along the stream, but most dams are believed to be inactive.

Lost Soldier Creek

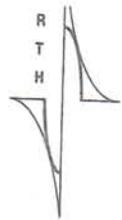
This drainage flows through about 4 miles of public land, 1.5 miles of state, and 0.75 miles of private lands within the ES area. However, only about 2 miles of the drainage are able to support aquatic wildlife. There are presently no stream inventories on this drainage. Poor flows, high sedimentation, and high temperatures are believed to be major problems with this drainage. No fish species have been observed in this stream. Beaver activity has been observed, but present population numbers are not known.

Cover is fair, but livestock use is considered to be heavy. Trampling of riparian and emergent vegetation, and stream bank sloughing are major problems.

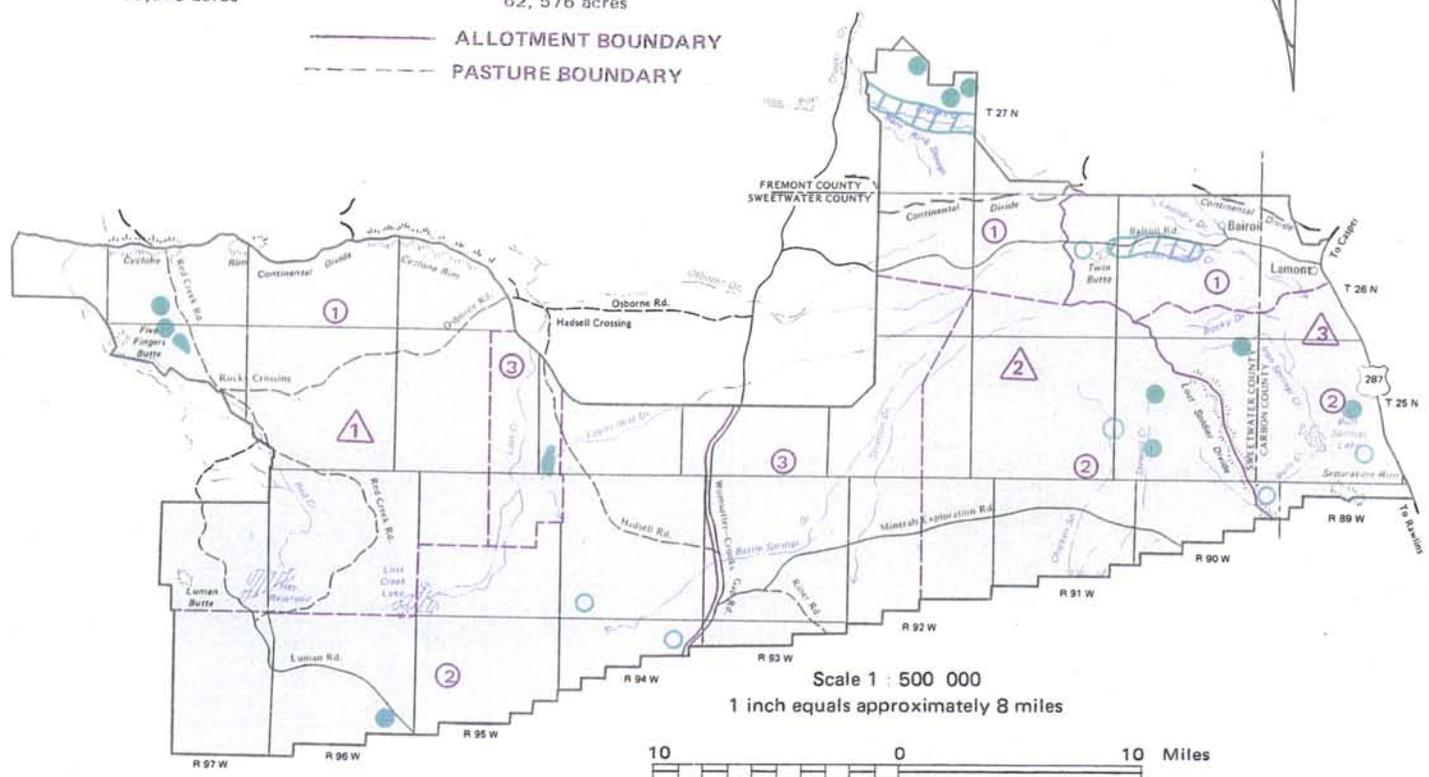
- ① CYCLONE
130,216 acres
- ② LUMAN
109,794 acres
- ③ LOST CREEK
15,508 acres

- ① SAND SPRING
39,647 acres
- ② CHICKEN SPRING
86,768 acres
- ③ OSBORNE WELL
62,576 acres

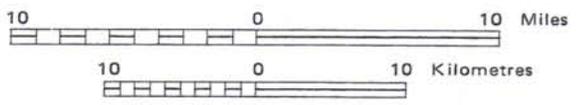
- ① LOST SOLDIER
29,500 acres
- ② BULL SPRINGS
38,845 acres



— ALLOTMENT BOUNDARY
- - - PASTURE BOUNDARY



Scale 1 : 500 000
1 inch equals approximately 8 miles



LEGEND

-  OBSERVED WATERFOWL USE AREA
-  PROBABLE (BUT NOT OBSERVED) WATERFOWL USE AREA
-  AQUATIC HABITAT

**AQUATIC HABITAT AND
WATERFOWL USE AREAS**
Seven Lakes Grazing
Environmental Statement
Map 2 - 16

DESCRIPTION OF ENVIRONMENT—EXISTING

Threatened and Endangered Species

Those wildlife species determined by the Secretary of the Interior to be threatened with extinction are on the endangered species list published in the *Federal Register*. Those species which may occur in the Seven Lakes ES area are the American peregrine falcon and the black-footed ferret.

American Peregrine Falcon (*Falco peregrinus anatum*)

Peregrine falcons migrate through the Seven Lakes ES area; however, none have been observed to nest. The area is not considered as critical habitat for this species.

Black-Footed Ferret (*Mustela nigripes*)

This endangered species has been found to be closely associated with prairie dogs and prairie dog towns (USDI, BLM 1972). Much information exists on the black-footed ferret in association with black-tailed prairie dogs (*Cynomys ludoricianus*), but little information has been written on its relationship with white-tailed prairie dogs (*Cynomys leucurus*). Since it is the latter species which occurs in the ES area, information on the black-footed ferret in the area is lacking. Clark (1975) published known sightings of black-footed ferrets in Wyoming. No sightings have been reported in the ES area. There have been several sightings of black-footed ferrets in the Oregon Buttes area, approximately 20 miles west of the ES boundary. Since the habitat at Oregon Buttes is similar to that in the ES area, and there are white-tailed prairie dog concentrations between the two areas, it seems highly probable that ferrets could occur in the Seven Lakes ES area. Approximately 30 hours were spent at night in towns containing large numbers of prairie dogs, looking for black-footed ferret presence during September. No evidence of ferrets was observed.

State of Wyoming Rare and Endangered Wildlife

The State of Wyoming Game and Fish Department has published a list of wildlife species which are thought to be endangered, rare, status undetermined, extinct, or peripheral in Wyoming. The species and their status which may occur in the Seven Lakes ES area are listed in Table 2-31.

Wild Horses

Population

The Seven Lakes ES area is known to have supported wild horses since the early 1900s. Most of the horses are believed to be descendants of horses that escaped or were released on the range by local ranchers. Today there are an estimated 240 wild and free-roaming horses in the area. Their numbers are increasing about 20% annually. (No wild burros are found in the Seven Lakes ES

area.) Table 2-32 displays the wild horse inventory information for the Seven Lakes Planning Unit. Additional information on inventories, characteristics, and history of wild horses in the Seven Lakes Planning Unit is found in the Seven Lakes Unit Resource Analysis (URA) which is available for public inspection in the Rawlins District Office.

Distribution and Movement

Wild horses can be found throughout the Seven Lakes ES area. Movement within the general distribution areas appears to normally be confined to a 3 or 4 square mile area in which animals forage and water.

The horses are found in three concentration areas (Map 2-17). There are approximately 80 horses in seven bands consistently located along the checkerboard boundary north of the Chain Lakes. About 40 horses are usually found on the south facing slopes of Cyclone Rim northwest of Stratton Lake. And finally, about 120 wild horses are located along the Crooks Gap-Bairoil Road in approximately twelve bands. These last horses seem to be the most mobile. Some of these horses occasionally wander into the northern half of the Ferris allotment.

The horses also move between areas of concentration. Apparently wild horses from the Seven Lakes commonly move north onto Green Mountain (outside the ES area) during the summer, mixing with wild horses from the Lander Resource Area. Wild horses also summer on Stratton Rim. The ES area boundary runs through the concentration areas near Crooks Mountain and on Cyclone Rim. Sometimes the wild horses in these areas are found in the Seven Lakes Planning Unit and sometimes they are found in the Lander Resource Area (Map 2-17).

Horse movement also occurs, back and forth, across the western boundary of the ES area (Rock Springs-Rawlins District boundary). There is a large concentration of wild horses in the Continental Peak herd which is found just west of the west boundary fence, and these horses probably mix with those of the ES area.

Additionally, wild horses from the Seven Lakes Unit are known to occasionally migrate down onto the checkerboard lands to the south. The horses have free access in several places to these checkerboard lands and go there for water. This fact somewhat complicates management of wild horses in the ES area.

In winter, the horses are often found on exposed ridges which are blown free of snow. The bands prefer to feed along draws, ravines, and protected areas such as north or east facing slopes and small basins.

Crucial habitat can be defined as that habitat required for the survival of an animal population. No crucial habitat for wild horses has been identified in the Seven Lakes ES area, because no particular areas are believed to be required for their survival. The horses do frequent certain areas, but the horses would leave these areas if sufficiently disturbed or if they lack feed. Horses are able to forage in deeper snows than most other animals and are capable of traveling through fairly deep snow to areas where forage would be more readily available.

TABLE 2-31
STATE OF WYOMING RARE AND ENDANGERED WILDLIFE
OBSERVED IN THE SEVEN LAKES ES AREA

<u>Species</u>	<u>Status</u>	
Burrowing Owl	Rare	A ground dwelling owl closely associated with prairie dog towns. It has been observed and photographed in the area.
Meadow Jumping Mouse	Rare	Possibly inhabiting low meadows near streams.

TABLE 2-32
 WILD HORSE INVENTORY INFORMATION
 WILD HORSE HERD DATA - SEVEN LAKES PLANNING UNIT*
 RAWLINS DISTRICT, WYOMING

Inventory Count	Colts %-Number	Yearlings %-Number	Band Size			Number of Bands	Organization of Observer
			Min.	Max.	Aver.		
1. 151 March 1974	NI NI	NI NI	NI	NI	NI	NI	BLM
2. 194 March 1975	0.5 1	NI NI	NI	NI	12.1	16	BLM
3. 233 Summer 1975	20.6 48	7.7 18	NI	NI	NI	NI	BLM
4. 238 March 4, 1976	11.3 27	NI NI	4	34	11.9	20	BLM
5. 222 May 1976	NI NI	NI NI	NI	NI	NI	NI	Wyo. Game & Fish
6. 223 May 26, 1976	17.6 39	NI NI	1	39	10.1	22	BLM
7. 307 Aug. 13, 1976	17.6 54	NI NI	1	58	14.6	21	BLM
8. 214** Aug. 17, 1977	16.4 35	NI NI	NI	NI	9.3	23	BLM

NI = No information

*Inventory counts number 1 through 7 covered the Seven Lakes Planning Unit which is larger and includes the Seven Lakes ES area (refer to Map 2-19). The number of wild horses that would have been found only in the ES area is not possible to determine from these earlier inventories.

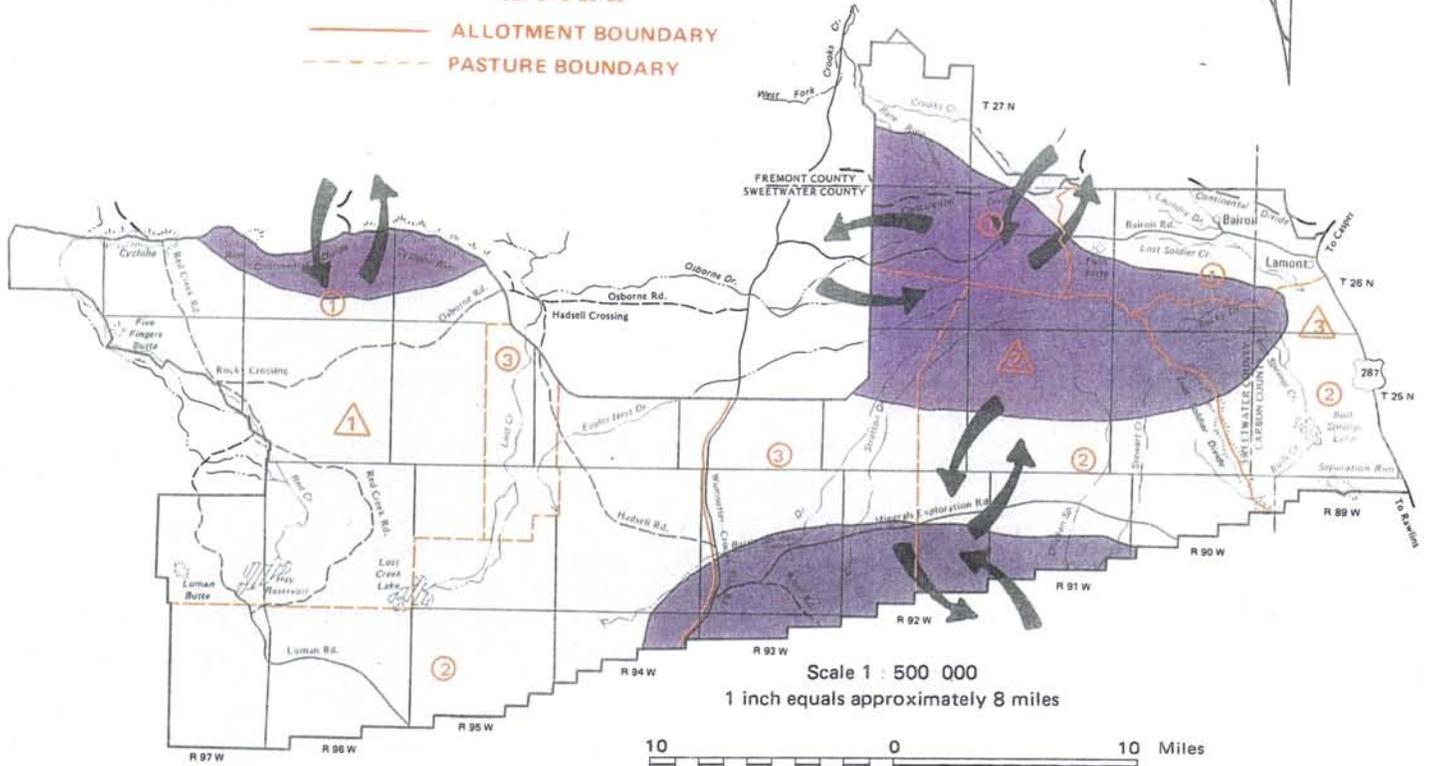
**The ES area, excluding the Ferris Allotment, was inventoried. A more detailed memorandum is included in the backup materials.

