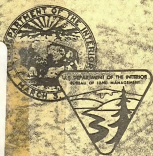


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DRAFT ENVIRONMENTAL IMPACT STATEMENT
PRELIMINARY WILDERNESS RECOMMENDATIONS

for

CLARK COUNTY

NEVADA

Prepared by

DEPARTMENT OF THE INTERIOR

BUREAU OF LAND MANAGEMENT

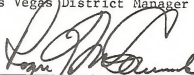
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Las Vegas District Manager



Roger J. McCormack

Associate State Director, Nevada

The proposed land use plan contains preliminary wilderness recommendations, subject to change during administrative review, on 383,429 acres of public land in Clark County, Nevada. The action responds to the mandate of Section 603 of the Federal Land Policy and Management Act of 1976 to review all public land roadless areas of 5,000 acres or more; determine their suitability or nonsuitability for wilderness designation; and report these suitability recommendations to the President no later than October 21, 1991.

For further information contact: Mr. Ed Ciliberti, EIS Team Leader, at 4765 W. Vegas Dr. or P.O. Box 26569, Las Vegas, Nevada 89126, or call (702) 385-6403.

Date the draft environmental impact statement with the preliminary wilderness recommendations was made available to the public:

Date by which comments must be received: **AUG 26 1983**

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SUMMARY

INTRODUCTION

The Stateline-Esmeralda Resource Area of the Bureau of Land Management's Las Vegas District is presenting for public review the preliminary wilderness recommendations on 383,429 acres of public land in Clark County, Nevada. These preliminary wilderness recommendations are subject to change during administrative review. Congress will make the final decision on wilderness suitability and nonsuitability. This draft environmental impact statement is the detailed document required by law to be included with a recommendation and report on a legislative proposal to Congress.

SUMMARY DESCRIPTION OF THE ALTERNATIVES

A basic objective of each alternative is to establish an appropriate allocation of resources consistent with the principles of multiple use and sustained yield. Each alternative provides a different view of what is appropriate. Five alternatives, including the Preferred Alternative, are analyzed in this draft environmental impact statement. Summary Table One portrays the percentage of public land recommended suitable under each alternative, while Summary Table Two identifies the suitable and nonsuitable acreage for each WSA under each alternative.

All Wilderness Alternative

If this alternative were to be implemented, all seven Wilderness Study Areas (WSAs) would be recommended suitable for wilderness designation. The naturalness of the areas, as well as the outstanding opportunities for solitude and

primitive and unconfined recreation, would be maintained. However, management could not assure that the wilderness character of the entire area within each WSA would be maintained over the long term. The factors affecting manageability of the areas as wilderness over the long term include the potential unauthorized use of off-road vehicles due to the ease of access, and the illogical configuration of some of the areas based on current boundary locations.

No Wilderness Alternative

The No Wilderness Alternative would recommend all seven WSAs in their entirety as unsuitable for wilderness designation. Under this alternative, the WSAs would be returned to regular multiple use management, and would be managed consistent with the Clark County Management Framework Plan.

The No Wilderness and No Action Alternatives are the same in this EIS. Impacts would be nearly the same under both alternatives because the major impacts of nondesignation (e.g., energy and mineral development) are not planned by the BLM and so are unaffected by the BLM planning system.

In addition, this alternative emphasizes the mineral values identified in the seven Wilderness Study Areas. It eliminates those areas which the G-E-M reports identified as having either moderate or high potential for minerals - oil and gas, geothermal, metallics, and nonmetallics.

Evaluation of a no action alternative is required by the regulations for preparing environmental impact analyses. Hereafter, the No Wilderness Alternative and the No

Action Alternative will be referred to as the No Wilderness Alternative.

Management Enhancement Alternative

This alternative emphasizes the enhancement of manageability of the Wilderness Study Areas as wilderness over the long term. The recommendations in this alternative consist of boundary adjustments designed to assure that WSAs can be managed as wilderness over the long term. Issues considered in developing these boundary adjustments were control of random off-road vehicle access, local needs for urban-suburban expansion, increasing development on adjacent private lands, and existing powerline corridors with potential for expansion. If this alternative were to be implemented, portions of six WSAs would be recommended suitable for wilderness designation and one WSA would be recommended entirely nonsuitable.

The naturalness of the areas recommended suitable for wilderness designation, as well as the outstanding opportunities for solitude and primitive and unconfined recreation, would be maintained. The entire area recommended suitable for wilderness designation within the six WSAs can be managed as wilderness over the long term.

Wilderness Accent Alternative

This alternative was developed as a result of public comment during the EIS scoping process. It is largely an expansion of the Management Enhancement Alternative intended to replace some of the high quality wilderness values eliminated in that alternative.

If this alternative were implemented, the essential improvements added to the Management Enhancement Alternative

would be recommending portions of all seven WSAs as suitable for wilderness designation and re-inclusion of Bitter Ridge and portions of the Gale Hills into the Muddy Mountains recommendation.

Preferred Alternative

This alternative, developed also as a result of the scoping process review, emphasizes conformity with the direction of land use allocation established in the Clark County Management Framework Plan. It reinforces the concept of establishing the primary use of the Spring Mountain Range to respond to the recreational needs of the growing Las Vegas Valley community. It is also in line with the planning direction to leave Clark County public lands open to mineral exploration.

In addition, this alternative recognizes the extensive local and regional support received by BLM for the designation of wilderness in the Muddy Mountains. This WSA received more support in the scoping process for the EIS than any of the other six WSAs in Clark County.

Another attractive feature of this alternative is to nearly double the potential acreage of the American Desert/Joshua-Pinyon Woodland Ecosystem found in the National Wilderness Preservation System.

If this alternative were implemented, four WSAs would be recommended, in part, to the National Wilderness Preservation System; three would be recommended as nonsuitable. The highest quality areas of naturalness of the recommended suitable areas, as well as their outstanding opportunities for primitive recreation and solitude, would be well maintained within adjusted boundaries that would largely provide self-management.

IMPACT SUMMARY

The impacts of each alternative on the different resources are shown in comparative form on Summary Table Three. Significant beneficial or adverse impacts are noted as SBI or SAI. The significance of some impacts could not be gauged.

MAJOR CONCLUSIONS

This study concludes that there will be no significant impacts to livestock grazing, wild horses or burros, wildlife, threatened or endangered plants, forestry, cultural resources, soil, water, air, lands, or fire management in any alternative. Additionally, there will be no significant economic or social impacts. Significant impacts will occur to energy and minerals, wilderness values, and recreation in the different alternatives as described in Summary Table Three.

SUMMARY TABLE ONE

PERCENTAGE OF PUBLIC LANDS RECOMMENDED
SUITABLE UNDER EACH ALTERNATIVE

	All Wilderness Alternative	Management Enhancement Alternative	Wilderness Accent Alternative	No Wilderness Alternative	Preferred Alternative
Percentage of Wilderness Study Areas* Recomm- ed Suitable for Wilderness Desig- nation	100%	51%	67%	0	37%
Percentage of Public Land in Clark County** Recommended Suitable for Wilderness Designation	12%	6%	8%	0	5%

* There are 383,429 acres of public land within the Wilderness Study Areas, including 724 acres of U.S. Forest Service lands.

** There are 3,097,131 acres of BLM-administered public land within Clark County.

Source: Clark County Unit Resource Analysis 1981; Clark County Wilderness EIS Team 1983.

SUMMARY TABLE TWO
SUITABLE AND NONSUITABLE ACREAGE
FOR EACH WILDERNESS STUDY AREA (WSA) UNDER EACH ALTERNATIVE

Wilderness Study Areas	All Wilderness Alternative		Management Enhancement Alternative		Wilderness Accent Alternative		No Wilderness Alternative		Preferred Alternative	
	Suitable Acreage	Nonsuitable Acreage	Suitable Acreage	Nonsuitable Acreage	Suitable Acreage	Nonsuitable Acreage	Suitable Acreage	Nonsuitable Acreage	Suitable Acreage	Nonsuitable Acreage
Arrow Canyon Range	32,853	0	26,950	5,903	26,950	5,903	0	32,853	0	32,853
Muddy Mountains	96,170	0	36,850	59,320	44,260	51,910	0	96,170	44,260	51,910
Mt. Stirling	69,650	0	42,707	26,943	44,431	25,219	0	69,650	30,190	39,460
La Madre Mountains	56,967(a)	0	44,388(b)	12,579(c)	44,388(b)	12,579(c)	0	56,967(a)	44,388(b)	12,579(c)
Pine Creek	24,000	0	21,530	2,470	21,530	2,470	0	24,000	21,530	2,470
No. McCullough Mtns.	47,166	0	0	47,166	40,950	6,216	0	47,166	0	47,166
So. McCullough Mtns.	56,623	0	22,940	33,683	32,645	23,978	0	56,623	0	56,623
Total	383,429(a)	0	195,365(b)	188,064(c)	255,154(b)	128,275(c)	0	383,429(a)	140,368(b)	243,061(c)

(a) Includes 724 acres of U.S. Forest Service lands added to the original WSA for wilderness study.

(b) Includes 285 acres of U.S. Forest Service lands added to the original WSA for wilderness study.

(c) Includes 439 acres of U.S. Forest Service lands added to the original WSA for wilderness study.

Source: Clark County Wilderness EIS Team 1983.

SUMMARY TABLE THREE
COMPARATIVE SUMMARY OF IMPACTS

RESOURCE COMPONENT	ALTERNATIVE				
	ALL WILDERNESS	WILDERNESS ACCENT	MANAGEMENT ENHANCEMENT	PREFERRED	NO WILDERNESS
Wilderness	Naturalness in all 7 WSAs would be preserved - SBI	Naturalness in portions of all 7 WSAs would be preserved - SBI	Naturalness in portions of 0215, 0229, 0401, 0412, and 0414 would be preserved - SBI	Naturalness in portions of 0229, 0401, 0412, and 0414 would be preserved - SBI	
	Outstanding opportunities for solitude in all 7 WSAs would be preserved - SBI	Outstanding opportunities for solitude in portions of all 7 WSAs would be preserved - SBI	Outstanding opportunities for solitude in portions of 0215, 0229, 0401, 0412, and 0414 would be preserved - SBI	Outstanding opportunities for solitude in portions of 0229, 0401, 0412, and 0414 would be preserved - SBI	
	Outstanding opportunities for primitive recreation in 0229, 0401, 0412, 0414, 0425, and 0435 would be preserved - SBI	Outstanding opportunities for primitive recreation in portions of 0229, 0401, 0412, 0414, 0425, and 0435 would be preserved - SBI	Outstanding opportunities for primitive recreation in portions of 0229, 0401, 0412, and 0414 would be preserved - SBI	Outstanding opportunities for primitive recreation in portions of 0229, 0401, 0412, and 0414 would be preserved - SBI	

SUMMARY TABLE THREE (Continued)
 COMPARATIVE SUMMARY OF IMPACTS

RESOURCE COMPONENT	ALTERNATIVE				
	ALL WILDERNESS	WILDERNESS ACCENT	MANAGEMENT ENHANCEMENT	PREFERRED	NO WILDERNESS
Wilderness (Cont.)			Wilderness values in portions of 0401 and 0414 would be lost to improve manageability - SBI and SAI		
		Wilderness values in portions of all 7 WSAs would be lost to improve manageability - SAI	Wilderness values in portions of 0215, 0229, 0412, and 0414, would be lost to improve manageability - SAI	Wilderness values in portions of 0401 would be lost to improve manageability - SAI	
			Wilderness values in 0425 and 0435 would be lost - SAI	Wilderness values in 0215, 0425, and 0435 would be lost - SAI	Wilderness values in all 7 WSAs would be lost - SAI
Recreation	Outstanding opportunities for primitive recreation in all 7 WSAs would be preserved - SBI	Outstanding opportunities for primitive recreation in portions of 0229, 0401, 0412, 0414, 0425, and 0435 would be preserved - SBI	Outstanding opportunities for primitive recreation in portions of 0229, 0401, 0412, and 0414 would be preserved - SBI	Outstanding opportunities for primitive recreation in portions of 0229, 0401, 0412, and 0414, would be preserved - SBI	

SUMMARY TABLE THREE (Continued)
COMPARATIVE SUMMARY OF IMPACTS

RESOURCE COMPONENT	ALTERNATIVE				
	ALL WILDERNESS	WILDERNESS ACCENT	MANAGEMENT ENHANCEMENT	PREFERRED	NO WILDERNESS
Recreation (Cont.)			Lower quality opportunities for primitive recreation would be available in 0425 and 0435, and in portions of 0215, 0229, 0401, 0412, and 0414 - SAI	Lower quality opportunities for primitive recreation would be available in 0215, 0425, and 0435, and in portions of 0229, 0401, 0412, and 0414 - SAI	Lower quality opportunities for primitive recreation would be available in all 7 WSAs - SAI
	ORV use would be foregone in all 7 WSAs	ORV use would be foregone in portions of all 7 WSAs	ORV use would be foregone in portions of 0215, 0229, 0401, 0412, 0414, and 0435	ORV use would be foregone in portions of 0229, 0401, 0412, and 0414	
Cultural Resources		All of Arrow Canyon, a particularly valuable area, would be added to 0215	All of Arrow Canyon, a particularly valuable area, would be added to 0215		

SUMMARY TABLE THREE (Continued)
COMPARATIVE SUMMARY OF IMPACTS

RESOURCE COMPONENT	ALTERNATIVE				
	ALL WILDERNESS	WILDERNESS ACCENT	MANAGEMENT ENHANCEMENT	PREFERRED	NO WILDERNESS
Energy & Minerals	382,705 acres of moderate potential for oil and gas in all 7 WSAs would be lost - SAI	252,764 acres of moderate potential for oil and gas in portions of all 7 WSAs would be lost - SAI	192,975 acres of moderate potential for oil and gas in 0215, 0229, 0401, 0412, 0414, and 0435 would be lost - SAI	137,978 acres of moderate potential for oil and gas in 0229, 0401, 0412, and 0414 would be lost - SAI	No energy or mineral potential would be lost in any of the 7 WSAs - SBI
X	1,200 acres of high potential for metallics in 0401 would be lost - SAI	490 acres of high potential for metallics in 0401 would be lost - SAI	490 acres of high potential for metallics in 0401 would be lost - SAI		
	40,480 acres of moderate potential for metallics in 0401 and 0435 would be lost - SAI	31,270 acres of moderate potential for metallics in 0401 and 0435 would be lost - SAI	23,430 acres of moderate potential for metallics in 0401 and 0435 would be lost - SAI	1,120 acres of moderate potential for metallics in 0401 would be lost - SAI	

SUMMARY TABLE THREE (Continued)
COMPARATIVE SUMMARY OF IMPACTS

RESOURCE COMPONENT	ALTERNATIVE				
	ALL WILDERNESS	WILDERNESS ACCENT	MANAGEMENT ENHANCEMENT	PREFERRED	NO WILDERNESS
Energy & Minerals (Cont.)	9,240 acres of high potential for nonmetallics in 0215, 0229, and 0412 would be lost - SAI	5,600 acres of high potential for nonmetallics in 0215 and 0229 would be lost - SAI	5,070 acres of high potential for nonmetallics in 0215 and 0229 would be lost - SAI	1,120 acres of high potential for nonmetallics in 0229 would be lost - SAI	
	268,506 acres of moderate potential for nonmetallics in all 7 WSAs would be lost - SAI	168,959 acres of moderate potential for nonmetallics in portions of all 7 WSAs would be lost - SAI	154,825 acres of moderate potential for nonmetallics in 0215, 0229, 0401, 0412, 0414, and 0435 would be lost - SAI	128,958 acres of moderate potential for nonmetallics in 0229, 0401, 0412, and 0414 would be lost - SAI	
Wildlife	Overall habitat protection would be provided in all 7 WSAs	Overall habitat protection would be provided in portions of all 7 WSAs	Overall habitat protection would be provided in portions of 0215, 0229, 0401, 0412, 0414, and 0435	Overall habitat protection would be provided in portions of 0229, 0401, 0412, and 0414	No unmitigated impacts
SAI - Significant Adverse Impact		0215 - Arrow Canyon Range WSA		0414 - Pine Creek WSA	
SBI - Significant Beneficial Impact		0229 - Muddy Mountains WSA		0425 - No. McCullough Mountains WSA	
		0401 - Mt. Stirling WSA		0435 - So. McCullough Mountains WSA	
		0412 - La Madre Mountains WSA			

CHAPTER ONE

ALTERNATIVES

BACKGROUND

The Clark County Wilderness Environmental Impact Statement (EIS) is developed in response to Section 603 of the Federal Land Policy and Management Act (FLPMA) of October 21, 1976. This law directed the Bureau of Land Management (BLM) to inventory, study, and then report to Congress through the Secretary of the Interior and the President, the public lands suitable for inclusion in the National Wilderness Preservation System (NWPS).

BLM has set the end of fiscal year 1987 for completing wilderness studies and reporting wilderness suitability to the Secretary of the Interior. This document completes the study requirements for the seven Wilderness Study Areas (WSAs) in Clark County, Nevada. FLPMA then requires the Secretary by October 21, 1991 to report his recommendations to the President. The President has until October 21, 1993 to send the recommendations to Congress. Only Congress can designate any of the WSAs as wilderness.

PURPOSE OF AND NEED FOR ACTION

The primary goal of the BLM wilderness study process is to recommend for wilderness designation those areas where wilderness is determined to be the most appropriate use of the land and its resources.

It is the policy of BLM that each WSA be studied through the BLM planning system to analyze all values, resources, and land uses. The findings of the study, including public participation, determine whether an area will be recommended as

suitable or nonsuitable for designation as wilderness. In practice, determining an area's "suitability" or "nonsuitability" for preservation as wilderness, means determining whether the area is more suitable for wilderness designation or more suitable for other uses. This document will analyze the potential impacts of designating or not designating all or portions of seven WSAs as wilderness.

This study was conducted in accordance with BLM's Wilderness Study Policy (Federal Register, Vol. 47, No. 23, February 3, 1982). The policy establishes procedures to ensure that suitability recommendations are (1) based on full consideration of all multiple resource values of public lands, (2) consistent with established national policy, and (3) that all interested and affected members of the public and state and local governments are made aware of the study and given adequate opportunity to comment and otherwise be involved in the study process.

SETTING

Clark County is located in the southernmost portion of Nevada, bordered by California to the southwest and Arizona to the east. The county is comprised of more than 5 million acres, with 3,097,131 acres (Clark County URA 1981) administered by the Las Vegas District, Stateline-Esmeralda resource Area (SERA). Seven WSAs are considered in this document. All are located within easy driving distance from the metropolitan area of Las Vegas, the county seat.

The county has a population of 461,816 people (U.S. Department of Commerce 1980), which represents 57.8 percent of the state's population. Almost 98 percent of the county's population resides in the Las Vegas Valley (see Location Map). The primary industries in the county are tourism, gaming, and recreation. Mining and agriculture combined make the smallest segment of the local economy, and they account for less than 0.2 percent of total county employment.

WILDERNESS STUDY

Nineteen WSAs were identified in Clark County upon completion of the inventory process in 1980. Although the BLM inventory found that 12 of these areas did not meet the wilderness criteria as individual units, their contiguity to other-agency wilderness proposals led to their designation as Wilderness Study Areas.

Prior to scoping, one of these contiguous units, the Bonelli Peak WSA (NV-050-0238), was dropped from further study, when it was discovered that it was not, in fact, contiguous to the National Park Service wilderness proposal for Lake Mead National Recreation Area (see Federal Register, Vol. 47, No. 239, December 10, 1982). As an individual unit, Bonelli Peak does not meet the wilderness criteria.

Original wilderness inventory decisions were amended (Federal Register, December 30, 1982) to remove two other contiguous units, the Nellis WSA (NV-050-04R-15) and the Jumbo Springs WSA (NV-050-0236), from further study because they failed to meet the minimum size criteria.

A later amendment to original wilderness inventory decisions (Federal Register, April 14, 1983)

removed the remaining nine contiguous WSAs in Clark County from further study. These areas were dropped based on an Interior Board of Land Appeals decision (Don Coops, 61 IBLA 300, 1982) and a U.S. Department of the Interior Solicitor's Opinion (USDI, Office of the Solicitor, 1982) that the BLM inappropriately considered other-agency lands in its wilderness inventory. The nine WSAs removed from further study were:

- Fish and Wildlife #1 (NV-050-0201)
- Fish and Wildlife #2 (NV-050-0216)
- Fish and Wildlife #3 (NV-050-0217)
- Lime Canyon (NV-050-0231)
- Million Hills (NV-050-0233)
- Garrett Buttes (NV-050-0235)
- Quail Springs (NV-050-0411)
- Eldorado (NV-050-0423)
- Ireteba Peaks (NV-050-0438)

SUMMARY DESCRIPTION OF ALTERNATIVES AND THEIR IMPACTS

The alternatives analyzed in this draft environmental impact statement provide a full range of land use choices from those favoring resource protection to those favoring resource production. Summary Table One identifies the suitable and unsuitable acreage figures for each WSA under each alternative, while Summary Table Two portrays the percentage of public land recommended suitable under each alternative.

The purpose of alternatives is to establish different land use allocations of resources consistent with the principles of multiple use and sustained yield. An analysis and subsequent comparison of the consequences of each alternative provides the decisionmaker and the public full knowledge of a particular decision's likely results. A comparative analysis of the environmental impacts of each alternative is displayed on Summary

Tables One and Two.

All Wilderness Alternative

This alternative represents the maximum possible acreage that could be recommended for designation as wilderness. All seven Wilderness Study Areas, totalling 383,429 acres of public land, would be recommended to Congress for inclusion into the National Wilderness Preservation System (see the All Wilderness Alternative Map located at the end of this chapter).

No Wilderness (No Action) Alternative

This alternative meets the National Environmental Policy Act (NEPA) mandate of studying a no action (no wilderness) alternative, and will analyze the effect of recommending all WSAs in Clark County nonsuitable for wilderness designation.

This alternative also recognizes the potential development of mineral and energy resources. In fact, minerals data revealed only a few pockets of land within WSAs that could be recommended suitable for wilderness designation. These pockets were too small to meet the wilderness criteria. Because the No Wilderness Alternative would recommend all WSAs nonsuitable for wilderness designation, it in effect is the same as an alternative emphasizing minerals development.

Management Enhancement Alternative

This alternative emphasizes the enhancement of manageability of the WSAs as wilderness over the long term. It was developed as part of the MFP II planning process and identified as the Bureau's proposed action at the beginning of scoping. The recommendations in this alternative consist of adjusting boundaries to form more logical management

configurations.

The principal management issue addressed in developing this alternative was the effect of denial of wilderness area access by random off-road vehicle (ORV) users. Since virtually all other uses are permitted or controlled by BLM in some positive way (Special Recreation Use Permits or SKUPs, the 3809 Regulations on exploration and mining, oil and gas Applications for Permit to Drill or APDs, range improvement cooperative agreements and permits, etc.), the agency could effectively protect wilderness areas from improper uses by those actions. Only random ORV users of all types would be effectively uncontrolled, without significant and costly patrolling, signing, and obstacle placing. A logical alternative, especially in times of austere budgets, is to select boundaries which would offer terrain-related, natural obstacles to vehicles and which concurrently provide significant wilderness acreage.

Other issues considered in developing these boundary adjustments were local needs for urban-suburban expansion, increasing development on private lands contiguous to the WSAs, existing powerline corridors with potential need for expansion, and cultural resource protection (see Table 1-1 for details on which of these issues affects each WSA).

Portions of six of the WSAs, totalling 193,365 acres of public land, would be recommended to Congress as suitable for wilderness designation, while 188,064 acres would be recommended as nonsuitable due to manageability considerations (see the Management Enhancement Alternative Map located at the end of this chapter).

Arrow Canyon Range - A boundary

adjustment would eliminate bajada areas on the edges of the WSA that are easily accessible to vehicles. The entire Arrow Canyon itself would be included in this alternative to provide protection for both walls and their cultural resource values. Under this alternative, 26,950 acres would be recommended suitable for wilderness preservation and 5,903 acres nonsuitable.

Muddy Mountains - Western bajada areas and the northeastern White Basin area, totalling 59,320 acres, would be recommended nonsuitable because of the difficulty of controlling vehicle access to this flat terrain. A core area of 36,850 acres would be recommended suitable for wilderness designation.

Mt. Stirling - The northern lobe of the WSA is a bajada with serious vehicle access problems. Potential development of adjacent private lands and of the Wheeler Well area for recreation were also considered in the boundary adjustment. For these reasons, 26,943 acres would be recommended nonsuitable, and 42,707 acres would be recommended suitable for wilderness designation.

La Madre Mountains - The boundary would be adjusted away from the bajada area on the east that is easily accessible to and currently used by off-road vehicles. This boundary would also allow for future development and expansion from the suburban Lone Mountain area. A narrow extension of previously unstudied National Forest land would also be excluded. The portion of the WSA recommended nonsuitable would be 12,579 acres, and 44,388 acres would be recommended suitable for wilderness designation.

Pine Creek - Boundary adjustments to enhance manageability would

eliminate a narrow finger of land from the southwestern corner of the WSA, and a small area impacted by potential suburban expansion to the east by the Mountain Springs community. Under this alternative, 2,470 acres would be recommended nonsuitable, and 21,530 acres recommended suitable for wilderness designation.

North McCullough Mountains - A majority of the WSA is easily accessible to vehicles through the central basin. The area is being approached by urban expansion from the north and west, and there are several active mines on the boundary of the WSA. For these reasons, the entire WSA would be recommended as nonsuitable for designation as wilderness.

South McCullough Mountains - Boundary adjustments would accommodate a proposed powerline corridor through McCullough Pass, and eliminate much of the bajada surrounding the WSA, where vehicle access would be difficult to control. The area recommended suitable for designation as wilderness would be 22,940 acres. The area recommended nonsuitable would be 33,683 acres.

Wilderness Accent Alternative

This alternative was derived from the concerns voiced in the public scoping process by numerous individuals. It would adjust configurations proposed in the Management Enhancement Alternative to further accent the wilderness values.

Portions of all of the WSAs, totalling 255,154 acres of public land, would be recommended to Congress as suitable for wilderness designation, while 128,275 acres would be recommended as nonsuitable.

Arrow Canyon Range - Boundaries and

adjustments would be identical to those in the Management Enhancement Alternative.

Muddy Mountains - The Management Enhancement Alternative boundary would be adjusted to include Bitter Ridge to the east and to enlarge the southwestern area to include a larger portion of the lands near the West End-Pabco Road. These two inclusions would protect the scenic features of the Bitter Ridge area and incorporate a few high quality valleys or washes and intervening ridges that complement the Muddy Peak. These boundary adjustments are well-defined and easily recognizable, and these areas are infrequently intruded by ORVs. Under this alternative, 44,260 acres would be recommended suitable for wilderness designation and 51,910 acres would be recommended nonsuitable.

Mt. Stirling - The western boundary, between Crust Spring and the county line, would follow the originally designated WSA boundary. This would provide protection to the petroglyphs, wildlife, and vegetation in the lower canyons and washes. Under this alternative 25,219 acres would be recommended nonsuitable and 44,431 acres recommended suitable for wilderness designation.

La Madre Mountains - The boundary would be identical to that in the Management Enhancement Alternative.

Pine Creek - The boundary would be identical to that in the Management Enhancement Alternative.

North McCullough Mountains - The boundary on the west and northwestern edges of the WSA would start at the base of the hills, eliminating the valley portions of the WSA. Under this alternative, 6,216 acres would be recommended nonsuitable and 40,950

acres recommended suitable for wilderness designation.

South McCullough Mountains - The boundary identified in the Management Enhancement Alternative would be extended eastward to the township line (between townships 25 and 26 south) to include the foothills and intervening washes, following the break in steepness at the base of the foothills. The Management Enhancement Alternative boundary would also be expanded on the west, along both sides of Railroad Spring, to the break in steepness of the foothills. These expansions would help protect the vegetation, especially the good stands of several species of cacti in the area. Under this alternative, 32,645 acres would be recommended suitable for wilderness designation, and 23,978 acres nonsuitable.

Preferred Alternative

This alternative seeks that optimal mix of land use allocations that best meets the needs and objectives of multiple use management as identified by the planning process. It seeks to resolve the conflicts between minerals, recreation, and other resources by meeting the objectives and following the recommendations in the Clark County Management Framework Plan, now nearing completion.

Major planning considerations that have been incorporated into this alternative are as follows:

Lands 3.0 "...provide for transportation, energy transmission corridors, communication and related sites...."

Minerals 1.0 "...to facilitate and encourage the exploration and development of minerals."

Recommendation M1.1 "...to open all lands to mineral entry and leasings... in accordance with the Mining Law of 1872 and the Mineral leasing Act of 1921."

Recreation 5.0 "...manage the Spring Mountain Range as the primary recreation lands for the area. All other programs and resource plans will be conducted with and subordinated to the Recreation Program...."

One of the most important potential energy sources located in recent years is the Overthrust Belt, which runs through Clark County. (For a discussion of the theory behind and importance of the Overthrust Belt, see the Final Environmental Assessment of Oil and Gas Leasing in the Red Rock Canyon Recreation Lands (USDI, Las Vegas District, 1980).)

Numerous firms have shown interest in the county by applying for and purchasing oil and gas leases. Extensive seismic and exploration work has been accomplished, along with the drilling of several deep test wells. To the minerals and energy industry, access to explore for and develop subsurface resources on federally managed lands is a fundamental need.

This alternative is designed to leave a significant portion of the WSAs open to the full spectrum of multiple use management.

Conversely, the Spring Mountains have been and will continue to be a principal recreation area for local residents. The area has ease of access and is only a short distance from the city. It supplies a wide spectrum of recreational opportunities in the only nearby forest setting, uses which include hiking, backpacking, camping, sightseeing, mountain climbing, skiing, photography, horseback riding,

hunting, and even stream fishing for youngsters. The current opportunities range from highly developed to primitive recreational experiences.

Kyle and Lee Canyons are highly developed areas that are managed by the U.S. Forest Service. Current visitation in these areas has reached the level where use must be limited to day use, with demand to provide more in excess of supply. The U.S. Forest Service plan envisions the overflow of demand being met by BLM facilities and campgrounds. The remaining undeveloped area of the Toiyabe National Forest is classified as backcountry, for use in nonmotorized recreational activities.

BLM currently manages two developed campsites, with motorized access for camping, picnicking, and associated activities. Current planning calls for expansion of the existing facilities along with the development of new ones.

On the developed side of the recreation spectrum, BLM manages the Red Rock Canyon Recreation Lands, which include a visitor center, paved roads and trails, and developed day use picnic and recreation sites.

The full range of recreational opportunities would be provided were some portion(s) of the Spring Mountain Range managed as wilderness. This alternative identifies the three WSAs in the Spring Mountain Range for wilderness use and opportunities. This completes the full complement of recreation opportunities on the Spring Mountain Range for the citizens of Las Vegas and Clark County.

The Muddy Mountains WSA has consistently attracted more support and attention from statewide and local conservationists than most other WSAs in the state. During the EIS scoping

process, it received more comments than any other WSA in Clark County. Forty percent of the 125 people commenting mentioned the Muddy Mountains specifically. Of those 90 percent commented favorably. Local conservation groups consider Pine Creek their first priority, the Muddy Mountains their second priority, and the La Madre Mountains their third priority for designation in Clark County.

La Madre Mountains - The boundary would be identical to that in the Management Enhancement Alternative.

Pine Creek - The boundary would be identical to that in the Management Enhancement Alternative.

Mount Stirling - The boundary would be the same as the Wilderness Accent Alternative with two adjustments to eliminate conflicts with the development of the gold, silver, and lead resources in those areas. The northwestern and the southern portions of the WSA would be removed because of moderate and high mineral potential for precious metals (see the Preferred Alternative Map at the end of this chapter). Since Mount Stirling per se, would no longer be within the suitable wilderness area, this area would probably have to be renamed Wheeler Peak.

Muddy Mountains - The boundary would be identical to that in the Wilderness Accent Alternative

The remaining areas, where current and projected recreation use and demand are lower, would be recommended nonsuitable for wilderness, with the potential for energy and nonmetallic resources taking priority.

Arrow Canyon Range - The southern portion of the WSA is classified high and the remainder is classified

moderate in potential for nonmetallics, including clays, diatomite, carbonate rock, and silica sand. Its location on the Overthrust Belt ranks the area as moderate for oil and gas potential, while the eastern portion of the WSA has moderate potential for low temperature geothermal applications.

North McCullough Mountains - An area near the center of the eastern boundary has been classified moderate in potential for geothermal energy. The WSA has been classified moderate and low in potential for nonmetallics, including numerous sand and gravel deposits in the northern portion. The WSA is considered to be part of the Overthrust Belt and therefore is classified as moderate for oil and gas potential.

South McCullough Mountains - There are sizeable areas classified moderate in potential for feldspar, volcanic rock, and sand and gravel along the eastern and western boundaries. The area is considered to be part of the Overthrust Belt and therefore is classified as moderate for oil and gas potential. The bulk of the central area is also classified moderate in potential for metallic minerals like gold, silver, and lead. The remainder of the area is too small to qualify for wilderness designation.

Under this alternative, 96,108 acres would be recommended suitable and 287,321 acres would be recommended nonsuitable for wilderness designation.

CRITERIA TO ESTIMATE EFFECTS OF ALTERNATIVES

For each alternative an assessment will be made of the significant impacts upon each affected resource (minerals, livestock grazing, wildlife, wilderness, recreation,

utility corridors, urban expansion, etc.). The assessment will identify the resource values which would be foregone if the area were not designated as wilderness; the resource values which would be foregone if the area were to be designated as wilderness; the mandatory wilderness characteristics, special features, and multiple resource benefits of each area; the present and potential uses of these public lands; and the short-term and long-term benefits and detriments of wilderness designation.

The BLM will estimate whether or not the areas proposed as suitable for wilderness designation in each alternative are capable of being managed under BLM's Wilderness Management Policy, given the nature of each area and the resource uses and potential uses conflicting with wilderness management.

STANDARD OPERATING PROCEDURES

The standard operating procedures listed below will be followed regardless of which alternative or combination of alternatives is implemented.

1. Each Wilderness Study Area will be managed under the "Interim Management Policy for Lands Under Wilderness Review" (1979) to preserve its suitability until Congress officially designates it as wilderness and includes it in the National Wilderness Preservation System or it is officially removed from further wilderness consideration.

2. Resource activity plans will be prepared or modified to be in conformance with BLM's Wilderness Management Policy and will become part of the wilderness management plan for each area designated as wilderness.

3. A wilderness management plan will

be prepared for each area designated as wilderness by Congress. The wilderness management plan will describe the management strategy that will be used to attain the objectives of the Wilderness Management Policy.

4. Management of areas officially released from further consideration as wilderness will be guided by the land use decisions in the Clark County Management Framework Plan (1983).

5. Mineral resources survey reports will be prepared by the U.S. Geological Survey and the U.S. Bureau of Mines on all areas with a preliminary recommendation as suitable for wilderness designation. The mineral resources reports will become part of the information used by the Secretary of the Interior in making the final recommendations on wilderness suitability.

6. Subject to valid existing rights and not before January 1, 1984, all lands designated as wilderness will be withdrawn from all forms of appropriation under the mining laws and from disposition under all laws pertaining to mineral leasing, unless Congress specifically provides otherwise.

7. Reasonable access will be allowed for all valid rights established prior to the time an area is designated as wilderness.

8. The grazing of livestock will be allowed to continue in the areas designated as wilderness. Livestock grazing is a grandfathered use which was established in all the Wilderness Study Areas prior to the enactment of the Federal Land Policy and Management Act of 1976.

9. Protection of cultural resources will continue to be guided by the Antiquities Act of 1906, the National

Historic Preservation Act of 1966, the Federal Land Policy and Management Act of 1976, the American Indian Religious Freedom Act of 1978, as amended, and the Archaeological Resources Protection Act of 1979.

10. Protection and management of wild horses will continue to be guided by the Wild Horse and Burro Act of 1971, as amended.

11. Plans of operations for mining claim activities disturbing more than five acres per year will be reviewed by the BLM, using at a minimum an environmental assessment, under the regulations contained in 43 CFR 3809 and 43 CFR 3802.

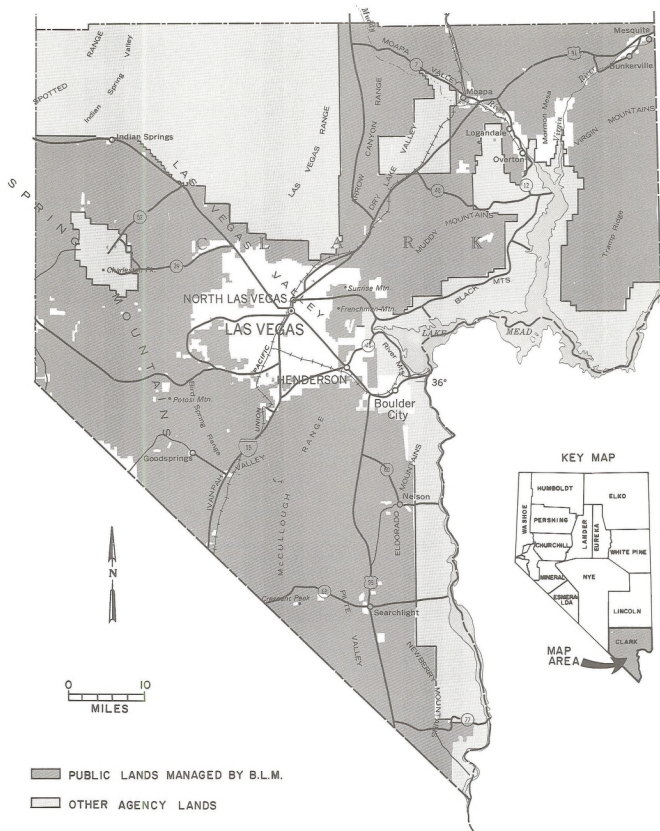
12. Applications for permits to drill on oil, gas, and geothermal leases will be reviewed by BLM, using at a minimum an environmental assessment.

