APPENDIX M METHODOLOGY USED IN THE RANGE ANALYSIS

METHODOLOGY FOR VEGETATIVE INVENTORY

A vegetative inventory on public land in the Headwaters Resource Area was conducted beginning in October of 1979 and field work was completed in November of 1981. The data collected have been used in this document to classify sites, determine the vegetative condition of plant communities, and determine the suitability of the land for livestock grazing.

Classification

Two classification systems were used in site identification. Sites dominated by-grassland, shrub, or a mixture of grass/shrub vegetation were classified according to the Soil Conservation Service's *Montana Grazing Guides* (1974) as ammended. This system interprets the site based upon geographic region (in this case the foothills and mountains of Montana); soil characteristics, including texture and depth; mean annual precipitation; and climax vegetation, to the extent that it can be interpreted for the site.

Sites having the potential to produce a 10% or greater canopy coverage of trees in near climax condition were classified according to Forest $Habitat\ Types\ of\ Montana$ (USDA, FS 1977a). This system interprets the site based upon the potential climax tree species and indicator plants that occur in the undergrowth.

Vegetative Condition

Inventory crews first identified and delineated the boundaries for the sites to be inspected. Estimates of plant species composition, based on weight, were then made for the plant community found on each site. Using tables in the SCS's Montana Grazing Guide, and more detailed data in the SCS's unpublished Technical Range Site Descriptions for Montana, the present species composition was compared to the potential climax composition for the site. A condition rating was computed for the vegetation on each site. This rating represents the extent to which the site differs from potential climax. While this condition rating is often referred to as range condition, this document refers to the rating as vegetative condition. This is done to better separate this rating from a rating of overall resource condition, and to inject a less subjective interpretation of the term condition.

Four condition classes are set forth by the SCS. A plant community in excellent condition exhibits little change in species composition when compared to the potential climax plant community for the site. Between 100% and 75% of the kinds and amounts of vegetation produced would be found in climax. Good condition communities produce between 75% and 51% of the kinds and amounts of vegetation found in climax. Fair condition communities produce between 50% and 26% of the kinds and amounts of vegetation found in climax. Poor condition communities produce between 25% and 0% of the kinds and amounts of vegetation found in climax. A fifth condition class of unclassified was used in the inventory to designate vegetative communities that could not be legitimately compared to a climax community. The unclassified rating was applied to areas that had been plowed and seeded, areas where native vegetation has been manipulated by mechanical or chemical means, areas of undergrowth communities having dense forest canopies or heavy duff accumulation, etc.

Suitability

The suitability of each site for livestock grazing was recorded. One of four ratings was assigned to each site: suitable, no environmental factors restricting livestock access and use of the site; potentially suitable, environmental factors now limit livestock access or use, but changes could be made that would make the site suitable; unsuitable, environmental factors now limit livestock access or use that cannot be changed; and limited suitability, most commonly used for areas producing ephemeral vegetation. The major criteria used to rate range land suitability are: distance from water, slope or other physical barriers, forage production, and the erosion rating for the soil. BLM Instruction Memorandum 78-134 was used in applying these criteria.

ALLOTMENT CATEGORIZATION

Specific criteria were developed to evaluate the management situation for each allotment and sinale out those allotments that will require a change in present grazing management in order to resolve conflicts in the use of resources. The present condition of the resource, its potential to respond to management changes, the current management situation, and the socioeconomic feasibility of changing grazing management were all used as criteria. These are based on current BLM policy. which can be found in W.O. I.M. 82-292. Each criterion was rated independently by a cross section of resource specialists familiar with the allotment. Each specialist recommended placement of the allotment into one of three management categories. Finally, the ratings and recommendations were reviewed by the Area Manager who made a tentative decision on how the allotment would be categorized. Appendix D places each allotment into one of the three management categories and describes livestock use in each allotment. Table M-1 shows the natural resource factors for each allotment that were used in the categorization process. The management category for an allotment may be changed after the RMP/EIS is completed in 1983, or may be changed when resource conditions change or new data becomes available.

Allotments Where Change is Not Feasible

These allotments are best described as follows: little, if any, conflict exists in resource use; overall, resource values are relatively low; the biological potential for response to different management is low; the size or potential productivity of the allotment does not warrant the expenditure of funds for supervision; and/or the cost of range improvements needed to change grazing management exceeds the expected benefits. These allotments are referred to as custodial management, or C allotments.

Allotments Where Change is Not Needed

These allotments are best described as follows: vegetative and watershed conditions are satisfactory; the allotment has the potential for high resource production and is producing near its potential; there are no serious resource use conflicts; and/or the allotment's size and physical characteristics could warrant investment of public funds for range improvements and/or supervision. These allotments are referred to as maintenance management, or M allotments.