- PASTURES**
- ① CYCLONE
130 216 acres
 - ② LUMAN
109 794 acres
 - ③ LOST CREEK
15 508 acres

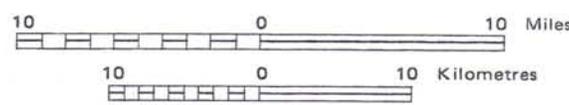
- PASTURES**
- ① SAND SPRING
39 647 acres
 - ② CHICKEN SPRING
86 768 acres
 - ③ OSBORNE WELL
62 576 acres

- PASTURES**
- ① LOST SOLDIER
29 500 acres
 - ② BULL SPRINGS
38 845 acres

— ALLOTMENT BOUNDARY
- - - PASTURE BOUNDARY



Scale 1 : 500 000
1 inch equals approximately 8 miles



LEGEND

- WILD HORSE CONCENTRATION AREAS
- MOVEMENT PATTERNS

PRESENT WILD HORSE CONCENTRATION AREAS AND MOVEMENT PATTERNS

Seven Lakes Grazing
Environmental Statement

DESCRIPTION OF ENVIRONMENT—EXISTING

The areas of horse use are somewhat dependent on water supplies, although it is not uncommon to see wild horses more than 5 miles from water. In late summer, when water supplies are limited, herd ranges become restricted. Water sites used by the bands include, the Chain Lakes, Sooner Reservoir, Chicken Spring, Dry Well Reservoir, Free Flowing Well, Osborne Well, and the stock reservoir at Stratton Lakes. In addition to the above mentioned sites, the horses use water from pot-holes in roads after rainstorms. Most movement to and from water is in the early mornings and late evenings.

Habitat

A draft wild horse management plan (Herd Management Area Plan—HMAP) was written in June of 1977. It would be implemented concurrently with the proposed action.

Forage has not been reserved for wild horses in the Seven Lakes ES area. Each horse is estimated to consume an average of 900 pounds of forage per month (Rice 1975). The 240 wild horses presently in the Seven Lakes ES area consume approximately 2,592,000 pounds of forage annually. Using Hansen's (1975) data, 900 pounds of forage for wild horses is equivalent to .574 of a winter sheep AUM (900 pounds x .287 wild horse sheep diet similarity: 450 pounds of forage per winter sheep AUM). It is estimated that on the average a wild horse requires 10 gallons of water per day.

The condition of the wild horse population appears to be excellent. It is very rare to encounter an injured, sick, or emaciated wild horse. There are no apparent inbreeding problems.

The wild and free-roaming horses have been protected from unauthorized capture, harassment, and killing by federal law since 1971.

Because of the unfenced open spaces presently found in the Seven Lakes ES area, the wild horses are indeed free-roaming. They use public, state, and private lands in the area at will. In fact, many of the existing water sources wild horses use are on private or state land.

The Seven Lakes ES area is presently relatively remote and unvisited despite the recent upsurge in mineral activity. The wild horses of the area can, for the most part, be viewed in a very natural setting unmarred by man-made intrusions. The horses are not greatly alarmed by visitors and can usually be approached to within a few hundred yards. During the past year, only one report of wild horse harassment was made, and one horse was found shot.

CULTURAL RESOURCES

Cultural resources are defined as those fragile and non-renewable remains of human activity, occupation, and endeavor as reflected in districts, sites, structures, artifacts, objects, ruins, works of art, architecture, and natural features that were of importance in human events. These resources consist of (a) physical remains, (b) areas

where significant human events occurred—even though evidence of the event no longer remains, and (c) the environment surrounding the actual resource. Cultural resources are commonly discussed in terms of their prehistoric and historic values; however, each of these aspects represents a part of the continuum of events representing the earliest evidences of man to the present day.

Measures have been taken to identify and evaluate the cultural resources located within the ES area: Western Wyoming College (Metcalf 1976) conducted a regional sample inventory which included 0.02% of the ES area; intensive inventories have been conducted on 20% of the proposed water developments; a historic study was conducted by Western Interpretive Service (1976); and a helicopter evaluation was conducted by BLM on the historic trails in the ES area. In addition, a literature review has been conducted, which included consultation with knowledgeable individuals, and a search of the Wyoming State Archeologist files and BLM cultural resource inventory files. To identify cultural resources listed on, or eligible for nomination to the National Register of Historic Places, the February 7, 1978, *Federal Register* was reviewed and the State Historic Preservation Officer (SHPO) was consulted. None of the National Register sites are located in the ES area; however, one site identified in the ES area is eligible for nomination to the National Register (Luman Ranch).

Since cultural resources eligible for nomination to the National Register were identified within the ES area, appropriate documentation of compliance with Section 106 of the National Historic Preservation Act has been developed as outlined in 36 CFR 800 and a determination of "no effect" was reached.

Archeological Background

The ES area is situated between three major culture areas: the Great Plains, the Great Basin, and the Northwest Plateau. In describing human use of the region, much emphasis has been placed upon the easily traveled corridor through southwest Wyoming and the occupants have been described largely as transitory. Great time depth and continuity can be demonstrated for the prehistoric occupation of the ES area. Known sites in the region date as early as 11,200 B.C.

Forty prehistoric sites have been identified in the ES area. All sites were associated with hunting, gathering, and camping activities. Twenty-nine of these sites are classified as campsites. Stone or tipi rings are found at nine of these camping areas, and firepits were positively identified at all of them. Tool manufacture is evident at twelve of the campsites. Because of the high number of grinding tools used for plant preparation found, it is thought that the majority of these areas were occupied during the middle prehistoric period when plant processing was an important activity. Isolated lithic materials and evidence of tool manufacture were found at nine sites. One site contains what are thought to be hunting blinds, although associated evidence of organized hunting activity in the area has not been found.

DESCRIPTION OF ENVIRONMENT—EXISTING

The evaluation of cultural sites in the Seven Lakes ES area thus far has been based solely on the observation of surface features. This approach lacks the thoroughness of subsurface testing at each location, but in most cases it is felt to be adequate to determine if sites meet National Register standards.

Because surveying in the ES area has not been extensive, a predictive model based on the sample survey done by Metcalf (1976) serves to estimate where sites might exist in the region. Topographic variety determines the patterning of sites. The survey, which included the Seven Lakes, Sandy, and Green Mountain ES areas, revealed that 79% of the sites occurred around permanent and ephemeral streams, springs, and playa lakes. Aside from the dependence on water sources in an arid region, these areas offered a rich wildlife habitat and vegetation that provided an important food source. Two of the 40 identified archeological sites in the ES area were found during this survey, and both were located in the vicinity of a water source.

Every major sand dune sampled had at least one site; and because of the movement of sands, it is probable that more cultural material is buried. Evidence of bison kills, in the form of butchered and burnt bone, is commonly found in sand dunes. Components of a communal bison kill are an area of good grazing, a topography suitable for channeling animals to a pre-selected area, and a cuesta, cliff, arroyo, or situation suitable for jumping, corralling, or trapping animals.

Any terrain where there is considerable relief relative to the broader surrounding area such as buttes, escarpments, and very hilly areas are defined as breaks. In seven out of ten of the samples made in breaks, at least one site was found. The uplands, consisting of rolling country dissected by minor drainages, are the most common terrain in the ES area. Flatlands are characterized by a relatively featureless terrain with low relief. The least productive site areas are in flats and uplands where there is a lack of variety in vegetation and relief (See appendix B-2-23 for a more complete discussion of the research design used by Metcalf).

Heavy trampling damage from years of grazing in the Seven Lakes ES area has already occurred at many existing water sources and in draws. It is suspected that many archeological sites, both surface and subsurface, have already been heavily damaged or destroyed.

Historical

The Luman Ranch site located on private land in the proposed Cyclone Rim allotment is listed on the Wyoming Inventory of Historic Sites and has been determined to be eligible for National Register nomination. The desert ranch dates from about 1918 and served as headquarters for a sheep raising operation at the peak of the World War I sheep boom. It is an imposing ruin in the desert area, with many log buildings, dugouts and other structures standing. New oil and gas drilling activity is underway nearby and equipment and housing for the drilling activity are presently located on the site.

The only historical trail passing through the ES area is the Rawlins-Fort Washakie Stage and Telegraph Line. The stage line has state and local significance because of its importance as a major transportation route from 1878 to 1906 providing a passage to Lander and Fort Washakie for freight and travelers from the Rawlins rail line. There are no portions of the trail within the project area which have sufficient integrity to merit nomination to the National Register. A helicopter inventory conducted by the Rawlins BLM Office (1976) revealed that all visible portions of the trail passing through the ES area had either been severely eroded or used as access. The Bull Springs and Lost Soldier Stage Stations were the third and fourth stops out of Rawlins. There are two sheds at the Lost Soldier site, but it is believed that these are a result of the oil-field development of the 1920s. According to the survey conducted by Western Interpretive Services (1976), there is no cultural material remaining at the Bull Springs site.

VISUAL RESOURCES

Characteristic Landscape

The majority of the Seven Lakes ES area (95%) lies in a physiographic region known as the Great Divide Basin. This is the same physiographic unit wherein lies the nationally noted Red Desert. The remaining 5% of the ES area lies in the North Platte basin to the North. Both basins exhibit the same characteristic landscapes and will be discussed collectively in terms of the landscape features.

Landform

The landform is visually homogeneous, consisting of gradually rolling to nearly flat terrain. There is no dramatic landform contrast. Even the Lost Soldier Divide, which rises gradually to the horizon, is indistinct from the west. The view of Lost Soldier Divide from the east is more apparent because the uplift is facing east and the change in landform is therefore more distinct. There are no expansive rock outcroppings in the ES area; in fact, rock formations of any kind are rare. The only location where any rock can be seen is at the crest of Lost Soldier Divide and then only as a foreground element. This subtle landscape imparts an overwhelming sense of openness to the viewer. The subtlety is reinforced by the lack of contrast from the component elements. The visual form, as previously described, is not pronounced; the lines are indistinct except for roads and old seismic lines, the brown toned earth colors are homogeneous; textures are very fine to almost without texture.

Modifications to the natural characteristic landscape include roads, seismic lines, earthen reservoirs, petroleum pad construction, uranium exploratory holes, and the beginnings of a uranium strip mine. These modifications are

DESCRIPTION OF ENVIRONMENT—EXISTING

very localized and are generally subordinate to the landscape.

Vegetation

Vegetation as a landscape feature in the Seven Lakes ES area is equally subtle. The vegetation consists of low shrubs, forbs, and grasses seldom exceeding 18 to 24 inches in height. Some scattered juniper occur on Lost Soldier Divide at the higher elevations, and Lost Soldier Creek supports a few scraggly aspen. The colors are silver greys to grey greens with seasonal bright greens and yellows from spring grasses and flowers. The color and line becomes more pronounced along northeast facing slopes—a product of more vigorous growth associated with snowpack. The color tones are richer and most dominant in the natural swales, which adds subtle definition to gradual, rolling terrain. The vegetative texture is nonexistent except in the immediate foreground.

The modification to the vegetative feature is synonymous to the modification previously described under landform. This is because the change in landform caused a reduction in plant material. In some cases, disturbed areas are becoming revegetated naturally. The scars are detectable because the invader plants differ in composition with the characteristic landscape.

Another condition common to present water sources is the trampling of vegetation by livestock (Figure 2-4). This denudes the area, adds fecal deposits, compacts the soil, and creates disharmony with the surrounding landscape.

Structures

Structures, all man-made in origin, tend to be the most dominant feature on this landscape. The type of structures that can be associated with visual intrusions in the ES area are gas and oil derricks, tanks, and equipment; uranium drilling derricks; and water development structures including cabins, tanks, troughs, and windmills, which occur mostly on state lands. (Refer to Mineral Resources for the status of development and Water Resources for the number of water developments in the ES area.)

A power line-pipeline corridor traverses the northern portion of the Sand Spring and Lost Soldier pastures. These structural elements of line, form, and texture are dominant in the foreground (Figure 2-5) but are scarcely visible for a distance in excess of 2 miles.

The oil fields, tanks, and the community of Bairoil, located in the northeast portion of the Ferris allotment, constitute the greatest assemblage of foreign elements found in the ES area.

Visual Resource Management Classes

Visual Resource Management (VRM) classes have been established for these public lands. The manner in which they were determined is explained in Appendix B-

2-6. Each VRM class describes a different degree of modification allowed in the basic elements (form, line, color, and texture) of the landscape. These classes are therefore the basis for determining whether or not a modification would result in a visual impact. These classes are defined on Table 2-33 and the areas they cover are shown on Map 2-18.

RECREATION RESOURCES

The recreation use in the Seven Lakes ES area is relatively unique because there are no recreation facilities, and only one stream supporting game fish. This open terrain is special to many people, however. As Chapter 1 stated, the ES area lies in part of the Red Desert and for this reason, the area is of special value as "open space".

Some rockhounding is said to occur, but local clubs report very little use by their members. Petrified wood and arrowhead collecting are the dominant rockhounding attractions in the area and occur in small localized areas. Other user groups, such as the snowmobile clubs, seldom venture into the area.

Hunting constitutes the major recreational attraction to the area. The major species hunted are pronghorn, sage grouse, cottontail rabbits, and mule deer. This listing is in the order of hunting popularity of the species mentioned. Table 2-34 shows the recent hunter use in the ES area for sage grouse and pronghorn. Wildlife Figure 2-2 shows the relationship of the pronghorn and mule deer hunting areas to the ES area. The mule deer hunting areas 096, 098, and 099 have yielded average harvests of 97, 25, and 14 antlered mule deer respectively, from 1972 through 1975 (Wyoming Game and Fish). The pronghorn hunting areas, 060, 061, and 064 were scheduled for 100 (bucks only), 600 (any pronghorn), and 300 (any pronghorn) pronghorn licenses respectively for the 1977 pronghorn hunting season. Using the average hunter success from 1973 through 1975 for each hunt area (60—62%; 61—94%; 64—95%), the estimated harvest for the 1977 hunting season would be 62 pronghorn in area 060, 654 in area 061, and 285 in area 064. Of course, only a portion of these pronghorn and mule deer would be taken in the Seven Lakes ES area.

The Wyoming Game and Fish Department (January 1977b report) estimates the present fishing capacity of Crooks Creek to be approximately two anglers per mile. About 5¼ miles of Crooks Creek crosses the ES area. Using the Wyoming Game and Fish methodology from the report, this creek would be expected to have 11 recreation days of fishing.

To summarize known recreation use, the ES area has a total of 910 recreation days of use. This figure is the combined recreation days of pronghorn and sage grouse hunting, and fishing on Crooks Creek. There is also some incidental mule deer hunting use.