13. Both Bureau- and non-Bureau activities are reviewed through the NEPA process. Identified impacts are mitigated using one or more of the 203 stipulations in the publication "Special Stipulations to Streamline Environmental Assessments, Contracts, and other Project Work Documentation" (USDI, BLM, Las Vegas District, 1981), as appropriate. That publication is included here by reference as committed mitigation.

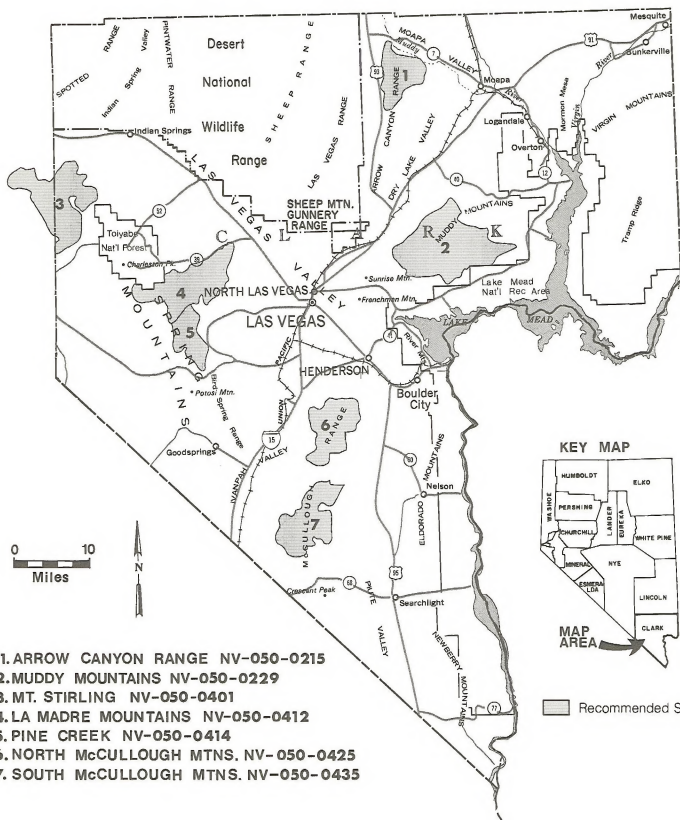
TABLE 1-1
 MANAGEMENT ENHANCEMENT ALTERNATIVE
 MANAGEMENT ISSUES

<u>WSA</u>	<u>Vehicle Access</u>	<u>Urban Expansion</u>	<u>Private Development</u>	<u>Powerline Corridors</u>
Arrow Canyon Range	X			
Muddy Mountains	X			
Mount Stirling	X		X	
La Madre Mountains	X	X		
Pine Creek	X	X		
North McCullough Mtns.	X	X	X	
South McCullough Mtns.	X			X

Source: Clark County Management Framework Plan 1982; Clark County Wilderness EIS Team 1982.

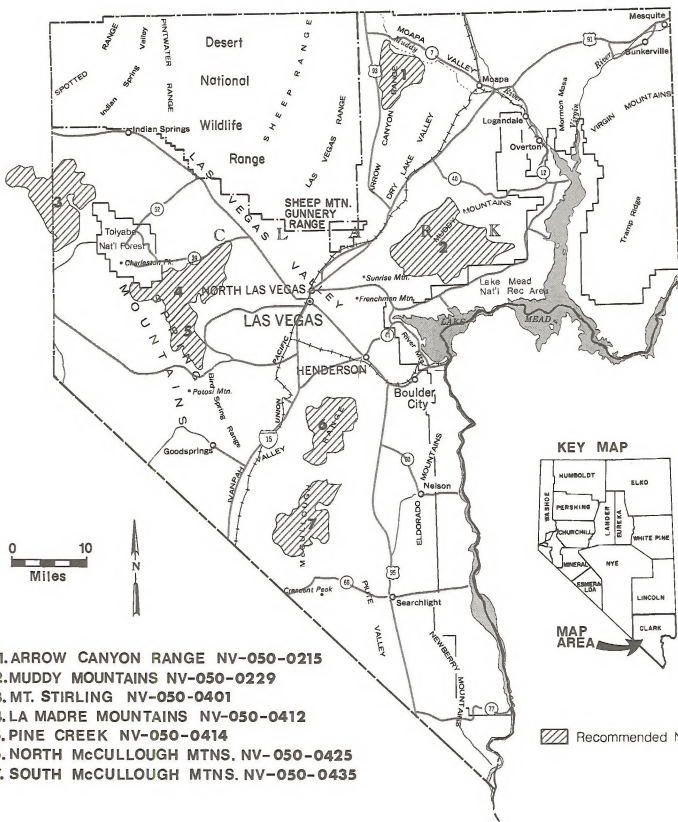


**CLARK COUNTY WILDERNESS
LOCATION MAP**



1. ARROW CANYON RANGE NV-050-0215
2. MUDDY MOUNTAINS NV-050-0229
3. MT. STIRLING NV-050-0401
4. LA MADRE MOUNTAINS NV-050-0412
5. PINE CREEK NV-050-0414
6. NORTH McCULLOUGH MTNS. NV-050-0425
7. SOUTH McCULLOUGH MTNS. NV-050-0435

ALL WILDLIFE ALTERNATIVE

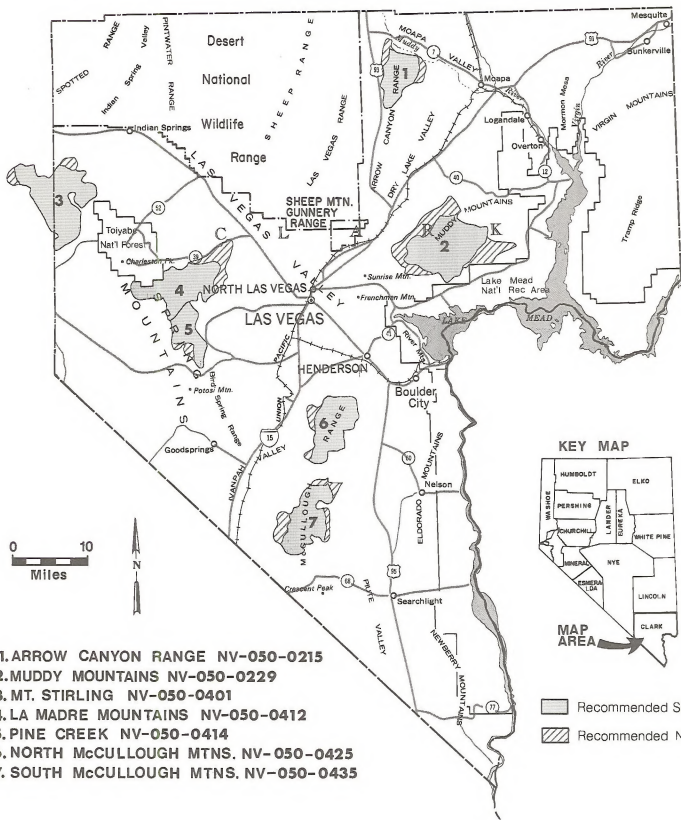


1. ARROW CANYON RANGE NV-050-0215
2. MUDDY MOUNTAINS NV-050-0229
3. MT. STIRLING NV-050-0401
4. LA MADRE MOUNTAINS NV-050-0412
5. PINE CREEK NV-050-0414
6. NORTH McCULLOUGH MTNS. NV-050-0425
7. SOUTH McCULLOUGH MTNS. NV-050-0435

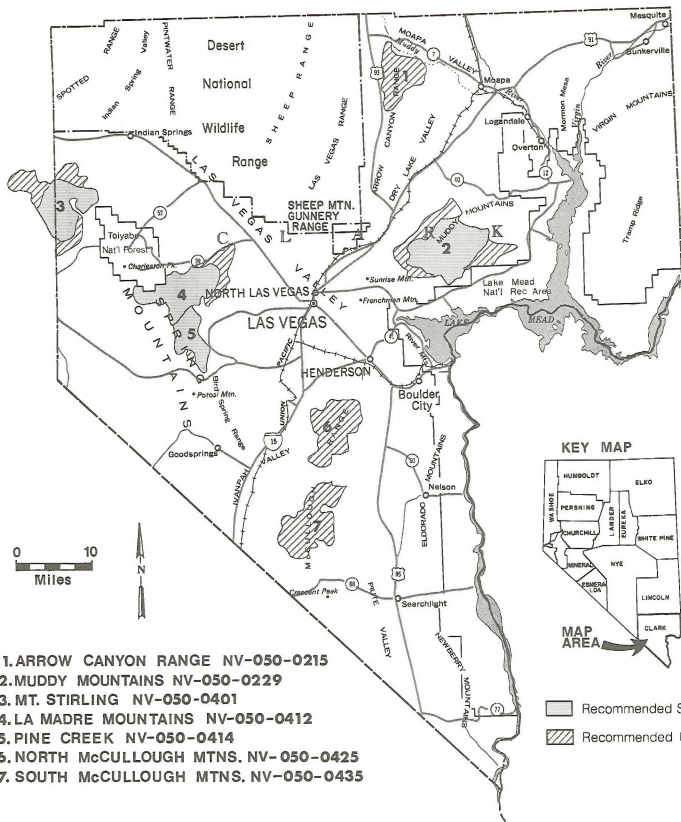


Recommended Nonsuitable

MINERALS DEVELOPMENT ALTERNATIVE

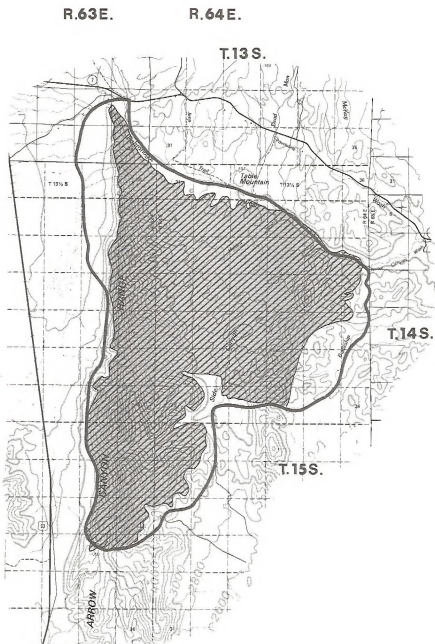


WILDERNESS ACCENT ALTERNATIVE



PREFERRED ALTERNATIVE

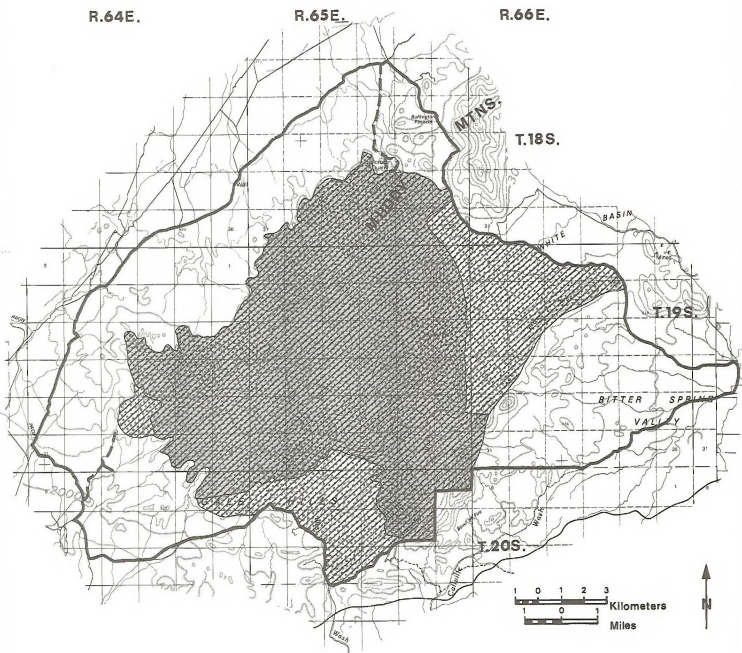
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- RECOMMENDED SUITABLE UNDER THE MANAGEMENT ENHANCEMENT ALTERNATIVE
- ▨ RECOMMENDED SUITABLE UNDER THE WILDERNESS ACCENT ALTERNATIVE



ALTERNATIVES





ARROW CANYON RANGE NV-050-0215

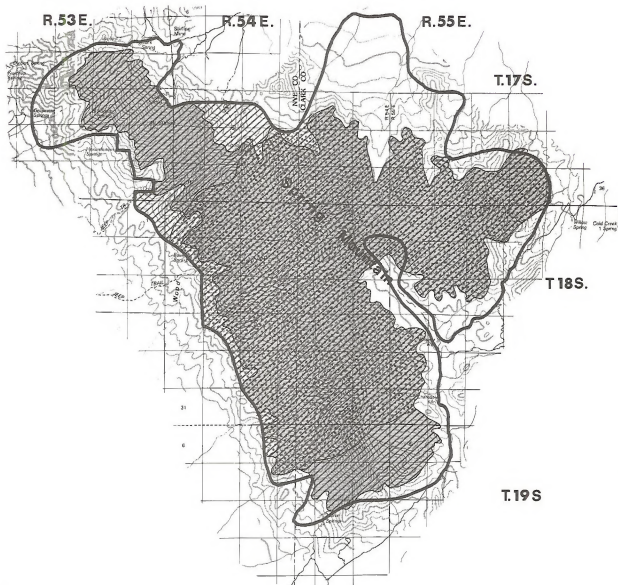
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- RECOMMENDED SUITABLE UNDER THE MANAGEMENT ENHANCEMENT ALTERNATIVE
- ▨ RECOMMENDED SUITABLE UNDER THE WILDERNESS ACCENT ALTERNATIVE
- ▩ RECOMMENDED SUITABLE UNDER THE PREFERRED ALTERNATIVE
- - - CHERRYSTEM ROADS



ALTERNATIVES

MUDDY MOUNTAINS NV-050-0229

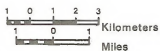
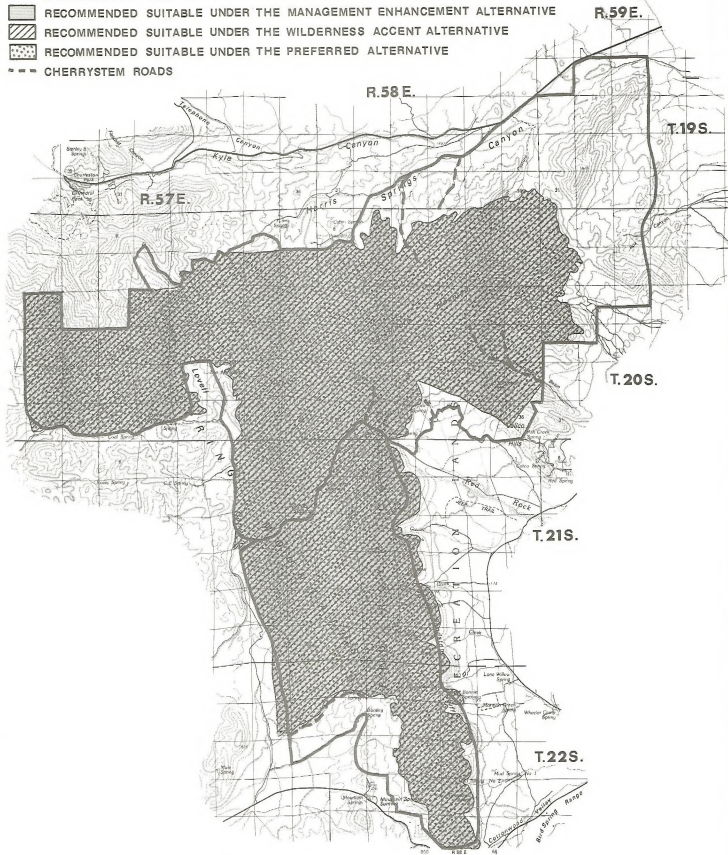
-  RECOMMENDED SUITABLE UNDER THE ALL WILDERNESS ALTERNATIVE
-  RECOMMENDED SUITABLE UNDER THE MANAGEMENT ENHANCEMENT ALTERNATIVE
-  RECOMMENDED SUITABLE UNDER THE WILDERNESS ACCENT ALTERNATIVE
-  RECOMMENDED SUITABLE UNDER THE PREFERRED ALTERNATIVE



ALTERNATIVES

MT. STIRLING NV-050-0401

- RECOMMENDED SUITABLE UNDER THE ALL WILDERNESS ALTERNATIVE
- RECOMMENDED SUITABLE UNDER THE MANAGEMENT ENHANCEMENT ALTERNATIVE
- ▨ RECOMMENDED SUITABLE UNDER THE WILDERNESS ACCENT ALTERNATIVE
- ▩ RECOMMENDED SUITABLE UNDER THE PREFERRED ALTERNATIVE
- - - CHERRYSTEM ROADS

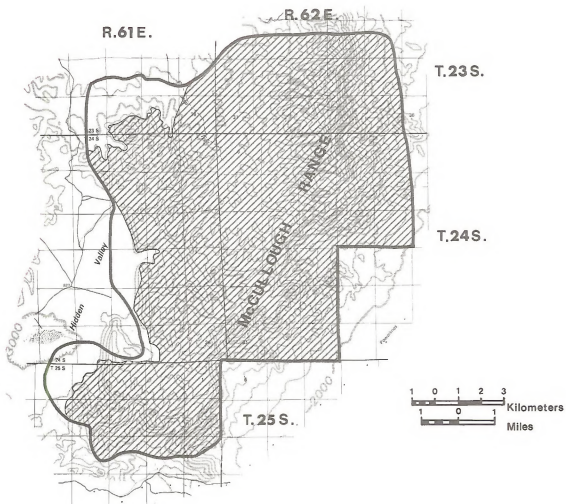


ALTERNATIVES

LA MADRE MOUNTAINS NV-050-0412
PINE CREEK NV-050-0414

— RECOMMENDED SUITABLE UNDER THE ALL WILDERNESS ALTERNATIVE

▨ RECOMMENDED SUITABLE UNDER THE WILDERNESS ACCENT ALTERNATIVE

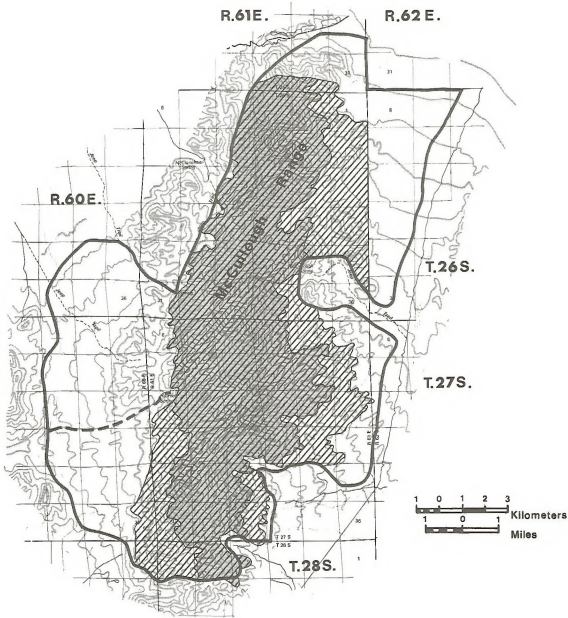


ALTERNATIVES

NORTH McCULLOUGH MTNS. NV-050-0425

- RECOMMENDED SUITABLE UNDER THE ALL WILDERNESS ALTERNATIVE
- ▒ RECOMMENDED SUITABLE UNDER THE MANAGEMENT ENHANCEMENT ALTERNATIVE
- ▨ RECOMMENDED SUITABLE UNDER THE WILDERNESS ACCENT ALTERNATIVE

- - - CHERRY SYSTEM ROADS



ALTERNATIVES

SOUTH McCULLOUGH MTNS. NV-050-0435

CHAPTER TWO

AFFECTED ENVIRONMENT

INTRODUCTION

This chapter describes the natural and socioeconomic environment of Clark County and the specific resources and uses found within the seven Wilderness Study Areas (WSAs), totalling 383,429 acres of public land, which would be affected by the alternatives. For more detailed information on each WSA, a Clark County Wilderness Technical Report is available on request to the Las Vegas Office.

HUMAN ENVIRONMENT OF THE STUDY AREA

Overview

Clark County encompasses an area of 5,075,009 acres, and 61 percent of the land in the county (3,097,131 acres) (Clark County URA 1981) is publicly owned and administered by the Bureau of Land Management (BLM). Other federal agencies administering public lands in the county are the U.S. Forest Service, Department of Defense, Bureau of Reclamation, U.S. Fish and Wildlife Service, National Park Service, and Bureau of Indian Affairs.

Clark County accounts for 58 percent of the total population of Nevada. The county is predominantly rural in nature, with the exception of the Las Vegas Valley urban area, which includes Las Vegas, North Las Vegas, Henderson, and Boulder City, where nearly 98 percent of county residents are concentrated. Smaller communities outside the urban area include Mesquite, Overton, Moapa, Logandale, Laughlin, Searchlight, Jean, Sloan, Goodsprings, Indian Springs, and others.

Major transportation arteries are Interstate Highway 15, and U.S. Highways 93 and 95. There are 13

airports in the county - 6 public, 5 private, and 2 military - and Las Vegas is a principal terminal for east-west cargo shipment on the main Union-Pacific Railroad line. Clark County is also located in the path of many of the major utility corridors connecting the Southern California megalopolis with energy-producing areas in the continent's interior.

Clark County lies at the northeastern extreme of the Mojave Desert Biome. On its northern and eastern boundaries, transitions into the Great Basin Biome and into the Sonoran Desert Biome occur.

Elevations in the county rise from 600 feet at Lake Mojave in the southern end of the county to 11,918 feet at Mount Charleston in the Spring Mountain Range. Generally the broad valleys tend to lie at the 2,000- and 3,500-foot levels. The mountain ranges rising from the desert floor reach varying heights below that of Mount Charleston. Principal ranges in the county in addition to the Spring Mountain Range are the McCullough Range (North and South); the Eldorado and Newberry Range; the Muddy Mountains; the Arrow Canyon Range; the Virgin Mountains; and the Gold Butte area peaks and ridges.

Temperatures in Clark County range widely over the year and differ greatly with elevation changes. Winters are mild with day and nighttime temperatures ranging from the mid-60s (degrees Fahrenheit) to the low-40s. Some freezes do occur. Summers are hot, with daytime maximum temperatures averaging 95° to 105° F and nighttime temperatures averaging a minimum of 70° to 75° F.

Precipitation is low over much of Clark County. Most of the county is in the rain shadow formed by the Sierra Nevada Range of California and the Spring Mountains. The amount of annual precipitation varies with elevation. In the valley floors average annual precipitation ranges from 4 to 8 inches. In the higher mountainous regions the range is from 12 to 20 inches per year. In Clark County most precipitation occurs from November to March, dropping to a minimum in May and June. In the July-August period there may be a slight peaking and another may occur in the September-October period. These peaks are relatively brief and coincide with particularly strong storm systems reaching the area from either the Pacific Ocean or the Gulf of Mexico.

The sources for the above brief discussion and the location of more detailed information are the Clark County Unit Resource Analysis and Planning Area Analysis (1980-1981).

Air Quality

The air quality rating for all of Clark County except the Las Vegas Valley nonattainment area is Class II. The nonattainment area currently exceeds federal ambient air quality standards for total suspended particulates, carbon monoxide, and oxidants (Clark County Department of Comprehensive Planning 1980).

Three WSAs (La Madre Mountains, Pine Creek, and North McCullough Mountains) extend into the nonattainment area. While they are not considered as being important pollution sources, intrusion of pollutants from the population center in the Las Vegas Valley does occasionally decrease the air quality of these areas.

Water Resources

Water quality data for Clark County is limited. During the 1979 Clark County Water Quality Survey (USDI, BLM, Las Vegas District, 1979) 64 springs were sampled and tested for a variety of chemical and biological constituents. Based on this survey, naturally occurring springs throughout the county are generally unsafe for human consumption without treatment. Typical constituents exceeding primary or secondary Environmental Protection Agency (EPA) drinking water standards include fecal coliform, turbidity, nitrate-nitrogen, total dissolved solids, sulfate, chloride, manganese, and iron.

While some of these constituents are inherent in the water as a result of the aquifer material or surface water, fecal coliform, nitrate-nitrogen, and turbidity are related to unrestricted access of livestock, wild horses and burros, and wildlife to the spring source. Degradation related to such spring source disturbance, and subsequent fecal contamination, exceeds the State of Nevada Water Quality Standards as identified in Article 4 of the Nevada Water Pollution Control Regulations (Nevada Division of Environmental Protection 1979). Water quality of these spring sources does, however, meet suitability criteria for livestock and wildlife (Ayers and Westcott 1976).

No perennial streams occur within any of the wilderness study areas, although all except the Mt. Stirling WSA fall within either the Muddy River or Colorado River watersheds.

Information regarding current erosion condition, available from the Bureau's Watershed Development and Conservation Program, was useful in identifying problem watershed areas. Of particular concern were these areas with critical or severe erosion conditions.

By consolidating the erosion susceptibility and erosion condition data, those areas requiring some degree of protection from surface-disturbing activities were identified. Such areas are identified as having critical watershed condition and a high erosion susceptibility.

Recreation

Much of the county's outdoor recreation takes place on BLM-managed lands. Current uses include big game (bighorn sheep, deer) and small game (quail, dove, rabbit, etc.) hunting, camping, hiking, sightseeing, photography, mountain climbing, rockhounding, and off-road vehicle (ORV) driving. Significant uses are also made of lands managed by other agencies, including Lake Mead National Recreation Area (National Park Service), Toiyabe National Forest (U.S. Forest Service), and Spring Mountain Ranch and Valley of Fire State Parks (Nevada Division of State Parks). In all but the Lake Mead National Recreation Area, where water-related activities are the principal uses, activities are similar to those conducted on BLM-managed lands.

ORVs generally are involved in almost all activities, either as home-to-site transport or as an integral part of the recreational event. In the latter case, Clark County public lands are the subject of numerous commercial and competitive events. They range from young amateur races such as those conducted monthly at Las Vegas Dunes by the Mother's Motocross, to the highly professional Mint 400 Desert Race, billed as the largest event of its kind in the country.

Currently, no ORV events are authorized within any of the seven WSAs. Some promoters have indicated interest in courses which would run

through WSAs. Individual ORV users may penetrate WSA boundaries from time to time.

Cultural Resources

Over 3,200 cultural sites are currently known in Clark County. Typical sites recorded include flake scatters, rockshelter sites, rock art sites (petroglyphs and pictographs), and temporary campsites (containing chipped stone, ground stone, and ceramics). Other sites known in Clark County include agave roasting pits, village sites, and aboriginal sites with structures (architectural features), such as stone walls, mounds, and hunting blinds. Many historic sites are also known for Clark County. (Clark County URA 1981.)

Lands

The principal lands use concern in Clark County is its function as an energy transmission corridor between the Utah-Wyoming supply areas and the southern California (Los Angeles-San Diego) demand areas. The corridor is largely defined by the recreation lands to the east and south (Lake Mead NRA and the Grand Canyon National Park) and the national defense-related lands to the north and west (Nevada Test Site and Nellis Air Force Base Bombing and Gunnery Range).

A second major concern is providing public lands for purposes related directly (e.g., land sales, other disposals) or indirectly (e.g., communication sites, rights-of-way) to urban growth in Las Vegas.

Geology and Minerals

Most of the topographic features in Clark County are typical of the Basin and Range physiographic province, with elongate north-trending ranges

separated wide valleys or topographic basins. The eastern part of the county has exterior drainage through the Colorado River, but a large part of the area drains into shallow enclosed basins.

The rocks exposed include igneous, metamorphic, and sedimentary types ranging in age from Precambrian to Recent. Sedimentary rocks representing systems of the Paleozoic Era are widespread in all but the southern part of the county, where Precambrian and Tertiary rocks form the ranges.

In the southern part of the area and along the Colorado River a sequence of volcanic rocks several thousands of feet thick overlies the Precambrian basement complex.

The principal metallic mineral resources of Clark County are lead, zinc, gold, silver, copper, and manganese. Minor amounts of vanadium, cobalt, nickel, platinum, and tungsten have been produced commonly as accessories to the major metals.

Base metal mining began in Clark County during 1857, boomed in the early part of the 20th century, and has been on the decline ever since. Large scale commercial hardrock operations are presently nonexistent in the county. However, recent rises in base metal prices, particularly precious metals, have stimulated new interest in the county's old mining districts and adjacent areas. Most of the renewed prospecting and exploration activity is being done by the small independent miner rather than large mining corporations. Recreationists or weekend miners also contribute heavily to this activity in their search for gold.

A number of nonmetallic resources or industrial minerals are found in Clark

County. Principal commodities now being produced are sand, gravel, gypsum, limestone-dolomite, silica sand, and talc; lesser amounts of perlite, clay, borates, salt, and turquoise have also been mined. Commercial operations within Clark County consist of two limestone/dolomite mines, two gypsum mines, two silica sand mines, and one talc/bentonite mine. Sand and gravel are mined extensively throughout the county. Operations are generally small, of short duration, and in proximity to population centers and/or access routes.

None of the nonmetallics, except for oil and gas, are experiencing the significant prospecting/exploration activity as is the case of the metallics. Although no oil and gas has been discovered in commercial quantities in Clark County, exploration activity in terms of leasing, geophysical prospecting, and exploratory drilling is presently quite active. This can be attributed to the petroleum industries' interest in the Overthrust Belt, of which Clark County is a part. Forty-six wells have been drilled in the county between 1929 and 1982. All have been apparently unsuccessful. Nearly 90 percent of all federally owned oil and gas rights in the county have either been leased or are under lease application.

(Appendix A consists of a brief discussion of each mineral identified in the GEM Reports (Great Basin GEM Joint Venture 1982) as found in Clark County, including composition, uses, alternative or replacement substances, and relative abundance in this county and abroad. It is intended to put the mineral into perspective for the reader.)

Geothermal Resources

No Known Geothermal Resource Areas (NKRAs) occur in Clark County. Consequently, the county is not considered to have significant potential for geothermal development (USDI, Office of the Secretary, 1973). No geothermal power facilities are projected for Clark County through the year 2020 (State of Nevada, State Engineer's Office, 1973). Any development would involve low temperature geothermal resources, and be limited to on-site recreational or agricultural purposes. Such development is unlikely because of costs.

Livestock Grazing

All of Clark County is currently classified as ephemeral range for livestock grazing. Within the county are 41 allotments and eight unallotted, ungrazed areas (e.g., Las Vegas Valley). The area normally subject to livestock grazing amounts to 2,968,797 acres. A five-year average usage (1975-1979) saw a total of 30,856 animal unit months (AUMs) harvested. There are 44 livestock operators (USDI, BLM, Las Vegas District, 1982).

Wild Horses and Burros

While both wild horses and wild burros are found in Clark County, the latter are by far the more numerous. The northern reaches of the county are, in fact, somewhat of a transition zone for the animals. As one moves southward, the environment becomes more inhospitable to horses.

County-wide, the population in 1981 was estimated at 48 wild horses and 827 wild burros. They are found in four herd use areas: Gold Butte, Muddy Mountains, Eldorado Mountains and the Spring Mountains. (USDI, BLM, Las Vegas District, 1982).

Wild horses and burros are found in four of the seven WSAs. Horses and burros use the areas in which they are found yearlong. In most areas, WSAs comprise only a portion of the total habitat area of the animals. Burros inhabit the low foothills and desert floor yearlong, while horses, in most areas, range at higher elevations. Very seldom do the horses and burros mix, except in cases where both species water at the same springs.

Vegetation - Forest Products

Of the 3.6 million acres of public lands inventoried in the Clark County Range Survey (USDI, BLM, Las Vegas District, 1981), the vast majority, some 3.2 million acres, was catalogued as desert shrub or creosote bush community. Some 297,513 acres, or nine percent of the lands surveyed, were identified as being in the pinyon-juniper community. These types were found almost entirely in the Spring Mountain and South McCullough Ranges.

Because of the relatively few acres of pinyon-juniper and the high demand in Las Vegas for a forest-based recreational experience, forest products harvesting in Clark County is limited. No fenceposts or Christmas tree permits are currently offered. Firewood sales are made only in October, November, and December, and then only dead or down gathering is permitted. No commercial sales are made, and cords are limited to one per individual. Las Vegas' demand on public lands for forest products is met largely from Lincoln County. However, consideration is being given to greenwood cutting when that would enhance recreational values, particularly in the Spring Mountain Range, or other values such as wildlife or livestock forage production.

Desert vegetation, which could be used for landscaping, is found throughout Clark County and in almost all of the WSAs. However, due to the slow growth rate of most desert vegetation species, little potential exists for sustained yield even under moderate to light harvest rates.

Relict stands of ponderosa pine are found in the Mt. Stirling, Pine Creek, and La Madre Mountains WSAs. The trees are apparently remnants of a forest which covered the Spring Mountain Range during an earlier period of higher rainfall. No reproduction of ponderosa pine is occurring in the WSAs.

Threatened or Endangered Plants

No officially listed threatened or endangered plants are found in Clark County. However, 25 species are proposed for federal listing, pending further investigation. An inventory was conducted in 1979 and 1980 to determine location and crucial or potential habitat of these plants (USDI, BLM, Las Vegas District, 1980). Of the 25 species, 11 are found within 5 of the WSAs.

Wildlife

The wildlife resource in Clark County consists of a wide variety of species. Most are associated with the Mohave Desert Biome with some species typical of Great Basin. In this analysis only certain species will be addressed. These are mule deer, elk, desert bighorn sheep, desert tortoise, Gambel's quail, and chukar. These species have been chosen because of their importance in Southern Nevada and their value as indicator species.

Fire Management

From a fire management perspective, the seven wilderness study areas

located in Clark County can be divided into two major types, based on fuel loading, fuel component (value at risk), urban-wildland interface, and public awareness.

The first type includes the Muddy Mountains and Arrow Canyon WSAs, with the following characteristics:

Fuel Loading: Fuel loading is sparse, approximately 0-1 tons per acre, consisting mainly of desert shrubs and annual grasses. Fire spread is very limited due to the average distance between plants, approximately 4 to 5 feet.

Fuel Component: The fuel component consists mainly of desert plants, yucca, Joshua trees, cholla, and annual grasses. The values at risk are relatively low. This is primarily due to plant condition and availability, i.e., although desert plants can bring a monetary value at a nursery, their availability limits their value.

Urban-Wildland Interface: Urban-wildland interface is insignificant in and around the areas surrounding the Arrow Canyon Range and Muddy Mountains WSAs. If a major wildland fire occurred in these WSAs no major property risk would be involved.

Public Awareness: Although a highway borders one side of each WSA, there are few opportunities for the public to witness fire activity.

The second type is composed of the La Madre Mountains, Pine Creek, Mt. Stirling, and North and South McCullough Mountains WSAs, with the following characteristics:

Fuel Loading: Fuel loading is moderate to heavy, approximately 5 to 20 tons per acre, consisting of

ponderosa pine, pinyon pine, juniper, desert shrubs, and annual grasses. Fire spread can be rapid and totally consuming, due to the compactness and continuity of the fuel.

Fuel Component: The fuel component consists of moderate to heavy stands of pinyon pine. Pinyon pine in southern Nevada represents a high value at risk due to its uniqueness. There are also light to moderate stands of ponderosa and desert shrubs with annual grasses. The values at risk are very high in these WSAs due to the uniqueness of these plants for the area.

Urban-Wildland Interface: The urban-wildland interface is extremely high. The following communities are near these WSAs and could be greatly threatened by wildfire occurring in one of the WSAs: Mt. Springs, Lovell Canyon, Sky Mountain Ranch, Kyle Canyon, Harris Springs Ranch, Cold Creek Estates, Searchlight Rural Community, Spring Mountain State Park, Calico Basin, Blue Diamond, Bonnie Springs (Historical Ranch), and Kyle Canyon Road Residents.

Public Awareness: Residents of Las Vegas, Henderson, Boulder City, Searchlight, and Pahump can see most fire activity (smoke, flame) that occurs in one or more of the four WSAs. Since the concern in these communities for the protection of the limited forested resource in southern Nevada is extremely high, public awareness of fire activity is very acute.

The media coverage of wildfire and fire suppression activities in these areas is extremely well documented. Often they provide major topics of television and radio newscasts, and front page newspaper articles.

SOCIOECONOMIC ENVIRONMENT

The overall socioeconomic environment of Clark County is extensively displayed in the following four documents, which are incorporated into this EIS by reference.

1. "Clark County Planning Area Analysis." U.S. Department of the Interior, Bureau of Land Management, Las Vegas District. May, 1981.
2. "Comprehensive Plan for Clark County, Nevada. Task One - Existing Conditions." Clark County Department of Comprehensive Planning, Las Vegas, Nevada. August, 1981.
3. "Socioeconomic Impacts Associated with the Harry Allen Station in Southern Nevada (Contract YA-512-RFP6-103)" Chapter 2. Prepared by Eyring Research Institute, Provo, Utah, for the U.S. Department of the Interior, Bureau of Land Management, Denver Service Center, Denver, Colorado. December, 1976.
4. "Socio Economic Impact Estimates for Nevada/Utah Deployment Region" prepared by the United States Air Force Ballistic Missile Office, Norton Air Force Base, California. Volume ETR 2, ETR 2A, ETR 2C. December, 1980.