Allotments Where Change is Needed

These allotments are best described as follows: vegetative and/or watershed conditions are not satisfactory; the allotment's potential production is high to moderate, but it is producing below its potential; there are substantive conflicts with other resource uses; and/or the allotment's size, physical characteristics, and the anticipated benefits from management changes warrant investment of public funds for range improvements and/or supervision. These allotments are referred to as improvement management, or I allotments.

GRAZING MANAGEMENT PROBLEMS, OPPORTUNITIES, AND OBJECTIVES

Table M-2 describes the most common problems that are encountered in the administration and management of livestock grazing on public land in the resource area. It also describes in general terms what management actions can be used to correct the situations. The table is intended to provide an overview of how grazing management or administration could be improved to favor livestock and/or forage production. The situations described do not apply to all allotments nor do the management actions take into account multiple use management considerations.

Appendix E presents allotment specific problems and objectives that consider multiple use management. Economic analyses will be applied to each allotment that requires an investment of public funds to implement needed changes.

TABLE M-1 RESOURCE CONDITIONS/CONFLICT

Priority for proposed AMP allotment (wild./ran.)	1/2							2/5	1/2	0/0) I	(2/2				1/2	1/1			;	1/1	2/5	1/1	1/1	1/1	2/2 1/2		1/2		
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Special areas Tent. mgmt. of concern categ.	Bald eagle &	Deer wt/sp	use Deer wt/sp	use Deer wt/sp	use Big game	wc/sp None	None	None	Deer wt/sp	None	None	None	Usprey	deer, antelope	deer	wt/sn	Antl./deer	wt/sp. Antl./deer	Antl./S.	None None	None	None None	Elk wt/sp.	None Deer wt/sp.	Elk/deer	wt/sp. None Elk/blue-	grouse Osprey Osprey/	fishery None	None	None	wt/sp/su
Potential of rip. areas to respond	Hi-Mod.	Low	Low	Hi-Mod.	Hi-Mod.	ı	F. Mod	, i	1	1 1	1	I	l	ł	1	l	Hi-Mod.	ModLow	i	Hi-Mod.	13	H-Mod	Hi-Mod.	H-Mod.	Hi-Mod.	Hi-Mod.	? Hi-Mod.	ı	Hi-Mod.	Z Z	
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Potential of veg. to respond	ModLow	ModLow	ModLow	Mod.	ModLow	ModLow	Mod-Low	Mod.	ModLow	Mod-Low	Mod.	Low	ModLow	Low	ModLow	MO T	Low	Mod.	Low	ModLow ModLow	Low	70g.	Mod.	ModLow	ModLow	ModLow Mod.	ModLow Mod.	Mod.	Mod.	ModLow	
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Allotment Name	Missouri	Q&Q Common	Alta Mountain	Amazon	Wicks	Stauback Creek	Prickly Pear	Dowdy Ditch	County Line	N. Dollerty Boulder Biver	Silver Sage	Rattlesnake Creek	Breaks	Black Sage	S. Doherty (E&W pasture)	O'S CIERR	Log Gulch SGC	Bull Mountain	Yellowshack	Whitehorse Beaver	Clark Gulch	Neating Guidh Common Individual	Kimber Gulch	Beaver Creek Whiskey Gulch	Hi Ore	Keating Individual Indian Creek	High Peak Devils Bottom	Emigrant Creek	Pole Canyon Biofnot	Rocky Canyon Little Roulder	
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TABLE M-1 RESOURCE CONDITIONS/CONFLICT

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Special areas Tent. mgmt. of concern categ.	None Antl./	Antelope Mule deer	None	None	None None	Deer	Deer Deer/antl./s,	gr. Elk/S. gr.	Deer & elk	Fik/deer	Fishery	Elk/fishery	None E Y	凿	Turkey/mule	deer	None	Elk/deer	Deer	None	None	Deer/elk	None	Elk calving	None	Antelope	None Deer/elk	None	None	None	None	None	None		Sage gr.
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Change needed in wildlife hab. cond.	No Some	Some	Ninor I	No Significant	Minor Significant	2	Significant Significant	Significant	Minor	Minor	Minor	₽;	Minor	Minor	Ž	Minor	Significant	Some	Some	2	Some	Minor	Minor	SOLUE No.	2	Some	Some	Minor	ž	2 2	Minor	S	ر. آ	Minor I	Minor
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Allotment Name	Lone Mountain Rattlesnake	W. Keating Gulch Section 33	Little Butte	Ury Hollow Spring	Farnham Creek Beavertown Creek	Rader	Pipestone East & West	Toston Canal	Dunbar Springs	Deer Fark Boy Gulch	Upper Sixteen	Sixteen Mile	Madison Buffalo Bio Davis Gulch	Garden Gulch	N. Duck Creek	Indeside Quar	Sixmile	Confederate Gulch	Hidden Hollow Iverson (Broad. Co. Only)	Rocky	N. Sixmile	Little Rocky CA	Shadoan Sawmill	Greysun Creek Wall Mountain	Lower Duck Cr.	Galt (TBN, R5E)	Galt (T10N, R1E)	Spring Creek	Upper Dry Creek	Hound Grove	Cottonwood Gulch	Little Hellgate	Deep Creek (USFS)	East Irigent W. Dexter Point	CL&D Arthun
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TABLE M-1 RESOURCE CONDITIONS/CONFLICT