While other forms of recreation use may occur in the ES area, the extent is not predictable because of low use and sporadic occurrence.

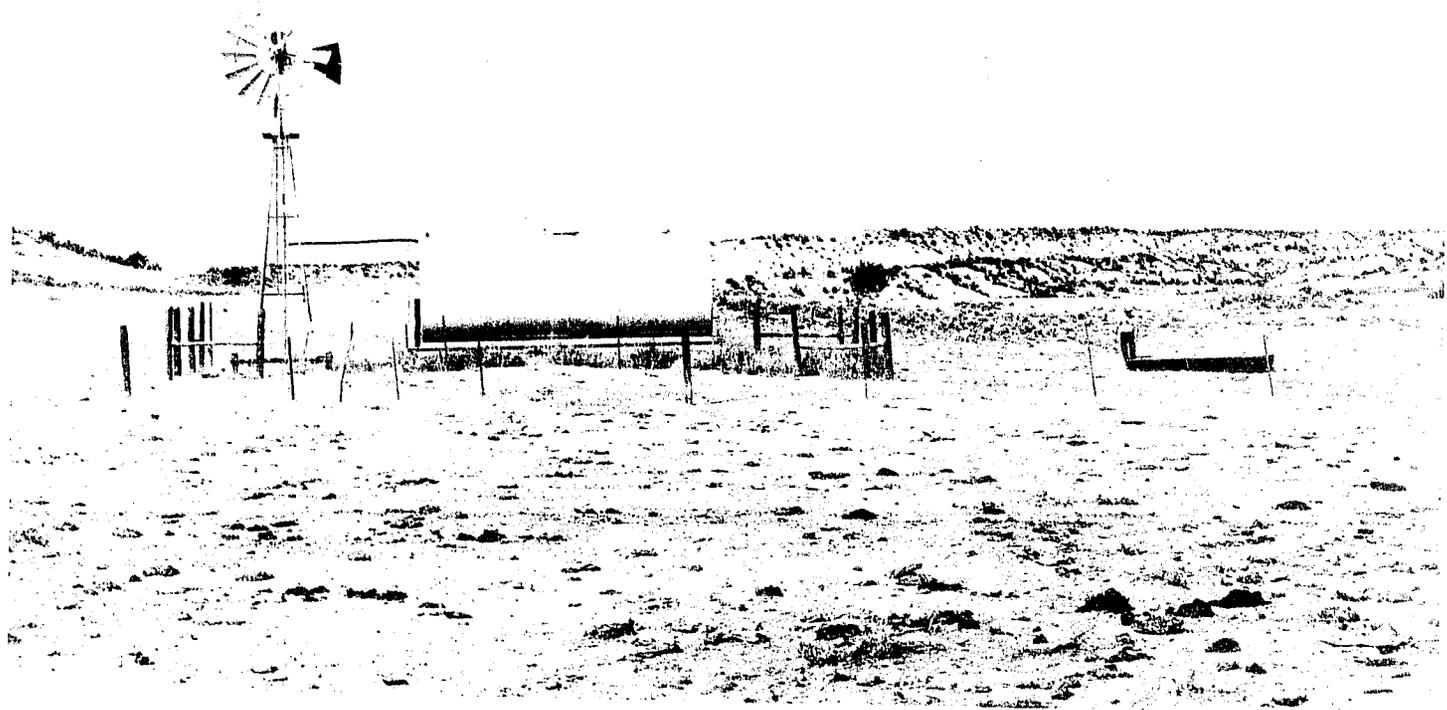


Figure 2-4
VEGETATION TRAMPLED BY LIVESTOCK
AROUND WATER FACILITIES

2-55



Figure 2-5
UTILITY CORRIDOR SHOWING POWER
TRANSMISSION AND BURIED GAS
LINE LOCATION

TABLE 2-33

VISUAL RESOURCE MANAGEMENT CLASS OBJECTIVES

- CLASS I - Natural ecological changes only. Primitive or natural area where management activities are restricted.
- CLASS II - Changes in any of basic elements; form, line, color, and texture should not be evident in management activity.
- CLASS III - Changes in basic elements (form, line, color, texture) may be evident in management activity. But changes should remain subordinate to visual strength of existing character.
- CLASS IV - Changes may subordinate original composition and character but must reflect what could be natural occurrence within character type.
- CLASS V - Change is needed, naturalistic character disturbed to point where rehabilitation is needed to bring back in character to surrounding countryside. An interim short-term classification until one of the other objectives can be reached through rehabilitation or enhancement.

TABLE 2-34
HUNTER USE*

	<u>SAGE GROUSE</u>		<u>BIRDS PER</u>
	HUNTER NUMBERS	HUNTER DAYS**	DAY***
1971	167	376	1.9
1972	218	491	1.9
1973	172	387	1.9
1974	204	459	1.9
1975	219	493	1.9

	<u>PRONGHORN</u>		<u>SUCCESS***</u>
	HUNTER NUMBERS	HUNTER DAYS****	
1971	300	600	87%
1972	34	68	87%
1973	71	142	87%
1974	148	296	87%
1975	204	408	87%

*These figures pertain to the ES area only. The figures were interpolated on an acreage basis assuming even distribution of game and hunters in recording areas, and Wyoming Game and Fish Department as data source.

**2.25 HUNTER DAYS PER HUNTER, a figure provided by the Wyoming Game and Fish Department for this time period as stated in the 1975-1980 Strategic Plan for Wildlife.

***These figures are a 5 year (1970-1974) state-wide average supplied by the Wyoming Game And Fish Department in their draft A Strategic Plan for the Comprehensive Management of Wildlife in Wyoming.

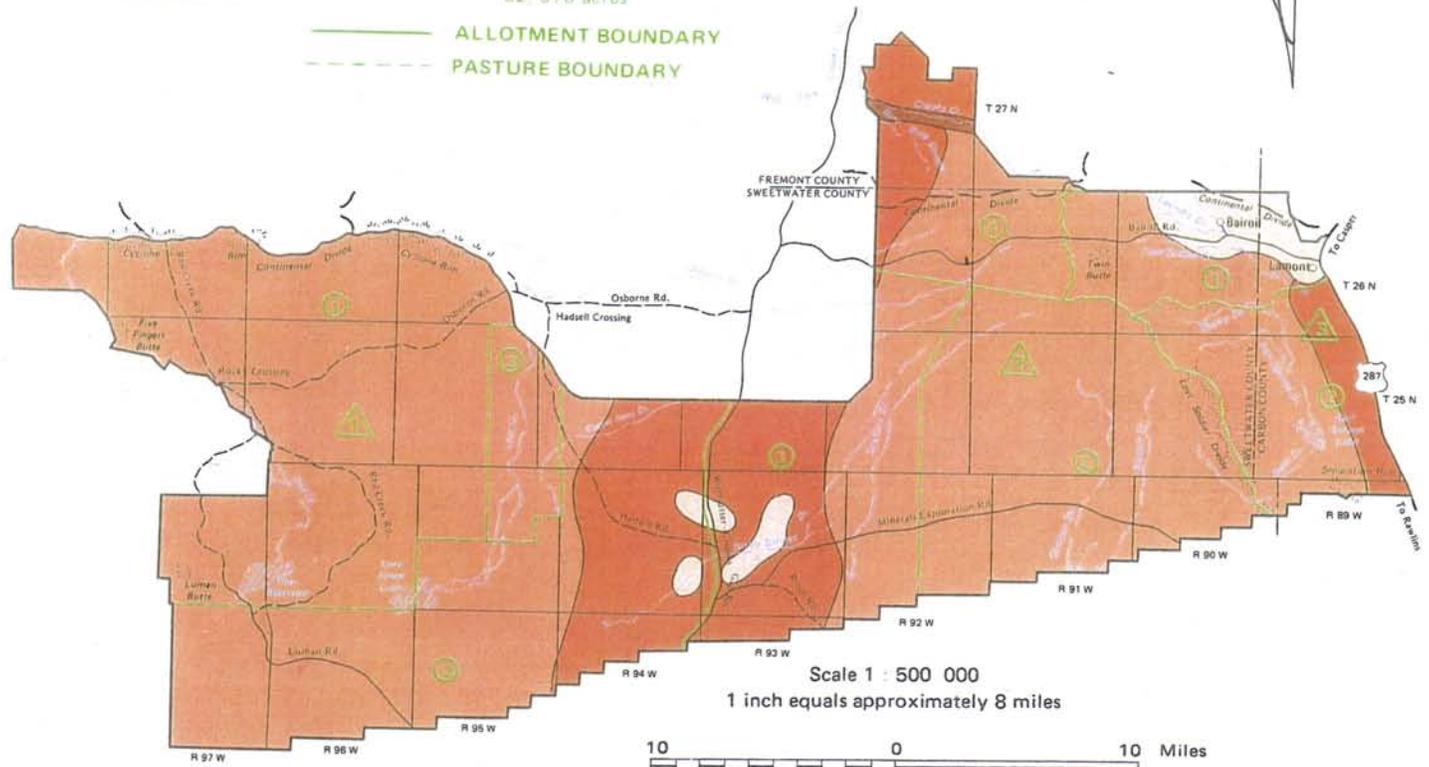
****2.0 days is the average days hunted per pronghorn - Wyoming Game and Fish Department.

- PASTURES**
- ① CYCLONE
130,216 acres
 - ② LUMAN
109,794 acres
 - ③ LOST CREEK
15,508 acres

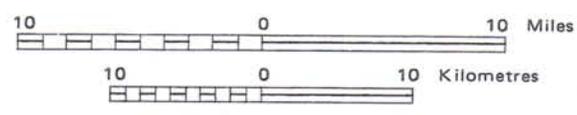
- PASTURES**
- ① SAND SPRING
39,647 acres
 - ② CHICKEN SPRING
86,768 acres
 - ③ OSBORNE WELL
62,576 acres

- PASTURES**
- ① LOST SOLDIER
29,500 acres
 - ② BULL SPRINGS
38,845 acres

—— ALLOTMENT BOUNDARY
- - - PASTURE BOUNDARY



Scale 1 : 500 000
1 inch equals approximately 8 miles



LEGEND

- VRM CLASSES II
- VRM CLASSES IV
- VRM CLASSES III
- VRM CLASSES V

**VISUAL RESOURCE
MANAGEMENT CLASSES**
 Seven Lakes Grazing
 Environmental Statement
 Map 2 - 18

DESCRIPTION OF ENVIRONMENT—EXISTING

WILDERNESS

Due to the fact that the Seven Lakes ES area is a large, unfenced, unoccupied, and largely undeveloped tract of public land, there is a certain wild quality inherent in much of it. Preliminary studies have identified a number of roadless areas in excess of 5,000 acres, the minimum size which could normally be considered for wilderness designation under the 1964 Wilderness Act (P.L. 88-577). Those areas together encompass most of the ES area.

No wilderness study areas have yet been established. It is not presently known what parts, if any, of the ES area will be identified as wilderness study areas. There are, however, four areas which have been identified as clearly not having wilderness qualities. They are: the Bairoil-Lamont area, consisting of approximately 10,000 acres; the Minerals Exploration Company mining area (T.24N., R.93W.), consisting of approximately 23,000 acres; the Hay Reservoir area, consisting of approximately 35,000 acres; and the Crooks Creek-Green Mountain area, consisting of approximately 5,000 acres. These areas clearly have no wilderness potential because: Bairoil is the center of oil and gas production, the Hay Reservoir area is being developed for oil and gas production, the Minerals Exploration Co. area is a large developing uranium mining and milling area, and the Crooks Creek-Green Mountain area is both state owned lands and the site of major mineral development.

This would indicate that the remaining 440,000 acres (85%) of the ES area may have wilderness qualities and could conceivably be considered for wilderness study. The Sierra Club, the Wilderness Society, Friends of the Earth, and other environmental groups strongly support the establishment of wilderness areas in the Great Divide Basin or Red Desert Region of Wyoming. During the Seven Lakes MFP hearings, several formal statements to this effect were received by BLM.

The wilderness inventory, in accordance with Sec. 603 (a) of the Federal Land Policy and Management Act (FLPMA), has not been completed on the public lands that would be impacted by the proposal. Prior to implementation of any actions, the areas will have to be inventoried and impacts on potential or existing wilderness areas assessed.

Until Congress acts on an area that has been designated for wilderness study, existing multiple-use activities, including grazing and supporting activities will continue. New uses or expanded existing uses will be allowed if the impacts will not impair the suitability of the area for wilderness.

LIVESTOCK GRAZING

Ferris Allotment

Both cattle and sheep are licensed to use the Ferris uncommon allotment. Cattle use accounts for only 5% of the total licensed livestock use, and presently is made

from May 1 to November 30. Sheep use the allotment from mid-October to April 30. The grazing seasons are based on traditional use, rather than on range plant physiological requirements. Today in the Ferris uncommon allotment, eight livestock operators hold grazing privileges. Two operators run cattle and six run sheep (Table 2-35).

The grazing privileges were adjudicated to the operators in the late 1950s. The adjudication was inadequate by today's standards. It failed to specify class of livestock, season of use, specific areas of use, and did not take into account range suitability for grazing.

In 1976, a new range survey using the weight estimate method was completed for this allotment. This survey indicates there are 28% fewer animal unit months (AUMs) of forage available for livestock grazing than the 6,805 AUMs currently licensed. This survey also broke the forage down by class of livestock and found that the Ferris uncommon allotment contains approximately twice the number of winter sheep AUMs as summer cattle AUMs. Range suitability by class of livestock was calculated for the ES area (Table 2-36).

Trailing livestock to and within the Ferris uncommon allotment is confined to sheep, since cattle are normally trucked.

Due to lack of water, poor distribution of summer cattle is a major problem. The cattle are usually found only along Lost Soldier Creek and actually utilize very little of the allotment. There are no fences within the allotment to aid in distributing the livestock. The allotment is fenced across most of its northern boundary, across its southern limits, and on the east side. The western edge of the allotment is a fairly steep rim called Lost Soldier Divide. Sometimes cattle do drift over it.

In the Ferris allotment, the licensed active livestock use over the last 5 years (Table 1-1) has averaged 209 cattle AUMs and 3,335 sheep AUMs (Appendix B-2-15).

Of the six sheep operations licensed to graze in the Ferris allotment, only three, with 3,540 AUMs of qualifications, have actively been using most of their privileges. These three operators have a gentleman's agreement among themselves as to how the Ferris allotment is used. One sheepman keeps his stock in the southern half of the allotment while the two remaining operations utilize only the northern half. The three remaining sheep operators have been taking nonuse, or leasing the base property to which the federal grazing privileges are attached, for the past several years. One of the sheep operators (1,023 AUMs) who has been intermittently taking nonuse, is awaiting the required authorization from the BLM to convert to cattle use. One operation has 746 AUMs and plans to either take nonuse or lease the base property until an estate is settled. The third has indicated he would not request a conversion to cattle, but would probably continue to lease the base property to which his 155 federal AUMs are attached to another operator actively engaged in the sheep business.