All four documents are available at the Las Vegas District Office, Bureau of Land Management, and other document repositories in northern and southern Nevada.

Social Profile

Clark County accounts for 58 percent of the total population for the State of Nevada. The metropolitan area of Las Vegas, including Henderson, Boulder City, and North Las Vegas, has 454,769 persons while the remaining rural areas have 7,047 persons (U.S. Department of Commerce 1980). In a recent local newspaper article

(Vogel 1982), the population of the county was estimated to have reached a half-million.

Clark County has an overwhelmingly urban population. Nearly 98.8 percent of the residents are concentrated in the Las Vegas Valley and Boulder City. On the other hand, the rural population of the county, although small, is distinctive in its life styles and its attitudes.

The county and its people can be divided into four distinct communities:

Moapa-Virgin River Valley: This is a rural, agriculturally-oriented area.

The agriculture base is principally dairy farming and alfalfa production.

The area is developing as a bedroom community of Las Vegas, for individuals who are willing to commute to Las Vegas, but want a rural lifestyle.

Las Vegas and Government-

Installation-Oriented Communities:

These are represented by small towns to the west and northwest of the city: Blue Diamond, Mountain Springs, Mount Charleston, and Indian Springs. The first three are less than an hour's drive from the city. Each provides a setting relatively isolated from the urban hustle of Las Vegas. Mountain Springs and Mount Charleston, in particular, are noteworthy for their sylvan surroundings, an ambience much prized in the desert. Indian Springs provides a close-at-hand residence for Nevada Test Site and Indian Springs Air Force Base employees. Although each community has a base of residents involved in the town itself, these areas are very attractive to Las Vegas seeking country residences.

Service Communities: The southern tier of communities, Goodsprings, Jean, Nelson, Searchlight, and

Laughlin, seem to be most strongly oriented toward services, particularly recreational. Jean provides roadside services and gaming to Las Vegas-bound travelers. It also offers a base to desert recreationists. Laughlin is organizing itself to become a major gaming destination for Arizonans by expanding both the community and the existing casinos. Searchlight has been a central service community at the state's southern tip since the days of the highly active Searchlight Mining District. It still retains the independent spirit of the early prospectors who founded it.

Urban Las Vegas (Las Vegas, North Las Vegas, Henderson, Boulder City, and Metropolitan Clark County):

Seen by many outsiders as only an impersonal gaming capital (the Strip and Downtown), Las Vegas is in fact two communities: the gaming establishment and, behind that facade, a very normal, residential community with much the same interests and drives as comparable communities (Eyring 1976). It is an expanding community, with one of the highest growth rates in the country. Providing the appropriate environment to encourage and accommodate that growth is a basic thrust of urban Las Vegas. Only Boulder City, of all the urban communities, has moved legislatively to moderate its natural growth rate.

The Eyring Research Institute study (1976, pp. 34-39) discusses the cultural values and beliefs that characterize Clark County as these values and beliefs are perceived by the opinion leaders interviewed. County-wide, a high importance was given to "economic development and industrial growth and expansion." Overall, more traditional values such as hard work, religion, and community cohesion rated somewhat below the

first two. However, when responses from rural and metropolitan opinion leaders were separated and compared, there were radical differences. Metropolitan leaders emphasized economic development, industrial growth, and material comfort, while rural leaders strongly de-emphasized them. Conversely, the family, neighborliness, honesty, and trust were highly rated values for rural leaders, but given less relative emphasis by urban opinion leaders.

Attitudes toward public land management among urban Las Vegas residents do, and will continue to, vary greatly. It is routine for BLM employees, in public forums and in discussions with local citizens, to encounter the entire spectrum of national opinions on public land and natural resource management. This diversity of opinion is traceable to the fact that Las Vegans look to the public lands largely to satisfy their immediate recreational needs. These run the gamut of activities from nonconsumptive, such as hiking and camping, to consumptive, such as hunting.

Hunting is a recreational activity of great interest, with particular attention being given to the desert bighorn sheep. It is a prize trophy and the official animal of the State of Nevada. The lore of the animal has caused several local groups to be organized to support actions to improve the population. Management of the animal and its habitat, particularly if not supportive of population improvement, would generate immediate and strong expressions of concern.

In rural Clark County, particularly in the Moapa-Virgin River Valley and the service communities, the attitude toward public land management lies nearer to the natural resource use

pole than the resource preservation one. The community memory of the struggle in the late 19th and early 20th centuries to reclaim the land for agriculture or to extract the valuable minerals of southern Nevada is still very much alive. Many of the older residents are the immediate children of those pioneers. The current generation perceives itself as the repository and transmitter of those values which made the pioneering successes possible.

Many residents of these areas would describe themselves as good husbands of the land. They are concerned that natural resource values be preserved, but they would express confidence that the values can be preserved alongside production useful to and needed by the community.

Migration and Growth Patterns

Clark County's growth rate since 1950 has been about 8-1/2 times that of the nation (Clark County Department of Comprehensive Planning 1981). During the decade of 1960 to 1970, nearly as many residents were added as a result of migration as had resided in the county in 1960. Projections are that the Clark County population will double by the year 2000 (Clark County Department of Comprehensive Planning 1981.)

The county has developed the expertise and infrastructure to meet a mobile population and large numbers of tourists. In fact, the MX study (USAF 1980) concluded that even the massive project it proposed would not have significant impacts upon the county infrastructure or social well-being of the residents.

Public Attitudes Toward Wilderness

In a 1981 survey of Nevadans, Senator Cannon found there was overall support

(50 percent support to 41 percent nonsupport) for designating certain U.S. Forest Service Rare II areas as wilderness.

A Statewide Comprehensive Outdoor Recreation Plan (SCORP) survey in 1981 recorded the following attitudes to the question "do Nevada's unique natural and unusual areas need preserving?" Statewide, 92.39 percent agree or strongly agree, 3.01 percent disagree, and 4.59 percent did not respond. Since this study used "preservation of unique natural and unusual areas" rather than "wilderness," its application to wilderness designation may be limited (Nevada Division of State Parks 1982).

The wilderness issue has been controversial in Clark County since its inception. During the early stages of the wilderness process, when large segments of public domain were being inventoried for identification of wilderness values, public sentiment was high and predominantly anti-wilderness in nature. Local off-road vehicle, ranching, and mineral interests were very vocal and public meetings, like the one at Western Highschool in September of 1978, turned into shouting matches with the majority of the participants purporting anti-wilderness positions. BLM employees perceived the local population as being against the large amounts of local lands being "locked up" in wilderness.

During the inventory phase, those WSAs included in the Statewide Inventory received significantly more public response than those studied under the special, accelerated inventories. The two Statewide Inventory units, Mt. Stirling and Pine Creek, were commented on specifically by more than 30 respondents and in general by over 2,000 respondents. Of the five special inventory units, the La Madre

Mountains and the Muddy Mountains received the most total comments and the most positive comments. Numerous supportive comments on the La Madre Mountains came from residents of the adjacent Lone Mountain area.

After the inventory was completed, additional comment on the Muddy Mountains was generated by a public meeting hosted by the Sierra Club on the possibility of oil drilling in the WSA. The meeting generated newspaper articles and television features, editorials, and two letters advocating protection of the WSA's wilderness values.

With time, the amount of land under study decreased and public understanding of wilderness issues and of the activities that would or would not be allowed by wilderness designation increased. The issues and concerns of the ORV organizations, and mining and ranching industries are still present and voiced at public meetings but with less intensity than at earlier meetings.

The Clark County Wilderness EIS scoping process showed that the differences between groups, interests, and concepts for public lands management and use are still present.

Approximately 125 individuals and organizations commented in the scoping process. The Muddy Mountains and Pine Creek WSAs received the most comments and the most support. The Arrow Canyon Range received significantly less support than any of the others. Southern Nevada conservationists generally agreed that their number one priority is Pine Creek; number two is the Muddy Mountains; and number three is the La Madre Mountains. Over 90 percent of the respondents commented favorably on designation of the four WSAs that would be recommended suitable in the Preferred Alternative.

Interest in the Clark County wilderness study seemingly is still primarily a local issue with some regional, but little national, interest.

The opinions and results of other national surveys fluctuate and seem to contradict each other. The only conclusion that is obvious is that the conflict between the advocates and adversaries of wilderness continues.

Economics

The Las Vegas Standard Metropolitan Statistical Area (SMSA) is comprised of all of Clark County, including the cities of Las Vegas, North Las Vegas, Henderson, and Boulder City. Las Vegas is located 289 miles from the Los Angeles SMSA; 294 miles from the Phoenix SMSA; and 431 miles from the Salt Lake City SMSA. The Las Vegas SMSA is the primary urban area within five-hours commuting time of any of the WSAs being studied. There are over 7.4 million acres of statutory and administratively endorsed wilderness within commuting distance of Las Vegas ("Profile 2" 1982).

Clark County has 57.9 percent of the State's population. Gaming/recreation employs 30.7 percent of the county's labor force. The service sector, including gaming, employs 46.8 percent of the county's total labor force. On the county level, mining and agriculture provide for less than 0.3 percent of the total employment. Agriculture in Clark County accounts for less than 7.5 percent of the State's total agriculture sales. Mining in the county accounts for less than 6 percent of the State's current mineral income (Nevada Employment Security Research Section 1982).

County Income From Taxes: Half of the annual oil and gas lease fee of \$1 per acre is allocated to the U.S. Treasury, the other half goes to the State of Nevada which allocates it to

the counties for educational purposes. The county charges an ad valorem tax based on an assessed value of \$2.00 per acre for nonproducing oil and gas leases. If production occurs, the per acre tax will be dropped and the county will base its tax on the net proceeds of the wells. The current tax rate is \$2.25 per \$100.00.

The Trap Springs field at Railroad Valley (Nye County, Nevada) is the oil and gas production field nearest to the study area. Since its discovery six years ago, it has produced 4.2 million barrels at an estimated value of \$101 million (Pam Cosby, Administrator of Nevada Division of Mineral Resources, personal communication, June 1982). An amount equal to 12.5 percent of the value of each barrel of oil and gas is paid to the federal government and the Nevada State School Funds (6.25 percent each).

Recreation Economics: Current estimated recreation usage in all WSAs in the county per year has been estimated to be no more than 20,000 visitor-days annually. Over 75 percent of this usage is thought to occur in two WSAs, La Madre Mountains and Pine Creek.

The annual visitor volume to the Las Vegas SMSA for 1982 is estimated to be over 12,000,000 people (Las Vegas Convention and Visitors Authority 1982). The 1980 visitor-day usage for all outdoor visitation in Clark County is over 7,200,000 visitor-days (Nevada Division of State Parks 1982.)

Current wilderness usage would need to increase over twenty times as a result of designation, before a significant impact to the service and recreation industry would be felt.

Ranching: There are 35 individuals actively involved in ranching in Clark County on BLM-administered lands. Typically, these ranchers are employed

in another sector in addition to their ranching activity. Only three ranchers have allotments that use portions of the Muddy Mountains, Mt. Stirling, and North and South McCullough Mountains WSAs.

Mining: The primary minerals currently produced in Clark County, in order of value, are sand and gravel (alluvium), lime, gypsum, and stone. No new mines are projected for Clark County in the near future (Schilling 1981). A total of 23 existing mines employ 289 individuals. Eighty-four individuals are employed in mining precious metals; 52 individuals in mining gypsum; 98 individuals in lime and dolomite; 53 individuals in silica sand; and two individuals in mining light aggregate (Table 2-5). Five operations employ over 10 individuals and two operations employ 51 percent of all individuals in mining activities in Clark County. The value of nonmetallic minerals produced in 1981-82 was \$11,373,079 and the value of metallic minerals was \$192,337. Clark County produced less than 3 percent of the State's mineral gross yield (Nevada Department of Taxation 1982). The number of individuals employed in mining decreased by 16.7 percent during 1982 (Nevada Employment Security Research Section 1982).

WILDERNESS STUDY AREAS

The following narratives describe specific environmental features of each of the seven WSAs.

Arrow Canyon Range

Wilderness Values

Description: The Arrow Canyon WSA is a narrow, north-south range typical of the Basin and Range Province. The 32,853-acre WSA is 35 miles northeast of Las Vegas. Roughly triangular in shape, it is 4 to 12 miles north-south and 2 to 6 miles east-west. The WSA

includes a ridgeline of limestone peaks and canyons, a central valley cut by numerous washes, and a series of ridges on the eastern end cut by deep washes including the near vertical sides of Arrow Canyon. The entire WSA is vegetated with desert plants of the creosote bush community.

Naturalness: One and a half miles of bladed road, seven miles of way, two excavated mining test pits, a mine shack, and scattered vehicle tracks occur in the WSA. The ridgeline core area contains only the shack and is essentially natural. The intrusions mainly affect the northern end of the central valley, but are substantially unnoticeable. U.S. Highway 93, State Highway 7, powerlines, farms, and the Reid Gardner power plant of the Moapa Valley are visible from the high points of the range. These outside influences are located from one to six miles from the boundary.

Opportunities for Solitude: The rugged topographic features of the ridgeline and its canyons provide outstanding opportunities for solitude. The central valley and eastern ridges offer some opportunities for solitude because of the numerous deep washes and other features. However, opportunities for solitude are less than outstanding in these areas. There is no vegetative screening in the WSA.

Opportunities for Primitive

Recreation: Primitive recreation opportunities are good but not outstanding. Dayhiking, backpacking, rock scrambling, nature study, photography, hunting and horseback riding are all available. Easy access, scenic views, and challenge are the best characteristics. Lack of diversity and truly outstanding features limit the quality of the experience.

Special Features: The sheer west face of the Arrow Canyon Range with its dramatic white band of quartzite is of scenic interest to visitors within the WSA and travelers on U.S. Highway 93. The ridgeline offers good views of the Sheep Range and other features of the basin and range country. Arrow Canyon has geological, archaeological, and scenic values. The canyon, which in places is only 20 feet wide and 300-400 feet deep, clearly displays strata of Paleozoic carbonates. Extensive petroglyph panels are found on its walls. Other archaeological resources are found throughout the WSA (see Cultural Resources Section). Bighorn sheep inhabit the mountainous portions of the WSA in all but the driest months.

Recreation

There are no developed recreation facilities within or adjacent to the WSA. Recreation use is light with the exception of the Arrow Canyon area. Most use is by individuals and families but organized groups have used the area including university field groups, the Sierra Club, off-road vehicle clubs for both racing and noncompetitive events, and rockhound groups.

Arrow Canyon is an important sightseeing area because of its scenic, geological, and archaeological interest. Field trips from the university, Sierra Club hikers, ORV users, and family groups come to the area to observe the extensive petroglyph panels, narrow impressive canyon walls, and the unique display of numerous layers of Paleozoic carbonates. The sheer, banded face of the ridgeline is also valuable to sightseers but is most frequently observed from U.S. Highway 93 outside the WSA.

Off-road vehicle racing has been

restricted in the WSA since the previous Management Framework Plan (Virgin Valley Land Use Guide 1975), however, Arrow Canyon has been used for competitive events in the past and is important for ORV sightseeing.

Hiking use is probably very light in this WSA. Most dayhiking and camping occurs in the vicinity of Arrow Canyon. Some hiking undoubtedly occurs along the ridgeline and a register has been placed on the highest peak south of Arrow Peak.

Rockhounds consider the Arrow Canyon area very valuable for fossils.

Cultural Resources

The entire Arrow Canyon WSA is considered highly sensitive. Extensive stands of agave, a bighorn sheep population, desert tortoise, and numerous rock cavities dotting the limestone formations which make up most of the WSA enhance the potential for archaeological site occurrences in the form of rock shelters. Cultural resource values found within the WSA include agave roasting pits, shelter caves, lithic and ceramic scatters, petroglyphs, and rock alignments.

Lands

This WSA is composed of 32,853 acres of public land. An electric transmission line is located along the northern boundary of the WSA, and the proposed Intermountain Power Project (IPP) transmission line is located to the west of the WSA. A portion of the WSA (3,400 acres) has been named on a list of federal lands in Nevada proposed by the State of Nevada in 1981 for transfer to state ownership. These lands have been identified for the proposed Arrow Canyon State Park, and the State has submitted an application for the lands.

Geology and Minerals

Geologically the Arrow Canyon Range is composed predominately of carbonate Paleozoic rocks flanked by older and more recent alluvium in the valleys. The WSA is composed of both bedrock and alluvial materials.

There are no known metallic mineral deposits in the WSA. Nonmetallic mineral production has included silica sand at the Tiffany Quarry (a patented claim) on the southeastern boundary of the WSA. Large reserves are believed available. Murphy (1954) reports intermittent production with less than 2,000 tons of quartzite mined annually. There is no production at present. Small quantities of bentonite have reportedly been mined from a deposit near the northeastern boundary of the WSA. A quarry is presently in operation along the western side of the WSA, mining quartzite and crushing it.

There are 27 post-FLPMA authorized oil and gas leases affecting all 32,853 acres of the WSA. These 27 leases were authorized during the period 1979 through 1982 for a term of ten years each. There are no geothermal leases in the WSA. There are 300 acres of pre-FLPMA and 500 acres of post-FLPMA mining claims. See the Mining Claims & Mineral Leases Map for the Arrow Canyon Range WSA.

The Arrow Canyon Range shows no evidence indicating metallic mineral favorability. It has a moderate to high favorability for nonmetallics including silica, montmorillonite, gypsum, diatomite, limestone, dolomite, and alluvium. The favorability for oil and gas resources is moderate because this area is part of the Overthrust Belt. The eastern portion of the WSA has been identified by the U.S. Geological Survey (1979) as moderately favorable in potential

for geothermal resources. Refer to the "Arrow Canyon/Las Vegas Range G-E-M Resources Area (GRA No. NV-29) Technical Report" for more detailed minerals information on this WSA. See the Mineral Potential Map for the Arrow Canyon Range WSA for an illustration of highest potentials in this WSA.

Livestock Grazing

Three allotments overlap this WSA -- the Arrow Canyon allotment, containing 27,416 acres of the WSA; the Pittman Well allotment, containing 1,232 acres of the WSA; and the Ute allotment, containing 4,205 acres of the WSA. The Arrow Canyon allotment is classified ephemeral, meaning that livestock use is licensed only when annual forage is available. The WSA portion of this allotment is virtually ungrazed, however, because of the steep, rugged terrain and lack of water. There is one operator on this allotment. The Ute allotment is classified ephemeral and has three operators, but is seldom used. The Pittman Well allotment is classified ephemeral, has one operator, and has not been grazed for the past eight years. There are no existing or proposed range facilities in this WSA.

Watershed

There are 4,450 acres of critical watershed within the Arrow Canyon WSA, representing 14 percent of this WSA. See the Critical Watershed Map for the Arrow Canyon Range WSA.

Threatened or Endangered Plants

A small population of Perityle megalocepala var. intricata which has been recommended for inclusion on the threatened list, is found in one of the canyons on the west side of the Arrow Canyon Range (Mozingo and Williams 1980).

Wildlife

The Arrow Canyon Range supports a yearlong herd of desert bighorn sheep. Although yearlong use occurs, it is dependent upon summer precipitation. The area is also a winter concentration area. Prior to 1933 natural water catchments in the Arrow Canyon Gorge area provided yearlong water and bighorn use was yearlong. In 1933 the Civilian Conservation Corps constructed a cement dam at the head of Arrow Canyon Gorge in an attempt to slow down the rushing waters to prevent flooding in the Moapa Valley farmlands. The slowing of the water runoff resulted in silting in of the existing natural catchments, elimination of permanent crucial summer habitat for desert bighorn, and the intermittent summer utilization of the area. There are currently 18,312 acres of bighorn habitat within the WSA (see Table 2-3). Janke (1980) identified a potential increase of approximately 170 animals yearlong if waters were developed throughout the range. Nevada Department of Wildlife (NDW) currently issues four bighorn hunting tags in this area.

There are 5,914 acres of Gambel's quail crucial habitat (see the Wildlife Habitat Map for the Arrow Canyon Range WSA), related to six quail guzzlers along the northern border of the WSA installed by NDW in 1981. This is a high hunter use area. A small amount of crucial desert tortoise habitat (461 acres) occurs at the northeastern edge of the WSA. This area represents a tortoise population density estimate of over 50 animals per square mile.

Other species occurring in the area include coyotes, bobcat, a variety of raptors, nongame birds, and reptiles.

Fire Management

Lightning accounts for a majority of the fire activity in this WSA. Fire occurrence is very low, 1 to 3 fires every 5 years. Due to the lack of continuous vegetation, fire behavior in this WSA is limited to single plant fires.

Muddy Mountains

Wilderness Values

Description: This WSA is located in the south end of the Muddy Mountain Range, 20 miles northeast of Las Vegas. The 96,170-acre WSA is roughly rectangular in shape, 5 to 17 miles east-west and 6 to 13 miles north-south. Elevations range from 2,000 to 5,400 feet. Four major landform regions occur in the WSA. The Muddy Mountains form the core area of limestone peaks and canyons, including two interior valleys where outcrops of orange, red, and cream Aztec sandstone are exposed. The northern bajada slopes gradually northward from the Muddy Mountain core. The Gale Hills, to the west and south, are low, red hills of deposited sediments characterized by rugged erosional features and three major basins. Bitter Spring Valley and White Basin are part of a large bajada divided in two by the sharply upthrust Bitter Ridge. Various desert plant communities are found in the WSA. Tree cover is limited to large desert willows in several of the big drainages. No springs occur in the WSA, but water is found much of the year in catchments in the Aztec sandstone and Gale Hills conglomerate.

Naturalness: The WSA has three cherrysystems totalling seven miles of road, one active oil drilling operation, and an abandoned test pit and mine. Thirteen miles of vehicle way, a motorcycle race course, scattered vehicle tracks, and several old abandoned water catchments also

occur in the WSA. The imprints are concentrated in the northern bajada, Hidden Valley in the Muddy Mountain core area, and the three basins in the Gale Hills formation, and are substantially unnoticeable. Outside imprints have little effect on the WSA with the exception of air traffic. The west end of the WSA is particularly affected by commercial airlines coming into and departing from Las Vegas.

Opportunities for Solitude:

Excellent topographic screening provides outstanding opportunities for solitude in most portions of the WSA, in spite of the lack of vegetative screening. Cliffs, peaks, and deeply cut canyons provide seclusion for visitors in the Muddy Mountain core and most of the Gale Hills. The northern bajada, Bitter Spring Valley, White Basin, and two of the basins in the Gale Hills do not have adequate screening to provide solitude. Although most of the WSA is screened from outside influences, the air traffic reminds users that civilization is not far away.

Opportunities for Primitive

Recreation: Dayhiking, backpacking, nature study, photography, and climbing and scrambling are outstanding in this WSA. A variety of outstanding special features (see Special Features section) contribute to the value of the experience. The varied topography offers numerous destinations, trip lengths, and challenge levels. The area is easily accessible yearlong, to the large population of the Las Vegas Valley.

Special Features: Geologic and archaeological resources and bighorn sheep are the most outstanding features of the WSA. The brightly colored, sculpted sandstone formations of Hidden and Wild Sheep Valleys are exposed by erosion through a fenster, or "window" through the overthrust

limestone of the Muddy Mountain mass. The limestone peaks form a scenic background and from the top, offer outstanding views of basin and range country, and Lake Mead. The conglomerate of the Gale Hills formation readily forms cliffs, the most impressive of which are the 600-foot West End Wash cliffs. On the south end, Lovell Wash cuts Anniversary Narrows, a canyon 1/3 mile in length, 7 to 15 feet wide and 400 to 600 feet deep. Desert bighorn are found in most of the WSA except during periods of drought. Wild horses and burros inhabit the southern and eastern portion of the WSA yearlong. This WSA, particularly the sandstone portions, has a significantly rich concentration of archaeological resources (see Cultural Resources section).

Recreation

There are no developed recreation facilities in the Muddy Mountains WSA. Recreation use is light with the exception of the Anniversary Narrows and Hidden Valley areas.

Anniversary Narrows is an important sightseeing area. Visitors are attracted to the vicinity by the contiguous Lake Mead NRA, the nearby Ore Car mining claims owned and frequented by Las Vegas gem clubs, and the adjacent, inactive Anniversary Mine. Anniversary Narrows itself can only be traversed on foot. The Narrows opens into the red-walled washes of Lovell Basin, a lesser used area with high scenic values. Hidden Valley, attractive for the Special Features described above, receives moderate use by foot and vehicle. The West End Wash cliffs, Muddy Mountain core area, and Bitter Ridge offer outstanding views and are scenic features visible from within and outside the WSA. The rest of the WSA receives light use.

The northern bajada and western end of the Gale Hills have been raced by

off-road vehicles several times. The old MINT 400 course runs near the northern boundary. Individual use occurs frequently on the boundary roads and the northern bajada, occasionally in the White Basin and West End Wash Basin, and rarely in Big Valley. Moderate ORV sightseeing has been occurring in Hidden Valley; however, the Clark County ORV CRMP Committee voted in 1982 to close the road into Hidden Valley and close Hidden Valley to ORV use.

Most hiking occurs in Anniversary Narrows and Hidden Valley. The Sierra Club regularly leads hikes to both locations and National Park Service naturalists have used the Narrows for nature hikes for ten years. Most camping and backpacking occurs in Hidden Valley. Use is moderate in these two areas and light elsewhere in the WSA.

An important rockhounding area lies just south of the WSA at the Ore Car mine. Amethyst, jasper, opal, and agate are collected in the area. Use of the WSA itself is probably light due to lack of vehicle access.

Cultural Resources

This entire WSA has numerous cultural expressions, which are directly reflected by the environmental variables which are present. These exploitable resources include a high density of bighorn sheep, desert tortoise, and several chert quarry sources. A cultural resources Class II (sample-oriented) inventory of a portion of the potentially valuable oil and gas Overthrust Belt was completed under contract by the Archaeological Research Center at UNLV (USDI, BLM, Las Vegas District, 1980). Several of the sample units inventoried during this project lie within the WSA. Site types recorded during this project in the Muddy

Mountains included agave roasting pits, numerous pictograph and petroglyph panels, open camp sites, rock shelters, quarry sites, and lithic and ceramic scatters (USDI, BLM, Las Vegas District, 1980). Within the Hidden Valley subunit, test excavations at two rockshelter sites revealed a Puebloan occupation spanning over 4,000 years of culture history. Hidden Valley has been determined to be eligible for nomination to the National Register of Historic Places as an archaeological district (USDI, BLM, Las Vegas District, 1981).

Lands

This WSA is composed of 96,170 acres of public land. There is a 33-acre patented mining claim, with access road, cherrystemmed in the southwest portion of the WSA. There is an existing right-of-way on the northwest boundary of the WSA (the 200-foot Navajo-McCullough transmission line). In addition, two 500-kv lines (associated with the Allen-Warner Valley project) are proposed to parallel the Navajo-McCullough line outside of the WSA.

Geology and Minerals

The WSA predominantly contains Paleozoic carbonate rocks forming the higher elevations, clastic Mesozoic sandstones and carbonates, and clastic Cretaceous to Tertiary sediments of the lower elevations. The geologic structure of the area is very complex.

There are no known metallic mineral occurrences in the WSA. There are deposits which are or have previously been mined for nonmetallic mineral resources, including clay and silicate deposits within the WSA. Additional nonmetallic mineral occurrences in the WSA include gypsum, colemanite, opalized chalcedony, agate,

glauberite, limestone, montmorillonite, illite, smectite, silica, thenardite, dolomite, magnesite, potash, building stone, and alluvium. The Muddy Mountains as a whole is considered the prime location for potential nonmetallic mineral resources of any of the WSAs investigated for the Great Basin Region.

Gypsum is currently being mined and milled within a mile of the western boundary of the WSA at Apex. Annual production is in the thousands of tons.

Borate in the form of the mineral colemanite was produced in the 1920s from the Anniversary Mine on the southern edge of the WSA, from lenses of colemanite interbedded with clay, limestone, dolomite, and gypsum. Total production from this deposit was approximately 200,000 tons. Another similar colemanite deposit is located along the northeastern edge of the WSA. Total production from this deposit was small since mining lasted only from 1922 to 1924 when litigation closed the mine.

The Vanderbilt montmorillonite clay deposit in the western portion of the WSA was mined between 1955 and 1975. Production comes from a six-inch to six-foot thick bed, and is reported to have varied from 100 to 200 tons per year.

The Wyatt Silica Mine, just outside the northeastern boundary of the WSA, shipped three to four carloads of silica prior to 1936. Southwest of this silica deposit and within the WSA is the Colorock Quarry which recorded minor production of flagstone.

Patented claims are found at the two colemanite mines and the gypsum mine. Two patented claims cover the Vanderbilt clay deposit within the WSA. Unpatented claims within the WSA

cover silica along the north border of the WSA, silica and colemanite along the south border, and some gypsum claims in the vicinity of the Pabco Gypsum Mine on the west.

There are no known oil and gas deposits or oil seeps in the vicinity, although two exploratory wells have been drilled in the WSA, one to a depth of 5,919 feet in 1959 and the other to a depth of 5,666 feet in 1965. Both wells had slight oil shows in the Upper Paleozoics. Another well is currently being drilled in the Colorock Quarry area of the WSA, to a projected depth of 9,000 feet.

There are seven pre-FLPMA authorized oil and gas leases affecting about 14,256 acres (15 percent) of the WSA. These seven leases were authorized during the period 1972 through 1976 for a term of ten years each. Two of the leases have expired (2,560 acres). There are 59 post-FLPMA authorized oil and gas leases affecting 76,936 acres (80 percent) of the WSA. These 59 leases were authorized during the period 1977 through 1981 for a term of ten years each. The remaining 4,978 acres of the WSA are covered by three pending oil and gas lease applications. There are 650 acres of pre-FLPMA and 950 acres of post-FLPMA mining claims in the WSA. See the Mining Claims & Mineral Leases Map for the Muddy Mountains WSA.

In summary, there is no data indicating favorability for metallic minerals in the WSA. However, nonmetallic mineral potential is moderate to high because of the mines, occurrences, and favorable geologic environment for many quantities. The Muddy Mountains WSA is considered the prime area of interest for nonmetallics of any WSAs in Nevada. Oil and gas potential for the area is moderate and industry interest is high, because this is a part of the Overthrust Belt. Refer to the "Muddy

Mountains G-E-M Resources Area (GRA No. NV-34) Technical Report" for more detailed minerals information on this WSA. See the Mineral Potential Map for the Muddy Mountains WSA for an illustration of highest potentials in this WSA.

Livestock Grazing

Three allotments overlap this WSA--the Muddy Mountains allotment, containing 71,354 acres of the WSA; the White Basin allotment, containing 23,520 acres of the WSA; and the Sunrise Mountain allotment, containing 1,296 acres of the WSA. Cattle have been customarily grazed on the White Basin allotment from March through May and September through November. Both cattle and horses have customarily been grazed on the Muddy Mountains allotment from March through May. Each of these two allotments has two operators. The Sunrise Mountain allotment is unallotted and has not been grazed for the past eight years. There are two reservoirs, a well, and a corral along the northern boundary of the WSA, and no other existing or proposed range facilities. See the Range Improvements & Critical Watershed Map for the Muddy Mountains WSA.

Wild Horses and Burros

This WSA is part of the Muddy Mountains Herd Management Area (HMA) and the most recent inventories (1982) show that 17 horses and 59 burros are found in the HMA. The WSA furnishes approximately 30 percent of the habitat area used by horses and 10 percent of the burro habitat. Most of the waters used by the horses and burros are outside the boundary of the WSA.

Watershed

There are 5,750 acres of critical

watershed within the Muddy Mountains WSA, representing 6 percent of this WSA. See the Range Improvements & Critical Watershed Map for the Muddy Mountains WSA.

Threatened or Endangered Plants

A population of Arctomecon californica has been found in the south end of the WSA. Although this species is proposed for listing as threatened, a recommendation has been made by the Northern Nevada Native Plant Society and the Nevada State Museum (Mozingo and Williams 1980) to "declassify" the plant since it is found over a wide area of gypsum soils.

Wildlife

Desert bighorn use in the Muddy Mountains is yearlong with concentrated use in the winter. Summer distribution is limited by a lack of permanent water and therefore is dependent upon precipitation and natural catchments occurring throughout the area. Janke (1980) has projected that a potential increase of nearly 400 animals could be achieved through water development and removal of competing wild horses and burros. There are 49,280 acres of yearlong habitat within the WSA (see Table 2-3). The Nevada Department of Wildlife issued three hunting tags in the Muddy Mountain area in 1982.

A small amount of Gambel's quail crucial habitat (563 acres) occurs on the extreme eastern border of the WSA (see the Wildlife Habitat Map).

Other species occurring within the WSA include mountain lion, coyotes, bobcats, and a wide variety of raptors, nongame birds, and reptiles.

Fire Management

Lightning accounts for a majority of

the fire activity in this WSA. Fire occurrence is very low, 1 to 2 fires every 5 years. Due to the lack of continuous vegetation, fire behavior in this WSA is limited to single plant fires.

Mount Stirling

Wilderness Values

Description: This WSA encompasses the northernmost portion of the Spring Mountains, 45 miles west of Las Vegas. It contains 69,650 acres in a roughly triangular shape, 10 miles north-south and 4 to 10 miles east-west. Elevations range from 4,800 to 9,618 feet. A northwest-southeast trending ridge, steeper on the southwest face and heavily dissected into peaks and canyons, runs the length of the WSA. A central valley, one mile across, separates the ridge from a second peak complex centered around Wheeler Peak. Several miles of bajada are included on the north boundary. The WSA is made up of limestones, dolomite, and quartzite. With the exception of fire scars, the WSA is heavily vegetated with pinyons and junipers throughout, with ponderosa pine and white fir at high elevations.

Naturalness: The most significant impacts on naturalness are the numerous terraces cut in the face of Wheeler Peak as an erosion control measure after a major fire in the 1960s. Six miles of way and four miles of cherrystems also enter the WSA. Seven private parcels with water developments and jeep trail access are located on the boundaries. Several old mines are located nearby and the town of Pahrump is seven miles southwest. The rugged topography and good tree cover limit the effect of any of these unnatural sites to substantially unnoticeable.

Opportunities for Solitude: Almost the entire WSA offers outstanding solitude because of the rugged complex of canyons, ridges, and heavy forest cover. The exceptions are the northern bajada which is flat with desert vegetation and the burned-over parts of the Wheeler Peak complex.

Opportunities for Primitive

Recreation: Dayhiking and backpacking are outstanding in this WSA. Other available opportunities are rock scrambling on the high peaks of the range, nature study, photography, hunting, and horseback riding. The area is large enough to offer a variety of loop routes and destinations including Mt. Stirling, Wheeler Peak, and other high points. The dense forest cover is sufficiently unique in southern Nevada to be an attraction.

Special Features: The rugged cliffs of the southwest face are highly scenic and offer excellent views of classic basin and range country. Mule deer inhabit the forested portions and wild horses the lower elevations. Nine springs are located at the base of the range on or near the WSA boundary. Historic and prehistoric sites, including the charcoal kilns at Wheeler Well and petroglyphs on the very summit of Mt. Stirling, have been located in the WSA (see Cultural Resources section).

Recreation

There are no developed recreation facilities in the WSA, although BLM's Cold Creek and Willow Creek Campgrounds are within a mile of the eastern boundary. This is the least used of the WSAs located in the recreationally popular Spring Mountain Range. A wide variety of activities occur in the WSA at moderate to low levels of use.

Sightseeing is popular along the Wheeler Wash boundary road. Forest cover, fall colors, wild horses and burros, scenic vistas, and the historic Wheeler Pass Charcoal Kilns add to the interest of this area.

Terrain and vegetation limit the suitability of this WSA for off-road use. Wheeler Wash Road and the jeep trails leading to the springs on the WSA boundary are important to OKV sightseers. Some of the washes on the northern and western sides receive light ORV use.

The Wheeler Well area is important for dispersed camping because the flat terrain is conducive to site development. Camping also occurs at the end of the jeep trails that access the WSA from the boundaries. Wheeler Peak, Mt. Stirling, and Wood Canyon are the most likely hiking destinations. The Sierra Club occasionally leads dayhikes to these destinations. Mt. Stirling is recognized as a climbing opportunity (Wheelock 1975). Although the WSA offers numerous backpacking possibilities, existing use is probably light.

The Wheeler Well area is also important for pine nut collecting by individuals and families. Permits for noncommercial wood gathering have also been issued for this area.

Cultural Resources

The entire WSA must be considered highly sensitive for potential cultural resources. Important environmental variables present in the unit include dense tracts of pinyon pine and juniper trees, several springs, and deer and historic bighorn sheep populations.

Cultural resource values for this WSA

are well documented. The Mt. Stirling area was archaeologically inventoried in August of 1978. The sites recorded during these surveys include two isolated finds (one historic), one lithic scatter in association with ten rock features, and one open site (USDI, BLM, Nevada State Office, 1978).

The open site, at which milling equipment was found, may be indicative of a pine nut processing site. There are several rock circles, situated on a slope overlooking a wash, which could be the remnants of a village encampment. The Wheeler Well Charcoal Kilns, a National Register site, are located at the southeastern boundary of the WSA. There is also a petroglyph site in the interior.