Priority for proposed AMP allotment (wild./ran.)																			1/2									1/1	1/5	1/2			1/1	!	1/2						
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Special areas Tent. mgmt. of concern categ.	Antelope	None Pheas./	sharptail	None Phese /	sharptail	waterrowi	None	None	None	None	None	None	None	Deer/elk	Sharptail gr.	Deer, elk	Raid parie	None	Crucial elk	wt/sp	EIK/deer yi		Grizzly	Elk winter	Griz., elk, deer	Grizzly	Grizziy, elk	Mone Materfow	Waterfowl	Mule deer	;	None	Deer		B. sheep/	None	Grizzly	Deer, elk	None	Deer	
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Change needed in wildlife hab. cond.	Minor	Minor		Minor		Significant	Minor	Minor	Minor	Minor	Minor	Minor	Minor	Minor	Minor	Minor	Winor	Minor	Minor	•	Minor	Minor	Significant	Minor	Minor	Minor	Minor	Minor	Significant	Significant	ì	Minor	Significant	•	Significant	Minor	Minor	Minor	Minor	Minor	
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Allotment Name	Reservoir - (L&CCo.	Pasture) Farmers Reserve Freezenut West		Anderson Coulee		Waddel Lakes Swift Dam	East Birch Creek	West Birch Creek	Homesite	South Canal Ditch	Simms Creek	Blackfeet Gulch	Ryan Coulee	Lower Flat Creek	Big Eddy	Hardy Creek	Hardy Tiptingen Cleuch	Linner Flat Creek	Bia Gold Run Creek		Area Creek	Little Creek	Roger's Creek Middle Fork Dearborn	Bock Creek	Bean Lake	Dearborn River	Roost Hill	Willow Creek	Dothole	Willow Creek Canal (L&C	Co. Pasture)	Willow Creek Canal (Teton	Co. Pasturej Alkali Flat (L&C Co.	Pasture)	Alkali Flat (Teton Co.	Pasturej Florence Canal	Indian Head Rock	Andy Creek	Cox Creek (Cascade Co.	Cox Creek (L&C Co.	
Ö	6315	6316	<u>}</u>	6318	n (6320 6321	6322	6323	6324	6326	935B	6359	6330	6331	6332	9534	0330	933	7544		7577	7607	7603	7604	7605	200	7607	909	7610	7612	1	7612	7613		7613	7614	7659	7671	7701	7701	

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00- 2 0.2222	u <u>></u> ≥≥υ≥	υ-υ	0020-00200-	00∑0000000
Deer None Sheep, elk, deer, bear Deer Elk, deer Deer, fishery Fishery, bald	eagle Deer Deer Deer Turkey, deer Elk, deer Elk, deer Osprey None Deer, elk fish Noxicus weeds	riparian Elik, deer Deer, elik Deer, elik Elik, deer Deer, elik Grouse,	None None None None None None None Antelope Deer ? ? Deer	deer None Elk None Deer None Bald eagle None Trout fishery Elk, deer, anti.
Mod. Hi-Mod. Hi-Mod. ModLow	H;-Mod.	Mod. Mod. Hi-Mod. Hi-Mod.	<u>ا ا ا ا ا ک</u> A ا ا ا ا ا ا ا ا ا ا ا ا ا ا ا ا ا ا ا	Mod-High Mod. ± i igh
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188 888881	Significant No	Significant No	Significant No Significant No Significant Significant	Significant No
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Stickney Greek Holten Lake Oxbow (includes Towhead Gulch) Sheep Greek Burke Greek Spring Gulch Sieben Ranch Hilger Hills	Danas Bar Mt. Bend-Powerline Centennial Gulch Cottonwood Creek Wickiup Creek Sheriff Gulch Spokane Hills Toms Gulch Willow Creek Deer Creek Virginia Creek Deadman Empire Creek	Gravelly Range Lake Ogivie Gulch Beartrap Gulch Lost Horse Creek Gloster Edwards Mountain Drumlummon-Skelly Marysville	Park Gulch Willir Ridge St. Louis Gulch Spring Gulch Spring Gulch Iron Ridge Greenhorn Gulch Iron Ridge Greenhorn Siding Granite Creek Dog Creek Dog Creek Ten Mille Creek	Sevenmile Colorado Guich East Scratchgravel Ford Coulee Tiger Butte West Jackson Creek Delmoe Toston Noel Buffalo Hump Whitetail Creek
7702 7703 7704 7705 7706 7707 7709	7713 7714 7715 7716 7719 7720 7720 7762 7775 7801	7805 7806 7807 7808 7809 7810 7811	7814 7815 7816 7817 7818 7820 7821 7821 7823 7823 7823 7823 7823	7828 7829 7830 7831 7833 7940 7948 7958 7958