TABLE 2-35
PRESENT CLASS AND FEDERAL AUMS OF
LIVESTOCK OPERATIONS IN ES AREA

Operations	Present Class	Present Qualifications (AUMs)
FERRIS INCOMMON ALLOTMENT		
A	Sheep	1,023
B	Sheep	1,763
C	Sheep	1,245
D	Sheep	746
E	Sheep	155
F	Sheep	532
G	Cattle	165
H	Cattle	176
Wyoming Game & Fish Commission	Sheep	1,000*
	Total Cattle =	341 AUMs
	Total Sheep =	6,464 AUMs
SEVEN LAKES INCOMMON ALLOTMENT**		
A+++	Cattle	529
B+++	Cattle	2,661
C+++	Cattle	662
D+++	Cattle	530
E+++	Cattle	3,280
F+++	Sheep	5,714
G	Cattle	1,836
H	Cattle	758
I	Sheep	2,618
J	Sheep	16,809
K	Summer Sheep	1,000
L	Sheep	3,340
M	Sheep	4,375
N	Sheep	3,602
O	Sheep	1,455
P	Sheep	1,253
Q	Sheep	1,144
R	Sheep	2,423
S	Sheep	7,651
T	Summer Sheep	951
U	Sheep	1,142
Wyoming Game & Fish Commission	Sheep	4,341*
	Total Cattle =	10,256 AUMs
	Total Sheep =	57,818 AUMs

*Reserved for wildlife.

**The existing Seven Lakes incommon allotment is a large grazing allotment which includes all of the proposed Cyclone Rim allotment, most of the proposed Stewart Creek allotment, as well as significant portions of the Green Mountain allotment and the Arapahoe Creek allotment which lie outside the ES area (refer to Map 2-19).

+++These operations would take their use outside the ES area once the proposed action is implemented.

TABLE 2-36
ACREAGES BY SUITABILITY FOR EACH CLASS OF LIVESTOCK*

Allotment (acres)	Class of Livestock	Presently Suitable	Additionally Suit- able When Water De- velopments are Oper- ational	Additionally Suit- able with Manage- ment (by 1998)	Unsuitable Pre- sently and Through 1998
Ferris (68,345)	Summer Cattle	53,062	0	3,434	11,849
	Winter Sheep	61,171	0	2,616	4,558
Stewart Creek (188,991)	Summer Cattle	81,772	59,609	18,883	28,727
	Winter Sheep	188,634	0	0	357
Cyclone Rim (255,518)	Winter Cattle	80,495	149,416	0	25,607
	Summer Sheep	234,250	1,304	3,076	16,888
	Winter Sheep	237,498	0	0	18,020

*Refer to Appendix B-1-4 for suitability criteria.

DESCRIPTION OF ENVIRONMENT—EXISTING

Seven Lakes Incommon Allotment

Sheep and cattle are presently authorized to graze in what is named the Seven Lakes incommon allotment. This allotment is an unfenced area of approximately 600,000 acres, traditionally a winter sheep area, which includes the Stewart Creek and Cyclone Rim allotments of the proposed action as well as portions of two additional grazing allotments (Green Mountain and Arapahoe Creek). Map 2-19 shows the relative locations of these allotments.

Twenty-one livestock operations (seven cattlemen and fourteen sheepmen) hold grazing privileges in the Seven Lakes incommon allotment (Table 2-35).

The existing Seven Lakes incommon allotment is a vast area (roughly 25 miles north to south and 45 miles east to west) that is virtually without interior fencing. Livestock operators are not restricted to specific areas within the allotment. These situations have made effective livestock grazing management extremely difficult for livestock operators and BLM. Some cattle operators experience difficulty in keeping track of the whereabouts of their stock, and BLM personnel have difficulty with use supervision. Some unauthorized livestock grazing takes place, but exactly how much is not known.

It is estimated that 30% of the existing active licensed cattle use occurs in the area of the proposed Cyclone Rim allotment and 10% is estimated to be used in the location of the proposed Stewart Creek allotment. The remaining 60% of the active licensed cattle use in the Seven Lakes incommon allotment is taken outside the ES area.

The Seven Lakes incommon allotment suffers from the problem of summer cattle drifting into it from its neighboring allotment to the north (Green Mountain). There are no data showing the magnitude of the drift problem, but it is estimated that cattle drift adds 30% more use (3,077 AUMs) above the total licensed use in the Seven Lakes incommon allotment. Above and beyond the drift from Green Mountain, trespass is a serious problem in the Seven Lakes allotment. Several users have indicated trespass sheep and cattle can frequently be found in the allotment. One trespass action was pursued by BLM in 1976.

Both cattle and sheep use this allotment, with the majority of use by sheep. During the past 10 years, the trend has been that many of the established sheep operators are going out of business or desire to change their operations to run cattle. Subsequently, they have taken about 66% nonuse (35,158 AUMs) annually (Table 1-1). All livestock operators who use the Seven Lakes incommon allotment use it to complement their livestock operations on other BLM grazing allotments, U.S. Forest Service lands, state grazing leases, and/or private lands.

The seasonal patterns of grazing by livestock are based on the operators' historical use and desires rather than on physiological needs of plants and range readiness criteria. Cattle use is taken from May 1 to December 31. Sheep use is yearlong, but most is taken from October to May.

In the Seven Lakes ES area, excluding the Ferris allotment, an estimated use of 4,460 cattle AUMs and 18,101

sheep AUMs is made each year. This estimate was based on the licensed active use in the Seven Lakes incommon allotment and the amount of unauthorized use believed to be drifting into the allotment (Appendix B-2-15 and B-1-3).

One rancher has requested that some of his use be changed from winter sheep to winter cattle. Cattle are presently found during the winter in allotments adjacent to and south of the Seven Lakes ES area; nevertheless, winter weather makes winter cattle operations risky ventures. At times, bulldozers have been needed to rescue bands of sheep from winter snows. Riddle and Oakley (1972) reported that a 1971 blizzard in the Seven Lakes ES area lasted 4 days, covered 18 inch tall sagebrush with snow, and was immediately followed by over 2 weeks of subfreezing temperatures and ground blizzards.

Bad winters resulting in unusually high livestock mortality apparently hit about every 20 years—1927, 1949, 1971 (personal communication, Bernard Sun 1977). Table 1-1 and Figure 1-1 show the large amount of cattle nonuse that followed the most recent bad winters, those of 1971-1972 and 1972-1973.

The Seven Lakes incommon allotment was adjudicated in 1958. The major problems associated with the adjudication were that no forage was reserved for wild horses, no season of use or class of livestock was specified, and no consideration of the area's suitability for grazing was made. Presently, cattle concentrate around the limited watering sites, leaving much of the allotment ungrazed.

MINERAL RESOURCES

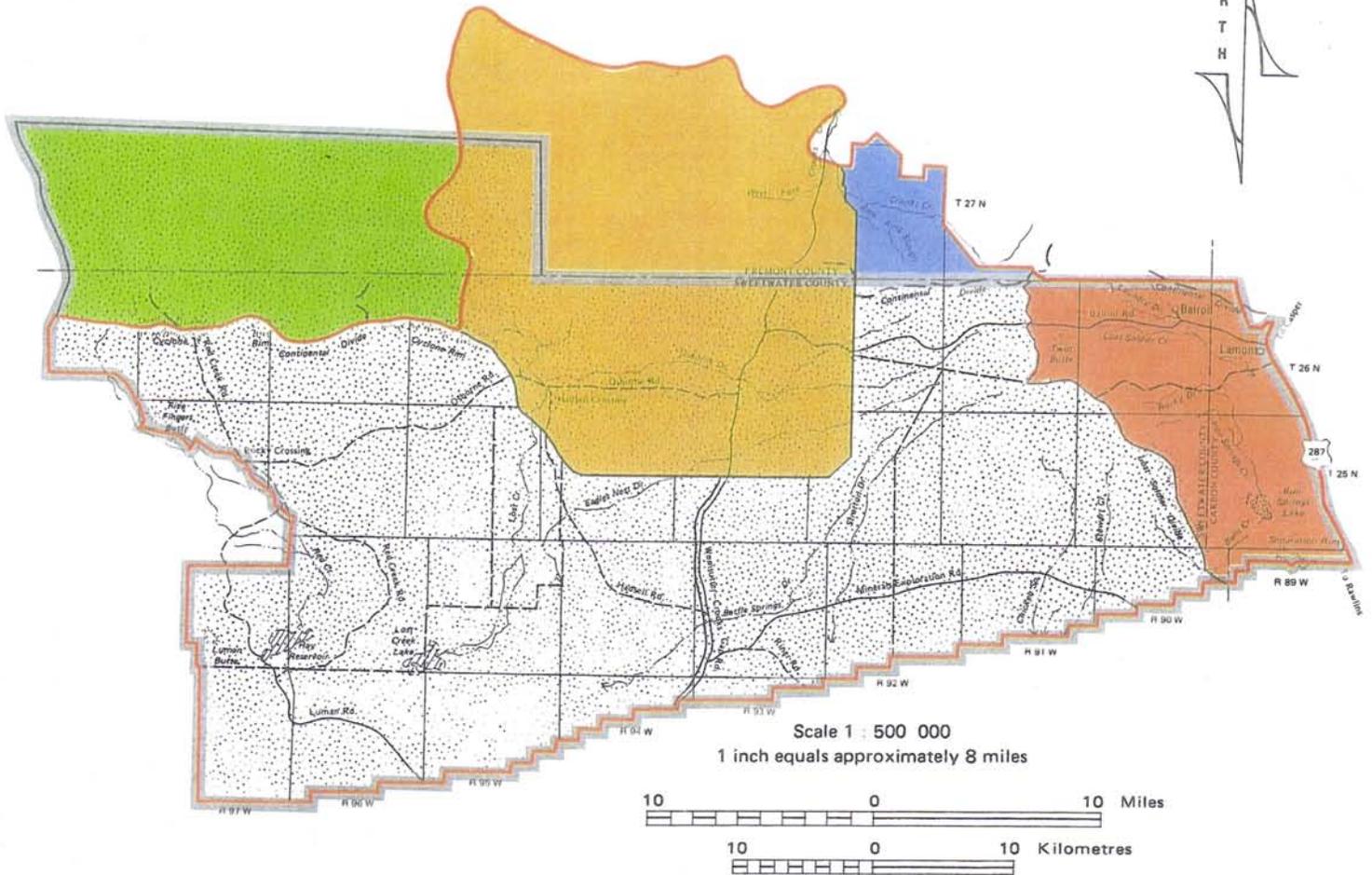
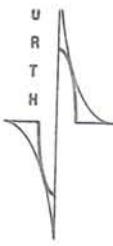
Oil and gas have been produced in the area for over 60 years with substantial production in two fields.

Lithologic and facies changes within the sediments in the basin have created stratigraphic traps for large accumulations of natural gas. Through modern exploration methods and new technologies, reservoirs are being discovered and drilled with considerable success. New stratigraphic traps in the southwestern part of the area were discovered in 1975. There is an average of 31 holes drilled per year.

The southwestern part of the area contains several potentially mineable coal beds. The coal in this area contains uranium and for this reason, several studies have been completed. The coal beds were first mapped in 1907 by reconnaissance, and were drilled and mapped in detail by the U. S. Geological Survey from 1951 through 1956. There is no present production, but there is considerable interest in the Red Desert coals. There is little activity concerning the coal at present, but the coal beds have been drilled.

Saline minerals, chiefly sodium sulfate and sodium carbonate, occur as evaporite deposits in dry lake or ancient playa lake beds. Because of the internal drainage of the basin, large accumulations of saline minerals are believed to exist. There is little activity concerning saline minerals, mainly due to distance from markets.

Uranium exploration, drilling, and claim staking intensified throughout the basin about 1954 and has continued



LEGEND

-  FERRIS ALLOTMENT IN THE SEVEN LAKES PLANNING UNIT, DIVIDE RESOURCE AREA. (ALLOTMENT BOUNDARIES HAVE REMAINED CONSTANT.)
-  THE FORMER SEVEN LAKES INCOMMON ALLOTMENT.
-  PORTION OF THE GREEN MOUNTAIN PLANNING UNIT, LANDER RESOURCE AREA TRANSFERRED TO THE SEVEN LAKES PLANNING UNIT, DIVIDE RESOURCE AREA. IT IS THE NORTHERN PORTION OF THE PROPOSED STEWART CREEK ALLOTMENT.
-  THE NEW ARAPAHOE ALLOTMENT CREATED BY COMBINING PORTIONS OF THE GREEN MOUNTAIN PLANNING UNIT AND THE SEVEN LAKES PLANNING UNIT. THE ARAPAHOE ALLOTMENT IS NOT INCLUDED IN THE SEVEN LAKES E. S. BUT WILL BE COVERED IN THE GREEN MOUNTAIN GRAZING ENVIRONMENTAL STATEMENT.
-  PORTION OF THE FORMER SEVEN LAKES PLANNING UNIT, TRANSFERRED TO THE GREEN MOUNTAIN PLANNING UNIT.
-  PRESENT SEVEN LAKES GRAZING ENVIRONMENTAL STATEMENT
-  NEW PLANNING UNIT BOUNDARY
-  FORMER PLANNING UNIT BOUNDARY

PRESENT AND PROPOSED BOUNDARIES

Seven Lakes Grazing
Environmental Statement

DESCRIPTION OF ENVIRONMENT—EXISTING

until the present time so that most of the area is now covered by claims. More than 5 million feet of exploration holes have been drilled in the basin. Several economic deposits have been discovered and several companies are considering developing deposits.

LAND USE PLANS, CONTROLS, AND CONSTRAINTS

Local Government

The Seven Lakes ES area lies in parts of Carbon, Fremont, and Sweetwater Counties.

Sweetwater and Carbon currently have county zoning ordinances. Fremont is preparing a county zoning ordinance which may be adopted in 1978. The portion of the Seven Lakes area within Sweetwater County is zoned primarily for Agricultural (A) use, although two areas, one around the Bairoil area and the other including the Minerals Exploration Company uranium properties, are zoned for Industrial (I) development. Livestock grazing and range improvement programs are consistent with both of these designations. (The industrial classification is needed to implement a mineral development project such as a mine, but not for mineral exploration activities.)

That part of Carbon County in the Seven Lakes ES area is zoned for Ranching, Agriculture, and Mining (RAM). Livestock grazing is consistent with this designation. A strip of land 2,000 feet wide on either side of Highway 287 in Carbon County, bordering the ES area, is classified as a scenic corridor. Livestock grazing is not in conflict with this land use designation.

Other Agencies

The Wyoming State Board of Land Commissioners has jurisdiction over some of the lands within the Seven Lakes ES area. The policies of the above agency are consistent with the existing use of area's resources. The applicable policies and uses are as follows:

Approximately 26,000 acres of state lands in the Seven Lakes ES area are leased to livestock operators for a 1 to 10 year term. The lessee is considered the guardian and manager of the land. The public may enter upon state land under lease, for hunting and fishing purposes. It is the policy of the Wyoming State Land Board to require sportsmen to advise the lessee of their intention to go upon state land prior to entry.