Lands

This WSA is composed of 69,650 acres of public land. There are no private lands. However, there are five 40-acre patented parcels and one 80-acre patented parcel adjacent to the northwestern boundary of the WSA. A portion of the WSA (9,280 acres) has been named in a list of federal lands in Nevada proposed by the State in 1981 for transfer to state ownership. These lands have been identified for the Spring Mountain Range State Forest, however, no application has yet been made.

Geology and Minerals

The Mt. Stirling WSA is located in the northern Spring Mountains, which consists of intensely deformed Late Precambrian to Permian sedimentary rocks. The area is made up of complexly faulted and folded Paleozoic marine miogeosynclinal rocks.

Just west of the north end of the WSA is the Johnnie Mining District, which

is said to have produced more than \$1 million in gold -- perhaps \$10 million at 1980s prices. Along the north boundary of the WSA is the informal Stirling Mining District which probably produced a little gold; some of the prospects of this district are within the WSA. Just outside the southern edge of the WSA is the El Lobo property that has produced a few tons of lead-silver ore.

There are no patented claims within the WSA. Most unpatented claims are in the Johnnie or Stirling districts, and a few of the latter are well within the WSA. There are also a few unpatented claims in the vicinity of the El Lobo property at the southern edge of the WSA.

There are 14 post-FLPMA authorized oil and gas leases affecting 2,090 acres (3 percent) of the WSA. These leases are located along the boundary of the WSA, and were authorized during the period 1979 through 1982 for a term of ten years each. There are no pending oil and gas lease applications, and no geothermal leases. There are 250 acres of pre-FLPMA and 50 acres of post-FLPMA mining claims in the WSA. See the Mining Claims & Mineral Leases Maps for the Mt. Stirling WSA.

The northwestern part of the WSA is classified moderately favorable for metallic minerals, including gold, silver, copper, lead, and zinc, as part of a postulated gold district extending from Johnnie to Stirling. Part of the southeastern edge is classified highly favorable for silver, lead, and zinc mineralization in a thrust fault. The remainder of the WSA is classified unfavorable for metallic minerals. The western part of the WSA is classified unfavorable for nonmetallic minerals, and a small part of the northeastern corner is classified moderately favorable for alluvium; the remainder is classified

moderately favorable on the basis of the extensive exposures of limestone and dolomite. The classification for oil and gas is moderate because this area is part of the Overthrust Belt, and the classification for geothermal is of low favorability. Refer to the "Mount Stirling G-E-M Resources Area (GRA No. NV-31) Technical Report" for more detailed minerals information on this WSA. See the Mineral Potential Map for the Mt. Stirling WSA for an illustration of highest potentials in this WSA.

Livestock Grazing

Three allotments overlap this WSA--the Wheeler Slope allotment, containing 14,819 acres of the WSA; the Wheeler Wash allotment, containing 23,465 acres of the WSA; and the Mt. Stirling allotment in Nye County, containing 31,366 acres of the WSA. The Wheeler Wash allotment is proposed for reclassification to ephemeral-perennial range (see Glossary) and for intensive range management, although no studies or activity plans have yet been done. There is one operator on the allotment, who customarily grazes cattle from May through November. The Wheeler Slope allotment is unallotted and ungrazed. The Mt. Stirling allotment has one operator who customarily grazes cattle on it yearlong. There are several spring developments in the western portion of the WSA, and no proposed range facilities within the WSA. See the Range Improvements Map for the Mt. Stirling WSA.

Wild Horses and Burros

This WSA comprises approximately 25 percent of a large Wild Horse/Burro Herd Management Area. The WSA furnishes critical summer habitat for the 50-60 horses found in the area. Approximately 20 burros use the

extreme southern end of the WSA.

Forestry

This WSA contains both potential firewood and Christmas tree areas. One of the major wood gathering areas in Clark County, Wheeler Pass and Wheeler Well, is located adjacent to the eastern boundary of the WSA. Some woodcutting could be inadvertently occurring in the WSA, and has occurred in Wood Canyon in the past.

Wildlife

The Mt. Stirling area currently supports no desert bighorn, however, the area has been identified as historically occupied by bighorn (McQuivey 1978). Janke (1980) has projected a potential of 530 animals in the area (see Table 2-4), with a reintroduction and some water development. See the Wildlife Habitat Map #1 for the Mt. Stirling WSA.

Deer and elk occur throughout the WSA. The Wildlife Habitat Map #2 Map for the Mt. Stirling WSA delineates the elk and deer distribution and seasonal use areas. There are 54,847 acres of deer habitat and 53,388 acres of elk habitat in the WSA (see Table 2-3). Potential exists for increasing abundance of these species through proper management of fire and some water developments.

There are 5,222 acres of crucial Gambel's quail habitat and 1,535 acres of crucial chukar habitat in the WSA. See the Wildlife Habitat Map #1 for the Mt. Stirling WSA.

Other species found in the area include coyotes, mountain lion, bobcat, a variety of raptors and nongame birds, and several species of reptiles.

Fire Management

Lightning fires account for a majority of the fire activity in this WSA. These fires usually involve individual trees with occasional ground fuel being consumed. Within the last 10 years, 3 large project fires have occurred. Two of these three fires were man-caused. Fire seems to have had a significant role in shaping the structure of the existing plant community.

It is very likely that large fires could develop in this WSA. This area has a pronounced slope effect, a heavy fuel loading, and continuous fuel, making the area especially vulnerable to large fire occurrence.

La Madre Mountains

Wilderness Values

Description: Most of the La Madre Mountains WSA is within the Red Rock Canyon Recreation Lands, 15 miles west of Las Vegas. Located in the Spring Mountain Range, the WSA is contiguous to the Pine Creek WSA on the south and the Toiyabe National Forest, Mt. Charleston Backcountry Area on the north.

The WSA contains 56,967 acres, including 724 acres of National Forest. It is 2 to 8 miles north-south and 14 miles east-west with elevations ranging from 3,600 to 9,400 feet.

The eastern half of the WSA contains the southwest-northeast-trending La Madre Ridgeline. The angular peaks of this ridgeline have nearly vertical southeast faces and gradually sloping back sides. The western half of the WSA consists of ridges and drainages radiating from the much higher Mt. Charleston Ridgeline to the north in

the National Forest.

The WSA is composed of limestones and dolomites except for several outcroppings of rugged, red Aztec sandstone on the Las Vegas side of the La Madre Mountains. Pinyon and junipers are found throughout the WSA, scattered on the southeast face and low elevations and in dense stands above 6,000 feet. Pockets of white fir and ponderosa pine occur at high elevations. Several fire scars affect the unit's vegetation, including a 1982 fire which deforested most of the Lovell Canyon basin.

Naturalness: Six cherrystem contain ten miles of road or way, a small gypsum mine, and a commercial campground. Three private ranches, two housing areas, and the Red Rock Canyon Visitor Center, loop drive, and picnic areas are on or within two miles of the WSA boundary. Las Vegas and the Blue Diamond strip mine are visible from high points in the WSA. Air traffic is frequent.

Within the WSA itself are eight miles of way, an old corral, trough, and a small unofficial dump site. The major impact of the internal and external imprints is on the low elevation lands, within one or two miles of the boundary, in the east half of the WSA. No internal and few external imprints affect the west half of the WSA.

Opportunities for Solitude: The least natural portions of the WSA also offer few opportunities for solitude.

The low elevations, particularly on the southeast slope of the La Madre Ridgeline, lack sufficient vegetation or rugged terrain to screen visitors from each other, the cherrystems, or outside sights and sounds. The higher elevations are rugged and heavily forested, offering outstanding solitude. The broad valley of Lovell Canyon lacks topographic screening and

also vegetative screening since the fire of 1982.

Opportunities for Primitive

Recreation: Dayhiking, rock climbing, and scrambling opportunities are outstanding in this WSA. Good climbing rock in the scattered sandstone outcrops, a variety of destinations and challenge levels, and outstanding views from high points contribute to this rating. Special features (see Special Features section) add to the experience. An excellent backpacking route ties this WSA to the Pine Creek WSA to the south and Mt. Charleston to the north. The WSA is easily accessible yearlong to half the population of Nevada, the residents of the Las Vegas Valley.

Special Features: The red and buff Calico Hills, White Rock Hills, Brownstone Basin, and Little Red Rocks Hills, are of geological and scenic interest. The cross-bedded sandstone demonstrates their origin as former sand dunes. The Keystone Thrust of the older limestones of the La Madre Range over this younger sandstone is clearly evident above Brownstone Canyon. Views of the La Madre Mountain cliff face, and from the cliff face, are outstanding. A large bighorn sheep herd inhabits the WSA yearlong. A small herd of elk, the remnants of an earlier stocking effort, move between the WSA and the National Forest. The large variation in elevation (6,000 feet) allows for a variety of plant communities from Southern Mohave desert shrub to white fir and ponderosa pines. Numerous prehistoric sites have been located in the WSA including Brownstone Canyon, an archaeological district on the National Register of Historic Places (see Cultural Resources section).

Recreation

The dramatic ridgeline of the La Madre

Mountains forms the north end of the Red Rock Canyon Recreation Lands. The scenic loop drive, which attracts 441,000 visitors a year, forms the south boundary of the WSA. While most use occurs on or outside of the boundaries, portions of the WSA receive heavy use from individuals and groups including ORV groups, rock climbing schools, BLM guided hikes, the Sierra Club, and Scout troops. There are no developed recreation facilities within the WSA.

The brilliantly colored Calico Hills are readily observed from the loop drive and the Blue Diamond Highway and are a very important scenic feature. The rugged La Madre Ridgeline and Turtlehead Mountain offer outstanding views and are attractive features visible from the Las Vegas Valley as well as from within the WSA. Brownstone Canyon, White Rock Hills, and Little Red Rocks are attractive sandstone features.

The Clark County ORV CRMP Committee made several recommendations in 1982 that will lead to decreased ORV use in the Red Rock Canyon Recreation Lands portion of this WSA, including limiting off-road vehicles to designated roads. Little Red Rocks will continue to be an important ORV play area. The cherrystems as well as washes on the Kyle Canyon side are moderately important for ORV sightseeing.

The Calico Hills are one of the most important dayhiking areas in the Red Rock Canyon area. This area is immediately adjacent to the scenic loop drive and several parking areas. La Madre Spring, White Rock hills, and Brownstone Canyon also receive considerable use. Guided hikes by BLM, the Sierra Club, and school groups are held here. Turtlehead Mountain and the La Madre Ridgeline receive light to

moderate use. Use is light elsewhere in the WSA. Backpacking activity is light throughout. An excellent, potential ridgeline route connects the National Forest's Mt. Charleston trail system to the Pine Creek WSA on the south. However, thick undergrowth discourages backpacking on that route. Most camping takes place in conjunction with vehicle use of the cherrystems on the east side of the WSA.

Box Canyon and the southeastern portion of the WSA are important horseback riding areas for the horse owners from Lone Mountain and Calico Basin. Organized riding events have taken place along the edge of the WSA near the scenic loop drive and over the Rocky Gap Road. The washes and cherrystems on the Kyle Canyon side receive moderate riding use.

The Sandstone Quarry area of the Calico Hills and the White Rock Hills are important rock climbing areas. Use is by individuals, groups, and rock climbing schools. These two areas together with the much larger and more diverse sandstone escarpment The Sandstone Quarry area of the Calico Hills and the White Rock Hills are important rock climbing areas. Use is by individuals, groups, and rock climbing schools. These two areas together with the much larger and more diverse sandstone escarpment of the Pine Creek WSA make up the best climbing area in southern Nevada and perhaps all of Nevada.

The Harris Springs Road and the Lovell Summit Road are moderately important for noncommercial pinyon nut harvesting.

Cultural Resources

This WSA is considered extremely sensitive. Environmental variables

present in this WSA, which contribute toward a high probability for site occurrences, include numerous springs and perennially flowing streams, pinyon pine, agave, and deer and bighorn sheep populations. Cultural resource inventories conducted by members of the Archaeological Research Center at UNLV (USDI, BLM, Las Vegas District, 1978) revealed an extremely high density of cultural sites at Brownstone Canyon (which has just recently been included in the National Register of Historic Places as an archaeological district), Willow Spring, and La Madre Spring. Site types representative of this WSA include dramatic rock art panels including both petroglyphs and pictographs, numerous agave roasting pits, rock shelters, milling sites including both bedrock mortars and portable metates, open camp sites adjacent to springs and creeks, and lithic and ceramic scatters.

Lands

This WSA is composed of 56,967 acres of public land, including 724 acres of contiguous U.S. Forest Service land, the Harris Mountain area. About 43 percent of the WSA (24,184 acres) is included in the Red Rock Canyon Recreation Lands. These lands were segregated from the operation of the agricultural land laws, including the mining laws, but not the mineral leasing laws, by Multiple Use Classification N-257 (November 10, 1966). This classification is currently under review in accordance with Section 202(d) of the Federal Land Policy and Management Act. About half of the WSA has been named in a list of federal lands in Nevada proposed by the State in 1981 for transfer to state ownership for the proposed Spring Mountain Range State Forest, however, no application has yet been made.

Geology and Minerals

Geologically the WSA consists of Mesozoic and Paleozoic sediments made up primarily of carbonate rocks. The Keystone Thrust fault is a major structural element, thrusting Paleozoic rocks over the younger Mesozoic Aztec sandstone.

Metallic mineral resources are not reported to occur in the WSA, but minor lead-zinc replacement deposits are found to the immediate north and east. Also, the productive Goodsprings Mining District is just south of the WSA in similar rock units and produced gold, silver, lead, zinc, and copper.

Nonmetallics which have shown production include a minor amount of gypsum in the north and sandstone for building stone in the south. Extensive deposits of gypsum, silica, limestone, dolomite, building stone, and alluvium are found in the area.

There are 37 post-FLPMA authorized oil and gas leases affecting about 54,155 acres (95 percent) of the WSA. These 37 leases were authorized during the period 1979 through 1981 and are for a term of ten years each. The remaining 2,812 acres (5 percent) of the WSA are covered by five pending oil and gas lease applications. There are 1,450 acres of pre-FLPMA and 50 acres of post-FLPMA mining claims in the WSA. See the Mining Claims & Mineral Leases Map for the La Madre Mountains/Pine Creek WSAs.

Most of the WSA is classified of low favorability for metallics with numerous unfavorable areas occurring around the edges. The entire WSA is moderately favorable for nonmetallics except north of La Madre Mountain near Kyle Canyon which is highly favorable due to gypsum deposits.

The La Madre Mountains WSA is classified moderately favorable for oil and gas because the area is part of the Overthrust Belt, and of low favorability for geothermal. Refer to the "La Madre Mountains/Pine Creek G-E-M Resources Area (GRA No. NV-32) Technical Report" for more detailed minerals information on this WSA. See the Mineral Potential Map for the La Madre Mountains/Pine Creek WSAs for an illustration of highest potentials in this WSA.

Livestock Grazing

Four allotments overlap the WSA--the Kyle Canyon allotment, containing 17,116 acres of the WSA; the Roses Spring allotment, containing 5,630 acres; the Spring Mountain allotment, containing 25,974 acres; and the 7777 allotment, containing 7,523 acres. Only the Kyle Canyon allotment has an operator, and no livestock use has been authorized in any of the allotments for the past eight years. There are three spring developments, two reservoirs, a fence, and a corral along the boundaries and cherrystems of the WSA, and no proposed range facilities. See the Range Improvements Map for the La Madre Mountains/Pine Creek WSAs.

Wild Horses and Burros

This WSA furnishes approximately 7 percent of the habitat for herds of 25 burros and 10-15 horses. The burros move into the WSA for water and some forage during the summer months. Only 5-10 burros use the La Madre Mountains WSA, preferring the lower elevations to the south, adjacent to the Pine Creek WSA.

Forestry

The western portion of this WSA contains a good stand of mature pinyon and juniper trees, with a few ponderosa pine in the larger

drainages. The Sky Fire left over 2,000 acres of dead standing trees. Due to the steepness of the terrain and lack of roads and jeep trails in the area, firewood harvest would be extremely difficult.

Threatened or Endangered Plants

The following plants which are proposed for listing as threatened or endangered are known to occur in this WSA.

1. Astragalus aequalis - threatened
2. Calochortus striatus - threatened
3. Coryphantha vivipara var. rosea - threatened
4. Cryptantha tumulosa - threatened*
5. Penstemon bicolor subspecies bicolor - threatened
6. Phacelia anelsonii - threatened**

* Species is on the proposed list, but has been recommended (Mozingo and Williams 1980) for deletion because of widespread populations in Nevada and surrounding states.

** Recommended (Mozingo and Williams 1980) to be reduced to a species of special concern. Small populations occur over a widespread area both inside and outside Nevada.

Wildlife

Desert bighorn occur throughout the WSA. The western portion of the WSA (11,008 acres) has been identified as historically occupied habitat with no use currently. There are 46,234 acres of yearlong bighorn habitat in the WSA. Potential increase in the present herd is shown on Table 2-4. This increase is based on the existing and historic habitat available and the present condition of the habitat. Because of already good condition relative to forage, water, and cover, only minor increases could be achieved through project work. See the

Wildlife Habitat Map #1 for the La Madre Mountains/Pine Creek WSAs.

There are 42,086 acres of deer habitat and 22,886 acres of elk habitat in the WSA (see Table 2-3 and the Wildlife Habitat Map #2 for the La Madre Mountains/Pine Creek WSAs). These habitats are generally well-watered and the potential for increases in these herds by developing waters in these areas is low. However, through proper management of fire, herd increases could be significant.

Other species found in the WSA include mountain lion, coyote, bobcat, a variety of raptors and nongame birds, and several species of reptile.

Fire Management

Lightning accounts for a majority of the fire activity in this WSA. These fires usually involve individual trees with occasional ground fuel being consumed. However, within the last five years this WSA has experienced five Class C fires (10-99 acres), all started by lightning.

It is very likely that a large fire could develop in this WSA, due to the continuity of the fuel and the fuel loading. An additional concern is the urban-wildland interface in this WSA. The Sky Fire of 1982 consumed 2,2000 acres and threatened the Sky Mountain Ranch preserve. Several other urban areas could be threatened by wildland fire from this WSA, including the Kyle Canyon Road residents, Calico Basin, Red Springs Campground, Harris Springs Ranch, Williams Ranch, and Willow Springs Campground.

Pine Creek

Wilderness Values

Description: Most of the Pine

Creek WSA is within the Red Rock Canyon Recreation Lands, located 15 miles west of Las Vegas.

The WSA contains 24,000 acres and is approximately 11 miles north-south and four miles east-west. It straddles a north-south ridge of the Spring Mountains. Elevations range from 4,400 to 7,000 feet.

There are two distinct land forms in the WSA. The east-facing sandstone escarpment consists of colorful 2,000-foot, nearly vertical cliffs cut by numerous deep narrow canyons. Ponderosa pine grows in the canyons and in isolated pockets of soil on the slickrock escarpment top. Water is found most of the year in natural catchments in the sandstone and flowing from springs in the canyons. The limestone overthrust forms a rugged ridgeline above and west of the sandstone. Rounded hills and drainages fall gradually to the west from the ridgeline. Pinyon pine and juniper are the primary vegetation in this portion of the unit.

Naturalness: A two-mile cherrystem road and three miles of vehicle trails run into the WSA from the west boundary. These imprints are not significant except in the Rainbow Spring-Bootleg Spring area. Outside sights, including Las Vegas, the Blue Diamond strip mine, the Red Rock Canyon Scenic Loop Drive, Visitor Center, and Spring Mountain Ranch State Park, are visible from the escarpment.

Opportunities for Solitude: The sandstone portion of the WSA offers outstanding opportunities to avoid other visitors because of the extremely rugged topography throughout and heavy vegetation in most of the canyons. Opportunities for solitude in portions of Pine Creek closest to the loop drive are declining due to high

visitor use. Outside sights and sounds from Las Vegas, the Blue Diamond Mine, and the park developments affect the solitude experience on the escarpment. Air traffic is frequent. The 2,000-foot physical barrier of the escarpment creates a feeling of distance from the developments, but visitors will realize they are not in a remote place. The limestone overthrust portion of the unit offers outstanding solitude on the north slopes and wash bottoms due to the heavy pinyon-juniper cover. The sparse cover of the south slopes and the outwash plain in the southwest corner offer minimal solitude.

Opportunities for Primitive

Recreation: Dayhiking, backpacking, rock climbing and scrambling, photography, and nature study are outstanding in this WSA. The variety of outstanding special features (see Special Features section) contributes to the value of the experience. Numerous possible destinations for wilderness trips offer a wide range of challenge levels, varying from a leisurely dayhike one mile off a paved road to a two-day rock climb. La Madre Mountains WSA, to the north, is separated from Pine Creek by only a jeep trail, allowing for longer trips and a tie-in to the Mt. Charleston backcountry area. Pine Creek is easily accessible, yearlong, to half the population of Nevada.

Special Features: The red and buff, banded, sheer, sandstone cliffs are of geological, ecological and scenic interest. Views of the escarpment and from the escarpment are outstanding. Cross-bedding of sandstone from former sand dunes and the Keystone Thrust of limestone over the sandstone are clearly displayed. The deep, narrow canyons create cooler micro-climates supporting a large

number of plants endemic to the Spring Mountains, ponderosa pines at unusually low elevation, and the largest collection of fern species found in the Spring Mountains. Yearlong springs and seasonally flowing waterfalls and streams contribute to the beauty of the area and its usefulness for wildlife. The WSA supplies crucial summer habitat for a sizeable herd of desert bighorn sheep and lesser numbers of deer. A wide variety of historic and prehistoric cultural sites have been located in the WSA (see Cultural Resources section).

Recreation

The Pine Creek WSA contains the heart of the Red Rock Canyon Recreation Lands. While most use occurs outside the WSA boundaries, portions of the WSA receive heavy use from individuals and groups, including rock climbing schools, BLM-guided hikes, the Sierra Club, Scout troops, and the Audubon Society. Other than one primitive trail, there are no developed recreation facilities in the WSA. Access trails, a loop drive, picnic grounds, and scenic overlooks are within a few miles of the boundary. Other recreation developments in the area include Spring Mountain Ranch State Park and a commercial development featuring a model Old West town, zoo, and riding stable.

The colorful cliffs of the WSA are probably the most significant sightseeing feature in Clark County. They are viewed from within the WSA, from the scenic loop drive, Blue Diamond and Pahump Highways, and from the city of Las Vegas itself.

Much of the WSA is inaccessible to off-road vehicles. The Clark County ORV CRMP Committee recommended in 1982 that use be on designated roads only. Rocky Gap Road, on the WSA boundary,

is an important ORV sightseeing and hill climbing area, however, the CRMP Committee recommended upgrading it to passenger car quality. Bootleg and Rainbow Springs roads and some washes on the west side have also been important for ORV sightseeing.

The canyons and the top of the escarpment are important dayhiking areas. Pine Creek, Icebox, Lost Creek, and Oak Creek Canyons receive the heaviest use. Trails have developed through use in many of these canyons. A primitive trail, marked by paint, runs from the Red Rock Summit on Rocky Gap Road, to the bridge on Bridge Mountain. Backpacking use of the escarpment is moderate. Camping is discouraged below 5,000 feet except for the Oak Creek Canyon camping area. Rainbow and Bootleg Springs, Rocky Gap Summit, and the escarpment are important camping areas.

The Rocky Gap Road and the roads and washes on the west side of the WSA are important horseback riding use areas. The escarpment and canyons are unsuitable for this use.

The sandstone escarpment is the most important rock climbing area in southern Nevada and possibly all of Nevada (Clark County URA 1981). It is used by individuals, groups, and rock climbing schools. Articles concerning the area have been published in national climbing magazines and a guidebook is due to be published soon.

Cultural resources

This WSA is considered extremely sensitive. Environmental variables present in this WSA, which contribute toward a high probability for site occurrences, include numerous springs and perennially flowing streams, pinyon pine, agave, and deer and bighorn sheep populations. Cultural resource inventories conducted by members of the Archaeological Research

Center at UNLV revealed an extremely high density of cultural sites at several springs on the boundary of the WSA including Pine Creek, Oak Creek, Mud Spring, Lone Grapevine Spring, Scrub Oak Spring, Mountain Springs, Rainbow Spring, Bootleg Spring, and Switchback Spring. Site types representative of this WSA include dramatic rock art panels including both petroglyphs and pictographs, numerous agave roasting pits, rock shelters, milling sites including both bedrock mortars and portable metates, open camp sites adjacent to springs and creeks, and lithic and ceramic scatters. In addition, the historic Old Spanish Trail runs through the extreme southern portion of the WSA.

Lands

This WSA is composed of 24,000 acres of public land. The WSA is bordered on the west by an electric distribution line, and an existing utility corridor borders the WSA on the south. The 150-acre withdrawal located within the WSA, known as the Pine Creek Canyon Research Natural Area, was withdrawn in 1965 from all forms of appropriation under the public land laws, including the mining laws, but not from leasing under the mineral leasing laws. About 65 percent of the WSA (15,600 acres) is included in the Red Rock Canyon Recreation Lands (designated October 5, 1967). These lands were also segregated from the operation of the agricultural lands laws, including the mining laws, but not the mineral leasing laws, by Multiple Use Classification N-257 (November 10, 1966). This classification is currently under review in accordance with Section 202(d) of the Federal Land Policy and Management Act. A portion of the WSA (3,200 acres) has been named in a list of federal lands in Nevada proposed by the State in 1981 for transfer to state ownership for the proposed Spring Mountain Range

State Forest, however, no application has yet been made.

Geology and Minerals

Geologically the WSA consists of Mesozoic and Paleozoic sediments made up primarily of carbonate rocks. The massive Aztec sandstone forms high spectacular cliffs on the east side of the WSA in Red Rock Canyon. The Keystone thrust fault is a major structural element, thrusting Paleozoic rocks over the younger Mesozoic Aztec sandstone.

Metallic mineral resources are not reported to occur in the WSA, but the productive Goodsprings Mining District to the south and in similar rock units produced gold, silver, lead, zinc, and copper.

Extensive deposits of nonmetallic minerals, including gypsum, silica, limestone, dolomite, building stone, and alluvium are found in the area.

There are 12 post-FLPMA authorized oil and gas leases affecting about 22,800 acres (95 percent) of the WSA. These 12 leases were authorized during 1981 and 1982 and are for a term of ten years each. The remaining 1,200 acres (5 percent) of the WSA are covered by six pending oil and gas lease applications. There are 75 acres of pre-FLPMA and 1,525 acres of post-FLPMA mining claims in the WSA. A large group of placer claims in the Lovell Wash area west of the WSA is reported to be capable of producing extensive tonnages of low grade gold. See the Mining Claims & Mineral Leases Map for the La Madre Mountains/Pine Creek WSAs.

The western two-thirds of the WSA is classified of low favorability for metallics with the remainder being classified unfavorable. The entire WSA is moderately favorable for

nonmetallics.

The WSA is classified moderately favorable for oil and gas because this area is part of the Overthrust Belt, and of low favorability for geothermal. Refer to the "La Madre Mountains/Pine Creek G-E-M Resources Area (GRA No. NV-32) Technical Report" for more detailed minerals information on this WSA. See the Mineral Potential Map for the La Madre Mountains/Pine Creek WSAs for an illustration of the highest potentials in this WSA.

Livestock Grazing

The WSA lies completely within the Spring Mountain allotment, which is unallotted and has not been grazed for the past eight years. There are four spring developments along the WSA boundary, and no range facilities proposed within the WSA. See the Range Improvement Map for the La Madre Mountains/Pine Creek WSAs.

Wild Horses and Burros

This WSA furnishes approximately 18 percent of the habitat for herds of 25 burros and 10-15 horses. The burros move into the WSA for water and some forage during the summer months.

Forestry

This WSA contains potential woodcutting areas in stands of overmature pinyon pine and juniper. Little potential exists for Christmas trees, due to lack of reproduction of pinyon trees. Extreme steepness of slopes in most of the area precludes firewood harvest.

Threatened or Endangered Plants

The following plants which are or have been proposed for classification as threatened or endangered are known to

occur in or very near this WSA.

1. Angelica scabra - threatened
2. Astragalus remotus - threatened*
3. Perityle megaloccephala var. intricata - threatened*
4. Viola purpurea var. charlestonensis - threatened*

*Recommended to be reduced to species of special concern (Mozingo and Williams 1980). These species are found in small healthy populations in many sites. Many populations in other states or areas are protected.

Wildlife

Desert bighorn occur throughout the east half of the WSA, including 17,523 acres of crucial summer habitat. See the Wildlife Habitat Map #1 for the La Madre Mountains/Pine Creek WSAs. Potential increases in the present herd are shown on Table 2-4. These increases are based on the existing and historic habitat available and the present condition of these habitats. Because of already good condition relative to forage, water, and cover, only minor increases could be achieved through project work.

The entire WSA is mule deer habitat, including 18,112 acres of summer habitat. This habitat is generally well-watered and the potential for increases in these herds by developing waters in the area is low. However, through proper management of fire, herd increases could be significant. See the Wildlife Habitat Map #2 for the La Madre Mountains/Pine Creek WSAs.

Other species found within the area include mountain lion, coyote, bobcat, a variety of raptors and nongame birds, and several species of lizards.

Fire Management

Lightning fires account for a majority of the fire activity in this WSA. These fires usually involve individual trees with occasional ground fuel being consumed. A large project fire occurred in 1979 in the First Creek drainage destroying pinyon and ponderosa pine along both sides of the drainage. On an average, one can expect 10 lightning-caused fires per year and 1-2 man-caused fires per year. The primary cause of man-caused fire activity in this WSA is abandoned campfires.

It is very likely that a large fire could develop in this WSA due to the continuity of fuel and the fuel loading. Although the eastern portion of the WSA is dominated by large cliff faces (the Red Rock Escarpment), drainages and pockets of ponderosa and pinyon pine are densely scattered throughout the escarpment complex.

The fire effects could be, and have proven to be, potentially disastrous. Potential exists for damage to private property (individual structures), campgrounds within Red Rock Canyon, small communities (Mt. Springs, Calico Basin), historical landmarks, (Spring Mountain Ranch State Park), and an amusement center (Bonnie Springs, Old Nevada).

North McCullough Mountains

Wilderness Values

Description: This WSA contains the north half of the McCullough Mountain Range, 15 miles south of Las Vegas. The 47,166- acre WSA is rectangular, 10 miles north-south and 8 miles east-west. Elevations range from 2,000 to 5,092 feet. The massive, rounded to flat-topped volcanic peaks have a steep, east-facing escarpment and gradual western slope. Blocky, black, basalt flows are exposed on the ridges, peaks, and western slopes.

The east escarpment consists of formations of reddish-brown andesite breccia. The WSA contains some valley land on the western fringe and a broad, two-mile-wide central valley separating the main ridgeline from the rugged Sutor Hills. No springs occur in the WSA. Desert plants of the creosote bush community, including barrel cactus, scattered Joshua trees, and several species of cholla and prickly pear, dominate the WSA.

Naturalness: Six and one-half miles of way were found in the WSA. Scattered vehicle tracks occur in the western end, Hidden Valley, and its tributaries. One abandoned mine consisting of a shaft and collapsed shack and an old bladed drill pad are also found in the WSA. A communication site and active mine are located outside the WSA but near the boundary. Powerlines and substations are within a few miles of the east and south boundaries, and suburban development from Las Vegas and Henderson begin six miles north of the WSA. The internal imprints are substantially unnoticeable except in the Hidden Valley area and the lower portion of tributary washes. Urban development and powerlines can be seen from the ridgeline. Flights into McCarran International Airport frequently are routed over the WSA and are quite noticeable on the north end.

Opportunities for Solitude: The rugged east face of the escarpment and the Sutor Hills offer outstanding opportunities for solitude because of the outstanding topographic screening. Twisting canyons, peaks, and pinnacles screen visitors. The rounded peaks of the ridgeline, the broad central valley, Lava Valley, and Hidden Valley and the lower end of its tributaries do not provide adequate screening. There is no vegetative screening in the WSA.

Opportunities for Primitive

Recreation: Primitive recreation opportunities are outstanding because of the diversity of possible activities--backpacking, rock scrambling, nature study, photography, hunting, and horseback riding--and high quality of one activity, dayhiking. The canyons of the east face and the high points of the range provide numerous destinations and challenge levels. Special features add to the value of the experience. The area is easily accessible yearlong to the residents of the Las Vegas Valley. In summer, temperatures are generally too hot for use of this area.

Special Features: Unlike the other WSAs in Clark County, the North McCulloughs are volcanic in origin. Examples of lava flows, ash falls, and glassy zones are clearly displayed. The andesite flows of the rugged east face form particularly scenic features. The ridgeline offers excellent views of the Eldorado and Jean Dry Lakes, numerous ranges, and the Las Vegas Valley. The WSA supports an undisturbed desert plant community which combines plants of the Mohave and Sonoran Desert Regions and the Great Basin. Of particular interest are black grama grass, not known to occur elsewhere in Nevada, and large stands of teddy bear cholla. Bighorn sheep inhabit the WSA in all but the driest months. A variety of prehistoric sites have been located in the WSA (see Cultural Resources section.) The Sloan petroglyphs are on the National Register of Historic Places.

Recreation

There are no developed recreation facilities within or near the WSA. Recreation use is light throughout despite its proximity to Las Vegas. The rugged lava landscape impedes

vehicle and even foot traffic.

Sightseeing use is light and is not concentrated in any one area.

This WSA has been closed to off-road vehicle racing since the previous Management Framework Plan (Stateline Land Use Guide 1975). Casual use has occurred in Lava Valley, the large central valley, and washes draining into Hidden Valley. Use is light due to the rugged lava block terrain and the deep sand of the westward-draining washes (Clark County URA 1981).

Backpacking is probably very uncommon in this WSA. The most likely destination for dayhiking is the Sutor Hills area.

Cultural Resources

The entire WSA is considered highly sensitive. Environmental variables governing site distribution within the WSA include high density of bighorn sheep and several steep-walled canyons with heavily patinated rock surfaces, which readily lend themselves to potential rock art panels. The Sloan petroglyph site, which is on the National Register of Historic Places, is located in the western portion of the WSA. Many other rock art sites are located throughout the WSA. In addition to the rock art, other site types representative of this WSA include bighorn sheep hunting blinds, rock shelter sites, aboriginal trail segments, and lithic and ceramic scatters.

Lands

This WSA is composed of 47,166 acres of public land. An existing utility corridor through McCullough Pass borders the WSA to the south, and an existing major utility corridor borders the WSA on the east. The southeastern boundary of the WSA is

contiguous to the Eldorado Valley Act lands. These lands were set aside by special federal legislation giving the State of Nevada an option to purchase them. The Eldorado Valley Act lands will most likely be intensively developed.

Geology and Minerals

The North McCullough Range consists chiefly of Tertiary volcanic rocks, illustrated particularly on the eastern edge by a steep escarpment 2,000 to 3,000 feet high (Longwell et al. 1965). The entire area is blanketed with a Tertiary sequence of basal gravels and latite flows, andesite and rhyolitic flows, breccias and tuffs, and a basalt capping. In the Black Mountain area, these volcanics reach a maximum thickness of 3,200 feet.

The Alunite or Railroad Pass Mining District, a few miles northeast of the WSA, has produced less than \$100,000 in gold from the Quo Vadis mine. Gold and silver were produced in 1935 and 1936 from quartz veinlets in sheared andesite. An aggregate mine has been in production since 1979 just outside the southwestern boundary of the WSA. There are no patented claims within two or three miles of the WSA.

There are 29 post-FLPMA authorized oil and gas leases affecting about 39,148 acres (83 percent) of the WSA. These 29 leases were authorized during 1981 and 1982 for a term of ten years each. There are no pending applications. There are 150 acres of pre-FLPMA and 500 acres of post-FLPMA mining claims in the WSA. See the Mining Claims & Mineral Leases Map for the North McCullough Mountains WSA.

The North McCullough Mountains WSA is classified unfavorable for metallic minerals. Most of it is classified unfavorable for nonmetallic minerals

but parts around the edges are classified moderately favorable for alluvium. Oil and gas is of moderate favorability because this area is part of the Overthrust Belt. Geothermal potential is of low favorability except for an area in the northeastern portion of the WSA which has been identified by the U.S. Geological Survey (USDI, Geological Survey, 1979) as moderately favorable. Refer to the "McCullough Mountains G-E-M Resources Area (GRA No. NV-36) Technical Report" for more detailed minerals information on this WSA. See the Mineral Potential Map for the North McCullough Mountains WSA for an illustration of the highest potentials for this WSA.

Livestock Grazing

Three allotments overlap the WSA--the Hidden Valley allotment, containing 39,326 acres of the WSA; the Jean Lake allotment, containing 172 acres of the WSA; and the McCullough Mountains allotment, containing 7,668 acres of the WSA. All three allotments are proposed for reclassification to ephemeral-perennial range (see Glossary) and for intensive range management, although no studies or activity plans have yet been done. Each allotment has one operator, and two of the allotments have the same operator. The Jean Lake and McCullough Mountains allotments have customarily been grazed by cattle yearlong, and the Hidden Valley allotment by cattle from March through May and November through February. There are no existing or proposed range facilities within the WSA.

Forestry

Desert vegetation is found throughout the WSA, although little potential exists for sustained yield.

Wildlife

There are 35,789 acres of yearlong desert bighorn habitat in the WSA. See the Wildlife Habitat Map for the North McCullough Mountains WSA and Table 2-3. Use in this area is yearlong with concentrations of use in the winter months due to lack of summer water availability. The area is identified as a high priority for Habitat Management Plan development (Janke 1980) and shows a high potential for increasing bighorn numbers through water development (see Table 2-4).