TABLE M-1 RESOURCE CONDITIONS/CONFLICT

Priority for proposed AMP allotment (wild./ran.)			-		1/2								1/1			2/5											,	ا/ <u>د</u>	,	V													
Tent. mgmt. categ.	Σ	∑-	- ∑	O	- ;	∑ (ט כי	þ	ပ	c	ט כ	∑	i –	Σ	Σ	_	υ:	Σ(ى ن	ני	≥ ≥	2 ر	י כי	o	o	Σ	•	_	-	- ≥	Ó	טנ	ט כי	O	Σ	Σ	υ:	Σ	Σ	u 2	ΣΣ	Σ	ပ
Special areas Tent. mgmt. of concern categ.	Bald eagle,	Deer, fishery	Opiairo garrie Deer, elk	Moose y	None	None	None Raid earle	mule deer	Deer, elk, bald	eagle	None	None	Fisherv	Deer wt	¥	Riparian	Deer	EIK, deer		Ueer	Adula door	None oeer	None	Deer wt/sn	None	Deer/sage	grouse wt/sp	wild turkey/ deer/elk,	wt/sp	Eik Deer/elk	wt/sp	Mule deer/elk	None	None	Elk/deer	Riparian	Ě	sage grouse wt	Deer & elk	Deer	Bald earle	Deer	Deer wt
Potential of rìp. areas to respond	Hi-Mod.	Hi-Mod.	Nod.	Mod.	Mod	Mod.	H.Mod.		Hi-Mod.	TO VA	NION.	1 1	Mod	Mod.	Low	Mod.	I	I	I	I	1 5	<u>.</u>	١	 	I	Ì	1	Mod.		Mod.		I	1 1	1	1	High		Mod.	٥.		Mod.	.	Mod.
Change needed in rip. area condition	ı	Minor	No de la Carre	2	Significant	2	Significant	2	Š	بمصفقصن	olgi ili cal ili	1 1	Significant	Significant	Significant	Significant	I	I	1	ı	ا څ	€ 1	١	 	ı	I	: (Significant		Minor		ı	1 1	1	ı	Minor	1	Minor	۲۰		ZOULC.	.	Minor
Potential of habitat to respond	Low	Hi-Mod.	Nod.	Mod.	N od.	Nod.	L Mod		Hi-Mod.	TOPA	, MOG	<u> </u>	ij	Mod	Low	Mod.	, Low	H-Mod.	.	LOW	HI-IVIOG.	A 20	3 0	20 2	Low	Mod.		Mod		Mod.	•	NO.	A C	Pow	Hi-Mod.	Hi-Mod.	No	Mod.	High-Mod.	Low	H-W00.	Low	Low
Change needed in wildlife hab. cond.	Minor	Minor	Minor	Minor	Minor	Minor	Minor		Minor	Afinon	Misos	Minor	Minor	Some	Minor	Significant	Minor	Minor	Minor	Minor	Minor	. Virior	Minor	Minor	Minor	Minor	į	Significant		Significant	į	Minor	Minor	Minor	Minor	Minor	Minor	Minor	Minor	Minor	Minor	Minor	Minor
Potential of watershed to respond	Low	Low	% &	Low	Low	NO.	A A	3	Low	į	A C	3 0 -	<u> </u>	Low	Low	Low	row.	NO.	Low	row Low	LOW LOW	A 0.	3 2	* • • • • • • • • • • • • • • • • • • •	*O	Low	-	FOW.		LoV I		Low Low	3 A	*0 NO	Mod	Low	Low	LOW	Mod.	Low	Mod G	Low	Low
Change needed in watershed conditions	S _o	22	2	S	2	2:	22	2	ž	2	2 2	2	N	2	Š	2	2;	Minor	2:	2	2 2	2 2	2 2	2	2	2		Š		।	i	Minor	Not feas	Not feas.	S	2	2	<u>0</u>	Ž	S	Significant	2	Š
Potential of veg. to respond	ModLow	Low	۱۶ (۲۰ ۲۰ (۲۰	ر.	Ç- (r. c	Mod - Low		ModLow	c	۰. ر	₍	Nod	٥.	ModLow	٥.	ModLow	ModLaw	Low-None	ModLow	Mod - our	WIDGLOW	Mod-Low	Mod-Low	ModLow	Mod-Low		ModLow		ModLow	;	Low-None	Mod-Low	ModLow	ModLow	ModLow	ModLow	ModLow	ModLow	Low-None	ModLow	ModLow	ModLow
Change needed in veg. cond. &/or prod.	Minor	Minor	Significant	С.	C ~ (p. 0	Minor	5	Minor	c	_C	(r.	Significant	۲.	Minor	¢.	Minor	Minor	Minor	Minor	Minor	.iou	Minor	Min	Minor	Minor		Minor	•	Minor	•	Minor	Minor	Minor	Minor	Minor	Minor	Minor	Minor	Minor	Minor	Minor	Minor
Allotment Name	Smith River	So. Fork Sheep Cr.	Covote Creek	Gipsy Creek	Eagle Creek	No. Fork Musselshell	Daisy Dean Creek Trout Creek	200	Lower Smith River	70000	Civional Circles	West Enrk Mild Creek	Smith Creek	So. Fork Smith	Middle Creek	Little Elk Creek	Devil Canyon	Belt Creek	Ming Coulee	Monarch	Black Butte	No. rurk oneep oreek Deer Creek	Little Sulphur Creek	Martinsdale	Holliday L&L	Cottonwood Creek		Johnston		Hound Footstool Butte		W. Fork Hound Creek	Bhypard Ind	Sheep Creek	Water Tank Smith River	71 Ind.	Bird Creek	Battle Creek	Windy Hollow	Sand Coulee	Smith River North	Lower Sand Coulee	Bozeman Fork
o O	9651	9655	9863 9863	9671	9672	96/4	96/3 96/6	ò	9677	0000	0000	9690	9698	9699	9704	9708	9709	9710	9/15	9/22	07/0 07/0	9779 8079	02730	9733	9735	9739		u/43	,	9758	0	08/6		9804	9806	9810	9812	98.14	9818	8850	2 C	9836	9846