TRANSPORTATION NETWORKS

The major highway transportation system serving the region in which the Seven Lakes ES area lies, consists of Interstate 80 to the south, and Highway 287 which connects Interstate 80 at Rawlins to Lander to the north.

Rail transportation is provided by the Union Pacific Railroad which connects Rawlins and Rock Springs with both the east and west coasts. Scheduled air service is available in both Rawlins and Rock Springs.

The principal transportation system within the ES area consists of the Wamsutter-Crooks Gap road, the Luman road, the Bairoil road, and the Sweetwater County road, all of which are maintained, gravel surface county roads. BLM roads of some importance are the Riner road, the Hadsell road, the Osborne road, and the Red Creek road. Map 1-1 in Chapter 1 shows the major highway transportation system serving the ES area. Map 2-20 shows the principal transportation system within the ES area. In addition to the above maintained roads there are many miles of unmaintained, unimproved roads and trails throughout the ES area which are the result of mineral exploration, recreational activities such as hunting or off-road vehicle use, or livestock grazing and associated activities. Given good weather conditions there is no place in the ES area where one could not drive to within a mile or two in a pickup truck during the summer months. Road access for all of the current major activities in the area, on the whole, is adequate.

SOCIOECONOMIC CONDITIONS

This section describes the livestock operators presently licensed in the ES area who would be effected by the proposed action. Factors analyzed are income, employment, assessed valuation, social well-being, and socio-cultural attitudes. This was done so that the reader can more easily make a comparison between the present situation and the future situation in terms of the proposed action.

This section also describes the three county region, a part of which is made up by the ES area. This will facilitate the understanding of the ES area in terms of its impact on the regional economy.

The Seven Lakes ES area consists of parts of Carbon, Fremont, and Sweetwater Counties. Since socioeconomic data are usually reported only on a county basis, the analysis of socioeconomic conditions in this and subsequent chapters will, in part, include data describing those three counties as a whole. This approach is not without merit. First, there is no source of socioeconomic data for the ES area itself. Second, the permanent population of the ES area is estimated at approximately 350, all of which is associated with the oil industry at Bairoil and some highway business at Lamont. Third, all of the operators who would be affected by the proposed action or alternatives live outside the ES area itself but, with only one exception, in the three county area.

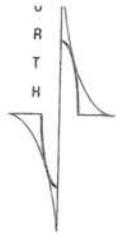
Seven Lakes ES Area Livestock Operators

Parts of fifteen livestock operations lie within the ES area boundaries. Of the fifteen, only eight can be defined as active operations. Seven of the eight operations are actually run by their owners as livestock operations

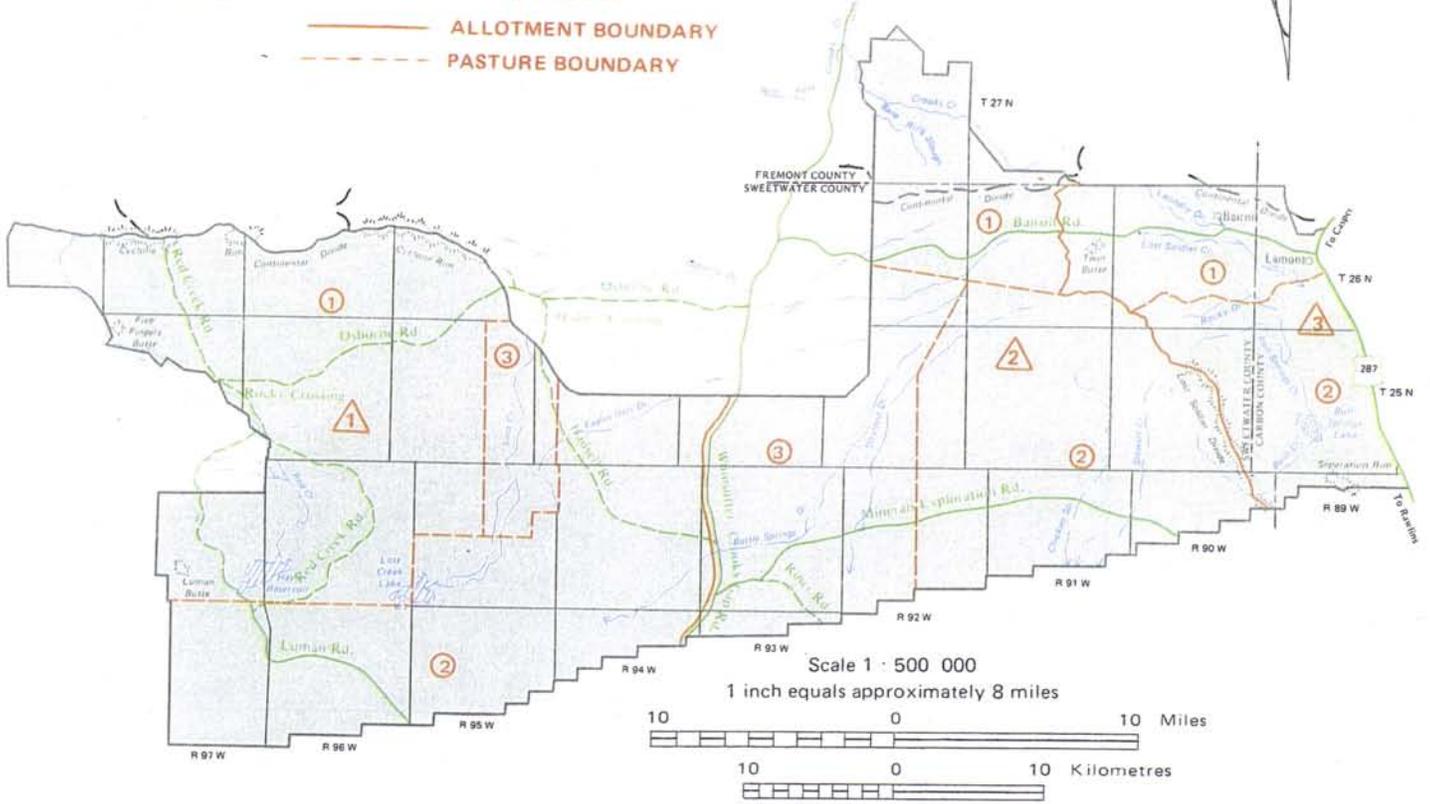
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62,576 acres

- PASTURES**
- ① LOST SOLDIER
29,500 acres
 - ② BULL SPRINGS
38,845 acres



—— ALLOTMENT BOUNDARY
- - - PASTURE BOUNDARY



LEGEND

- TRANSPORTATION ROUTES**
- U. S. HIGHWAY 287
 - COUNTY ROADS
 - BLM ROADS

TRANSPORTATION SYSTEM

Seven Lakes Grazing
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Map 2 - 20

DESCRIPTION OF ENVIRONMENT—EXISTING

while the eighth is only active in the sense that part of the operation is leased to one of the above seven active operations. Finally, two of the above seven operations are controlled by the same individual; therefore, there are eight operations in the ES area that are either all or partly active and which are presently controlled by six individuals.

No single livestock operator who uses the ES area can be described as typical of all Seven Lakes ES area operators. The operations are quite diverse in terms of size and the degree to which they depend on the public range lands. One operation stretches from the Sweetwater River in Natrona County through parts of Carbon, Fremont, and Sweetwater Counties. Other operations consist of only limited tracts of land outside the ES area. Some operators use all of their ES area grazing privileges while others are presently taking total nonuse. That is, some operators depend heavily on the ES area to sustain their livestock operations while others do not. Some of the operations are viable livestock operations while others are not, and are in fact leased to other livestock operators. The operator who has more ES area grazing privileges than anyone else (approximately 16,000 animal unit months—AUMs) is presently taking total nonuse. Many operators are presently desiring to change class of livestock from sheep to cattle.

Not all of the fifteen operations in the Seven Lakes ES area are bonafide livestock operations. One, for example, is part of an estate being managed by an heir. The BLM grazing privileges attached to the ranch are presently in total nonuse.

An examination of the individual operations themselves reveals that together they consist of approximately 230,000 AUMs. This figure is made up of AUMs from lands of all ownership within and outside the ES area, including national forest grazing privileges. It does not include AUMs which are a result of supplemental feeding from hay purchases or other ranch operations entirely outside the Rawlins District. Of the above total, approximately 24% are supplied by federal grazing privileges in the ES area. About 50% of the federal AUMs in the ES area are presently in nonuse. These "nonuse" AUMs have market value and contribute to the overall value of the individual ranch operations, but at present, they are not being used to generate income.

As noted above, the ranch operations that utilize grazing privileges in the ES area typically include lands in all directions outside the area including national forest and in one case, lands in Colorado. An analysis of BLM grazing case files and Forest Service records indicates that (in terms of AUMs) the Seven Lakes ES area supplies from 5% to 55% of the operations' total forage supplies. The largest operations, for example, obtain an estimated 10% to 12% of total forage supplies from the ES area, while the smallest, an estate, obtains more than half of its forage (in terms of AUMs) from the area. The average size operation obtains approximately 23% of its forage supplies from the area.

Due to the fact that the proposed action includes a boundary change, a simple comparison between the present situation and the proposed action is not possible. To

facilitate understanding of the socioeconomic section, we are analyzing only those livestock operations which run livestock in the ES area under the present situation and will continue to do so under the proposed action. Those operations which run livestock in the Seven Lakes in-common allotment north of the ES area are not included because they are essentially unaffected by the proposed action. This method is the only way that the analysis can be designed so that it is not only limited to the ES area but actually defines the present situation so that a "one on one" comparison can be made between it and the proposed action or alternatives.

Population

The current total population of the three county region that includes the Seven Lakes ES area is estimated at 87,449 (THK Associates 1976, U.S. Department of Commerce, Bureau of Census 1975, and personal communication, Fremont County Planning Office). Sweetwater County accounts for 44% of the total population or 38,310. Carbon County has 22%, or 19,100; and Fremont County has 34%, or 30,039. The population of the nearest community of any appreciable size, Rawlins, is 11,840 (Bickert, Brown, Coddington, and Associates 1976). Jeffrey City, to the north has an estimated population of 1,800; and Rock Springs and Green River have a combined population of 32,219.

Regional Income

Table 2-37 indicates 1972 personal income by major sources for the three county region within which the Seven Lakes ES area lies. Farm earnings account for 12% of personal income in Carbon County, 6% in Fremont County, and 5% in Sweetwater County. For the region as a whole, farm earnings constitute 8% of total income.

The role of livestock operations in regional income can be estimated based on the following assumption: if 75% of regional agricultural sales are attributable to livestock sales (U.S. Department of Commerce, Census of Agriculture 1974), then approximately the same percentage of income is derived from that source. Therefore, if farm earnings account for 8% of 1972 personal income from major sources, then approximately \$12,616,500 or 6% of the above personal income is derived from livestock operations in the three county region.

The percentage of regional personal income from major sources derived from livestock forage on the average over the years 1972-1976 in the ES area is approximately 0.1%. Livestock operations in the ES area contribute approximately 2% of total regional farm earnings. These percentages were obtained by first determining average active AUMs over the above 5-year period for the ES area operators. BLM grazing case files reveal that average livestock use has been 1,970 cattle AUMs and 17,793 sheep AUMs. (Remember, these figures are for the operators who currently use the ES area and will

TABLE 2-37

1972 PERSONAL INCOME BY MAJOR SOURCES

	<u>Carbon</u>	<u>Fremont</u>	<u>Sweetwater</u>	<u>Total</u>
Farm Earnings	\$ 6,982,000	\$ 5,071,000	\$ 4,769,000	\$16,822,000
Government Earnings	8,149,000	16,385,000	9,975,000	34,509,000
Manufacturing	5,214,000	3,904,000	1,834,000	10,952,000
Mining	12,945,000	21,087,000	22,618,000	56,650,000
Contract Constuction	3,782,000	6,790,000	22,160,000	32,732,000
Transportation, Communication, and Utilities	7,513,000	4,058,000	9,420,000	20,991,000
Wholesale and Retail Trade	7,016,000	11,251,000	9,499,000	27,766,000
Finance, Insurance, and Real Estate	1,161,000	2,131,000	1,193,000	4,485,000
Services	5,702,000	7,707,000	6,709,000	20,118,000
Other	<u>178,000</u>	<u>444,000</u>	<u>56,000</u>	<u>678,000</u>
TOTAL LABOR AND PROPRIETORS EARNINGS	\$58,642,000	\$78,828,000	\$88,233,000	\$225,703,000

Source: Wyoming Employment Security Commission

DESCRIPTION OF ENVIRONMENT —EXISTING

continue to do so under the proposed action.) The AUM figures were then converted to cow and sheep units (1,970 cattle AUMs \div 12 = 164 c.u.; 17,793 sheep AUMs \times 5 \div 12 = 7,414 s.u.). Next, the resultant figures were multiplied by revenue per sheep and cow unit (figures obtained from Stevens 1975; and Gee 1975) to obtain total income from livestock operations in the ES area (164 c.u. \times \$128.02 = \$20,995; and 7,414 s.u. \times \$35.78 = \$265,273; \$20,995 + \$265,273 = \$286,268). Multiplying this direct income effect by the livestock industry income multiplier of 2.25 (Council for Agricultural Science and Technology 1974) produces a total income effect of \$644,103 from active ES area livestock AUMs. The resultant figure was not adjusted to account for inflation.

The largest producer of income in the ES area at present is mineral exploration and production. Intensive exploration activities are presently being conducted for uranium and for oil and gas. It is not known how much income is generated at present by these activities, but it is known that the amount far overshadows that produced by agricultural activities. For example, when fully implemented by the early 1980s, the Union Oil Company Uranium project alone is expected to provide year-round employment for approximately 360 people.

ES Area Income

Income for livestock operations and hunting activities was estimated for the two allotments in the ES area for the present situation. These figures are shown in Table 2-38. The data in the table are estimates of activities which occur in the ES area only. Actually, all livestock operators, except those who run livestock in the Ferris uncommon allotment, are licensed to run livestock throughout the present Seven Lakes uncommon allotment. The estimates are based on present average active livestock use. To use present licensed use rather than average active use would be misleading, since a high percent of the AUMs are currently not being used to generate income. It is assumed that nonuse will continue at approximately the same level as has occurred over the past 5 years. Income under the present situation was calculated for livestock and hunting activities for each of the years during the 20-year analysis period (1978-1998). These income figures were then discounted at 6-5/8% to present value and summed. The resulting figure represents the present value of 20 years worth of livestock and hunting income. This figure equals \$3,808,691. The previously mentioned multiplier effect (2.25 for livestock operations and 1.035 for recreation) produces a total income effect of \$7,736,810, 91% of which is derived from livestock operations.

Income under the present situation is shown in Table 2-38. It is shown first for 1986 and 1998 (the short term and long term measuring points) so that the proposed action and alternatives can be quickly compared to the present. Second it is shown for the entire analysis period in present dollars to facilitate the same easy and accurate comparison.