Although no crucial habitat for quail and chukar currently exists, it has been identified as a high potential area for quail and chukar through water development and introductions.

Other species in the area include mountain lion, coyote, bobcat, and a wide variety of raptors, nongame birds, and reptiles.

Fire Management

Lightning accounts for a majority of the fire activity in this WSA. Fire occurrence is very low, and fires are usually limited to single plants or small islands of vegetation located throughout the WSA. Consumption would probably be less than 10 to 20 acres.

South McCullough Mountains

Wilderness Values

Description: The South McCullough Mountains are a long, narrow, primarily wooded range 13 miles west of Searchlight, Nevada. The WSA is 14 miles north-south and 3 to 9 miles east-west, totalling 56,623 acres. Elevations range from 2,500 to 7,026 feet. The mountains of the range are rounded and roughly symmetrical with both sides of the ridgeline dropping off gradually to numerous valleys and foothills. The boundaries also

encompass sloping bajadas on the west and east sides. Most of the WSA is composed of metamorphosed Precambrian rock with some volcanic flows on the north end. Vegetation varies from desert shrubs, Joshua trees, yuccas, and cacti at low elevations to dense pinyon-juniper stands above 5,000 feet.

Naturalness: Internal unnatural imprints are limited to two motorcycle race courses and scattered vehicle tracks on the bajadas, and two insignificant old mine tunnels. Two major cherrystems, totalling 4-1/2 miles of road, divide the WSA into several lobes. Five developed springs, two of them within the cherrystems, are on the boundaries of the WSA. A mining area and communication site are located near the south boundary and a powerline is parallel to and about 1/4 mile from the east boundary. These imprints are substantially unnoticeable except in the immediate vicinity and on the western bajada. The core area is narrow but natural and the outward views are primarily natural.

Opportunities for Solitude:

Screening is outstanding in the mountain core area due to the dense pinyon-juniper forest and the numerous draws and drainages dividing the central ridge. The bajadas on the west and east slope do not offer outstanding screening because of the gentle slopes and sparse, low-growing desert shrubs.

Opportunities for Primitive

Recreation: This WSA offers opportunities for dayhikes, backpacking, rock scrambling, nature study, photography, and horseback riding. No activity by itself is outstanding but the variety of available activities is outstanding. Good access, scenic views, diverse vegetation, and availability of water

on the boundaries contribute to the value of the experience.

Special Features: The South McCullough Range supports a variety of desert plant communities, including impressive stands of Joshua trees on the lower slopes. The five springs enhance the value of the area for wildlife. The WSA supplies crucial summer habitat for bighorn, chukar, quail, and mule deer. Numerous signs of aboriginal habitation have been found in the WSA (see Cultural Resources section).

Recreation

There are no developed recreation facilities within or near the WSA. Recreation use is light and most likely to occur around the springs. Most use is by individuals and families, but ORV groups and the Sierra Club have also used the area.

Sightseeing use is light and is most likely to occur in the more accessible western portion, particularly around the roaded springs.

The lower western slope of the South McCullough Mountains is an important off-road vehicle use area. Several races, including the "Las Vegas 400" have been held here. The Clark County ORV CRMP Committee in 1982 closed all of the McCullough Range to racing except for the slopes from Railroad Spring west. The two cherrystem roads into the springs as well as the boundary roads and springs are important ORV sightseeing and trail bike riding areas. The center of the range receives very little use. Use on the northeastern bajada is light due to the volcanic, rocky terrain.

Camping is most likely to occur near the springs in conjunction with vehicle use. Hiking use is light and dispersed. McCullough Mountain is

occasionally climbed.

Cultural Resources

This entire WSA lies within a high sensitivity zone for aboriginal site occurrences, because of the several springs and the pinyon pine and juniper. Site types representative of this WSA include open seasonal campsites near springs, pine nut cache features, rock shelters, a wickiup structure, and lithic scatters.

Lands

This WSA is composed of 56,623 acres of public land. An existing utility corridor through McCullough Pass borders the WSA to the north and an existing major utility corridor borders the WSA on the east. The northeastern boundary of the WSA is contiguous to the Eldorado Valley Act lands. These lands were set aside by special federal legislation so that the State of Nevada may have an option to purchase them. The Eldorado Valley Act lands will most likely be intensively developed.

Geology and Minerals

The geology of the South McCullough Range is chiefly a complex of metamorphic and igneous rocks of Precambrian age. The most abundant rock type is a gray gneissic granite, but many large areas are underlain by various kinds of schist and granitic rocks.

The Crescent Mining District, just south of the WSA, was activated in 1894 with the discovery of turquoise. Gold, silver, lead, and minor copper were produced until 1941 when the district became inactive. The Double Standard mine, just outside the southern boundary of the WSA, reportedly produced several thousand dollars worth of gold and silver.

The Sunset Mining District is southwest of the WSA. The only producing property in the district is the Lucy Grey mine. Total production is estimated at \$50,000, principally in gold with lesser amounts of silver, lead, and copper. The majority of the production was between 1905 and 1928.

There are 13 post-FLPMA authorized oil and gas leases affecting about 16,993 acres (30 percent) of the WSA. These 13 leases were authorized during the period 1980 through 1982 for a term of ten years each. There are no pending applications. There are 2,350 acres of post-FLPMA mining claims in the WSA. See the Mining Claims & Mineral Leases Map for the South McCullough Mountains WSA.

The south and center of the South McCullough Mountains WSA is classified moderately favorable for metallic minerals, including gold, silver, copper, lead, zinc, and beryllium. Part of the WSA is classified of low favorability for nonmetallic minerals because of the potential for feldspar and mica production, while the edges of the WSA are classified moderately favorable for alluvium. Oil and gas is of moderate favorability because this area is part of the Overthrust Belt. Potential for geothermal is of low favorability. Refer to the "McCullough Mountains G-E-M Resources Area (GRA No. NV-36) Technical Report" for more detailed minerals information on this WSA. See the Mineral Potential Map for the South McCullough Mountains WSA for an illustration of the highest potentials for this WSA.

Livestock Grazing

Two allotments overlap the WSA--the Jean Lake allotment, containing 25,110 acres of the WSA, and the McCullough Mountains allotment, containing 31,513 acres of the WSA. Both allotments are

proposed for reclassification to ephemeral-perennial range (see Glossary) and for intensive range management, although no studies or activity plans have yet been done. Both allotments have the same operator and have customarily been grazed yearlong by cattle. There are several range improvements within the WSA, but no proposed range facilities. See the Range Improvements & Critical Watershed Map for the South McCullough Mountains WSA.

Watershed

There are 1,400 acres of critical watershed within the South McCullough Mountains WSA, representing 2 percent of this WSA. See the Range Improvements & Critical Watershed Map for the South McCullough Mountains WSA.

Forestry

This WSA contains potential woodcutting areas at higher elevations. The drainages at lower elevations contain a small amount of wood, but little potential for sustained yield exists in the lower areas. No potential exists for Christmas trees, even at the highest elevations.

Threatened or Endangered Plants

The following plants which have been nominated for listing as threatened or endangered are known to occur in or very near this WSA.

1. Coryphantha vivipara var rosea - threatened
2. Cryptantha tumulosa - threatened

Wildlife

The distribution of desert bighorn and seasonal use areas are delineated on the Wildlife Habitat Map #1 for the

South McCullough Mountains WSA. There are 36,019 acres of bighorn habitat within the WSA (see Table 2-3). Water distribution limits summer use in the north and south ends of the WSA. Competition between cattle and bighorn in the areas around the existing waters has been identified as severe (Janke 1980, McQuivey 1976). There are 26,726 acres of deer habitat in the area (see Table 2-3 and the Wildlife Habitat Map #2 for the South McCullough Mountains WSA). Deer distribution is primarily associated with the higher elevations and the pinyon-juniper vegetation types. Very little potential exists for increasing the deer herd in this area. Gambel's quail and chukar crucial areas are delineated on the Wildlife Habitat Map #1 for the South McCullough Mountains WSA. The potential for increase in numbers and distribution through water development does exist.

Other species occurring within the WSA include mountain lion, coyote, bobcat, and a variety of raptors, nongame birds, and reptiles.

Fire Management

Lightning accounts for the majority of fires occurring in this WSA. These fires typically involve individual trees, Joshua trees, or yucca plants, with ground fuel occasionally being consumed. However it very likely that a large fire could occur in this WSA, due to the continuity of fuels and the fuel loading where vegetation exists.

DIVERSITY IN THE NATIONAL WILDERNESS PRESERVATION SYSTEM

Expanding the Diversity of Natural Systems and Features, as Represented by Ecosystems and Landforms

The Bailey-Kuchler system of ecosystem classification (Bailey 1976, Kuchler 1966) was selected for this analysis.

It is a land classification system which facilitates planning at the national level and provides a broad synthesis of current knowledge about the ecosystem geography of the country. The classification of ecosystems is based upon an integration of the natural factors of climate, vegetation, soils, and landform.

The Arrow Canyon, Muddy Mountains, and North McCullough Mountains Wilderness Study Areas are representative of the American Desert/Creosote Bush ecosystem. The Mt. Stirling, Pine Creek, and South McCullough Mountains Wilderness Study Areas are representative of the American Desert/Juniper-Pinyon Woodland ecosystem. The La Madre Mountains WSA contains portions of both ecosystems (see Table 2-6).

The American Desert/Creosote Bush ecosystem is currently represented in the National Wilderness Preservation System by one area which totals 311,493 acres. There are four areas, totalling 1,896,740 acres, which represent this ecosystem that are administratively endorsed for wilderness designation. Additionally, there are 141 areas, totalling 4,055,398 acres, which represent this ecosystem that are scheduled to be studied for possible inclusion into the National Wilderness Preservation System (see Table 2-7).

The American Desert/Juniper-Pinyon Woodland ecosystem is currently not represented in the National Wilderness Preservation System. There is one area, totalling 95,400 acres, which represents this ecosystem that is administratively endorsed for wilderness designation. Additionally, there are 20 areas, totalling 591,548 acres, which represent this ecosystem that are scheduled to be studied for possible inclusion into the National

Wilderness Preservation System (see Table 2-7).

Assessing the Opportunities for Solitude or Primitive Recreation Within a Day's Driving Time of Major Population Centers

Population centers are defined as Standard Metropolitan Statistical Areas (SMSAs) which have populations of 100,000 or greater. The SMSAs within approximately a day's driving time, based on a distance of 250 miles of the Wilderness Study Areas, are identified on Table 2-8. The number and acreages of statutory wilderness areas, areas which are administratively endorsed for wilderness designation, and further study areas within 250 miles of each SMSA are shown on Table 2-9.

Balancing the Geographic Distribution of Wilderness Areas

The Jarbidge Wilderness Area, located in northeastern Nevada, is the only area in Nevada designated as wilderness. The Jarbidge Wilderness Area totals 64,847 acres or .09 percent of Nevada federal lands. Currently, there are an estimated 8 million acres in Nevada under consideration for wilderness designation, as either administratively endorsed as suitable or scheduled for further planning. Within 250 miles of Las Vegas, and within the State of Nevada, there are 7 areas, totalling 1,878,445 acres, which are administratively endorsed for wilderness designation, and 72 areas, totalling 3,135,012 acres, which are scheduled for further planning ("Profile 2" 1982).

In the surrounding region and within 250 miles of Las Vegas, there are 30 designated wilderness areas, totalling 2,163,849 acres; 54 areas administratively endorsed for

wilderness designation, totalling
5,931,672 acres; and 448 areas
scheduled for further planning,
totalling 14,615,525 acres ("Profile
2" 1982).

TABLE 2-1
MINERALS ACTIVITIES AND POTENTIALS BY WSA

	Arrow Canyon Range	Muddy Mtns.	Mt. Stirling	La Madre Mtns.	Pine Creek	North McCullough Mtns.	South McCullough Mtns.
MINING CLAIMS							
Pre-FLPMA(1) Acreage(2)	300	650	250	1,450	75	150	0
Post-FLPMA Acreage(2)	500	950	50	50	1,525	500	2,350
OIL AND GAS LEASES							
Pre-FLPMA Leases	0	7	0	0	0	0	0
Acreage(2)	0	14,256	0	0	0	0	0
% of WSA Affected	0	15%	0	0	0	0	0
Post-FLPMA Leases	27	59	14	37	12	29	13
Acreage(2)	32,853	76,936	2,090	54,155	22,800	39,148	16,993
% of WSA Affected	100%	80%	3%	95%	95%	83%	30%
Applications	0	3	0	5	6	0	0
Acreage(2)	0	4,978	0	2,812	1,200	0	0
% of WSA Affected	0	5%	0	5%	5%	0	0
Percent of WSA Affected	100%	100%	3%	100%	100%	83%	30%
METALLICS	U	L	H	L	L	U	M
NONMETALLICS	H	H	M	H	M	M	M
URANIUM	L	L	L	L	L	L	L
OIL & GAS	M	M	M	M	M	M	M
GEOTHERMAL	M	L	L	L	L	M	L

U - Unfavorable
L - Low Favorability
M - Moderate Favorability
H - High Favorability

- (1) FLPMA - Federal Land Policy and Management Act, October 21, 1976
(2) All acreage estimated

Sources: Great Basin GCM Joint Venture 1982; USDI, Geological Survey, 1979.

TABLE 2-2

LIVESTOCK GRAZING IN WSAs

WSA	Allotment(s)	Acreage in WSA	Number of Permittees	Current Period-of-Use	MFP II Grazing Management Intensity(1)
Arrow Canyon Range	Arrow Canyon	27,416	1	Mar-May, Sept-Nov	C
	Pittman Well	1,232	1	No Use	C
	Ute	4,205	3	Mar-May	C
		<u>32,853</u>			
Muddy Mountains	Muddy Mountains	71,354	2	Mar-May	C
	White Basin	23,520	2	Mar-May, Sept-Nov	C
	Sunrise Mountain	1,296	NA	No Use	C
	<u>96,170</u>				
Mt. Stirling	Wheeler Slope	14,819	NA	No Use	C
	Wheeler Wash	23,465	1	May-Nov	I
		<u>69,650 (2)</u>			
La Madre Mountains	Kyle Canyon	17,116	1	No Use	C
	Roses Spring	5,630	NA	No Use	C
	Spring Mountain	25,974	NA	No Use	C
	7777	7,523	NA	No Use	C
		<u>56,243</u>			
Pine Creek	Spring Mountain	24,000	NA	No Use	C
		<u>24,000</u>			
North McCullough Mtns.	Hidden Valley	39,326	1	Mar-May, Nov-Feb	I
	Jean Lake	172	1	Yearlong	I
	McCullough Mtns.	7,668	1	Yearlong	I
		<u>47,166</u>			
South McCullough Mtns.	Jean Lake	25,110	1	Yearlong	I
	McCullough Mtns.	31,513	1	Yearlong	I
		<u>56,623</u>			

(1) Range management intensity (Clark County MFP 1983). I=Intensive, C=Custodial.

(2) Includes 31,366 acres of the WSA lying within Nye County.

TABLE 2-3
WILDLIFE HABITAT IN WILDERNESS STUDY AREAS

BIG GAME HABITAT	Deer Habitat		Deer Summer Habitat	Current Elk Habitat		Current Yearlong Bighorn Sheep Habitat		Current Summer Bighorn Sheep Habitat		Potential Bighorn Sheep Habitat	
	Acres	% of Total*	Acres	Acres	% of Total*	Acres	% of Total*	Acres	% of Total*	Acres	% of Total*
WSA											
Arrow Canyon Range						18,312	2.8%				
Muddy Mountains						49,280	7.5%				
Mt. Stirling	54,847	7.7%	14,208	53,388	21.0%					67,807	6.5%(a)
La Madre Mountains	42,086	8.6%	22,681	22,886	13.2%	46,234	7.1%	18,253	12.6%	11,008	2.0%
Pine Creek	23,872	4.9%	18,112			17,907	2.7%	17,523	12.1%		
No. McCullough Mtns.						35,789	5.5%				
So. McCullough Mtns.	26,726	5.5%	13,824			36,019	5.5%	15,130	10.5%		
TOTAL	147,531	26.7%	68,825	76,274	34.2%	203,541	31.1%	50,906	35.2%	78,815	8.5%

SMALL GAME and TORTOISE	Crucial Desert Tortoise Habitat		Crucial Quail Habitat		Crucial Chukar Habitat	
WSA	Acres	% of Total*	Acres	% of Total*	Acres	% of Total*
Arrow Canyon Range	461	0.1%	5,914	0.7%		
Muddy Mountains			563	0.1%		
Mt. Stirling			5,222	0.2%(a)	1,535	2.8%
La Madre Mountains						
Pine Creek						
No. McCullough Mtns.						
So. McCullough Mtns.			32,640	3.7%	11,802	26.5%
TOTAL	461	0.1%	44,339	4.7%	13,337	29.3%

* Represents the percent of all of that particular type of habitat available on BLM-administered lands in Clark County.

(a) Percent reflects only the acreage in Clark County and does not include acreage in Nye County.

Source: Clark County URA 1981; Clark County EIS Team 1983.

TABLE 2-4
WILDLIFE POPULATION ESTIMATES AND MANAGEMENT GOALS

WSA	Bighorn Sheep			Deer		Elk
	Fall-Spring	Summer	Goal*	Yearlong	Goal*	Yearlong
Arrow Canyon Range	49		170			
Muddy Mountains	63		386			
Mt. Stirling			530	73	219	23
La Madre Mountains	112	74	447	56	168	10
Pine Creek	43	71	140	32	96	
No. McCullough Mtns.	53		280			
So. McCullough Mtns.	53	137	281	35	35	

Source: Janke 1980.

TABLE 2-5
MINING OPERATIONS IN CLARK COUNTY*

Type	Size by Number of Employees				Total
	1-9	10-24	25-49	50+	
Aggregate	1				1
Gypsum		1	1		2
Limestone				1	1
Precious Metals	16	1			17
Silica Sand	1			1	2
TOTAL	18	2	1	2	23

*Excluding sand and gravel (alluvium).

Source: Schilling 1981.

TABLE 2-6

ECOSYSTEM-LANDFORM ACREAGES WITHIN
THE WILDERNESS STUDY AREAS

<u>WSA</u>	<u>Ecosystem</u>	
	American Desert/ Creosote Bush (acres)	American Desert/ Juniper-Pinyon Woodland (acres)
Arrow Canyon	32,853	
Muddy Mountains	96,170	
Mt. Stirling		69,650
La Madre Mountains	25,000	31,967
Pine Creek		24,000
North McCullough Mountains	47,166	
South McCullough Mountains		56,623
TOTAL	201,189	182,240

Source: "Profile 2" 1982; Clark County Wilderness EIS Team 1983.

TABLE 2-7

EXISTING AND POTENTIAL
ECOSYSTEM/LANDFORM REPRESENTATIONS IN THE NWPS

STATUS	ECOSYSTEM/LANDFORM			
	American Desert/ Creosote Bush		American Desert/ Pinyon Juniper Woodland	
	Number of Areas	Acres	Number of Areas	Acres
Statutory Wilderness	1	311,493	0	0
Endorsed by President for Wilderness Designation	4	1,896,740	1	95,400
Further Study	141	4,055,398	20	591,548
TOTAL	146	6,263,631	21	686,948

Source: "Profile 2" 1982; Clark County Wilderness EIS Team 1983.

TABLE 2-8

DISTANCE BETWEEN STANDARD METROPOLITAN STATISTICAL AREAS
AND CLARK COUNTY WILDERNESS STUDY AREAS

Standard Metropolitan Statistical Areas	MILES FROM THE WILDERNESS STUDY AREAS (WSAs)							Average Distance From Affected WSAs
	Arrow Canyon	Muddy Mountains	Mt. Stirling	La Madre Mountains	Pine Creek	North McCullough Mountains	South McCullough Mountains	
Las Vegas, NV	40	25	43	19	20	21	35	29
Phoenix, AZ	NA	248	NA	NA	NA	239	232	239
Fresno, CA	NA	NA	217	240	242	NA	NA	233
Bakerfield, CA	249	247	188	205	202	223	217	218
Long Beach - Los Angeles, CA	NA	NA	209	214	208	218	206	211
Anaheim, CA	NA	247	211	213	207	213	200	215
Riverside, CA	226	209	177	177	170	174	161	184
Porterville, CA	235	239	176	196	196	220	217	211
Oxnard, CA	NA	NA	219	228	223	236	225	226
San Diego, CA	NA	NA	NA	NA	NA	247	232	239

Source: "Profile 2" 1982.

TABLE 2-9

EXISTING AND POTENTIAL WILDERNESS AREAS
WITHIN 250 MILES OF THE
STANDARD METROPOLITAN STATISTICAL AREAS



SMSA	Statutory Wilderness		Administratively Endorsed		Further Study	
	Number of Areas	Acres	Number of Areas	Acres	Number of Areas	Acres
	Las Vegas, NV	14	1,853,239	54	5,669,166	447
Phoenix, AZ	17	2,247,085	19	1,880,718	266	7,070,949
Fresno, CA	19	1,712,573	39	5,631,086	267	7,924,092
Bakersfield, CA	19	2,127,900	42	5,456,571	323	9,420,314
Long Beach - Los Angeles, CA	18	1,816,367	32	3,075,731	307	9,295,527
Anaheim, CA	13	1,642,021	27	3,590,701	291	9,265,104
Riverside, CA	13	1,642,021	30	5,038,151	345	10,800,302
Porterville, CA	20	2,216,745	44	5,747,916	320	2,883,618
Oxnard, CA	21	2,216,745	33	3,034,461	284	8,574,303
San Diego, CA	8	795,960	18	1,520,660	232	1,260,495

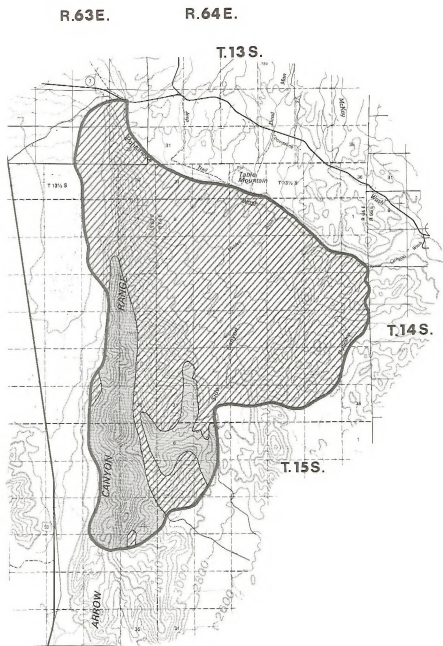
Source: "Profile 2" 1982.



ARROW CANYON RANGE WSA MAPS

MINERAL POTENTIAL
MINING CLAIMS & MINERAL LEASES
WILDLIFE HABITAT
CRITICAL WATERSHED

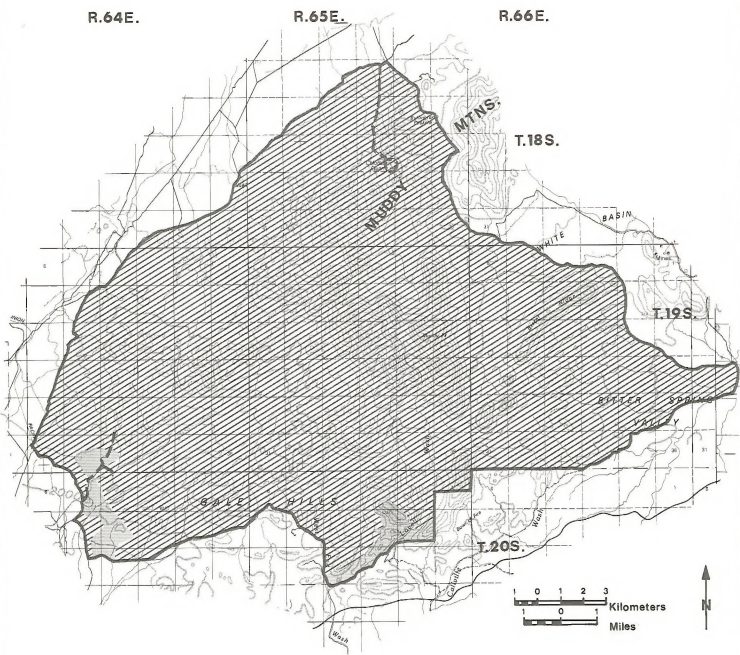
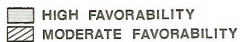
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-  MODERATE FAVORABILITY



MINERAL POTENTIAL

ARROW CANYON RANGE NV-050-0215

MINERAL POTENTIAL
MINING CLAIMS & MINERAL LEASES
WILDLIFE HABITAT
RANGE IMPROVEMENT & CRITICAL WATERSHED



MINERAL POTENTIAL

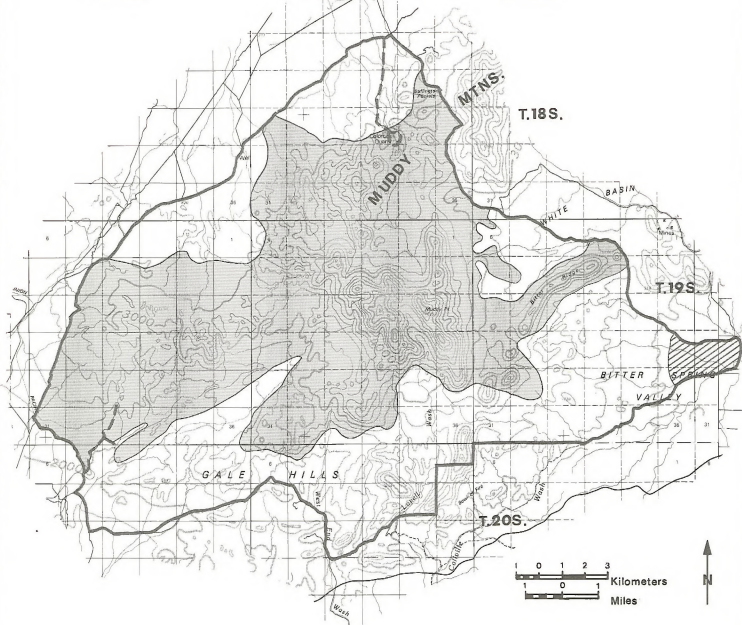
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- DESERT BIGHORN HABITAT
- GAMBEL'S QUAIL CRUCIAL HABITAT

R.64E.





R.65E.

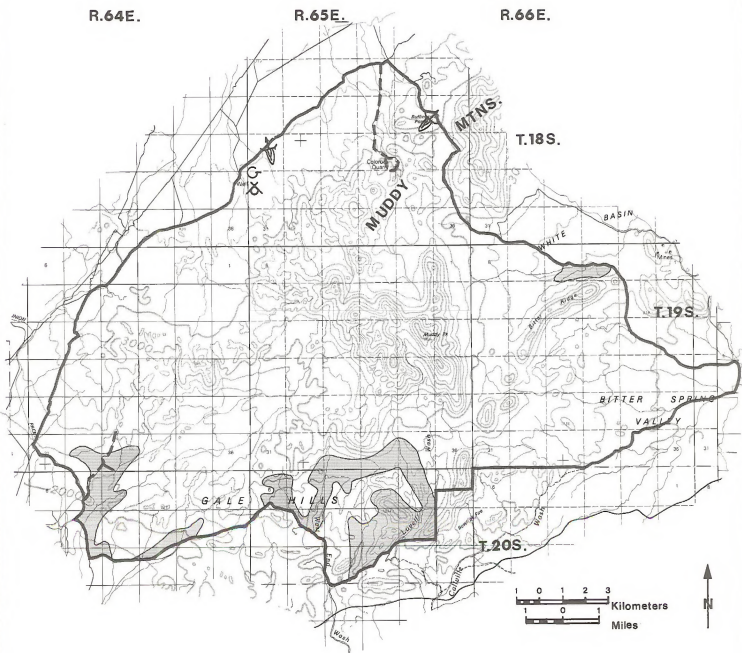
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WILDLIFE HABITAT

MUDDY MOUNTAINS NV-050-0229

-  CRITICAL WATERSHED
-  CORRAL
-  RESERVOIR
-  WELLS

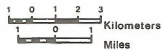
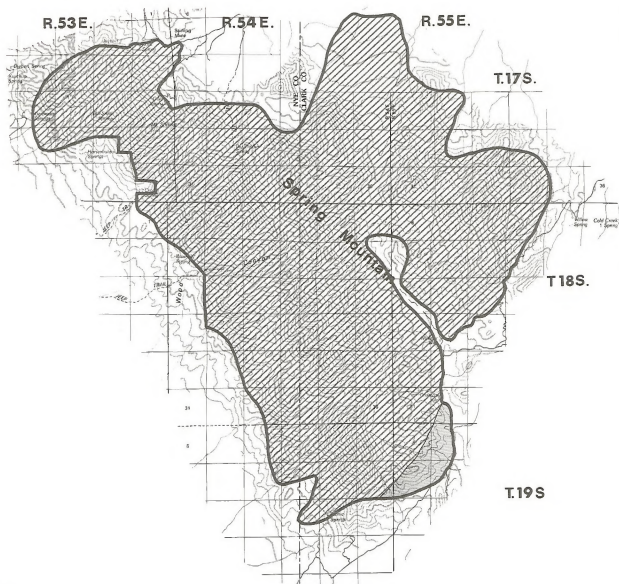


RANGE IMPROVEMENTS & CRITICAL WATERSHED

MUDDY MOUNTAINS NV-050-0229



MINERAL POTENTIAL
MINING CLAIMS & MINERAL LEASES
WILDLIFE HABITAT
RANGE IMPROVEMENT



MINERAL POTENTIAL

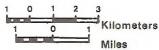
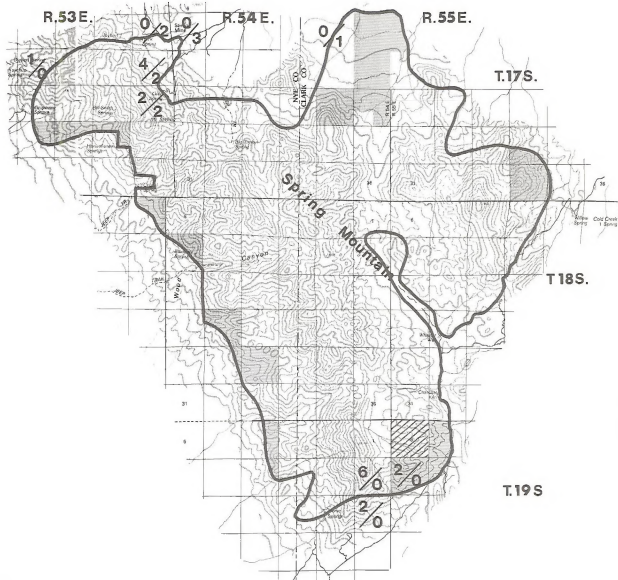
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 APPLICATION For Oil & Gas Lease

 POST-FLPMA Oil & Gas Lease




X/ PRE-FLPMA Mining Claims

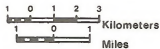
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MINING CLAIMS & MINERAL LEASES




MT. STIRLING NV-050-0401

-  DESERT BIGHORN POTENTIAL HABITAT
-  GAMBEL'S QUAIL CRUCIAL HABITAT
-  CHUKAR CRUCIAL HABITAT



WILDLIFE HABITAT #1

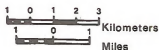
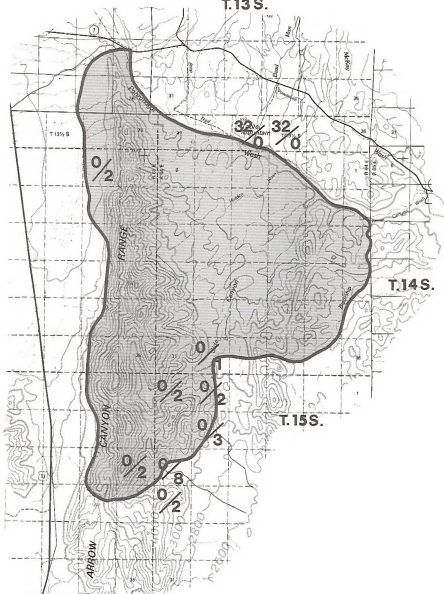
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-  POST-FLPMA Oil & Gas Lease
-  PRE-FLPMA Mining Claims
-  POST-FLPMA Mining Claims

R.63E.

R.64E.