APPENDIX M

ΣυΣΣ
Deer yl Elk/deer wt Riparian Sage grouse
WWW.
Minor No No
Low Mod.
Significant Minor Minor
Low Low
Significant No No No
ModLow ModLow ModLow ModLow
Minor Minor Minor
Black Canyon Morris Creek Smith River N. Lake Sutherlin
9849 9851 9857 9859

TABLE M-2 PROBLEMS, OPPORTUNITIES AND OBJECTIVES FOR GRAZING MANAGEMENT

Situation	Management Action
Grazing season and selective grazing habits of different kinds of livestock can reduce the quality and quantity of vegetation	Change the season of use and/or the class or kind of livestock
produced by a plant community.	Implement rotational grazing systems that will provide for plant maintenance requirements.
Livestock use can be poorly distributed within an allotment or pasture. This can result in heavy utilization of some sites while others may receive little or no grazing use.	Develop new sources of water to distribute livestock more evenly.
others may receive little or no grazing use.	Construct drift fences to alter traditional grazing patterns
	Specify placement of salt and mineral supplements.
	Require herding of livestock.
	Authorize the class or kind of livestock that will best utilize the allotment.
Current levels of livestock use may exceed the carrying capacity of an allotment.	Monitor actual livestock use and resulting levels of utilization to determine the proper carrying capacity.
Some sites that are now producing a quality and quantity of forage well below their potential have a poor potential to respond to changes in grazing management alone.	Restore productivity of these sites through mechanical treat- ment and/or seeding with native species or well-adapted introduced species.
Investments in range improvements needed to implement changes in grazing management often do not have favorable benefit/cost ratios.	Solicit contributions from range users and other parties benefiting from changed grazing management.
Denemo/ Cost Pados.	Design grazing management systems that require a minimum investment in range improvements, but will meet the stated objectives.
Plant and animal pests can adversely affect livestock and vegetative productivity.	In cooperation with other affected land owners, take actions to control concentrations of pests.