No economic value is attributed to wild horses under the present situation. It is possible that persons do visit the ES area to view wild horses, thus generating recreation income. No data are available on this activity, however.

No forage allocation has ever been made for wild horses, so no economic value in the form of an opportunity cost can be attributed to them under the present situation (see methodology for determining wild horse values in Appendix B-3-7).

Employment

Table 2-39 shows employment by type and broad industrial sector for the counties in the region (Wyoming Department of Administration and Fiscal Control 1975). As seen in the table, government (19%), mining (20%), construction (10%), and trade (19%) are the most important employment sectors in the three county region. Farm employment in the region makes up 3.6% of total regional employment. The figures do not indicate that portion of agricultural employment that is attributable to livestock production, but a representative estimate can be made based on livestock sales. According to the 1974 U.S. Census of Agriculture, 75% of total agricultural commodity sales in the region in 1974 are attributable to livestock. Assuming that labor requirements for different agricultural activities are similar, livestock operations should account for approximately 75% of total agricultural employment. This means that approximately 2.7% of total regional employment is attributable to livestock operations.

An estimate of the contribution of Seven Lakes ES area livestock forage to regional livestock employment was calculated using average manpower figures derived for cattle and sheep operations in published data (Stevens 1971 and 1975) and applying them to area livestock forage. It was determined that the equivalent of approximately 9.09 jobs were generated by active ES area BLM livestock forage on the average over the years 1972-1976 (see Appendix B-3-7 for methodology and calculations). This constitutes approximately 1% of total regional agricultural employment and a virtually unnoticeable percent of total regional employment.

Presently, the mineral industries in the Seven Lakes ES area may provide as much as 500 man equivalents employment. One uranium mine and mill is in the development stages. A major oil and gas exploration and development program is being conducted, and uranium exploration is being conducted throughout the area. The above figure is based on knowledge of the area only, since no other sources of data are available. Based on the above employment estimate, it can be concluded that mineral exploration and development is the dominant economic activity in the ES area at present.

Furthermore, the Lost Soldier and Wertz oil fields, located near Bairoil, indirectly provide employment in Sinclair and Rawlins, Wyoming because the refinery at Sinclair is dependent on oil from the above fields for a large part of the basic supply of crude oil. In fact, the location

TABLE 2-38
INCOME FROM LIVESTOCK AND HUNTING ACTIVITIES IN THE
SEVEN LAKES ES AREA UNDER THE PRESENT SITUATION

Income in Actual Dollars 1977*

Income Category	Allotment		Total ES Area Direct Income	Income Multiplier	Total Income Effect
	Ferris Incommon	Seven Lakes Incommon			
Livestock	\$51,910	\$234,358	\$286,268	2.250	\$644,103
Hunting**	8,390	25,169	33,559	1.035	34,734
TOTAL	\$60,300	\$259,527	\$319,827		\$678,837

Income in Actual Dollars 1986*

Income Category	Allotment		Total ES Area Direct Income	Income Multiplier	Total Income Effect
	Ferris Incommon	Seven Lakes Incommon			
Livestock	\$51,910	\$234,358	\$286,268	2.250	\$644,103
Hunting**	17,045	51,134	68,179	1.035	70,565
TOTAL	\$68,955	\$285,492	\$354,447		\$714,668

Income in Actual Dollars 1998*

Income Category	Allotment		Total ES Area Direct Income	Income Multiplier	Total Income Effect
	Ferris Incommon	Seven Lakes Incommon			
Livestock	\$51,910	\$234,358	\$286,268	2.250	\$644,103
Hunting**	18,562	55,688	74,250	1.035	76,848
TOTAL	\$70,472	\$290,046	\$360,518		\$720,951

Present Value of Income for 20-Year Analysis Period***

Income Category	Total ES Area Direct Income	Income Multiplier	Total Income Effect
Livestock	\$3,123,304	2.250	\$7,027,434
Hunting**	685,387	1.035	709,376
TOTAL	\$3,808,691		\$7,736,810

*Methodology shown in Regional Income section above.

**Based on visitor use data shown in Table 2-42 and methodology in Appendix B-3-7.

***Methodology explained in ES Area Income section above. Other methodology shown in Appendix B-3-7.

Note: Figures for the years 1986 and 1998 represent the results of a projection of present management into the future.

TABLE 2-39
1972 EMPLOYMENT BY BROAD INDUSTRIAL SECTOR

<u>Employment Sector</u>	<u>Carbon</u>	<u>Fremont</u>	<u>Sweetwater</u>	<u>Total</u>
Farm	405	298	202	905
Government	1,257	2,222	1,363	4,842
Manufacturing	400	476	186	1,062
Mining	1,007	1,914	1,991	4,912
Construction	313	556	1,690	2,559
Transportation, Communication and Utilities	661	422	835	1,918
Trade	1,225	1,804	1,703	4,732
Finance, Insurance, and Real Estate	120	210	164	494
Services	820	1,329	1,332	3,481
Other	3	49	4	56
TOTAL EMPLOYMENT	<u>6,211</u>	<u>9,280</u>	<u>9,470</u>	<u>24,961</u>

Wyoming Department of Administration and Fiscal Control 1975.

Wyoming Data Handbook 1975, Cheyenne, Wyoming.

DESCRIPTION OF ENVIRONMENT—FUTURE

of the refinery at Sinclair resulted from the existence of the oil fields at Bairoil.

Public Finance

The contribution to assessed valuation within the three county region from various sources is shown for 1976 in Table 2-40.

As seen, cattle and sheep contribute a very small percentage of total assessed valuation in the region (1.4%).

The contribution of Seven Lakes ES area AUMs to regional assessed valuation was estimated using the methodology in Appendix B-3-7. Assessed valuation based on average active use for the years 1972-1976 for livestock in the ES area is estimated to be \$42,888.

Social Well-Being

The economic climate of the three county area has improved since 1970, notwithstanding the livestock industry. Population loss from the area has been reversed since 1970, and unemployment is significantly below national levels. Carbon County, for example, is reputed to have an unemployment rate of less than 3% (personal communication, Job Service of Wyoming 1977).

The average weekly wage for covered employment in 1974 in Carbon County was \$171.58, while the average for the state was \$154.86. Similarly in 1977, the respective weekly wage figures were \$234 and \$209, indicating that the ES region is in a good economic position relative to the state of Wyoming (Wyoming Employment Security Commission 1974, 1977). Employment trends are similar and as previously indicated the economic growth has been largely a result of mineral industry activity.

Most of the ranch operations in the Seven Lakes ES area have been in existence since the early part of this century. One has been in operation since 1872. This indicates that they have been fairly stable in the long run. The BLM has no knowledge however, of the position the operators would occupy on a continuum of social well-being in the area.

Socio-Cultural Attitudes

With respect to livestock operators and mineral industry personnel, most strongly support the philosophy of multiple use management of public lands. Both groups believe strongly in the social, traditional, and economic importance of their vocations. They believe that continued multiple use management, including livestock grazing on public lands, is both desirable and needed to supply food and energy to regional and national markets as well as to maintain the economic base of the area.

All livestock operators who use the ES area are in favor of the proposed installation of range improvements. The ranch operators have consistently expressed a desire to see management of the area intensified to in-

clude construction of fences and development of water. The construction of the Arapahoe allotment boundary fence is supported by ranch operators both from the Rawlins and Lander areas. (The above summarizes opinions expressed by the area ranchers at meetings with Rawlins District BLM personnel during and after the development of the Seven Lakes MFP and prior to writing this ES.)

A segment of the population consisting of wildlife, recreation, and environmental groups is strongly in favor of protection of wildlife and open space values in the area. Fairly strong sentiment exists within these groups against fencing or major mineral development (Public Participation Record, Seven Lakes MFP Hearings).

FUTURE ENVIRONMENT

This section describes the resources and land uses that will probably be found in the Seven Lakes ES area in 20 years (1998) without implementation of the proposed action as described in Chapter 1. This time frame was selected because it is the point at which the objectives of the proposed action would be expected to be met.

No significant changes from the existing situation is expected in climate or topography.

Changes in mineral resource activity will be expected to influence most other resources. (Refer to the Mineral Resources section for a detailed discussion of the expected increases in this activity.)

Livestock management will continue as it exists today, with some changes in livestock class (refer to the Livestock Grazing section for details). Pursuant to management framework plan (MFP) decisions, the Lander area livestock operators will take their use outside the ES area.

Herd management area plans (HMAPs) and habitat management plans (HMPs) will be implemented to manage wild horses and wildlife habitat. The implementation of HMPs will include constructing some water developments and protective riparian fencing.

AIR QUALITY

By 1998, with increased uranium and coal mining, and a powerplant, air quality could be expected to be poorer than it is now. The changed air quality will depend on the locations mined since pollutants will be dispersed by winds and carried generally towards the east northeast (Table 2-2). In areas immediately adjacent to these possible sources of pollutants, air quality will be degraded by suspended particulates as well as other pollutants. An air pollution diffusion model considering types and the extent of developments is the only way to determine whether or not air quality would be degraded sufficiently to exceed state and federal air quality standards.

TABLE 2-40

1976 TAXABLE VALUATION BY CATEGORY
FOR THE THREE COUNTY REGION
CARBON, FREMONT, SWEETWATER

	<u>Amount</u>	<u>Percent</u>
Lands	\$ 15,416,033	2.7
Land Improvements	14,877,482	2.6
Town Lots and Improvements	63,608,652	11.6
Coal, Oil & Gas, and Uranium Production	247,993,553	44.1
Miscellaneous Mineral Production	75,263,495	13.4
Pipelines	11,493,777	2.0
Railroads	29,464,794	5.2
Public Utilities	16,457,978	2.9
Cattle & Sheep	7,995,041	1.4
Other Livestock	253,569	0.1
Construction Equipment	2,337,193	0.4
Farm Machinery	1,791,118	0.3
Mine Machinery & Sawmills	11,067,806	2.0
Oil Refiners, Oil & Gas Producing Equipment, Gas Plants & Other Industrial Plants	<u>\$ 64,307,697</u>	<u>11.4</u>
TOTAL	\$562,328,188	100.1

Source: Wyoming Department of Revenue and Taxation. 1976.

DESCRIPTION OF ENVIRONMENT—FUTURE

PALEONTOLOGICAL RESOURCES

Vertebrate fossils in the ES area are subject to unauthorized collection, and within 20 years, loss of resources to private collectors could have an effect upon data available for scientific study.

It is expected that proposed coal and uranium development could disturb fossil-rich areas through mining operations. Approximately 20,000 acres will be disturbed through mineral exploration and development. The paleontological resources in disturbed areas will be destroyed.

SOILS

It is anticipated that there will be no measurable change in the soil resource as a result of future grazing use. However, the mineral industry (oil and gas, coal, uranium) will disturb approximately 20,000 acres of which approximately 6,000 acres will be reseeded by 1998. The effects on the soil profiles in the disturbed areas will range from complete obliteration to removal of the A-horizon. The soils which have been subjected to only minor disturbances should be revegetated by root stock of species presently occupying the site. At this time, it is not possible to estimate reclamation success, sedimentation rates, acres in a reduced productivity state, or erosion condition.

WATER RESOURCES

By 1998, water consumption in the Seven Lakes ES area will increase significantly due to minerals activity, while livestock and wildlife use of water will remain near present levels. Oil and gas drilling, as well as production, will continue to use more water each year. Uranium and coal mining activities do not utilize much water in the mining and milling processes, but the uranium and coal bearing zones of the area tend to also be groundwater aquifers. Because of this, large amounts of water must be disposed of. The Minerals Exploration Mine expects to continuously dewater an average of 7,000 gallons per minute (gpm), or nearly 11,300 acre-feet per year (ac ft/yr) (Stone and Webster Engineering Corporation 1977). With other (possibly as many as seven) uranium mines expected, the amount dewatered each year could be higher. A coal-fired power plant in the area will require large amounts of water and could utilize water produced from mines. The total consumption of water for mineral activities is not possible to predict because of the absence of firm projections and needs.

It is not likely that the increase in water needs of industry will interfere with the small amounts needed for livestock and wildlife except for localized problems with stock wells within the zone of influence of larger industrial wells. Pumping of an aquifer for either dewatering or industrial use will create a cone of depression on the water table around the wells, and if encountered water is

discharged to evaporate or infiltrate, a bulging of the water levels around the discharge area is seen (Woodward-Clyde Associates 1976). Stock wells could have increased or decreased (could even go dry) flows, depending on which zone of influence they were in.

With dewatering and disposal activities, mixing of groundwaters from different aquifers and thus mixing waters of different qualities will likely occur. This practice could drastically change the quality of water in some of the aquifers, and thus, the quality of stockwater wells. It is not possible to predict how many stockwells will be altered by changes in supplies and/or qualities.

Storm runoffs in the Seven Lakes uncommon allotment will be likely to increase due to the many disturbances by mining activities. These disturbances include mill sites, areas being revegetated, mined areas, and structures to divert runoffs around uranium and coal pits. The possible magnitude of the increase in runoffs is unknown, but would be likely to also increase sediment discharges by way of increased channel and sheet erosion.

VEGETATION

Olsen and Hansen (1977) have shown that during the summer, fall, and winter seasons in the Red Desert, cattle and sheep have dietary overlaps of 35%, 41%, and 46%, respectively. Continuous grazing yearlong by livestock will not allow the vegetation to regain vigor and carbohydrate reserves. Production, in 1998, will as a result of the continuous yearlong grazing, be expected to decrease approximately 5%.

Increased mineral activity proposed for the Seven Lakes ES area, by 1998, will cause an additional decrease in production of forage of 4%. Though most mining activities are required to be rehabilitated, full restoration of vegetation to its present production level by 1998 will not be possible (refer to Mineral Resources, Chapter 2 Future for total acres disturbed by mineral activity).

The predicted production in 1998 will be 91% of the existing production level (see Table 2-41).

Changes in composition will be expected following rehabilitation. An increase in the vegetation species planted during rehabilitation will be expected to occur while a decrease will occur in the species disturbed by the mineral activities. The amount of decrease or increase will be dependent upon the success of the rehabilitation measures.

Table 2-41 compares present production and key species composition with the predicted production and future key species composition in 1998.

The acreage of each condition class of the vegetation will not be expected to change from the present situation. Grazing will not be expected to be different in 1998 from the present situation. Therefore the condition and trend will remain the same.