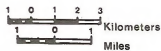
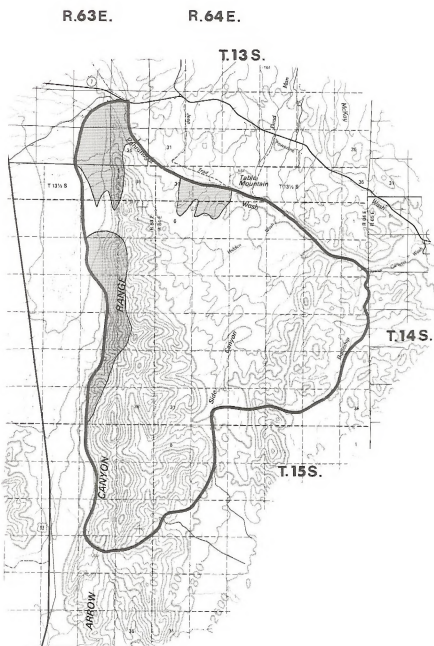
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MINING CLAIMS & MINERAL LEASES

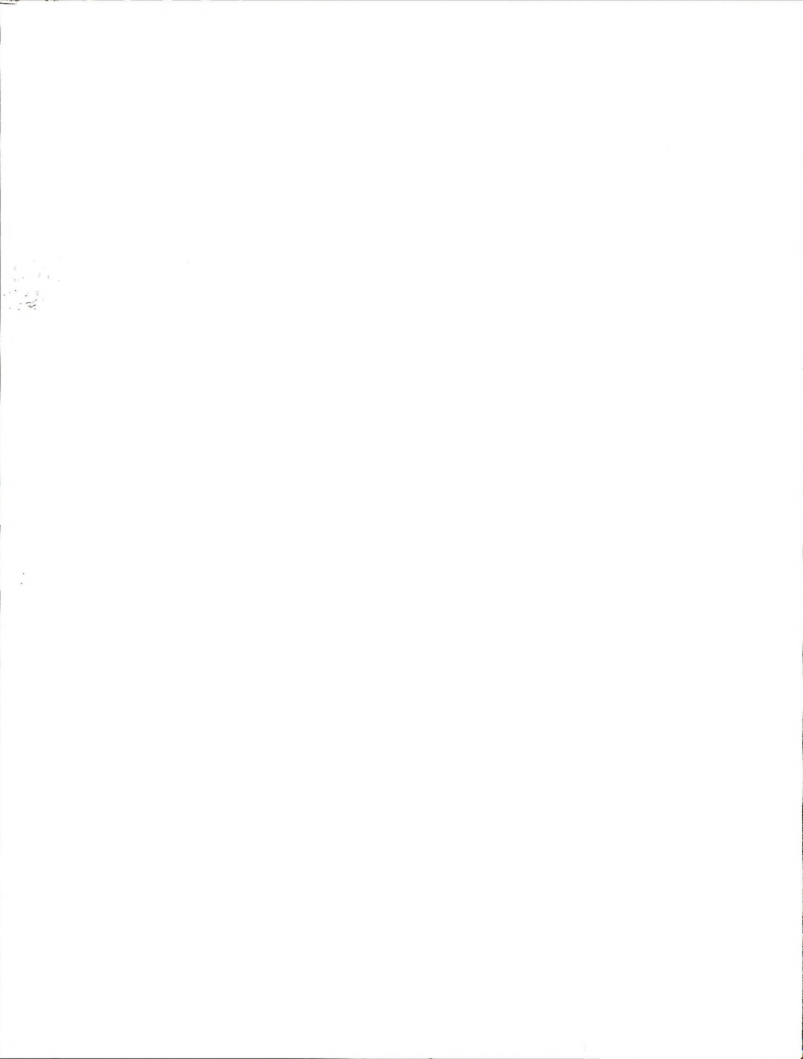
ARROW CANYON RANGE NV-050-0215





CRITICAL WATERSHED

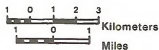
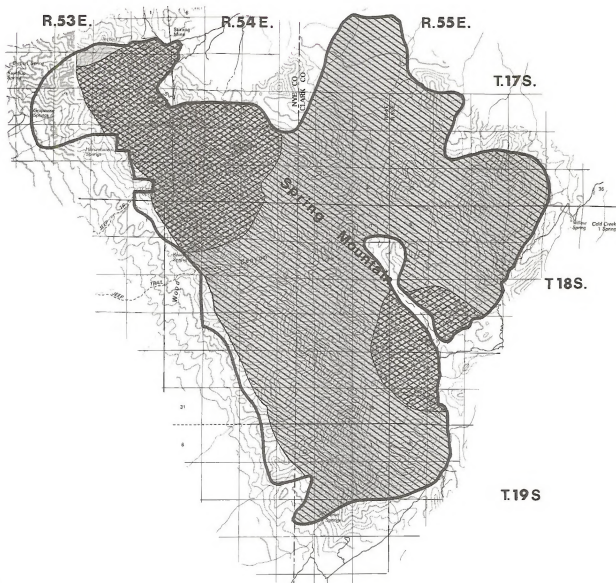


CRITICAL WATERSHED

ARROW CANYON RANGE NV-050-0215



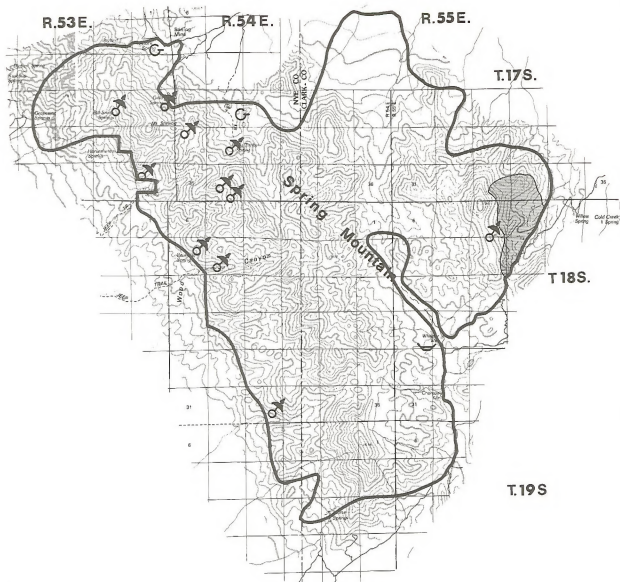
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-  MULE DEER SUMMER HABITAT
-  ELK YEARLONG HABITAT
-  ELK SUMMER HABITAT



WILDLIFE HABITAT #2

MT. STIRLING NV-050-0401

-  BURN SEEDING AND CONTOURING
-  SPRING DEVELOPMENT
-  CORRAL
-  TROUGH

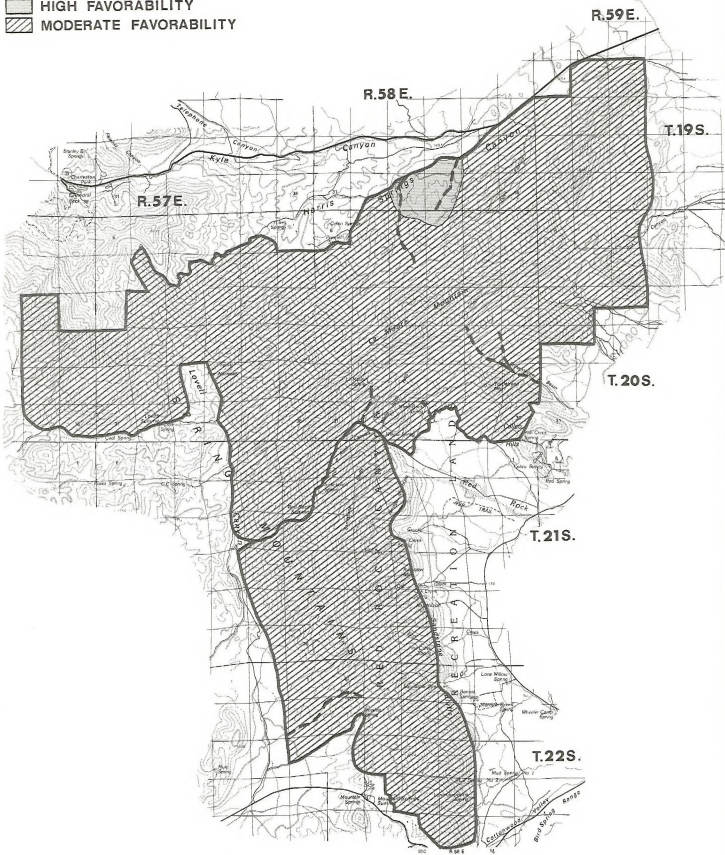


RANGE IMPROVEMENTS

MT. STIRLING NV-050-0401

LA MADRE MTNS./PINE CREEK WSA MAPS

MINERAL POTENTIAL
MINING CLAIMS & MINERAL LEASES
WILDLIFE HABITAT
RANGE IMPROVEMENT



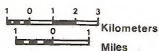
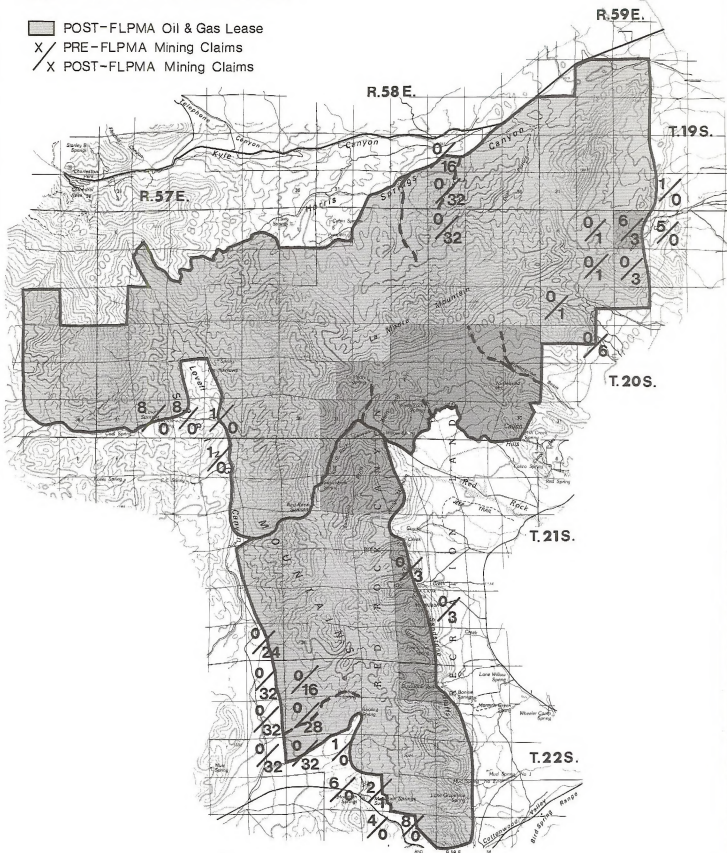
MINERAL POTENTIAL
LA MADRE MOUNTAINS NV-050-0412
PINE CREEK NV-050-0414

■ APPLICATION For Oil & Gas Lease




■ POST-FLPMA Oil & Gas Lease

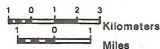
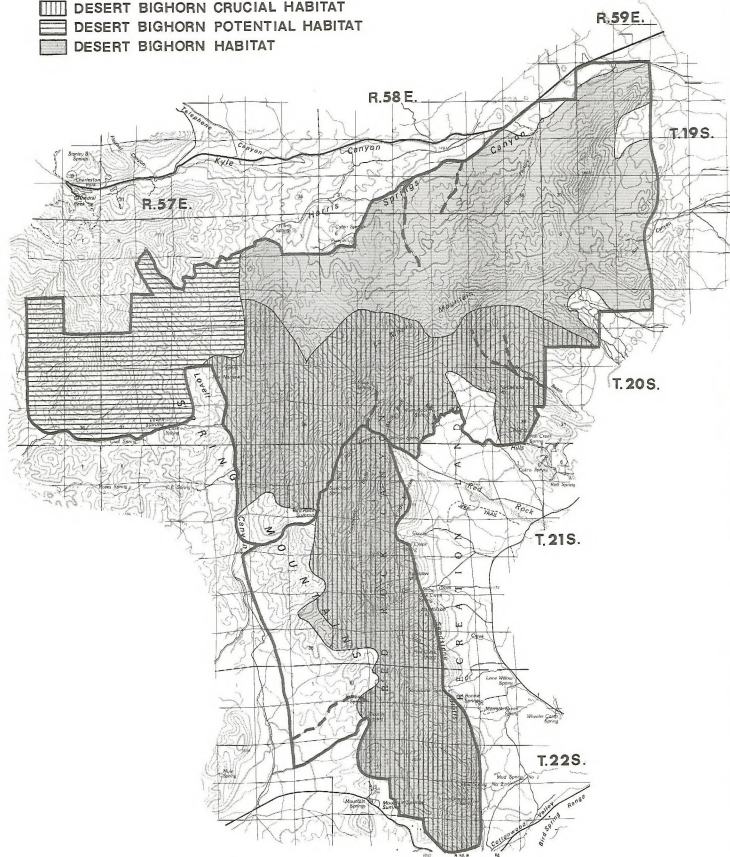
X/ PRE-FLPMA Mining Claims

/X POST-FLPMA Mining Claims







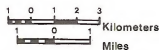
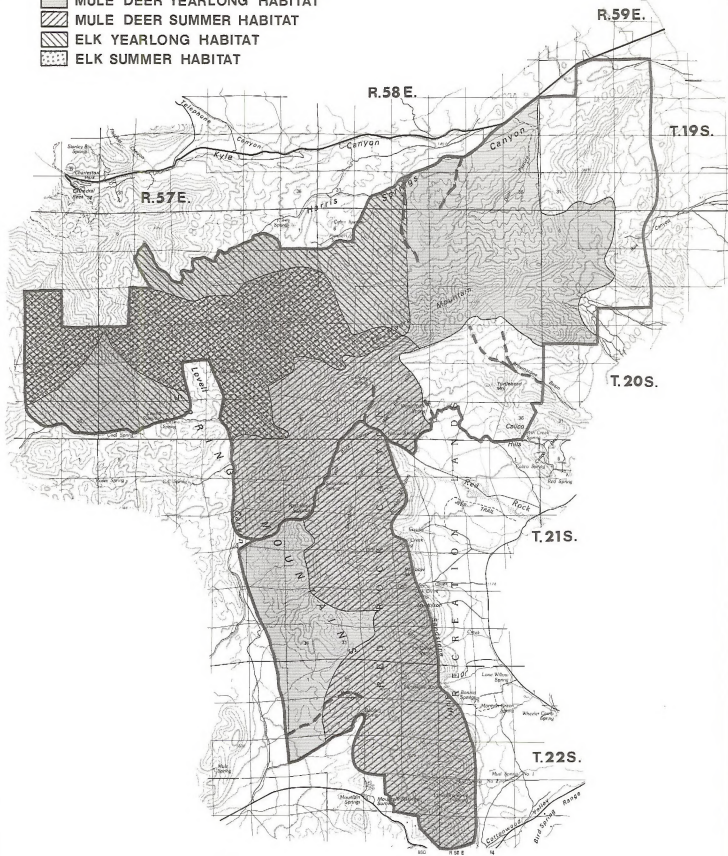
MINING CLAIMS & MINERAL LEASES
LA MADRE MOUNTAINS NV-050-0412
PINE CREEK NV-050-0414

-  DESERT BIGHORN CRUCIAL HABITAT
-  DESERT BIGHORN POTENTIAL HABITAT
-  DESERT BIGHORN HABITAT



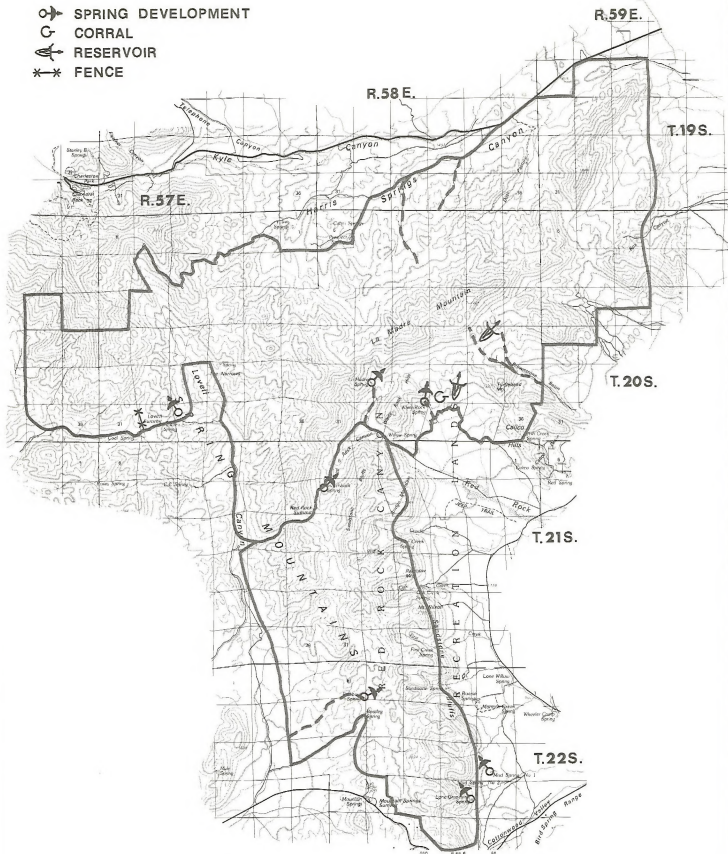
WILDLIFE HABITAT #1
LA MADRE MOUNTAINS NV-050-0412
PINE CREEK NV-050-0414

-  MULE DEER YEARLONG HABITAT
-  MULE DEER SUMMER HABITAT
-  ELK YEARLONG HABITAT
-  ELK SUMMER HABITAT



WILDLIFE HABITAT #2
LA MADRE MOUNTAINS NV-050-0412
PINE CREEK NV-050-0414

- SPRING DEVELOPMENT
- G CORRAL
- ⊕ RESERVOIR
- * * FENCE

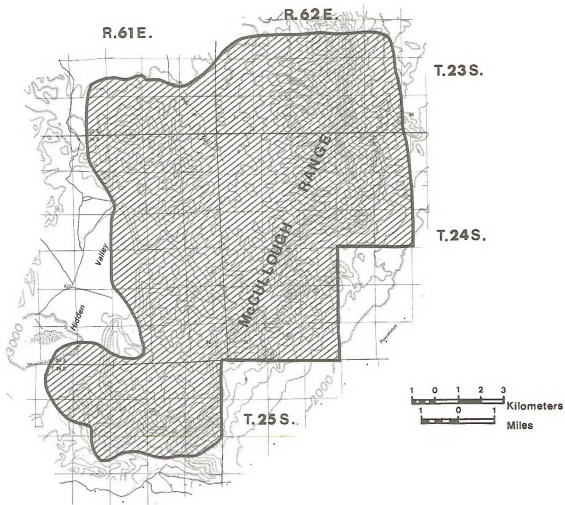


RANGE IMPROVEMENTS
LA MADRE MOUNTAINS NV-050-0412
PINE CREEK NV-050-0414

NORTH MCCULLOUGH MTNS. WSA MAPS

MINERAL POTENTIAL
MINING CLAIMS & MINERAL LEASES
WILDLIFE HABITAT

 MODERATE FAVORABILITY



MINERAL POTENTIAL

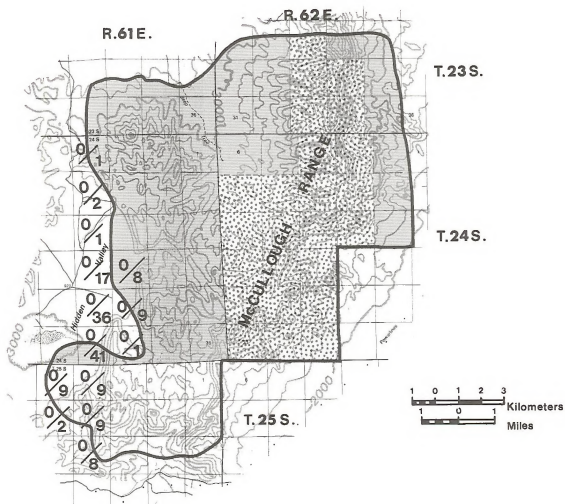
NORTH McCULLOUGH MTNS. NV-050-0425

 SIMULTANEOUS LEASING SYSTEM

 POST-FLPMA Oil & Gas Lease

X / PRE-FLPMA Mining Claims

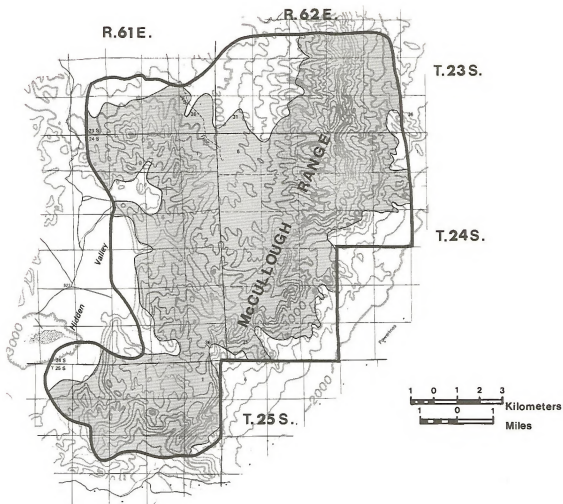
X / POST-FLPMA Mining Claims



MINING CLAIMS & MINERAL LEASES

NORTH McCULLOUGH MTNS. NV-050-0425

 DESERT BIGHORN HABITAT

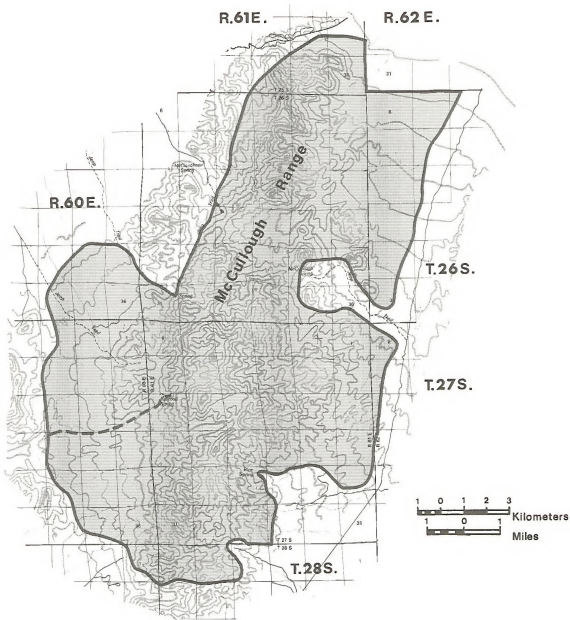


WILDLIFE HABITAT #1

NORTH McCULLOUGH MTNS. NV-050-0425




MINERAL POTENTIAL
MINING CLAIMS & MINERAL LEASES
WILDLIFE HABITAT
RANGE IMPROVEMENT & CRITICAL WATERSHED

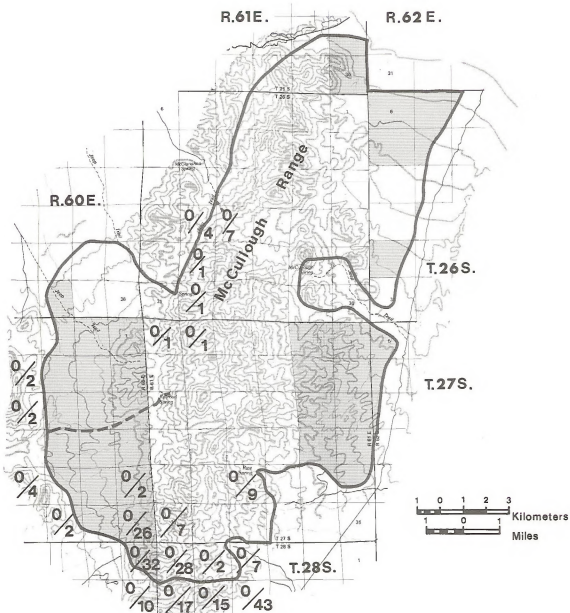
☐ MODERATE FAVORABILITY



MINERAL POTENTIAL





SOUTH McCULLOUGH MTNS. NV-050-0435

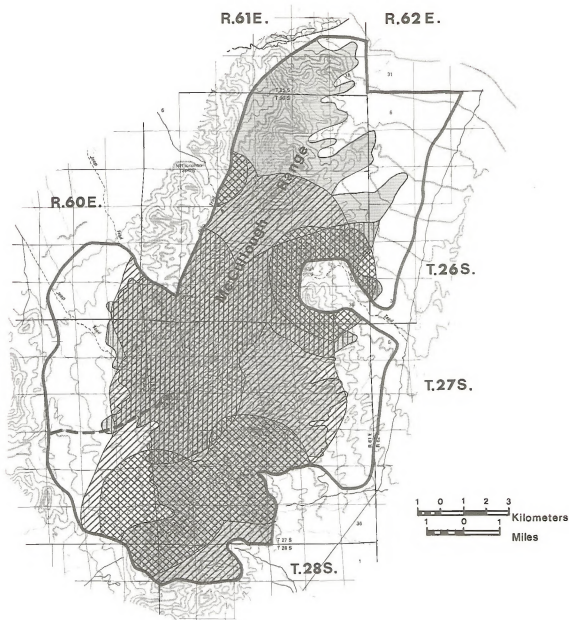
-  POST-FLPMA Oil & Gas Lease
-  PRE-FLPMA Mining Claims
-  POST-FLPMA Mining Claims



MINING CLAIMS & MINERAL LEASES

SOUTH McCULLOUGH MTNS. NV-050-0435

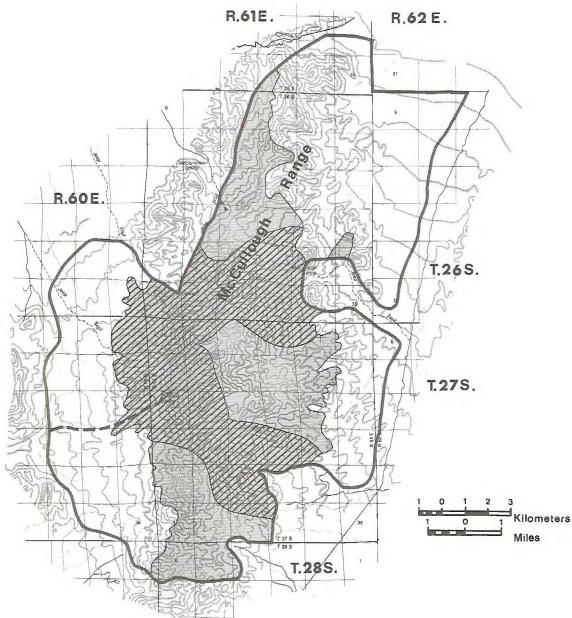
-  DESERT BIGHORN CRUCIAL HABITAT
-  DESERT BIGHORN HABITAT
-  GAMBEL'S QUAIL CRUCIAL HABITAT
-  CHUKAR CRUCIAL HABITAT



WILDLIFE HABITAT #1






SOUTH McCULLOUGH MTNS. NV-050-0435

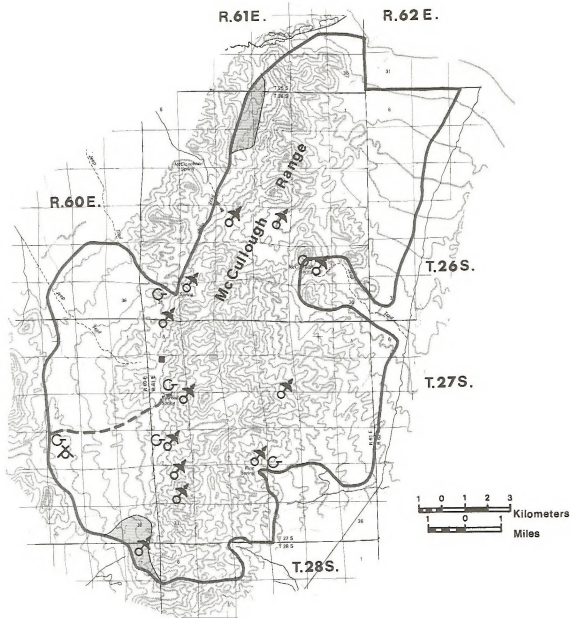
- MULE DEER YEARLONG HABITAT
▨ MULE DEER SUMMER HABITAT



WILDLIFE HABITAT #2

SOUTH McCULLOUGH MTNS. NV-050-0435

-  CRITICAL WATERSHED
-  SPRING DEVELOPMENT
-  CORRAL
-  WELLS
-  RANGE CABIN



RANGE IMPROVEMENTS & CRITICAL WATERSHED

SOUTH McCULLOUGH MTNS. NV-050-0435

CHAPTER THREE

ENVIRONMENT CONSEQUENCES

IMPACT ANALYSIS

The analysis of impacts is guided by the BLM's "Wilderness Study Policy" (Federal Register February 3, 1982) and Wilderness Management Policy (USDI, BLM, 1981).

The "Wilderness Study Policy" details the criteria to be considered in impact analysis, and the Wilderness Management Policy describes which activities will and which will not be allowed in designated BLM wilderness areas.

The criteria for analyzing impacts were further tailored to fit with the best available information for each resource.

In nearly every case, the impacts are potential impacts which the resource specialists believe are likely to occur. Further, the identified resources are, in several instances, potential resources, as in the case of minerals. In each such case, this information is the best available. Effort has been made to keep discussion of potential impacts and potential resources as realistic as possible.

Appendices A and B are development scenarios based on various proposals made known to resource specialists in discussions with individuals and groups over the past several years. They are intended as a basis for delineating likely impacts on nondesignated WSAs. It is not offered as a statement of what will happen, but simply as a possible development scheme for the purposes of impact analysis in this EIS.

ASSUMPTIONS

The following basic assumptions have been made throughout the impact analysis:

1. All baseline data are the best available.
2. Management actions on units not designated wilderness will be consistent with the Management Framework Plan.
3. The short term is the five-year period following a Congressional decision on a WSA. The long term is the time period after those five years.
4. Current trends in population and demand for resources will continue at the same rate of increase (or decrease) in the future, unless specifically stated otherwise.
5. All impacts described are direct impacts unless otherwise stated.
6. The BLM will have funding adequate for implementing the alternative designated by Congress.
7. The BLM will have funding adequate to cover the increased costs of constructing necessary range and wildlife habitat improvements to wilderness specifications (Porter, Bureau of Land Management, personal communication, 1983).
8. All areas found unsuitable for wilderness designation may be nominees for the Areas of Critical Environmental Concern (ACEC) process of identification and designation.
9. All areas lying within the Overthrust Belt, a zone of geologic

folding and faulting that geologists believe to have high potential for oil and gas reserves, will be considered for purposes of analysis to have moderate potential for oil and gas.

DETERMINATION OF SIGNIFICANT IMPACTS

To assist in determining if impacts are significant, thresholds are established for each resource. When an environmental impact exceeds a threshold, it is said to be significant. Thresholds are determined by the resource specialist, who uses professional judgement, and may also be influenced by law, regulation, and public opinion. In every case the existing condition is the baseline against which impacts are measured. The following thresholds have been developed for use in this EIS:

Soil - Any future action or series of actions which would cause a long-term decline in site productivity or watershed condition, or prevent rehabilitation of a debilitated watershed.

Water Resources - Any future action or series of actions which would result in a spring or stream exceeding Federal or State water quality standards or regulations.

Air Quality - Any future action or series of actions which would cause nonattainment of any Federal ambient air quality standard, exceed the maximum allowable increase of any pollutant above the baseline concentration, or which would fail to meet Air Pollution Control Regulations (Clark County District Board of Health 1978) in a nonattainment area.

Wilderness - Designation of an area as wilderness is considered to be a significant beneficial impact if it would preserve mandatory wilderness

characteristics (size, naturalness, opportunities for recreation or solitude) that would be lost without designation. A significant adverse impact occurs when an area will lose any one of these mandatory characteristics such that it would no longer qualify as a WSA.

Recreation - The thresholds are:

a. A 10 percent or greater change in recreation visitor-days in Clark County. b. The loss of any outstanding opportunity for a primitive form of recreation.

Visual Resources - A significant adverse impact occurs when cultural modification has a net negative impact to visual resources of a given area, according to the Visual Resource Management Scenic Quality Inventory and site-specific analysis.

Cultural Resources - The threshold would be unsalvaged loss of scientifically or educationally valuable sites.

Energy and Minerals - A significant impact occurs when access is denied to any area with high or moderate potential for minerals or energy development.

Livestock Grazing - The threshold of significance in livestock grazing is a ten percent or greater change over existing levels as listed in the Clark County Grazing EIS.

Wildlife - The threshold would be a change of 10 percent in the acreage of a crucial component of wildlife habitat, e.g., meadows, burned areas, riparian zones, or the loss of one water source to wildlife use.

Economics - The thresholds are a 5 percent change in income for any size group, or a 5 percent change in the

employment or sales of any sector.

Social Conditions - The threshold would be the influx or outflux of people (greater than ten percent of the existing population) in the area resulting from wilderness designation.

GENERAL IMPACTS

Soil, Water, and Air

Designation of wilderness areas would impact soil, water, and air resources only in terms of those man-induced impacts that would otherwise be unmitigated. Man's activities on public lands are evaluated through environmental assessment (EA) documents, in accordance with the requirements of the National Environmental Policy Act (NEPA). Stipulations (see the Standard Operating procedures in Chapter One) are made prior to approval of such actions to mitigate, if not prevent, impacts. In addition, the State of Nevada and BLM have a Memorandum of Understanding (USDI, BLM and Nevada Division of Environmental Protection, 1980) agreeing that BLM resource management plans will incorporate "Best Management Practices" to "eliminate or reduce water pollution from diffuse sources from the use, maintenance, or improvement of soil, water, and plant resources" (Nevada Division of Environmental Protection 1980).

The Wilderness Management Policy does not preclude actions necessary to protect resource values, such as water quality, air quality, or watershed conditions. However, additional stipulations would be applied to ensure that the wilderness character of the area would be retained. Should Assumption #7 fail, the additional cost and difficult access resulting from these restrictions would create additional hardships in complying with State water pollution control

regulations. This would be a negative impact, though not significant.

In summary, wilderness designation would neither prevent otherwise unmitigated impacts from occurring, nor preclude actions necessary for resource protection. Designating wilderness or not designating it would have no significant impacts to soil, water, and air resources.

Recreation - Designation of an area as wilderness would cause some increase in recreation use by calling attention to it. Current estimated usage in all WSAs in the county has been estimated to be no more than 20,000 visitor-days annually. Over 75 percent of this usage is thought to occur in two WSAs, La Madre Mountains and Pine Creek.

The annual visitor volume to the Las Vegas SMSA for 1982 is estimated to be over 12,000,000 people (Las Vegas Convention and Visitors Authority 1982). The 1980 visitor-day usage for all outdoor visitation in Clark County is over 7,200,000 visitor days (Nevada Division of State Parks 1982).

Current wilderness usage would need to increase over twenty times as a result of designation, before a significant impact to recreation visitor-days would occur. Such a large increase is highly unlikely. Conversely, nondesignation would not negatively impact the service and recreation industry.

However, designation would significantly benefit the available primitive recreation resource itself.

Designation would also provide legislative protection for special recreation sites such as unique geological features.

Visual Resources - Wilderness designation would provide a

beneficial impact to visual resources by prohibiting certain visually impairing activities and development. However, there would be no improvement in the existing visual quality as a result of designation. Under nondesignation circumstances, some short-lived adverse impacts could occur as a result of allowed activities. However, stipulations (see Standard Operating Procedures in Chapter One) available and committed to would retain such impacts below the level of significance.

Cultural Resources - Impacts occurring to cultural resources as a result of wilderness designation would be both beneficial and adverse. Adverse impacts would result from some increase in primitive recreational use and associated increase in vandalism and inadvertent damage to cultural resources. Adverse impacts would also occur due to relatively higher costs of intensive inventory and recordation in a wilderness area. Compliance with laws protecting cultural resources (see Standard Operating Procedures in Chapter One) would be more certain in areas with designation simply because there would be more monitoring of activities than in nonwilderness.

Beneficial impacts would result from a greater knowledge of the resource provided by an increase in visitors, and from inventories of areas where impacts of wilderness users are expected to be damaging. (These inventories are required by law.) The prohibition of certain activities would mean that sites that would normally be inventoried and then destroyed or removed would be left intact and in context for future study with new techniques. Nondesignation will cause reverse effects.

The only WSA-specific impact can be identified in this analysis is the addition of Arrow Canyon itself to the

suitability recommendation for the Arrow Canyon Range WSA in the Management Enhancement and Wilderness Accent Alternatives. This archaeologically sensitive area was not included within the boundary of the originally designated WSA, and its addition to improve manageability would be a beneficial impact.

Lands - The increasing need for microwave communication sites is causing companies and the U.S. Air Force to look closely at many areas in Clark County for possible locations. In the short term, areas outside of the WSAs can meet this demand. In the long term, however, wilderness designation could adversely affect communications by restricting microwave site locations. Several WSAs are located in areas well suited for communication site development.

Designation of wilderness would preclude any future utility corridors in those areas. Although the Bureau of Land Management has not completed utility corridor planning, private industry has identified a proposed corridor through the western portion of the Muddy Mountains WSA, and proposed expansion for the utility corridor through McCullough pass, between the North and South McCullough Mountains WSAs (Western Regional Corridor Study 1980). Topography is unsuitable or limiting for those corridors, and wilderness designation of any of the seven areas in Clark County would cause no adverse effects to any future corridor needs.

Wilderness designation would preclude any transfers of lands in those areas to State ownership, as identified in a 1981 list of federal lands proposed for transfer to the State of Nevada. Although BLM has received an application for only one of these areas that are within a WSA, this

could present a long-term, adverse impact.

Wilderness designation may also create long-term impacts to development of private lands adjacent to the WSAs, including the Eldorado Valley Act lands. Requested uses of the public lands adjacent to these private parcels may include rights-of-way to provide support services/functions that cannot be accommodated on the private parcels themselves, e.g., a water reservoir site. Wilderness designation would preclude such uses, however, surrounding public lands that are not being considered for wilderness designation may meet any future demands.

Energy and Minerals - Mining claim location could continue on all seven WSAs until such time as Congress acts on designation. Any designated areas would be precluded from further claiming. After designation mining claim assessment work will be allowed on existing claims subject to the Wilderness Management Policy. All existing claims in designated wilderness areas would be subject to an exam to prove that a valid discovery exists. Operations on valid claims will be subject to reasonable stipulations for the protection of wilderness values. These could represent adverse impacts to mining operations particularly in terms of increased costs to the operators. Such impacts may become significant should costs of exploitation be increased to the point that the operation is uneconomical and mining is effectively denied. However, since the essence of the mineral patenting process is the validity exam, it is highly probable that claimants with a valid discovery, when faced with wilderness constraints in their operations, would move to patent their mineral discoveries. They would thereby largely free themselves from

restraints on mining operations and put the burden of impact on the wilderness value. The ultimate impact of wilderness designation may not be to the mining claimant, but to the Government which, to protect the wilderness value, may choose to repurchase the patented land at a cost which includes the value of the minerals at a level it, the Government, has predetermined. That situation would obtain even under eminent domain procedures.

Claimants with invalid claims would not be affected.

Leasing operations on existing pre-FLPMA leases (leases taken before October 21, 1976) will be permitted under standard stipulations.

On post-FLPMA leases, obtained before January 1, 1983 (USDI, BLM, 1983), operations will continue to be subject to the Wilderness Stipulation which requires that operations be nonimpairing. After Congress acts, holders of leases in designated wilderness areas could continue to explore until the remaining term of the lease expires, subject to lease stipulations.

Since there is no significant potential for geothermal development in Clark County, wilderness designation would have no impact on the geothermal resource or use thereof.

Livestock Grazing - In as much as livestock grazing can continue in wilderness areas at levels existing prior to designation (Wilderness Management Policy) it is unlikely that designation of any of the seven WSAs would result in any significant impact on this use.

Adverse effects could occur as a result of restraints on range

improvement project development in general. However, no projects are currently identified for any of the seven areas. Both the basis of grazing (ephemeral, possibly ephemeral-perennial in the future on two WSAs) and the level of range improvement funding available in the future mitigate against any extensive need for project developments.

In summary, none of the alternatives would have any significant impact on livestock grazing.

Wild Horses and Burros - Wild horses and burros are fully compatible with wilderness. The principal constraint on the animals is the setting of desirable numbers in relation to the carrying capacity of their habitat. That requirement would exist regardless of designation. Some beneficial impacts would accrue as a result of wilderness designation by reducing opportunities for harassment and minimizing obstacles to their free-roaming characteristics within the designated areas. Overall, however, there would be no significant impacts.

Forestry - Firewood collecting--dead and down--is the only forestry activity currently authorized in Clark County and then only on the Spring Mountain Range. The activity is largely a family recreational one since cord numbers are limited. The bulk of Las Vegas' firewood demand is satisfied from Lincoln County. Current planning calls for greenwood cutting on both the Spring Mountain Range and the South McCullough Range. In both cases, however, it would be done in support of other programs (e.g., wildlife habitat improvement). Wilderness designations in the Spring Mountain Range would adversely impact the forestry program, but not significantly. Nondesignation would have no impact on the program.

Threatened or Endangered Plants - Since there are no currently listed plant species in Clark County, no impact can be accorded to them. However, those species which are list candidates would be benefited from wilderness designation as surface disturbance would be precluded. Under nonwilderness status, activities proposed in the critical habitat would require appropriate investigation and mitigation.

Wildlife - Wilderness designation would have a beneficial impact to existing wildlife resources through the overall resource protection it provides. Limiting man's intrusions and developments would benefit wildlife in the long term.

Wilderness designation, through protection-oriented, would preclude or make more costly some wildlife habitat improvements. Big game management, particularly with respect to such species as bighorn sheep where the management direction is to increase populations in existing ranges and reintroduce populations to historical ranges, could be complicated. Should Assumption Number 7 fail, costs could become prohibitive, resulting in strong adverse impacts.

Fire Management - Potentially damaging firefighting techniques include the off-road use of fire engines, clearing of helispots, use of bulldozers and graders, and air dropping of retardant.

A Las Vegas District policy restricts the off-road use of fire engines because of topography, safety, and apparatus maintenance cost. Engine crews can extend their water performance capability by the use of simple and/or complex extensive hose lay systems. This suppression technique does no damage to the landscape and after the hose lay

system is cleared up and removed, no evidence exists of its use. The same fire suppression technique and equipment would be used to suppress wildfire in all wilderness areas. Impacts to wilderness values would be negligible to none.

The use of helicopters in wilderness areas is a most effective non-disturbing method of suppressing wildfire which would destroy wilderness values. However, construction of a heliport requires removal of all vegetation over six inches high. No helispots would be constructed in wilderness, and natural clearings in the vegetation would be employed. Negative impacts would be minor, while positive benefits would accrue by rapid deployment of suppression forces.

Currently the Las Vegas District has used earth-moving fire suppression techniques only on those fires that present a potential danger to life or property. The Pine Creek and La Madre Mountains WSAs have the distinct potential of having a wildfire leave the WSA and threaten a wildland-urban interface community, where the deployment of earth-moving equipment would be considered. This could cause negative impacts to wilderness values.

Retardant is a chemical used to slow down the spread of a wildfire. Presently the Las Vegas District's air tanker reload base is using Monsanto's Phoschex AF (monoammonium-phosphate). The retardant currently consists of a fugitive dye to enhance initial attack capability. The color dissipates after approximately 14 days (depending on weather conditions), virtually leaving no impact to the visual resource, while assisting the rehabilitation efforts. There would be no long-term impact to wilderness values. Fire management will be in conformance with Wilderness Management Policy.

Social/Economics

Based upon the current low uses within the WSAs and the types of projected changes, none of the alternatives would significantly impact the economics (employment or income) or social structure of the county, state, region, or nation.

Based upon professional observation and judgement, the impacted public would perceive a higher level of social than economic impacts. The social impacts that would occur from the selection of any alternative would not be significant to the overall population of the county, but may be important to some individuals and some groups.

Each person has their own unique threshold and value system, based upon their background and experiences. An individual's ability to deal and cope with change, and their perception of the impact associated with the denial or opportunity to use public lands for their chosen activity (e.g., prospecting, hiking, etc.), varies greatly. These impacts cannot be quantified nor accurately measured.

IMPACTS BY ALTERNATIVE

All Wilderness Alternative

Arrow Canyon Range

Wilderness: Designating the entire WSA as wilderness would protect naturalness and opportunities for solitude in most of the WSA. This would be a significant beneficial impact.

However, wilderness values would decline in some parts of the WSA due to exercise of existing mineral rights and uncontrolled ORV use. The 800 acres of mining claims in the WSA are primarily in the southeast corner and

most likely are for silica. Some additional acres are likely to be claimed before designation. None of these claims have been tested for validity and none are producing. However, some development is likely and will affect naturalness, solitude, and primitive recreation. The overall effect would be minimal because all claims are within a mile of the boundary and the acreage involved is less than five percent of the WSA.

Post-FLPMA leases cover the entire WSA. These would probably expire without drilling before designation, resulting in no impacts to the wilderness resource.

Uncontrolled vehicle use would result in some deterioration of wilderness values in the northwestern bajada, Battleship Wash area, and in the central valley.

Recreation: Use by wilderness recreationists may increase because of the publicity. Sightseers on U.S. highway 93 would also benefit from the protection of the scenic west face of the Arrow Canyon Range. Vehicle-using recreationists would be adversely affected because they would forego the opportunity of developing the central valley into a racing and casual use ORV area.

Minerals: Under the All Wilderness Alternative, 32,853 acres of land containing moderate and high mineral potentials would be designated as wilderness in the Arrow Canyon Range WSA. This designation would severely restrict all forms of mineral development on existing claims and would preclude any post-designation claims and development. The mineral potential lost under this alternative would be as follows:

The entire WSA has moderate favorability for oil and gas based

upon the location of the Overthrust Belt.

The entire WSA has moderate and high favorability for nonmetallic minerals. The approximately 5,440-acre area of high favorability occurs in the south and west of the WSA and is based upon the Eureka Quartzite formation which is highly valuable for silica. The remaining approximately 27,413-acre area of moderate favorability is based upon other nonmetallic minerals including montmorillonite, gypsum, diatomite, limestone, dolomite, and alluvium.

This would be a significant adverse impact.

Muddy Mountains

Wilderness: This alternative would best protect wilderness values in the WSA. It would be a significant beneficial impact.

In some portions, wilderness values would still decline due to exercise of existing oil and gas and mineral rights and uncontrolled ORV use. There are 1,600 acres of mining claims in the WSA. Additional claims are likely to be staked before designation. Existing claims amount to less than 2 percent of the WSA and are concentrated in three peripheral areas--Buffington Pockets, West End Wash basin, and the mouth of Big Valley near the Pabco gypsum plant. Should these claims prove valid and be developed, the wilderness values in the remainder of the WSA would not be affected. All are within one mile of the boundary in areas possessing low wilderness values. The only exception is a claim on the saddle between Buffington Pockets and Hidden Valley. Development of this claim could have a negative effect on naturalness and solitude in Hidden Valley.

Ninety-five percent of the WSA is leased for oil and gas, with 15 percent of it in pre-FLPMA leases. Some drilling is likely to occur on these pre-FLPMA leases before designation. This would have a long-term impact on naturalness and a short-term impact on solitude and primitive recreation opportunities. Most of the pre-FLPMA leases are located on the northern bajada, an area of low wilderness values. However, four sections are located in Hidden Valley and Wild Sheep Valley, high wilderness value areas. The post-FLPMA leases will probably expire without drilling, resulting in no impacts.

ORV use will be difficult to control on the northern bajada, in White Basin/Bitter Spring Valley, and West End Wash Basin. In these areas, naturalness, solitude, and opportunities for primitive recreation will deteriorate over time unless substantial funds are available to control use.

Recreation: This alternative would benefit some activities and negatively affect others. It would best protect the high scenic values in the Muddy Mountains and outstanding opportunities for primitive recreation. This would be a significant beneficial impact.

Some adverse impacts to these values would still occur as documented under the preceding Wilderness section. Motorized uses would be negatively affected because roads would not be developed in the WSA. Any roads built because of preexisting mineral or energy rights would be closed after mineral production was completed. ORV users and racers would be denied the opportunity to use the northern bajada and Gale Hills.

Minerals: Under the All Wilderness

Alternative, 96,170 acres of land containing moderate and high mineral potentials would be designated as wilderness in the Muddy Mountains WSA. This designation would severely restrict all forms of mineral development on existing claims and would preclude any post-designation claims and development. The mineral potential that would be lost under this alternative is as follows:

The entire WSA has moderate favorability for oil and gas based upon the location of the Overthrust Belt.

Approximately 90,090 acres in all but the north-central portion of the WSA have moderate and high favorability for nonmetallic minerals. The approximately 2,400-acre area of high favorability occurs in the southwest and south of the WSA and is based upon gypsum, colemanite, and montmorillonite. The approximately 87,690-acre area of moderate favorability occurs in the remainder of the WSA and is based upon silica, opalized chalcedony, agates, limestone, dolomite, magnesite, gypsum, glauberite, thenardite, montmorillonite, illite, smectite, potash, and alluvium.

This would be a significant adverse impact.

Mount Stirling

Wilderness: This alternative would best protect the wilderness values of the WSA. This would be a significant beneficial impact.

Minimal negative impacts would occur in spite of designation. Mining claims cover only 300 acres of the WSA and only 50 of these acres were claimed in the last six years. Even though additional acres may be claimed

before designation, it is unlikely that the total will exceed one percent of the acreage of the WSA. Should the claims prove to be valid and be developed, adverse impacts to the wilderness values of the WSA as a whole would be minimal because all claims are within a quarter-mile of the boundary.

Three percent of the WSA is covered by post-FLPMA oil and gas leases. These leases are all within a mile of the boundary and most likely will expire without drilling before designation.

Off-road vehicle use would be difficult to control on the northern bajada lobe of the WSA. Over time, naturalness would decline in this portion. The northern bajada lacks outstanding opportunities for solitude or primitive recreation and contributes little to the WSA as a whole.

Recreation: Primitive recreation opportunities and scenic values would be best protected under this alternative. This would be a significant beneficial impact.

Recreational activities requiring the use of motorized vehicles would be negatively impacted. The opportunity to develop the interior of the unit into a motorized recreation area would be foregone. The best possible Wheeler Well campground location is not included in the cherrystem. However, other flat lands suitable for campground development occur outside the WSA boundary on the south side of the Wheeler Well Road.

In addition, a north-south road through the center of the WSA, which would facilitate motorized sightseeing, dispersed camping, and pine nut and firewood collecting, would not be possible. Both the campground and the road are long range

possibilities not feasible under foreseeable future budgets.

Off-road vehicle racers would not lose much under this alternative since the area would not have been available for racing and is not well suited for out-of-wash travel. The northern bajada lobe is the major area of ORV use that would not be available under this alternative.

Minerals: Under the All Wilderness Alternative, 69,650 acres of land containing moderate and high mineral potentials would be designated as wilderness in the Mount Stirling WSA. This designation would severely restrict all forms of mineral development on existing claims and would preclude any post-designation claims and development. The mineral potential that would be lost under this alternative is as follows:

The entire WSA has moderate favorability for oil and gas based upon the location of the Overthrust Belt.

Approximately 60,210 acres in all but the northwest portion of the WSA have moderate favorability for nonmetallic minerals based upon limestone, dolomite, and alluvium.

Approximately 12,760 acres in the northwest and southeast portions of the WSA have moderate and high favorability for metallic minerals. The approximately 1,200-acre area of high favorability occurs in the southeast portion of the WSA and is based upon silver, lead, and zinc. The approximately 10,560-acre area of moderate favorability occurs in the northwest portion of the WSA and is based upon gold, silver, copper, lead, and zinc.

Loss of access to these minerals would be a significant adverse impact.

La Madre Mountains

Wilderness: This alternative would best protect wilderness values in the WSA. This would be a significant beneficial impact.

In spite of designation, wilderness values would erode in localized areas due to mineral development and ORV use. Of the 1,500 acres of mining claims in the WSA, 90 percent are part of one block, a gypsum claim which extends two miles into the northern end of the WSA. Some work has been done on this claim and development is likely on at least part of it. Naturalness, solitude, and opportunities for primitive recreation would be lost in that portion. Topographic features would screen the mine from the rest of the WSA.

The other claims are located within a half-mile of the southern and eastern boundary and their development would have little effect on the WSA. Since only 50 acres have been claimed within the last six years and 33 percent of the WSA is segregated from the mining laws, it is unlikely that many additional acres would be claimed before designation.

Ninety-five percent of the WSA is covered by post-FLPMA oil and gas leases. It is unlikely that these would be drilled before they expire.

Off-road vehicle use in Little Red Rocks Basin, Box Canyon, and the lower end of the washes that drain to the north, would cause deterioration of wilderness values over time. Little Red Rocks Basin already lacks naturalness due to ORV use.

Recreation: The scenic values of the La Madre Range as well as its primitive recreation opportunities are best protected under this alternative. This would be a significant beneficial

impact.

Vehicle-using recreationists would be negatively affected because no new roads would be built in the WSA. ORV users would not legally be able to utilize the WSA, including the popular Little Red Rocks area.

Minerals: Under the All Wilderness Alternative, 56,243 acres of land containing moderate and high mineral potentials would be designated as wilderness in the La Madre Mountains WSA. This designation would severely restrict all forms of mineral development on existing claims and would preclude any pot-designation claims and development. The mineral potential lost under this alternative would be as follows:

The entire WSA has moderate favorability for oil and gas based upon the location of the Overthrust Belt.

The entire WSA has moderate and high favorability for nonmetallic minerals. The approximately 1,400-acre area of high favorability occurs in the north portion of the WSA and is based upon gypsum. The remaining 54,843 acres of moderate favorability is based upon other nonmetallic minerals, including silica, building stone, dolomite, alluvium, and more gypsum.

This would constitute a significant negative impact to mineral and energy development.

Pine Creek

Wilderness: Wilderness values would receive the best possible protection under this alternative. This would be a significant beneficial impact.

Of the 1,600 acres of mining claims in the WSA, all but 75 acres are part of

the Magnum Mining Company's microscopic gold placer claims. Should they prove valid and be developed, probably by strip mining, wilderness values would be lost for the short and long term in that portion of the WSA. However, these claims are largely screened from the rest of the WSA by topographic features.

Should Magnum Mining Company's concept of placer gold prove valid and additional claims be located before designation, the wilderness values of the WSA could be seriously affected. This has the potential to become a significant negative impact to Pine Creek's wilderness values. Its certitude cannot be estimated at this time, however.

Ninety-five percent of the WSA is leased for oil and gas. Since these leases are post-FLPMA and carry wilderness stipulations, they would likely expire undrilled before designation. Almost 50 percent of the leases also carry no-surface-occupancy clauses.

Uncontrolled ORV use would continue to erode wilderness values in the Mountain Springs, Bootleg Spring, and Rainbow Spring area. Some use would also continue in the washes that drain westward.

Recreation: The Red Rock Canyon Master Plan (Royston et al. 1976) designated most of the area as a primitive area, closed to vehicle use. This alternative would be compatible with the Master Plan by protecting the scenic values, fragile environments, and primitive recreation values that the Master Plan judged to be of prime importance. Protection of these primitive recreation uses would be a significant beneficial impact.

Energy and mineral interests would not be allowed to build the roads which

would have enabled vehicle-using recreationists to drive closer to the top of the escarpment and see the interior of the WSA. The Red Rock escarpment is the primary sightseeing feature from the Red Rock Canyon scenic loop drive and the Blue Diamond highway. Primitive recreation uses overall would benefit from this alternative.

Minerals: Under the All Wilderness Alternative, 24,000 acres of land containing moderate mineral potentials would be designated as wilderness in the Pine Creek WSA. This designation would severely restrict all forms of mineral development on existing claims and would preclude any post-designation claims and development. The mineral potential that would be lost under this alternative is as follows:

The entire WSA has moderate favorability for oil and gas based upon the location of the Overthrust Belt.

The entire WSA has moderate favorability for nonmetallic minerals based upon silica, building stone, limestone, dolomite, and alluvium.

This alternative would impose a significant adverse impact on mineral and energy development.

North McCullough Mountains

Wilderness: This alternative would protect wilderness values in the WSA. This would be a significant beneficial impact. The WSA boundary does offer some problem areas. Vehicle use would be nearly impossible to control in the Hidden Valley portion of the WSA. This portion does not possess wilderness values now. Vehicle use would also be difficult to control on the sloping lands in the northern end of the WSA. Wilderness values would deteriorate in these areas over time.

The 650 acres of existing mining claims are concentrated on the western boundary, mainly in Hidden Valley. Should these claims prove valid and be developed, natural conditions would deteriorate even further in this valley. Claim development would not affect the remainder of the WSA. The claims represent less than 2 percent of the total WSA area and are isolated by topography.

Eight-three percent of the WSA is covered by post-FLPMA oil and gas leases. Since these all contain wilderness protection stipulations, they would probably expire before designation without any drilling.

Recreation: Scenic values and primitive recreation opportunities would be protected. This would be a significant beneficial impact. Exceptions are discussed in the preceding Wilderness section. Vehicle-using recreationists would forego opportunities to utilize the area. Hidden Valley is currently heavily used by ORVs, particularly the sand dunes just inside the western WSA boundary.

Minerals: Under the All Wilderness Alternative, 47,166 acres of land containing moderate mineral potentials would be designated as wilderness in the North McCullough Mountains WSA. This designation would severely restrict all forms of mineral development on existing claims and would preclude any post-designation claims and development. The mineral potential that would be lost under this alternative is as follows:

The entire WSA has moderate favorability for oil and gas based upon the location of the Overthrust Belt.

Approximately 8,350 acres along the edges of the WSA have moderate favorability for nonmetallic minerals based upon alluvium.

This would be a significant adverse impact on mineral and energy development.

South McCullough Mountains

Wilderness: This alternative would protect naturalness, solitude, and opportunities for primitive recreation in most parts of the WSA. This would be a significant beneficial impact.

Mining claims and uncontrolled ORV use may cause some deterioration in wilderness values on the west side of the WSA. The 2,350 acres of mining claims are concentrated along the west boundary and in the south end. About 1,200 acres of claims occur in one block in the southwest corner. All of these claims have been made in the past six years, so it is likely that additional claims would be made before designation. Should the existing or future claims prove valid and be developed, wilderness values would be adversely affected in both the long and short term. All of the claims are within a mile of the boundary and topographically screened from the rest of the WSA.

The western bajada is an important ORV area and has been raced several times. Vehicle use would continue in this area in spite of designation unless considerable effort and expense is put into controlling it. Naturalness and, to a lesser extent, solitude and opportunities for primitive recreation, would decline over time.

Thirty percent of the WSA is covered by oil and gas leases. Since these are all post-FLPMA leases containing wilderness protection stipulations, they would probably expire before designation without drilling.

Recreation: This alternative would best protect recreation and scenic values as discussed under the preceding Wilderness section. This would be a significant beneficial impact.

Off-road vehicle uses would be negatively impacted because the lower west slopes of the range would not be available for their use. This area is an important ORV use area, is close to the Jean/Ivanpah Valley, another important ORV use area, and has been raced several times. Vehicles users would also be negatively impacted because no new roads would be allowed in the WSA. However, the five roads which access the core of the range would still be open.

Minerals: Under the All Wilderness Alternative, 56,623 acres of land containing moderate mineral potentials would be designated as wilderness in the South McCullough mountains WSA. This designation would severely restrict all forms of mineral development on existing claims and would preclude any post-designation claims and development. The mineral potential that would be lost under this alternative is as follows:

The entire WSA has moderate favorability for oil and gas based upon the location of the Overthrust Belt.

Approximately 6,000 acres along the edges of the WSA have moderate favorability for nonmetallic minerals based upon alluvium.

Approximately 29,920 acres in the south and center portions of the WSA have moderate favorability for metallic minerals based upon gold, silver, copper, lead, zinc, and beryllium.

This alternative would impose a significant adverse impact on mineral and energy development.

Summary and Conclusion

For a summary of impacts anticipated under the All Wilderness Alternative, see Summary Table Three.

The All Wilderness Alternative would

totally protect all the wilderness values identified in the inventory. The WSAs proposed for designation, however, contain areas of lower quality wilderness values and areas which, absent an intensive wilderness management and activity monitoring program, would be subject to random intrusion by wilderness incompatible activities resulting, in the long term, of loss of designated wilderness values.

This alternative would provide the maximum possible addition from Clark County of ecosystem/landform types for preservation in the National Wilderness Preservation System. The American Desert/Juniper-Pinyon Woodland ecosystem would be the most benefitted.

Mineral resource exploration and development would be most poorly served by this alternative in that all seven WSAs contain either high or moderate potential for mineralization. Access would be denied to a variety of nonmetallic minerals in each of the seven WSAs. Access to metallics would be denied in such areas as Mt. Stirling and the South McCullough Mountains. The most obvious energy potential loss would be in the Muddy Mountains, Pine Creek, La Madre Mountains, and Mt. Stirling WSAs where there are surface expressions of the oil and gas Overthrust Belt which runs through Clark County.

In as much as this alternative preserves wilderness values in the Spring Mountain Range, it is in concert with land use planning direction in Clark County which identifies the primary use in that area to be recreation. However, it does conflict with recommendations to leave the entire public land base in the county open to mineral and energy development by asserting nonmineral and energy uses over portions of the public lands in the county other than the Spring Mountain Range.

No Wilderness Alternative

Arrow Canyon Range

Wilderness: All of the Arrow Canyon Range WSA would be recommended nonsuitable in this alternative. The short-term impact on wilderness values would be negligible as no new development plans are in progress. Over the long term, wilderness values, particularly naturalness and solitude, would be lost to energy and mineral exploration and development, increased ORV use, and possible location of communication sites. This would be a significant adverse impact.

The mountainous portion of the WSA, which has the highest wilderness values now, would be the least affected other than by communication sites. However, this area is too narrow to maintain outstanding wilderness characteristics by itself.

Recreation: The No Wilderness Alternative would adversely affect some types of recreation and benefit others. Opportunities for primitive recreation would decline, a significant adverse impact. Scenic values would decline due to surface disturbance. Mining on the west face of the Arrow Canyon Range could seriously impact the scenic value of the range when viewed from U.S. Highway 93. Motorized recreationists would benefit due to increased access. ORV racers would benefit because part of the area would be available for their activity. Fossil hunting would be easier.

Should a State Park be established around Arrow Canyon, natural values in that area would be maintained and developed recreation opportunities would increase.

Minerals: Under the No Wilderness Alternative, none of the Arrow Canyon Range WSA would be designated as wilderness. This would allow all

forms of mineral development. No mineral potential would be lost under this alternative, thus a significant beneficial impact would occur.

Muddy Mountains

Wilderness: All of the Muddy Mountains WSA would be recommended nonsuitable in this alternative. Wilderness values would be adversely affected by energy and mineral exploration and development, increased ORV use, and possible communication site development in both the long and short term.

Generally, naturalness and outstanding opportunities for solitude and primitive recreation would be lost throughout the WSA over time. This would be a significant adverse impact. Some good primitive recreation opportunities would endure, such as dayhiking, rock scrambling, nature study, and photography, particularly in the Muddy Peak core area, Wild Sheep Valley, the west portion of Hidden Valley, and the West End Wash cliffs.

Recreation: Some forms of recreation would benefit from this alternative while others would be significantly adversely affected. Generally, scenic values and opportunities for primitive recreation would decline due to surface disturbance. This would be a significant adverse impact. Key recreation areas such as Hidden Valley, Wild Sheep Valley, Lovell Wash, and West End Wash cliffs would be impacted by development or nearby development.

Motorized recreationists, including rockhounds, would benefit due to increased access. ORV racers would benefit because part of the WSA would be available for racing.

Minerals: Under the No Wilderness Alternative, none of the Muddy

Mountains WSA would be designated as wilderness. This would allow all forms of mineral development. No mineral potential would be lost under this alternative. This would be a significant beneficial impact.

Mt. Stirling

Wilderness: All of this WSA would be recommended nonsuitable in this alternative. The short-term impact of this alternative on wilderness values would be negligible. The long-term impact to wilderness values would be significantly adverse. Naturalness and outstanding opportunities for solitude and primitive recreation would be lost to oil and gas and mineral exploration and development, wildlife developments, recreation developments, and ORVs. Limited opportunities for solitude would remain in canyons not affected by energy or mineral development. Some primitive recreation opportunities would still be available in limited areas. Dayhiking, rock scrambling, hunting, photography, horseback riding, and nature study would still occur in the WSA, particularly in the ridge line area.

Recreation: Motorized recreation opportunities would increase under this alternative but scenic values and primitive recreation would decline. Surface disturbance and the proliferation of roads would adversely affect the primitive values of the area. This would be a significant adverse impact. Should a campground be developed in the Wheeler Well area, recreationists would benefit. Roads would facilitate access to the interior of the WSA for motorized sightseers, pine nut and firewood collectors, and vehicle campers.

Minerals: Under the No Wilderness Alternative, none of the Mount Stirling WSA would be designated as wilderness. This designation would allow all forms of mineral

development. No mineral potential would be lost under this alternative. This would be a significant beneficial impact.

La Madre Mountains

Wilderness: All of this WSA would be recommended nonsuitable in this alternative. The short-term impact on wilderness values would be minor. The long-term impact on these values would be significantly adverse. Naturalness and outstanding opportunities for solitude and primitive recreation would be lost to oil and gas and mineral exploration and development, ORV use, and wildlife habitat developments. So long as existing management direction is not reversed, about 33 percent of the WSA would have no-surface-occupancy stipulations on oil and gas leases. However, areas with mineral potential could be developed. This portion of the WSA would not offer outstanding opportunities for solitude but would retain good dayhiking and rock climbing opportunities.

Recreation: Recreation would not be affected in several key areas of this WSA so long as current management policy on surface occupancy remains constant. Should this policy change, recreation could be significantly impacted within and outside of the WSA. Calico Hills, Brownstone Basin, White Rock Hills, and part of the escarpment are in the "core" protected area. Throughout the rest of the WSA scenic values would decline and the WSA would lose its value for primitive recreation. This would be a significant adverse impact. Vehicle-using recreationists would benefit from increased access for ORV play, pine nut and firewood collecting, sightseeing, and camping.

Minerals: Under the No Wilderness Alternative, none of the La Madre Mountains WSA would be designated as wilderness. This would allow all forms of mineral development. No

mineral potential would be lost under this alternative. This would be a significant beneficial impact.

Pine Creek

Wilderness: All of this WSA would be recommended nonsuitable in this alternative. The short-term impact on wilderness values would be negligible. The long-term impact on wilderness values would be significantly adverse. So long as existing management direction is not reversed, prohibiting surface occupancy on oil and gas leases in the eastern half of the WSA, that portion would retain wilderness value. However, allowance of mining activity could adversely impact those values. Naturalness, and outstanding opportunities for solitude and primitive recreation would be lost in the west half to oil and gas and mineral exploration and development and ORV use. The undeveloped eastern half is too narrow (1-1/2 miles) to maintain outstanding wilderness values by itself. However, dayhiking, rock climbing, nature study, and photography would still be outstanding in the undisturbed eastern portions.

Recreation: Recreation would not be affected on the east half of this WSA so long as current management policy on surface occupancy remains constant. Should this policy change, recreation would be significantly impacted within and outside of the WSA. On the west half of the WSA, scenic values and primitive recreation would decline due to surface disturbance. This would be a significant adverse impact. Vehicle-using recreationists would benefit by gaining access to the west half.

Minerals: Under the No Wilderness Alternative, none of the Pine Creek WSA would be designated as wilderness. This would allow all forms of mineral

development. No mineral potential would be lost under this alternative. This would be a significant beneficial impact.

North McCullough Mountains

Wilderness: All of this WSA would be recommended nonsuitable in this alternative. The short-term impact of nondesignation on wilderness values would be negligible. The only development anticipated in the short term is construction of a communication site on Black Mountain. Over the long term, wilderness values would be significantly adversely affected by oil and gas exploration and development, sand and gravel operations, wildlife habitat developments, and ORV use. Naturalness and outstanding opportunities for solitude and primitive recreation would be lost. Some good dayhiking, rock scrambling, nature study, photography, and hunting opportunities would still be available, particularly on the east face of the ridgeline.

Recreation: The No Wilderness Alternative would benefit motorized recreation and adversely affect primitive recreation. Scenic values and primitive recreation would decline due to surface disturbance. This would be a significant adverse impact. Vehicle-using recreationists would benefit from increased access to the center of the WSA and the east face of the range.

Minerals: Under the No Wilderness Alternative, none of the North McCullough Mountains WSA would be designated as wilderness. This would allow all forms of mineral development. No mineral potential would be lost under this alternative. This would be a significant beneficial impact.

South McCullough Mountains

Wilderness: All of this WSA would be recommended nonsuitable in this alternative. Wilderness values would be significantly adversely affected in the short and long term in the western end of the WSA and in the long term over the rest of the WSA. Mineral and energy exploration and development, communication sites, wildlife habitat developments, and ORV use and racing would lead to a loss of naturalness and outstanding opportunities for solitude and primitive recreation. The mountain core area would be less affected than the rest of the WSA. Some opportunities for dayhiking, rock scrambling, hunting, nature study, and photography would still remain.

Recreation: Vehicle-using recreationists would benefit from this alternative. Improved access would facilitate hunting, pine nut collecting, recreational prospecting, and sightseeing. ORV racers would benefit because the west part of the range would be available for their use. However, scenic values and primitive recreation would be significantly adversely affected by surface disturbance.

Minerals: Under the No Wilderness Alternative, none of the South McCullough Mountains WSA would be designated as wilderness. This would allow all forms of mineral development. No mineral potential would be lost under this alternative. This would be a significant beneficial impact.

Summary and Conclusion

For a summary of impacts anticipated under the No Wilderness Alternative, see Summary Table Three.

The no Wilderness Alternative would leave the lands in all seven WSAs open

to the full range of multiple use activities, subject to existing and applicable law and regulation.

Wilderness values would not receive designation protection. In the long term and beyond, these values could deteriorate. Possible developments within some portions of each wilderness study area, would impact the overall area in such a way that it would no longer qualify as wilderness.

Minerals development would benefit fully from this alternative. Access for development would be available to all areas. Exploration and development could take place subject to the safeguards provided under the 3809 regulations for locatable minerals, the environmental assessment process for saleable material, and the application-for-permit-to-drill process for oil and gas.

Under this alternative, Clark County public lands managed by the BLM would contribute nothing to the National Wilderness Preservation System. Given the 6.2 million acres of actual entries or potential candidates in the American Desert/Creosote Bush ecosystem/landform, that fact is probably not significant for that instance. Considering, however, the relatively small amount of American Desert/Juniper-Pinyon Woodland ecosystem/landform, a noncontribution from Clark County would be significant.

This alternative would be in concert with the Clark County land use plan in so far as that document calls for all public lands to be open to mineral and energy development. In so far as the wilderness end of the recreation spectrum would be eliminated from the BLM-administered lands on the Spring Mountain Range, the land use recommendation to have the primary use

on that range be for recreation would be, to one extent, frustrated. However, that planning direction in itself, coupled with committed mitigation in the Standard Operating Procedures in Chapter One, would aid significantly in maintaining "backcountry" values which would approximate wilderness experiences.

Management Enhancement Alternative

Arrow Canyon Range

Wilderness: Benefits and negative impacts to the wilderness resource would be similar to the All Wilderness alternative with the following exceptions. Some of the area with mineral claims in the southeast corner and vehicle problem areas on the northwest bajada and in the Battleship Wash area have been eliminated. The resulting boundary includes a more manageable area where deterioration of wilderness values would be less likely. The areas eliminated from wilderness protection did not possess high wilderness values.

The new boundary includes the entire Arrow Canyon, an important special feature because of its geologic, archeological, and recreational values.

Recreation: With some exceptions, benefits and negative impacts would be similar to those under the All Wilderness alternative. The scenic values would be better protected because all of Arrow Canyon would be recommended suitable under this alternative.

Motorized recreationists would have some additional areas for use on the northwestern bajada and in the Battleship Wash area.

Minerals: Under the Management Enhancement Alternative, 26,950 acres

of land containing moderate and high mineral potentials would be designated as wilderness in the Arrow Canyon Range WSA. This designation would severely restrict all forms of mineral development on existing claims and would preclude any post-designation claims and development. The mineral potential that would be lost under this alternative is as follows:

The entire area recommended suitable has moderate favorability for oil and gas based upon the location of the Overthrust Belt.

The entire area recommended suitable has moderate and high favorability for nonmetallic minerals. The approximately 4,480-acre area of high favorability occurs in the south and west of this alternative and is based upon the Eureka Quartzite formation which is highly valuable for silica. The remaining approximately 22,470 acres of moderate favorability is based upon other nonmetallic minerals, including montmorillonite, gypsum, diatomite, limestone, dolomite, and alluvium.

This would be a significant adverse impact.

Muddy Mountains

Wilderness: This alternative would protect the areas with the highest wilderness values while eliminating areas with the more severe manageability problems. This would be a significant beneficial impact.

All the mining claims would be eliminated by this alternative except for three, which total less than 100 acres, on the edge of Hidden Valley. All of the high-use ORV areas have also been eliminated, as well as two-thirds of the pre-FLPMA oil and gas leases.

Naturalness and opportunities for solitude and primitive recreation can be protected under this alternative, except for a portion of Hidden Valley which may be affected by mining or oil drilling. The high-value Bitter Ridge area would not be protected under this alternative, which would be a significant adverse impact.

Recreation: This alternative protects all the important scenic features, except for Bitter Ridge, while allowing for motorized use in most of the significant areas. Some adverse impacts to scenic values and primitive recreation would still occur. The northern bajada, West End Wash basin, Bitter Spring Valley, and White Basin would be available for motorized use. Motorized recreationists would still be adversely affected because roads would not be developed into other parts of the WSA and the Gale Hills would not be opened up for racing.

Cultural Resources: Impacts to cultural resources in this WSA under the Management Enhancement Alternative would be the same as the General Impacts section, except that the archaeologically sensitive Colorock Quarry and Buffington Pockets areas would not be included in the wilderness recommendation; hence adverse impacts to cultural properties could occur.

Lands: Impacts would be the same as for the All Wilderness Alternative.

Minerals: Under the Management Enhancement Alternative, 36,850 acres of land containing moderate and high mineral potentials would be designated as wilderness in the Muddy Mountains WSA. This designation would severely restrict all forms of mineral development on existing claims and would preclude any post-designation

claims and development. The mineral potential that would be lost under this alternative is as follows:

The entire area recommended suitable has moderate favorability for oil and gas based upon the location of the Overthrust Belt.

Approximately 31,250 acres in all but the north-central portion of this alternative have moderate and high favorability for nonmetallic minerals. The approximately 590-acre area of high favorability occurs in the south portion of this alternative and is based upon colemanite. The approximately 30,660 acres area of moderate favorability occurs in the remainder of this alternative and is based upon silica, opalized chalcedony, agates, limestone, dolomite, magnesite, gypsum, glauberite, thenardite, montmorillonite, illite, smectite, potash, and alluvium.

This would be a significant adverse impact.

Mt. Stirling

Wilderness: This alternative protects nearly all of the highest wilderness value areas while eliminating the least manageable portions. This would be a significant beneficial impact.

All of the mining claims, a third of the oil and gas leases, and the northern bajada lobe with its vehicle management problems are eliminated in this alternative. Minimal negative impacts to wilderness values would occur in the designated portion under this alternative.

The northern bajada lobe is the only sizeable area eliminated, however, it does not possess outstanding wilderness characteristics. Some of

the lower slopes eliminated on the north end of the WSA do possess wilderness characteristics, however, these areas are not large and are somewhat divided by private lands. Their principal value is to provide a larger wild area around the highly valued Mt. Stirling. This value would be lost. In addition, the western boundary of this alternative eliminates many of the scenic, highly valued canyons which drain to the west. Mineral and energy exploration and ORV use in the mouths of these canyons will cause the wilderness values to deteriorate over time.

Wilderness values would decline somewhat should high use recreation development occur in the large Wheeler Well cherrystem. This would not affect the WSA as a whole.

Recreation: This alternative would protect most of the major scenic features and primitive recreation opportunities while allowing for some motorized use. Protection of the outstanding opportunities for primitive recreation would be a significant beneficial impact. The Wheeler Well cherrystem includes more than a thousand acres of gently sloping land suitable for major recreation development, such as a campground. This area would also be available for dispersed motorized camping and pine nut and firewood collecting. The northern bajada would be available for ORV use. Motorized recreationists would be negatively impacted to some extent because there would be no more road building in the interior of this area, but they would gain the opportunity to drive further up into the canyons on the western slope. However, mineral and energy exploration and development in these canyons would lead to an erosion of scenic values over time.

Minerals: Under the Management

Enhancement Alternative, 42,707 acres of land containing moderate and high mineral potentials would be designated as wilderness in the Mount Stirling WSA. This designation would severely restrict all forms of mineral development on existing claims and would preclude any post-designation claims and development. The mineral potential that would be lost under this alternative is as follows:

The entire area recommended suitable has moderate favorability for oil and gas based upon the location of the Overthrust Belt.

Approximately 37,267 acres in all but the northwest portion of this alternative have moderate favorability for nonmetallic minerals based upon limestone, dolomite, and alluvium.

Approximately 6,720 acres in the northwest and southeast portion of this alternative have moderate and high favorability for metallic minerals. The approximately 490-acre area of high favorability in the southeast portion of this alternative is based upon silver, lead, and zinc. The approximately 6,230-acre area of moderate favorability in the northwest portion of the alternative is based upon gold, silver, copper, lead, and zinc.

This would be a significant adverse impact.

La Madre Mountains

Wilderness: This alternative would eliminate those areas with the most severe manageability problems, while protecting those areas with the highest wilderness values. The latter would be a significant beneficial impact.

Two-thirds of the gypsum claim would be eliminated from the suitability

recommendation, as well as all the other mining claims. The remainder of the gypsum claim would be less likely to be developed.

The areas with the least potential for controlling ORV use, Little Red Rocks and the washes that drain eastward and northeastward, would be eliminated. none of the eliminated portions offer outstanding opportunities for solitude and some of them are not natural in character.

Minimal negative impacts would occur in the designated portion. ORV use of the other driveable basins in the WSA--Brownstone, White Rock Spring, and La Madre Spring--would be minimized by the regulations controlling the Red Rock Canyon Recreation Lands. Opportunities for solitude would decline in the Calico Hills and White Rock Hills as use increases.

Recreation: The most important scenic and primitive recreation values of this WSA would be protected in this alternative. This would be a significant beneficial impact.

The most significant deletion from the study area under this alternative is the highly scenic northeast ridge. It is visible from the Kyle Canyon Road and may be negatively impacted by mineral development. For a further discussion of impacts to scenic values and primitive recreation activities, see the preceding Wilderness section.

The most popular ORV use areas, including Little Red Rocks and the east- and northeast-draining washes, would be deleted from wilderness designation under this alternative. Vehicle-using recreationists would still be somewhat negatively affected because no new roads would be built into the WSA. However, these recreationists would also benefit from

the protection of the La Madre Ridgeline, which is most frequently observed from the Red Rock Canyon scenic loop drive and other roads in the area.

Minerals: Under the Management Enhancement Alternative, 42,178 acres of land containing moderate mineral potentials would be designated as wilderness in the La Madre Mountains WSA. This designation would severely restrict all forms of mineral development on existing claims and would preclude any post-designation claims and development. The mineral potential that would be lost under this alternative is as follows:

The entire area recommended suitable has moderate favorability for oil and gas based upon the location of the Overthrust Belt.

The entire area recommended suitable has moderate favorability for nonmetallic minerals based upon silica, building stone, limestone, dolomite, gypsum, and alluvium.

This would be a significant adverse impact.