Garrison (1972) stated that fall and winter seasons are the least detrimental period for utilization of shrubs. Late spring and the middle of the growing season, when the carbohydrate reserves are the lowest, are the most dam-

TABLE 2-41
 PREDICTED PRODUCTION AND FUTURE KEY SPECIES COMPOSITION IN 1998
 ON PUBLIC, STATE, AND PRIVATE LAND WITHOUT IMPLEMENTATION OF THE PROPOSED ACTION COMPARED WITH
 PRESENT PRODUCTION AND KEY SPECIES COMPOSITION*

Allotments and Vegetation Types	Present Produc- tion (AUMs)	Present Key Species Composition %				Future Produc- tion (AUMs)**	Future Key Species Composition % ***			
		Agda	Orhy	Pose	Artr		Agda	Orhy	Pose	Artr
Ferris	5,625	Agda	Orhy	Pose	Artr	5,120	Agda	Orhy	Pose	Artr
Sagebrush		16	2	2	29		10	2	2	25
Grass		20	5	2	16		15	5	2	15
Greasewood		10	8	2	T		10	8	2	T
Seven Lakes****	50,476	Agda	Artr	Atnu	Orhy	45,933	Agda	Artr	Atnu	Orhy
Sagebrush		8	26	7	4		5	22	5	4
Grass		15	10	7	2		10	8	5	2
Saltbush		-	5	38	-		-	3	35	-
Greasewood		-	2	28	-		-	T	25	-

*All AUMs are expressed on a winter sheep basis.

**Refer to the narrative for explanation of determination of the future production.

***Refer to Appendix B-2-14 for methodology in predicting future key species composition.

****The Seven Lakes allotment occupies the same area as the proposed Stewart Creek and the Cyclone Rim allotments.

DESCRIPTION OF ENVIRONMENT—FUTURE

aging periods of use. Cook and Stoddart (1963) state that harvesting during the winter and again during late spring are the most detrimental. Grazing would take place from May 1 to November 30 by cattle and October 31 to April 30 by sheep in the Ferris allotment; while from May 1 to December 31 by cattle, May 16 to October 14 by sheep, and October 15 to May 15 by sheep in the Seven Lakes allotment. Grazing during the growing season will reduce the ability of the vegetation to maintain vigor. Defoliation will reduce the amount of leafy material used in production of carbohydrates. As the carbohydrate reserve is depleted and not replenished, the vigor of the vegetation will decrease. Changes in plant vigor generally precede changes in the botanical composition and range deterioration (Cook and Child 1971).

Poisonous plants will increase 1% or 2% by 1998. The major increase will occur in areas of extensive disturbance. Areas in which reclamation was unsuccessful will be susceptible to invasion by poisonous plants. The major increase will occur in the saline soils in the Cyclone Rim allotment. There is a vast amount of strippable coal present in this area and large amounts of greasewood are also present; therefore, if the coal is mined, the greasewood could expand. Arrowgrass may tend to spread in wet bottomlands which may receive excessive grazing pressure.

Range Improvements

Present range improvements will continue to exist; therefore the effects of improvements upon vegetation would be unchanged.

Threatened or Endangered Species

The future situation of the threatened or endangered species will not be expected to be different from the existing situation. There are no threatened or endangered species known to exist within the ES boundary, but the possibility of occurrence is probable.

ANIMALS

Terrestrial Wildlife

It is expected that the proposed wildlife habitat management plan (HMP) will be implemented. As a result of this activity plan for the Seven Lakes ES area, some waters will be developed for pronghorn and sage grouse use on summer range. Several springs will be developed, reservoirs and riparian areas fenced, and fences modified. Major fences will not be constructed, thus allowing unrestricted movement by pronghorn during migration periods.

Since active livestock use is expected to remain at about the present levels, the amount of vegetative cover and forage available to wildlife (not including vegetation lost from other activities) would remain at about present levels. Thus, those populations presently being supported by the extensive livestock nonuse would still be residing in the area. Those areas presently being overused by livestock would continue to be overused and may be a factor limiting local wildlife populations.

However, as a result of increased human activity, (e.g., energy exploration and development) wildlife habitat in the ES area will be expected to be of a lower quality than at present. There will be less available forage and cover for most wildlife species. (The opportunity for most animals to move and migrate without harassment or barriers would be reduced.) Some habitats which are presently used will become unavailable due to human activity, reducing the present carrying capacities. Those species (e.g., nesting raptors) which are sensitive to human activity will be forced into other areas. Pronghorn populations will be expected to reach and be maintained at the Wyoming Game and Fish Department's 1980 management objectives.

Although many acres of habitat may not be altered from the present situation, the overall increase in human activity in the ES area will be expected to reduce available habitat, lowering its quality for wildlife use, resulting in fewer numbers of most species.

Aquatic Wildlife

Aquatic habitats will be of lower quality than the present situation on Crooks Creek. Increased human activity on Green Mountain will continue the present trend of increased sediment yields. Livestock concentration areas will continue to create poor stream morphology for a trout fishery. Water flows will be expected to be reduced due to an increased demand for water in the area. Thus, fish production on this drainage will also be expected to be reduced by 20%-50% by 1998.

Lost Soldier Creek will be improved over the present situation due to proposed HMP fencing of this drainage. The overall quality will be improved due to livestock exclusion. The animals using this riparian area will increase in numbers and diversity.

Wild Horses

Future Populations

Upon implementation of the draft horse plan, wild horse numbers in the ES area will be kept at a reduced level of between 66 and 135 head; i.e., the horse population will be periodically reduced by rounding up and removing wild horses to keep the population within the parameters of the draft Seven Lakes Herd Management Area Plan (HMAP).

DESCRIPTION OF ENVIRONMENT—FUTURE

Quality of the wild horses' environment and the enjoyment of wild horses by the public as a wild symbol would decrease, but this quality cannot be measured.

Disturbed acreage from all mineral resource development will total 20,000 acres by 1998.

Future Habitat

Over the next two decades, apart from the proposed action of livestock grazing management, extensive mineral activity is expected to take place in the Seven Lakes ES area. This activity will significantly modify the habitat conditions for wild horses.

Although precise locations of future uranium and coal mines, or of future oil and gas wells and exploration activities are unknown, some 20,000 acres in the ES area could be disturbed by 1998. On some of the disturbed sites, increased numbers of plants such as locoweed (*Astragalus* spp.), which can be poisonous to horses, will occur. Forage production on the disturbed sites will generally be diminished. Reclamation efforts will not restore the natural vegetative diversity found in the Seven Lakes ES area.

The mines and drilling will permanently displace some horses from their natural concentration areas. The displacement of wild horses will be primarily caused by energy company development of new water supplies as well as the destruction of existing watering places. Extreme draw-downs of some existing wells are expected to result from the mining efforts.

Additional disruption of the wild horses will be expected due to the increased activity along existing roads. No doubt additional roads will also be built. Merely the sounds of heavy equipment will add some stress to the horses. Stress in other animal species has been solidly linked to lower reproductive rates and disease susceptibility.

More people will be in the Seven Lakes ES area due to energy related activity, and increased harassment, capture, and killing of the wild horses will occur. With all the energy development that is planned for the area, the wild horses will find themselves in a continually less wild and remote setting. The mining and other energy activity will present increased hazards to the wild horses. The traffic will be a major danger. Nevertheless, the Seven Lakes ES area should be able to provide for the needs of the 66 to 135 wild horses proposed by the herd management area plan through 1998.

CULTURAL RESOURCES

Within 20 years, cultural resources will receive from moderate to severe damage in localized areas as a result of continuing geologic erosion, trampling by livestock, vandalism, and off-road vehicle travel.

Severe surface and subsurface damage will occur to those cultural resources not identified by the surveys made prior to coal, gas, and oil development. Approximately 10,000 acres will be disturbed by such development prior to 1998.

It is assumed that 10,000 acres of uranium lode claims will be developed by 1998.

VISUAL RESOURCES

By 1998, the visual resource management (VRM) class objectives will be subject to change. This change will be a product of more intensive mining and petroleum development, resulting in a significant change in the characteristic landscape (refer to Mineral Resources section). The disturbed area of approximately 20,000 acres will be reduced to a VRM Class V designation (Map 2-21).

The other multiple use activities which would be occurring in the area are considered more compatible with the resource base and would not be expected to create any changes in the present VRM classes.

RECREATION

The projected hunter use for the ES area by 1998 is shown on Table 2-42. The data were prepared by using projections from the Wyoming Game and Fish Strategic Plan and assuming the present percent of harvest for these species listed.

Fishing on Crooks Creek (based upon Wyoming Game and Fish methodology and the reduction projected in the Animals section) will support one angler per mile. The 5½ miles of creek will therefore provide approximately 5 recreation days for fishing.

The total recreation days projected from present data will be 1,983 days annually. This is an increase of 118% over the present use.

WILDERNESS

Under provisions of the Federal Land Policy and Management Act of 1976 (P.L. 94-579) the lands in the Seven Lakes ES area will have been reviewed to determine their potential and suitability for preservation as wilderness by 1991. Recommendations to the President will have been made regarding such preservation after mineral surveys have been conducted in each of the areas, if any, which are identified in the inventory and analysis process.

LIVESTOCK GRAZING

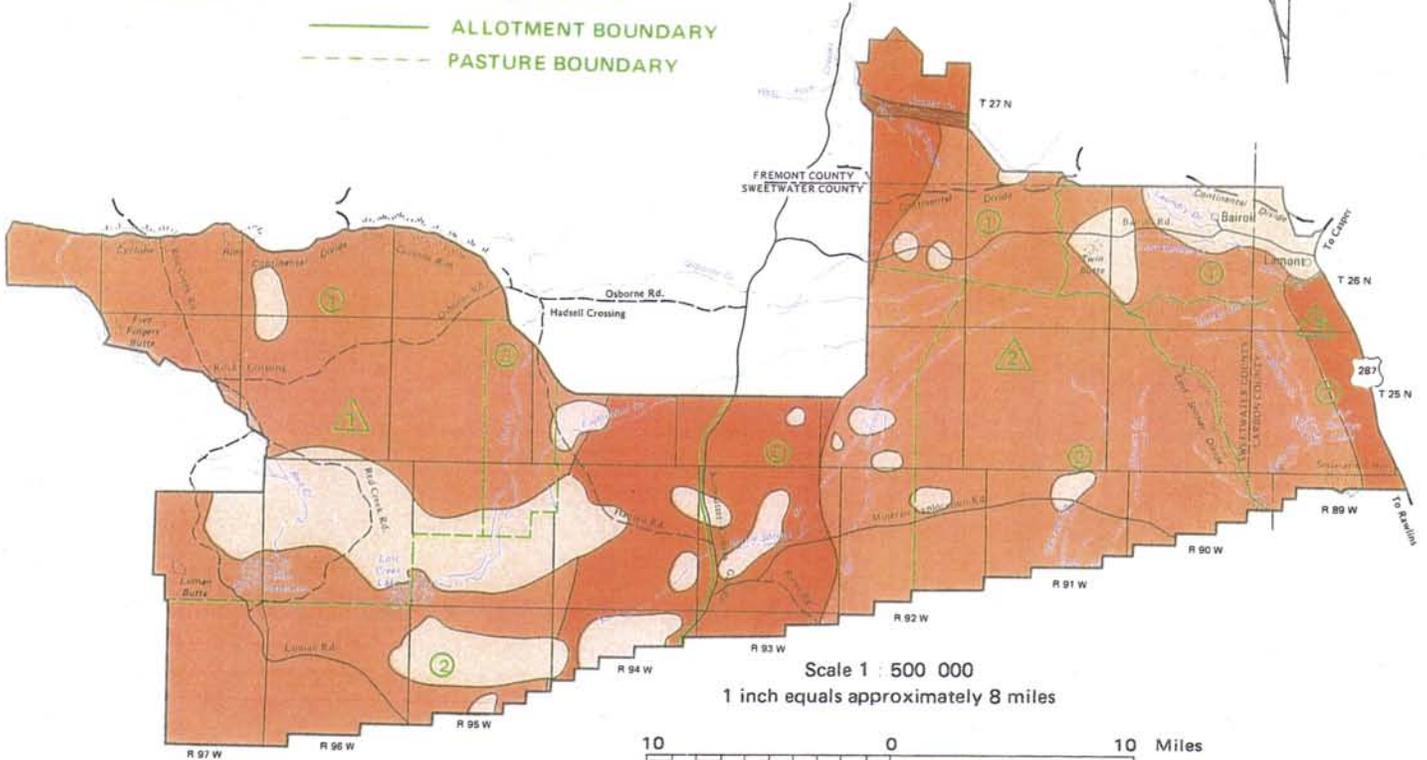
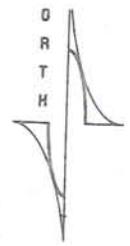
Within the next 20 years, the character of livestock grazing in the Seven Lakes ES area will be changed by coal and uranium mining. For example, one uranium company (Minerals Exploration Company) has proposed to dig a pit ½ mile wide by 4 miles long in the Stewart Creek allotment. In order to mine, they would pump the water table down, and discharge an average of 7,500 gallons of water per minute into Battle Springs Draw. In turn, the discharge would empty into Battle Springs Flat,

PASTURES
 ① CYCLONE
 130,216 acres
 ② LUMAN
 109,794 acres
 ③ LOST CREEK
 15,508 acres

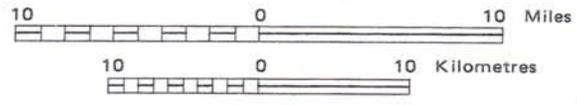
PASTURES
 ① SAND SPRING
 39,647 acres
 ② CHICKEN SPRING
 86,768 acres
 ③ OSBORNE WELL
 62,576 acres

PASTURES
 ① LOST SOLDIER
 29,500 acres
 ② BULL SPRINGS
 38,845 acres

———— ALLOTMENT BOUNDARY
 - - - - PASTURE BOUNDARY



Scale 1 : 500 000
 1 inch equals approximately 8 miles



LEGEND

	VRM CLASSES II		VRM CLASSES IV
	VRM CLASSES III		VRM CLASSES V

**FUTURE VISUAL RESOURCE
 MANAGEMENT CLASSES BY 1998**
 Seven Lakes Grazing
 Environmental Statement
 Map 2 - 21

TABLE 2-42
PROJECTED HUNTER USE*

Sage Grouse

	<u>Hunter Numbers</u>	<u>Days per Hunter</u>	<u>Total Hunter Days</u>	<u>Birds per Day</u>
1977	219	2.20	482	1.9
1980	245	2.50	613	1.7
1985	350	2.75	963	1.1
1990	525	2.00	1,050	1.0
1998	525	2.00	1,050	1.0

Pronghorn

	<u>Hunter Numbers</u>	<u>Days per Hunter</u>	<u>Total Hunter Days</u>	<u>Hunter Success</u>
1977	310	1.72	533	86%
1980	408**	1.87	763	85%
1985	408	2.04	832	82%
1990	408	2.22	906	80%
1998	408	2.22	906	80%

*Assumming even distribution of game and hunters in present recording areas, and accepting Wyoming Game and Fish Department predictions for statewide trends in hunter use.

**1980 is target date for establishing winter herd of 5,000. It was assumed this population will be maintained at this level and the number of annual permits will remain constant thereafter.

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in the Cyclone Rim allotment, inundating approximately 3,000 surface acres and drowning the existing vegetation which is mostly greasewood. A mining venture of this magnitude will eliminate the vegetation on 4,850 of acres and thus substantially reduce the forage production on two allotments. Seven similar mines are projected. Also, an additional 20,000 acres will be taken out of livestock production because of the mill sites, roads, and spoil piles associated with other mining ventures, although some may be reclaimed. Revegetation efforts following mining may have to rely on artificial irrigation methods in order to establish vegetation because the area has a short (100 days) growing season with slight (9 inches annually) and erratic precipitation. In addition to taking land out of production for livestock, mining may destroy existing and proposed water sources, but at the same time should provide some new sources.

Sheep use by the long term will remain the dominant use when compared to cattle use in the ES area because: (1) the forage of the Seven Lakes ES area is more suited for sheep than for cattle; (2) sheep, especially winter sheep, do not require as many range improvements, such as water developments and fences, as do cattle; (3) sheep are more energy efficient (require the input of less fossil fuel, i.e., less trucking) than cattle, plus they produce wool and meat, not just meat (Cook, 1976; Cook, Christensen, and Visintainer 1976; Pimentel, Dritschilo, Krummel, and Kutzman 1975); and (4) the ES area will continue to serve as a winter range for sheep bands which summer in more alpine ranges in the region. Nevertheless, the tendency for some sheep operators to convert to cattle operations will continue.

By 1998, the contribution of large herbivores to the total ecosystem nutrient cycling will not be measurable (Charley 1977) despite the fact that on an annual basis an estimated 95% of the livestock leave the ES area, 30% of the pronghorn are removed through hunter harvesting, and 20% of the wild horses will be gathered.

Without implementation of the proposed action or one of the alternatives, few major range improvements for livestock management will be built in the ES area within the next 20 years. Gap-fencing to control livestock drift into the area from the north has been needed and discussed for many years. However, if the present depressed state of the livestock industry continues along with the general change in emphasis of public land management to multiple use from the livestock dominated use of the past, it is doubtful that any livestock fencing will be built.

MINERAL RESOURCES

Increased mineral activity in the energy-rich Great Divide Basin is a certainty. The ES area will show accelerated exploration for oil and gas, uranium, and coal.

Before estimates can be made as to the amount of mineral activity in the Seven Lakes ES area, certain general and specific assumptions must be made.

General assumptions are as follows:

1. There will be no mineral withdrawals.

2. Market prices will continue to rise to the world commodity prices.

3. Environmental restraints will be the same as today, but not more stringent.

Specific assumptions for oil and gas are as follows:

1. Interstate gas will continue to be regulated.

2. Oil and gas supportive activities can keep up with the drilling schedules, e.g., drill pipe supplies, rigs, log trucks, mud, mud logging units, and construction units.

Specific assumptions for coal are as follows:

1. Coal lease applications will be processed in a timely manner.

2. The needs for a labor force can be met.

Specific assumptions for uranium are as follows:

1. Uranium will remain a locatable mineral.

2. Nuclear energy will continue to be developed.

3. There will be major water problems; e.g., flooding or disposal.

4. There will be no access problems.

Oil and gas production in the ES area ranges from 60 year old fields to new discoveries. New technologies should help with secondary and tertiary recovery methods in existing and abandoned fields. With the advantage of equipment which would drill to greater depths and a higher monetary reward for finding oil and gas, new fields can be expected. The primary exploration area is presently in the southwestern part of the ES area, around Hay Reservoir.

For analysis purposes, it will be assumed that drilling activity will remain at its present average level (refer to Figure 2-6).

Vegetative disturbance due to oil and gas activity in the Seven Lakes ES area was calculated as follows:

Miles of seismic lines = 75 miles/year

Width = 10 feet

75% disturbance

Total acres disturbed by 1998 = 1,364 acres

Miles of roads to drill pads = 31 miles/year

Width = 10 feet

Total acres disturbed by 1998 = 2,255 acres

50% of roads will be reseeded = 1,127 acres

Drill pads = 31/year

4 acres/drill pad

Total acres disturbed by 1998 = 2,480 acres

Drill pads will be revegetated after 4 years if they are abandoned (Wyoming's drilling success ratio is 10%).

$31 \text{ drill pads} \times 4 \text{ years} \times 4 \text{ acres/pad} \div 2 = 248 \text{ acres successfully revegetated/year}$

Coal resources in the ES area will be developed through strip mining many of the shallow sub-bituminous coals and insitu-gasification of the numerous deep coals.

Insitu-gasification is a reality in central Wyoming with Energy Research and Development Administration's (ERDA) pilot plant, located near Hanna, Wyoming. According to Charles F. Brandenburg of ERDA's research station, Laramie, Wyoming, it was learned that a 1,000 megawatt power plant could be a reality in the ES area by 1989. The plant would disturb 4 sections of land

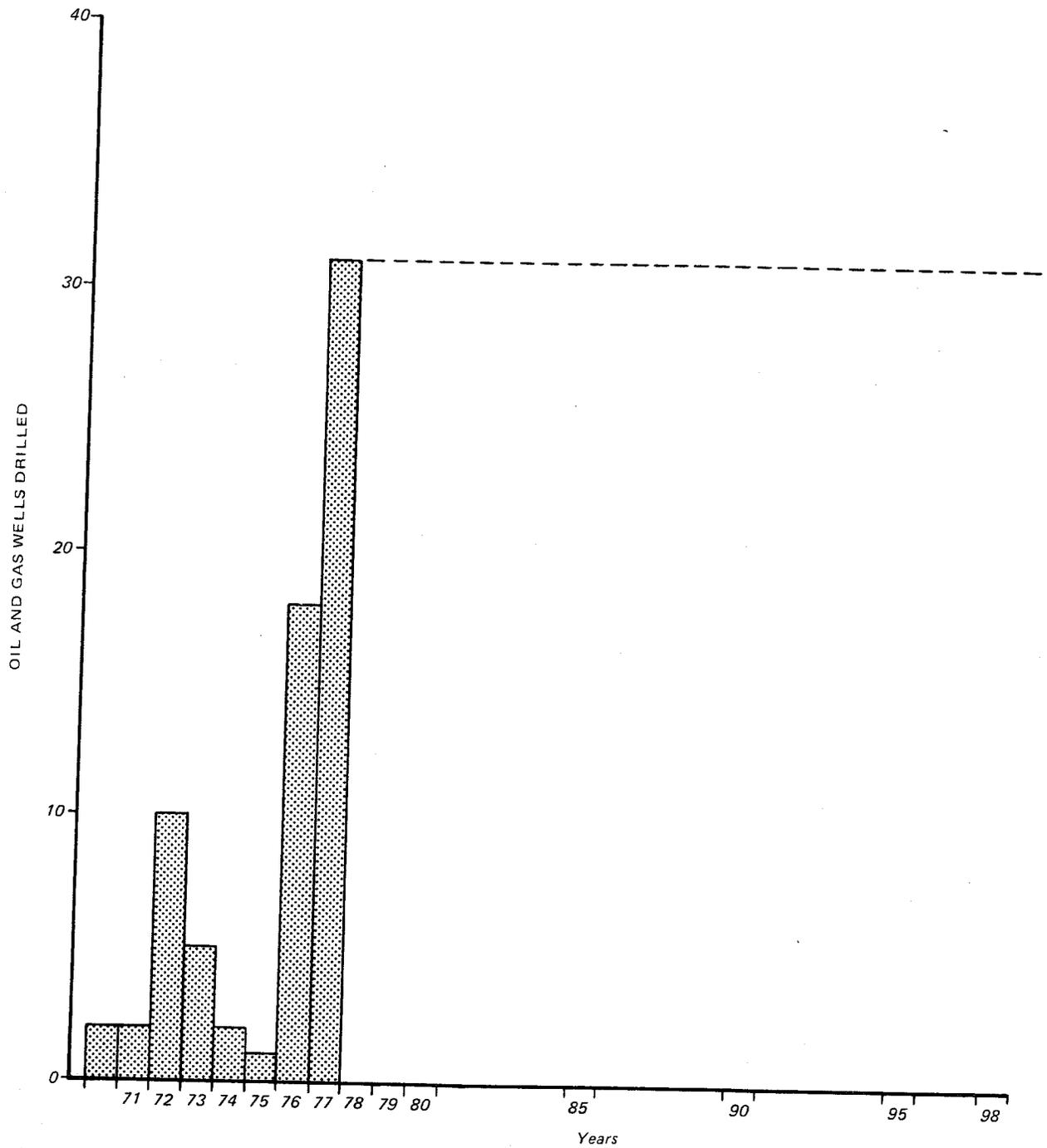


Figure 2 - 6
**OIL AND GAS DRILLING ACTIVITY IN THE
 SEVEN LAKES ES AREA**

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during its lifetime, which would be 25 years. By 1998, 2 sections of land (1,280 acres) would be disturbed.

According to Rocky Mountain Energy, a subsidiary of Union Pacific Corporation, long range plans could include a surface gasification plant, which will also involve a strip mine. Each strip mine in the area disturbs about 200 acres per year. Although Rocky Mountain Energy is mainly interested in coals on the land grant lands south of the ES area which are controlled by Union Pacific Corporation, their interest in the Red Desert coals is an indication of industry's planning for future coal leasing.

The coals in the Wasatch Formation, which outcrop in the western portion of the ES area, are high in sulphur and contain uranium, to a small degree. These factors have made the coals unsuitable for mining. With advances in technology, the Red Desert coals could be suitable for mining in the future. As fast as new mining methods have been advancing, it is projected that two new coal strip mines will be opened in the ES area with a total disturbance, including spoil piles, railroads, tram roads, loadout facilities, and shops, of about 2,500 acres by 1998.

Sodium sulfate and sodium carbonate deposits which occur in the ES area will probably not be developed in the next 20 years, since most of the sodium sulfate-carbonate is used in the manufacture of pulp and paper, which would require high transportation costs.

Uranium development in the ES area will be quite extensive by 1998. Minerals Exploration Company has uranium lode claims on 58,000 acres of public lands in the ES area and has started development of some of their claims. The Minerals Exploration mine and mill will encompass 1,850 acres.

Since it is time consuming and costly to build a uranium mill, many companies will prefer to ship their ore to another company's mill. Seven companies have done extensive exploration for uranium in the ES area. None of the companies have applied for permits to mine their ore, or have applied for permits to build a mill, but it is assumed that many of these companies are waiting for the Minerals Exploration mill to open. With a mill in the immediate area, it could be economical to develop many of the known deposits.

Since uranium is a locatable mineral, mining companies seldom release information until they are ready to develop their resource. To give an exact figure on acres that will be disturbed in the next 20 years would be mere speculation, but in evaluating the amount of exploration that is presently going on, it is assumed that there could be about seven open pit uranium mines with a total disturbance of 10,000 acres by 1998.

In summary, there has been an increased interest in coal, uranium, and oil and gas. Some 20,000 acres could be disturbed due to mineral exploration and development.

TRANSPORTATION NETWORKS

Transportation

The system of roads in the Seven Lakes ES area after 1998 will be essentially the same as today in terms of the basic configuration. It is nearly certain that the Sweetwater County Road, which serves as access to Minerals Exploration Company's proposed mine site, will be paved with an asphalt surface (personal communication, Minerals Exploration Company June 1977). There is some possibility that the Bairoil Road will be paved, but that is entirely dependent on whether or not the known deposits of uranium west of Bairoil are mined. At any rate the Bairoil Road, the Wamsutter-Crooks Gap Road, and possibly the Luman and Red Creek Roads will receive increased levels of maintenance in the future over the present. Finally, future access in the winter should be better than at present because of the need to maintain roads year-round for access to mineral exploration and development sites.

In summary, the principal transportation network in the area will be essentially the same except that most primary roads will have been improved. New roads will be largely limited to access roads to mineral development sites. Overall, access will be upgraded so that vehicular travel will be possible for a greater part of the year to more types of vehicles, including those not specifically designed for operation on rough, unpaved roads.

SOCIOECONOMIC CONDITIONS

Seven Lakes ES Area Livestock Operators

If past trends are any indication of what may occur in the future, a number of assumptions can be made about the future of the livestock operations in the ES area. First, there should be fewer livestock operations than at present. Second, the livestock operations should be larger in overall size. Third, the trend in class of livestock is to convert from sheep to cattle. These three trends have been in effect since the 1930s (U.S. Department of Commerce, Census of Agriculture 1974); and if they continue, there should be fewer but larger livestock operations, most of which run cattle in the ES area.

Population

Population projections are available for the region. However, none is available which projects population beyond the year 1990. Based on the latest information, the total population in the region for the year 1990 is projected to be 163,863 (THK Associates 1976, Bickert, Brown, Coddington and Associates 1976, and personal communication, Fremont County Planning Office). The populations for the individual counties are projected to be 73,350 for Sweetwater; 47,801 for Fremont; and 40,712 for Carbon in 1990. Assuming that population will increase annually between 1990 and 1998 by the same

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amount as the average annual increase estimated in the above projections to occur between 1980 and 1990, the populations of the three county region will be 206,459 in 1998. This constitutes a 26% increase over the figure projected for 1990.

The proportion of total regional population dependent on the forage resources of the ES area will be much less than at present due to growth of mineral and other industries.

On the other hand, a much higher percentage of regional population will be dependent on mineral exploration and production in the future than at present. By 1998, Mineral Exploration Company, for example, may have been operating a uranium mine and mill for some 15 years. By virtue of the fact that a uranium mill will be located in the Seven Lakes ES area, other known uranium deposits may be developed by other companies (personal communication, Minerals Exploration Company June 1977). Should this situation develop, a large number of jobs will be created and thus a large number of people will be dependent on those resources for their livelihood. No projections of employment are available, however.

A similar situation exists in the oil industry. A major exploration program is underway in the vicinity of Hay Reservoir. Oil and gas is being produced in that area, and it is expected that this will continue for the foreseeable future. It is not known how many people are dependent on oil and gas exploration in the Seven Lakes ES area for their livelihood, nor is it known how long exploration and production in the area will continue.

Income

Estimates of livestock and hunting income for the ES area for 1986 and 1998 and for the entire 20-year analysis period are shown in Table 2-38. Furthermore, the following generalization about ES area income can be offered with some certainty: First, agricultural income

should be relatively unchanged from the present, both for the ES area and the region as a whole; second, income due to the exploration and production of minerals will increase proportionate to population and employment both for the ES area and for the region as a whole; finally, agriculture will be less important in the future relative to the overall economy than it is at the present time.

Employment

Agricultural employment will remain essentially the same in 1998 in the ES area under a continuation of the present situation. Employment by the mineral industries will increase by a very large amount due to continued uranium and oil and gas exploration and development. It is not possible to quantify future employment in the minerals industries, however.

Public Finance

No data are available for the future, but it can be assumed that livestock valuation will remain essentially unchanged (not considering inflation) and much lower as a percent of total regional assessed valuation.

Present mineral production and assessed valuation is confined to the Lost Soldier and Wertz oil fields at Bair-oil. Oil and gas production in 1973 had an assessed valuation of more than \$20 million. Future assessed valuation on mineral production will increase dramatically with oil and gas, uranium, and possibly coal development and production.