Pine Creek

Wilderness: This alternative would protect the areas with the highest wilderness values while eliminating the least manageable portion. This would be a significant beneficial impact.

All of the escarpment is included in the WSA. However, the topographic boundary would leave out some of the spectacular canyon bottoms of the escarpment. If the Red Rock Canyon Recreation Lands are not withdrawn from mineral entry, these canyon bottoms would be vulnerable to mineral exploration and development. Wilderness values would be

significantly impacted should this occur. Outstanding opportunities for solitude would decline in these canyon bottoms, no matter how the boundary is drawn, as use increases. This would be a potentially significant adverse impact.

About half of the Magnum Mining Company's claims would be left out of the area recommended suitable under this alternative. Wilderness values on the remaining claimed acreage would be lost should they prove valid and be developed. The other 75 acres of claims would be eliminated.

The area most susceptible to uncontrolled ORV use--the Rainbow Spring, Bootleg Spring, and Mountain Springs portion--would be eliminated under this alternative. That part west of the two springs does not contain the most outstanding wilderness characteristics. Naturalness was already being affected by vehicle use. However, the western boundary has been drawn so far east that it is less than a half-mile from the ridge overlooking the escarpment and, in some places, actually runs along this ridge. Should mining occur in the undesignated portion, the high wilderness values of this ridgeline as well as the top of the escarpment itself would be threatened.

Recreation: Benefits and adverse impacts to recreation would be similar to those discussed in the preceding Wilderness section.

Off-road vehicle travel between Bootleg and Rainbow Springs could continue. Vehicle-using recreationists would be denied access to the rest of the west side of the WSA. This would be in keeping with the direction of the Master Plan (Royston et al. 1976) for this area.

Minerals: Under the Management Enhancement Alternative,

21,530 acres of land containing moderate mineral potentials would be designated as wilderness in the Pine Creek WSA. This designation would severely restrict all forms of mineral development on existing claims and would preclude any post-designation claims and development. The mineral potential that would be lost under this alternative is as follows:

The entire area recommended suitable has moderate favorability for oil and gas based upon the location of the Overthrust Belt.

The entire area recommended suitable has moderate favorability for nonmetallic minerals based upon silica, building stone, limestone, dolomite, and alluvium.

This would be a significant adverse impact.

North McCullough Mountains

Wilderness: Impacts would be the same as for the No Wilderness Alternative.

Recreation: Impacts would be the same as for the No Wilderness Alternative.

Minerals: Impacts would be the same as for the No Wilderness Alternative.

South McCullough Mountains

Wilderness: This alternative would protect the highest wilderness value areas while deleting most of the areas with manageability problems. Normally, this would be a significant beneficial impact. However, it creates a very narrow WSA, 3/4 to 4 miles in width. At least half of its length is two miles wide or less. In spite of the outstanding topographic and vegetative screening, outstanding opportunities

for solitude and primitive recreation would erode over time in the narrowest portions. The northeast boundary leaves out some area of good wilderness values that would widen the unit, add ecological diversity, and present minimal manageability problems because of its lava block terrain. In this configuration, therefore, this alternative should be considered a significant adverse impact to this WSA.

All of the bajada lands would be excluded from the wilderness recommendation under this alternative, eliminating problems with control of ORV activity.

About two-thirds of the mining claims would be excluded. All but about 50 acres of the southwest block of claims would be eliminated. The remaining claims occur along the west boundary between McClanahan and Railroad Springs. Should they prove valid and be developed, wilderness values would be adversely impacted for the short and long term in localized areas.

All but 600 acres of oil and gas leases would be excluded from the wilderness boundary under this alternative.

Recreation: This alternative would protect the most scenic areas and best primitive recreation values, with some exceptions, as described in the preceding Wilderness section. With the potential long-term loss of outstanding primitive recreation values, this alternative should be considered a significant adverse impact to this area.

Off-road vehicle recreationists would be benefited by the availability of the most useable areas, including the popular west slope. No new roads would be built into the WSA, but this would have minimal effect on vehicle

users.

Minerals: Under the Management Enhancement Alternative, 22,940 acres of land containing moderate mineral potentials would be designated as wilderness in the South McCullough Mountains WSA. This designation would severely restrict all forms of mineral development on existing claims and would preclude any post-designation claims and development. The mineral potential that would be lost under this alternative is as follows:

The entire area recommended suitable has moderate favorability for oil and gas based upon the location of the Overthrust Belt.

Approximately 900 acres along the edges of this alternative have moderate favorability for nonmetallic minerals based upon alluvium.

Approximately 17,200 acres in the south and center of this alternative have moderate favorability for metallic minerals based upon gold, silver, copper, lead, zinc, and beryllium.

This would be a significant adverse impact.

Summary and Conclusion

For a summary of impacts anticipated under the Management Enhancement Alternative, see Summary Table Three.

This alternative would concentrate on preserving the high quality wilderness found in six of the seven WSAs. The seventh, North McCullough Mountains, would be recommended as nonsuitable. By moving the wilderness boundaries back to terrain features that effectively preclude random vehicle use, management costs would be significantly reduced. The self-defending terrain would assure

that these wilderness values maintain their pristine quality over the long run. However, this drawing of the boundaries would create a very narrow wilderness area in the South McCullough Mountains. As a result of the new configuration, outstanding opportunities for solitude may be lost over the long term. In the Muddy Mountains, a highly valued area, Bitter Ridge, would be lost.

Mineral development would be allowed in the larger fringe areas recommended as nonsuitable. However, nearly half of the original inventory acres would continue to be unavailable to mineral exploration and exploitation. All the high interest oil and gas thrust fault expression--Muddy Mountains, Pine Creek, La Madre Mountains, and Mt. Stirling--would continue to be closed to energy exploration.

The Management Enhancement Alternative would also make significant contributions of ecosystems/landforms to the National Wilderness Preservation System. The potential acreage for the American Desert/Juniper-Pinyon Woodland would be more than doubled.

The alternative is consistent with Clark County public land use planning as it provides acreage to the wilderness end of the recreational activity spectrum available in the Spring Mountain Range. It is incompatible in that significant acreage is closed to access for mineral and energy development in areas where the potential is charted as either moderate or high.

Wilderness Accent Alternative

Arrow Canyon Range

Wilderness: Impacts would be the same as for the Management Enhancement Alternative.

Recreation: Impacts would be the same as for the Management Enhancement Alternative.

Minerals: Impacts would be the same as for the Management Enhancement Alternative.

Muddy Mountains

Wilderness: This alternative would protect all the high wilderness value areas. This would be a significant beneficial impact.

Some of the areas with manageability problems, such as the northern bajada and the Bitter Spring Valley, would be eliminated. However, the mining claims in West End Wash basin are included in this alternative. Development of these claims is likely and would result in a long-term adverse impact on naturalness, solitude, and primitive recreation in the lower portion of the basin. It would not affect the rest of the WSA. Three mining claims on the edge of Hidden Valley and five sections of pre-FLPMA oil and gas leases in Hidden Valley and Wild Sheep Valley may also result in adverse impacts to wilderness values. This alternative would protect the highly scenic Bitter Ridge.

Recreation: This alternative would protect all the significant scenic features in the WSA, while allowing for motorized use in part of the area. Some adverse impacts to scenic values and primitive recreation would still occur (see the preceding Wilderness section). Vehicle-using recreationists would still be adversely affected because the Gale Hills would be unavailable for use although the heavily used northern bajada would be open. This alternative protects the highly scenic Bitter Ridge while allowing for vehicle access into Bitter Spring

Valley.

Cultural Resources: Impacts would be the same as for the Management Enhancement Alternative.

Minerals: Under the Wilderness Accent Alternative, 44,260 acres of land containing moderate and high mineral potentials would be designated as wilderness in the Muddy Mountains WSA. This designation would severely restrict all forms of mineral development on existing claims and would preclude any post-designation claims and development. The mineral potential that would be lost under this alternative is as follows:

The entire area recommended suitable has moderate favorability for oil and gas based upon the location of the Overthrust Belt.

Approximately 38,660 acres in all but the north-central portion of this alternative have moderate and high favorability for nonmetallic minerals. The approximately 1,120-acre area of high favorability occurs in the south portion of this alternative and is based upon colemanite. A 37,540-acre area of moderate favorability occurs in the remainder of this alternative and is based upon silica, opalized chalcedony, agates, limestone, dolomite, magnesite, gypsum, glauberite, thenardite, illite, smectite, potash, and alluvium.

This would be a significant adverse impact.

Mt. Stirling

Wilderness: This alternative protects all of the highest value wilderness areas while eliminating that portion of the WSA with the most manageability problems. This would be a significant beneficial impact. Impacts would be the same as for the

Management Enhancement Alternative, except for the inclusion of the highly valued canyons on the western slope as suitable.

Recreation: This alternative protects the major scenic features and primitive recreation opportunities while allowing for some motorized recreation opportunities. This would be a significant beneficial impact. Impacts would be the same as for the Management Enhancement Alternative, except that motorized recreationists would be negatively impacted to some extent because the canyons on the west would not be available and there would be no road building in the interior of the area.

Cultural Resources: Impacts would be the same as for the Management Enhancement Alternative.

Minerals: Under the Wilderness Accent Alternative, 44,431 acres of land containing moderate and high mineral potentials would be designated as wilderness in the Mount Stirling WSA. This designation would severely restrict all forms of mineral development on existing claims and would preclude any post-designation claims and development. The mineral potential that would be lost under this alternative is as follows:

The entire area recommended suitable has moderate favorability for oil and gas based upon the location of the Overthrust Belt.

Approximately 37,231 acres in all but the northwest portion of this alternative have moderate favorability for nonmetallic minerals based upon limestone, dolomite, and alluvium.

Approximately 8,810 acres in the northwest and southeast portions of this alternative have moderate and high favorability for metallic

minerals. The approximately 490-acre area of high favorability occurs in the southeast portion of this alternative and is based upon silver, lead, and zinc. The approximately 8,320-acre area of moderate favorability occurs in the northwest portion of this alternative and is based upon gold, silver, copper, lead, and zinc.

This would be a significant adverse impact.

La Madre Mountains

Wilderness: Impacts would be the same as for the Management Enhancement Alternative.

Recreation: Impacts would be the same as for the Management Enhancement Alternative.

Cultural Resources: Impacts would be the same as for the Management Enhancement Alternative.

Minerals: Impacts would be the same as for the Management Enhancement Alternative.

Pine Creek

Wilderness: Impacts would be the same as for the Management Enhancement Alternative.

Recreation: Impacts would be the same as for the Management Enhancement Alternative.

Cultural Resources: Impacts would be the same as for the Management Enhancement Alternative.

Minerals: Impacts would be the same as for the Management Enhancement Alternative.

North McCullough Mountains

Wilderness: Impacts would be the same as for the No Wilderness Alternative.

Recreation: Impacts would be the same as for the No Wilderness Alternative.

Cultural Resources: Impacts would be the same as the General Impacts section.

Minerals: Under the Wilderness Accent Alternative, 40,950 acres of land containing moderate mineral potentials would be designated as wilderness in the North McCullough Mountains WSA. This designation would severely restrict all forms of mineral development on existing claims and would preclude any post-designation claims and development. The mineral potential that would be lost under this alternative is as follows:

The entire area recommended suitable has moderate favorability for oil and gas based upon the location of the Overthrust Belt.

Approximately 3,840 acres in the northeast portion of this alternative have moderate favorability for geothermal based upon hot springs along the Colorado River.

Approximately 5,310 acres along the edges of this alternative have moderate favorability for nonmetallic minerals based upon alluvium.

This would be a significant adverse impact.

South McCullough Mountains

Wilderness: Impacts would be similar to those identified for the Management Enhancement Alternative, except that additional WSA acreage on the east and southwest would be included in the area recommended

suitable for wilderness designation. This would correct the problems that would be caused by the extremely narrow width of the Management Enhancement Alternative proposed boundaries. It would also add diversity to the WSA by protecting low elevation plant communities on the northwest corner. This area is characterized by small peaks, numerous washes, and a lava block landscape which limits vehicle access. Overall, this alternative would be a significant beneficial impact.

No important ORV use areas would be included in suitability recommendation. However, there would be somewhat greater ORV use within the fringe areas of the WSA in this alternative than in the Management Enhancement Alternative.

The chief impacts under this alternative would be related to about 800 acres of mining claims in the southwest corner, should they be proved valid and subsequently developed. In that event, wilderness values would be lost on that end of the WSA. This would be an adverse impact.

Recreation: Primitive recreation opportunities and scenic values would be best protected under this alternative--a significant beneficial impact--at minimal cost to vehicle-using recreationists. The areas that were added to the Management Enhancement Alternative boundaries are not important ORV areas. Vehicle users would still be somewhat negatively impacted because no new roads would be allowed into the WSA.

Cultural Resources: Impacts would be the same as for the Management Enhancement Alternative.

Minerals: Under the Wilderness

Accent Alternative, 32,645 acres of land containing moderate mineral potentials would be designated as wilderness in the South McCullough Mountains WSA. This designation would severely restrict all forms of mineral development on existing claims and would preclude any post-designation claims and development. The mineral potential that would be lost under this alternative is as follows:

The entire area recommended suitable has moderate favorability for oil and gas based upon the location of the Overthrust Belt.

Approximately 2,880 acres along the edges of this alternative have moderate favorability for nonmetallic minerals based upon alluvium.

Approximately 22,950 acres in the south and center portions of this alternative have moderate favorability for metallic minerals based upon gold, silver, copper, lead, zinc, and beryllium.

This would be a significant adverse impact.

Summary and Conclusion

For a summary of impacts anticipated under the Wilderness Accent Alternative, see Summary Table Three.

The overall impact of this alternative would be to improve the preservation of preserved wilderness by concentrating on the high quality wilderness values in each of the seven WSAs. In most cases boundaries would be pulled back to topography which is largely self-defensive from wilderness incompatible intrusions. This would minimize random intrusions destructive of wilderness values.

Although minerals development would be permitted in the fringe areas released

from wilderness status in this alternative, overall, the Wilderness Accent Alternative would be comparably inimical to mineral values as the All Wilderness Alternative. This would be a significant loss, particularly in regards to energy development in the Muddy Mountains, Pine Creek, La Madre Mountains, and Mt. Stirling WSAs where thrust faults characteristic of the Overthrust Belt are evident.

This alternative would make a significant contribution of ecosystems/landforms to the National Wilderness Preservation System, particularly in respect to the American Desert/Juniper-Pinyon Woodland type. Nearly three-quarters of that type available on BLM-Managed lands in Clark County would be included in the system, tripling the amount currently endorsed for inclusion.

This alternative would be compatible with the direction of the Clark County public land use plan in so far as it calls for a broad spectrum of recreational uses be the primary use of public lands in the Spring Mountain Range. It is incompatible with the recommendation that public lands be open to mineral entry.

Preferred Alternative

Arrow Canyon Range

Wilderness: Impacts would be the same as for the No Wilderness Alternative.

Recreation: Impacts would be the same as for the No Wilderness Alternative.

Cultural Resources: Impacts would be the same as for the No Wilderness Alternative.

Lands: Impacts would be the same

as for the No Wilderness Alternative.

Minerals: Impacts would be the same as for the No Wilderness Alternative.

Muddy Mountains

Wilderness: Impacts would be the same as for the Wilderness Accent Alternative.

Recreation: Impacts would be the same as for the Wilderness Accent Alternative.

Cultural Resources: Impacts would be the same as for the Wilderness Accent Alternative.

Minerals: Impacts would be the same as for the Wilderness Accent Alternative.

Mt. Stirling

Wilderness: Most of the high wilderness value areas would be protected under this alternative. This would be a significant beneficial impact. However, Mt. Stirling itself and its radiating ridges, canyons, and lesser peaks would be eliminated. Mt. Stirling, the northern most of the Spring Mountain Range peaks, offers outstanding opportunities for dayhiking, scenic views, and petroglyphs on the very summit. Numerous springs surrounding the base increase the value of the area for backpackers and wildlife. The rugged southwest face of Horse Peak would also be eliminated under this alternative. Mineral and energy exploration and development would lead to a deterioration of wilderness values over time in these undesignated areas.

Negative impacts to the designated portion would be very minimal and similar to those described under the

Wilderness Accent Alternative.

Recreation: Many of the major scenic features and primitive recreation opportunities would be protected under this alternative. This would be a significant beneficial impact. The major difference between this alternative and the Wilderness Accent Alternative would be the elimination of Mt. Stirling and its surrounding ridges. Benefits to vehicle-using recreationists from this boundary adjustment would be slight. Energy and mineral development would likely create new roads into the area. However, access to two of the major drainages involves crossing private lands. Other impacts under this alternative would be similar to those under the Wilderness Accent Alternative.

Cultural Resources: Under the Preferred Alternative, adverse impacts to cultural resources would occur in the northwest portion of the Mt. Stirling WSA. The exclusion of this area could result in adverse impacts to petroglyph sites and spring sites in this area.

Minerals: Under the Preferred Alternative, 30,190 acres of land containing moderate and high mineral potentials would be designated as wilderness in the Mt. Stirling WSA. This designation would severely restrict all forms of mineral development on existing claims and would preclude any post-designation claims and development. The mineral potential that would be lost under this alternative is as follows:

The entire area recommended suitable has moderate favorability for oil and gas based upon the location of the Overthrust Belt.

Approximately 27,890 acres in all but the west portion of this alternative

have moderate favorability for nonmetallic minerals based upon limestone, dolomite, and alluvium.

Approximately 1,120 acres in the northwest portion of this alternative have moderate favorability for metallic minerals based upon gold, silver, copper, lead, and zinc.

This would be a significant adverse impact.

La Madre Mountains

Wilderness: Impacts would be the same as for the Management Enhancement Alternative.

Recreation: Impacts would be the same as for the Management Enhancement Alternative.

Cultural Resources: Impacts would be the same as for the Management Enhancement Alternative.

Minerals: Impacts would be the same as for the Management Enhancement Alternative.

Pine Creek

Wilderness: Impacts would be the same as for the Management Enhancement alternative.

Recreation: Impacts would be the same as for the Management Enhancement alternative.

Cultural Resources: Impacts would be the same as for the Management Enhancement Alternative.

Minerals: Impacts would be the same as for the Management Enhancement Alternative.

North McCullough Mountains

Wilderness: Impacts would be the

same as for the No Wilderness Alternative.

Recreation: Impacts would be the same as for the No Wilderness alternative.

Cultural Resources: Impacts would be the same as for the No Wilderness Alternative.

Minerals: Impacts would be the same as for the No Wilderness Alternative.

South McCullough Mountains

Wilderness: Impacts would be the same as for the No Wilderness Alternative.

Recreation: Impacts would be the same as for the No Wilderness alternative.

Cultural Resource: Impacts would be the same as for the No Wilderness Alternative.

Minerals: Impacts would be the same as for the No Wilderness Alternative.

Summary and Conclusion

For a summary of impacts anticipated under the Preferred Alternative, see Summary Table Three.

The Preferred Alternative recommends itself for its two principal strengths:

1. It is most in conformance with the land use plan recommended for Clark County public lands.
2. It provides a significant contribution to the National Wilderness Preservation System.

In the first instance, this

alternative complements the recommendation to make recreation the primary use in the Spring Mountain Range. It preserves the highest value wilderness areas in the Mt. Stirling, Pine Creek, and La Madre Mountains WSAs. It also provides self-defensible boundaries which will, with minimum management effort, largely eliminate incompatible, random uses of wilderness areas by vehicle operators.

The alternative reduces to a quarter of the WSA inventory acres, those areas closed to energy and mineral development. However, the areas closed include the Keystone Thrust found in the Pine Creek and La Madre Mountains WSAs. Three other WSAs, Arrow Canyon, North McCullough Mountains, and South McCullough Mountains would also be available. However, this resolution of conflicting uses is consistent with current management direction.

This alternative would also provide a significant contribution, based on the Spring Mountain WSAs, to the National Wilderness Preservation System. Nearly half of the original WSA inventory acres of American Desert/Juniper-Pinyon Woodland would be a potential addition. Were that to occur, the potential total would be nearly doubled over that currently recommended.

In addition, the inclusion of the Muddy Mountains WSA is responsive to the expressed concerns of a segment of the local and regional populace. These conservation groups have perceived that, along with the Spring Mountain WSA, the Muddy Mountains possessed higher wilderness values than other areas. Although this alternative would preclude use of an area with

moderate to high potential for mineralization, there is no current expression of those values being or becoming actualized.

MANAGEABILITY

The primary intent of considering the manageability of an area, is to ensure that an area recommended as suitable for wilderness designation can be managed as wilderness in a manner which enables the entire area designated to remain as wilderness in the long term.

The All Wilderness Alternative does not include any consideration of manageability in the suitability recommendation. Wilderness boundaries would require constant patrolling and artificial barriers to maintain wilderness values.

The Management Enhancement Alternative would recommend primarily those areas that are naturally defensible as suitable for wilderness. The wilderness areas would require the least patrolling and barrier construction of all the alternative boundaries.

The Wilderness Accent Alternative would strike a compromise between what are seen by the public as the highest quality wilderness values in the county, and what BLM has identified as the most naturally defensible boundaries for wilderness areas. Areas added to the Management Enhancement Alternative boundaries would be the Bitter Ridge and Gale Hills areas in the Muddy Mountains WSA, the western canyons of the Mt. Stirling WSA, the entire North McCullough Mountains WSA, and the eastern and western foothills of the South McCullough Mountains WSA. These additions to the suitability recommendations would present more wilderness manageability problems than

the Management Enhancement Alternative.

The boundaries of the areas recommended suitable under the Preferred Alternative are primarily those identified as the most naturally defensible, with the exception of the Bitter Ridge and Gale Hills areas in the Muddy Mountains WSA and the western canyons of the Mt. Stirling WSA. The high wilderness values of these areas would outweigh the probable additional costs of managing them.

The manageability of each WSA under each alternative is evaluated under the individual analyses of impacts to wilderness values.

Detailed information on the manageability of each of the WSAs is contained in the Clark County Wilderness Technical Report, available on request from the Las Vegas District Office.

DIVERSITY IN THE NATIONAL WILDERNESS PRESERVATION SYSTEM

Each of the alternatives, except the Minerals Development Alternative, would add diversity to the National Wilderness Preservation System (see Table 3-1). The primary benefit would be the additions to the ecosystem/landforms representations, particularly to the American Desert/Juniper-Pinyon ecosystem.

The American Desert/Creosote Bush ecosystem is currently represented in the National Wilderness Preservation System by one area which totals 311,943 acres. Four areas, totalling 1,896,740 acres, have been administratively endorsed for wilderness designation. The American Desert/Juniper-Pinyon Woodland ecosystem is currently not represented in the National Wilderness

Preservation System, with only one area, totalling 95,400 acres, administratively endorsed for wilderness designation ("Profile 2," 1982). As shown on Table 3-1, selection of any alternative other than the Minerals Development Alternative would significantly increase the acreage in that category. At a minimum, acreage would nearly double.

TABLE 3-1

DIVERSITY IN THE NATIONAL WILDERNESS PRESERVATION SYSTEM
COMPARISON BY ALTERNATIVE

ALTERNATIVES	Additions to the Geographic Area And Available Opportunities	Ecosystem/Landform			
		Number of Areas Recommended Suitable	Total Acres Recommended Suitable	American Desert/ Creosote Bush	American Desert/ Juniper-Pinyon Woodland
				Acres Suitable	Acres Suitable
All Wilderness	7	383,429	201,189	182,240	
Management Enhancement	6	195,365	76,221	119,144	
Wilderness Accent	7	255,154	124,581	130,573	
No Wilderness	0	0	0	0	
Preferred	4	140,368	56,681	83,687	

CHAPTER FOUR
PREPARERS

NAME	EIS ASSIGNMENT	POSITION	EDUCATION	EXPERIENCE
L. Poppy Benson	Wilderness, Recreation	SERA Outdoor Recreation Planner	B.S. Recreation Resources Manage- ment, University of Minnesota	1/2 year Minnesota Department of Natural Resources, 1 year U.S. Forest Service, 5 1/2 years BLM
Edward T. Ciliberti	Team Leader	Las Vegas District Chief, Division of Resources	B.A. English, St. Peter's College, New Jersey	11 years U.S. Army, 7 years BLM
Thomas S. Cook	Geology, Minerals, Energy	SERA Geologist	B.S. Geography, B.S. Geology, B.S.B.A. in Accounting and M.B.A., University of Nevada, Las Vegas	4 years BLM
Terry R. Driver	Wild Horses and Burros, T/E Plants, Forestry	Las Vegas District Range Conser- vationist	B.S. Animal Science and M.S. Range Management, Texas Tech Univer- sity	17 years BLM
Jon Joseph	Diversity in Natural Wilderness Preserva- tion System	Tonopah Resource Area Outdoor Recreation Planner	B.A. Recreation Administration, California State University, Chico	4 years BLM

CHAPTER FOUR
PREPARERS

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PREPARERS

NAME	EIS ASSIGNMENT	POSITION	EDUCATION	EXPERIENCE
Fred R. King	Socioeconomics	Regional Economist	B.S. Economics, Utah State University; M.B.A., University of Nevada, Las Vegas	6 years in banking, 2 years Moapa Band of Paiutes, 2 years BLM
Lois Kvoool	Word Processor Operator	Las Vegas District Editorial Assistant	1 year Word Pro- cessing Concepts, Clark County Community College	1 1/2 years U.S. Air Force, 1 year American Red Cross, 3 years BLM
Grace McEwan	Word Processor Operator	Las Vegas District Clerk-Typist	B.A. Liberal Arts Hunter College, New York	1 year Veterans Administration Hospital 1 year HUD 1 year FBI 9 mos. BLM
Stephen A. Mellington	Technical Coordinator	Las Vegas District Technical Publications Editor	B.S. Soil Science, University of Maryland, College Park	5 1/2 years BLM
Gary M. Pavusko	Fire Management	Las Vegas District Fire Management Officer	B.S. Natural Resources Conservation, San Jose State University	2 years U.S. Forest Service, 6 1/2 years BLM

CHAPTER FOUR
PREPARERS

NAME	EIS ASSIGNMENT	POSITION	EDUCATION	EXPERIENCE
Louis Pizatella	Livestock Grazing	SERA Range Con- servationist	B.S. Range Man- agement, Cali- fornia State University, Chico	1 year U.S. Forest Service, 4 years BLM
David E. Pulliam, Jr.	Wildlife	Las Vegas District Wildlife Biologist	B.S. Range Management and M.S. Range and Wildlife Habitat Management, Washington State University	7 years BLM
Steve Rasmussen	Cartography	Nevada State Office Visual Information Specialist	Truckee Meadows Comm- unity College, Nevada	12 years BLM
Stanton D. Rolf	Cultural Resources	Las Vegas District Archaeologist	B.A. Anthropology, University of Arizona	1 year Arizona State University, 10 years BLM
Dennis J. Samuelson	Lands	Las Vegas District Realty Specialist	B.S. Forest Manage- ment, University of Montana	8 1/2 years BLM

CHAPTER FOUR
PREPARERS

NAME	EIS ASSIGNMENT	POSITION	EDUCATION	EXPERIENCE
Mark E. Van Der Puy	Soil, Water, Air, Geothermal	Las Vegas District Hydrologist	B.S. Letters and Forestry, Calvin College, Michigan; B.S.F. Forestry, University of Michigan; M.S. Watershed Management, University of Arizona	2 years University of Arizona, 1/2 year Office of Surface Mining, 3 years BLM
Marta L. Witt	Writer/Editor, Technical Coordinator	Las Vegas District Technical Publications Editor	B.S. Park and Recreation Resource Management, Michigan State University	1 1/2 years U.S. Forest Service, 4 1/2 years BLM

SERA - Stateline-Esmeralda Resource Area

Source: Clark County Wilderness EIS Team 1983.

CHAPTER FIVE

PUBLIC PARTICIPATION

CONSULTATION AND COORDINATION

Consultation and coordination with all interested individuals, groups, and agencies has been an important part of the planning process for BLM-administered lands in Clark County, and will continue to play a vital role in the development of the Final EIS, recommendations of the Secretary of the Interior to the President, recommendations of the President to Congress, and ultimately the legislative process that will determine the designation or nondesignation of the areas being studied. On November 17, 1982 a notice of intent to prepare the Clark County Wilderness Environmental Impact Statement was published in the Federal Register (Vol. 47, No. 222). Letters and scoping plans were sent to approximately 800 individuals, organizations, and agencies, inviting participation in the EIS process. Formal briefings were held for the area's Congressional delegates and the Clark County Commission and staff.

SCOPING

Scoping workshops were held during December of 1982 in Mesquite, Searchlight, and Las Vegas. These workshops were attended by local and regional individuals and interest groups and focused on informal discussions of the resources, boundaries, and management alternatives. The scoping process resulted in 125 contacts and letters, which were reviewed and when appropriate, incorporated into the study.

As a result of scoping and additional minerals information (the GEM Reports)

the No Wilderness Alternative was adjusted and combined with the No Action Alternative. Adjustments were suggested to the Manageability Alternative by wilderness advocates that generated a Wilderness Accent Alternative.

The scoping process officially ended January 14, 1983. Comments from the public that were received after the closing date were reviewed and incorporated into the document when possible.

Of the 125 contacts made during the scoping period, analysis showed that 433 comments and recommendations were received from 239 individuals, firms, and organizations (see Table 5-1). Ninety-three percent of the input supported suitability recommendations and 7 percent supported nonsuitability recommendations. Of the seven Wilderness Study Areas in Clark County, the Muddy Mountains WSA attracted the most comments, 22 percent of the total comments analyzed. The Arrow Canyon Range WSA attracted the least comments of the WSAs, 7 percent. See Table 5-2 for details on comments and recommendations made on each WSA.

INTERAGENCY CONTACTS

Professional contacts have been made with the Nevada Department of Wildlife, National Park Service, U.S. Forest Service, Clark County Department of Comprehensive Planning, various departments of the University of Nevada (Las Vegas and Reno), and other BLM Districts.

Informal consultation on the possible existence of threatened or endangered plants and animals will be scheduled with the U.S. Fish and Wildlife Service.

AVAILABILITY OF THE DRAFT EIS

The Draft Environmental Impact Statement (DEIS) will be sent to all individuals, agencies, and groups who have expressed an interest in the Clark County planning process. Copies of the DEIS will also be sent to local agencies and organizations, and will be available for review at the listed 12 public libraries and 11 BLM offices. Anyone else wishing a copy of the DEIS may receive one by calling or writing the BLM Las Vegas District at P.O. Box 26569, Las Vegas, NV 89126, (702) 385-6463.

The following will receive copies of the DEIS:

Las Vegas City Manager
Mayor of Boulder City
Mayor of Henderson
Mayor of Las Vegas
Mayor of North Las Vegas
Citizen Advisory Councils/Town Boards
(11)

Clark County Commission
Clark County Dept. of Comprehensive Planning
Clark County Dept. of Parks and Recreation
Clark County Extension Agent
Clark County Game Board
Clark County Conservation District/Soil Conservation Service
Henderson Planning Department
Henderson Recreation and Parks Department
Lincoln County Commission
North Las Vegas Planning Department
Nye County Commission

Boulder City Chamber of Commerce

Henderson Chamber of Commerce
Las Vegas Chamber of Commerce
Las Vegas Convention and Visitors Authority

Senator Chic Hecht, Las Vegas
Representor Paul Laxalt, Las Vegas
Representative Harry Reid, Las Vegas
Representative Barbara Vucanovich, Las Vegas

U.S. Air Force (Nellis and Indian Springs Air Bases)
Army Corps of Engineers
Bureau of Indian Affairs
Bureau of Reclamation
Department of Commerce
Department of Energy
Department of Transportation
Environmental Protection Agency
U.S. Fish and Wildlife Service
U.S. Forest Service
U.S. Geological Service
Minerals Management Service
National Park Service

Nevada Bureau of Mines
Nevada Department of Wildlife
Nevada Division of Colorado River Resources
Nevada Division of Forestry
Nevada Division of State Parks
Nevada Division of Water Resources
Nevada State Clearinghouse

Fort Mojave Tribal Council
Intertribal Council of Nevada
Las Vegas Tribal Council
Moapa Business Council

Alamo Power District
Lincoln County Power District #1
Los Angeles Dept. of Water and Power
Nevada Power Company
Pioche Public Utilities
Southern California Edison

University of Nevada, Las Vegas
Center for Business and Economic Research
College of Physical Sciences

University of Nevada, Reno
Agriculture and Resource Economics
Division
Desert Research Institute
Fleischman College of Agriculture
Geological Society of Nevada
Mackay School of Mines
Nevada Bureau of Mines and Geology
Renewable Natural Resources Center
Society for Range Management

Las Vegas District Grazing Advisory
Board
Las Vegas District Multiple Use
Advisory Council
Multiple Use Advisory Board of Federal
Land Laws

Nevada Cattlemen's Association
Nevada State Cowbelles
Nevada Woolgrowers Association
N-5 Grazing Advisory Board, Caliente
N-5 Unit of Nevada Cattlemen's
Association
Livestock Permittees in Clark County

Archaeo - Nevada Society
Lost City Museum

Audubon Society, Red Rock Chapter
Desert Bighorn Council
Desert Tortoise Council
Fraternity of Desert Bighorn
Earth First
Friends of the Earth
Friends of Nevada Wilderness
Great Basin Zoological Society
Greenpeace
Humane Society of Southern Nevada
Las Vegas League of Women Voters
Las Vegas Wash Committee
Mountain States Legal Foundation
National Campers and Hikers
Association
Natural Resources Defense Council
Nature Conservancy
Nevada Conservation Forum
Nevada Open Land Organized Council
Nevada Organization for Wildlife
Nevada Outdoor Recreation Association
Nevada Public Land Users Association
Nevada Recreation and Park Society

Nevada Wilderness Association
Nevada Wildlife Federation
Northern Nevada Native Plant Society
Northwest Citizens Association
Public Land Council
Public Land Institute
Resource Concepts Inc.
Sagebrush Alliance
Sierra Club
Southern Nevada Conservation Council
Southern Nevada Environmental Forum
Soil Conservation Society
TOKT
The Wildlife Society
The Wilderness Society
Wildlife Management Institute

Boulder Gem Club
Bullfrog Mining District
Las Vegas Gem Club
Nevada Prospectors Association
Mining Claimants in WSAs
American Institute in WSAs of Mining
Engineers
American Mining Congress

California Federation of Mineralogical
Societies
Minerals Exploration Coalition
Nevada Mining & Prospectors Assoc.
Nevada Mining Council
Women in Mining

Chargers West Motorcycle Club
Gamblers Motorcycle Club
Groundshakers Motorcycle Club
Las Vegas Bronco Club
Las Vegas Jeep Club
Motorcycle Racing Association of
Nevada
Mint 400 Racing HQ
Motorcycle Dealers Assn.
Southern Nevada Off-Road Enthusiasts
Silver City Scramblers
So. Nevada Jackrabbit Motorcycle Club
So. Nevada Landcruisers
Sportsmans Racing Association
Vegas Rollin' Wheels
Vegas Valley 4-Wheelers
Watt Lott's Racing Association
Desert Sportsman Rifle & Pistol
National Rifle Association of America

Nellis Rod & Gun Club
Nevada Sportsmen's Association
Virgin Valley Sportsmen
So. Nevada Hang Gliders

Public Libraries

Blue Diamond Library
Blue Diamond, Nevada 89004

Boulder City Library
539 California Ave.
Boulder City, Nevada 89005

Bunkerville Library
Bunkerville, Nevada 89007

Charleston Heights Library
800 Brush St.
Las Vegas, Nevada 89107

Clark County Community College
Learning Resource Center
3200 E. Cheyenne Ave.
North Las Vegas, Nevada 89030

Clark County Library
1401 E. Flamingo Rd.
Las Vegas, Nevada 89109

Goodsprings Library
Goodsprings, Nevada 89109

Henderson Library
Henderson, Nevada 89015

Indian Springs Library
Indian Springs, Nevada 89018

Las Vegas Public Library
1762 E. Charleston Blvd.
Las Vegas, Nevada 89104

Moapa Valley Library
Overton, Nevada 89040

Mount Charleston Library
Mt. Charleston, Nevada 89101

North Las Vegas Library
2300 Civic Center Dr.
North Las Vegas, Nevada 89030

Pahrump Public Library
Pahrump, Nevada 89041

Searchlight Library
Searchlight, Nevada 89046

James Dickinson Library
Documents Dept.
University of Nevada
4505 Maryland Parkway
Las Vegas, Nevada 89154

Getchell Library
Govt. Publications Dept.
University of Nevada
Reno, Nevada 89507

Virgin Valley Library
Mesquite, Nevada 89024

West Las Vegas Library
1402 North D. Street
Las Vegas, Nevada 89106

Bureau Of Land Management Offices

Office of Public Affairs, BLM
18th and C Streets, NW
Washington, D.C. 20240

Nevada State Office
300 Booth St.
Reno, Nevada 89520

Battle Mountain District Office
North 2nd and South Scott Streets
Battle Mountain, Nevada 89820

Carson City District Office
1050 E. William Street
Carson City, Nevada 89701

Elko District Office
2002 Idaho Street
Elko, Nevada 89801

Ely District Office
Star Route 5, Box 1
Ely, Nevada 89301

Las Vegas District Office
4765 West Vegas Drive
Las Vegas, Nevada 89126

Winnemucca District Office
705 East 4th Street
Winnemucca, Nevada 89445

Arizona Strip District Office
196 East Tabernacle
St. George, Utah 84770

Cedar City District Office
1579 North Main
Cedar City, Utah 84720

Riverside District Office
1695 Spruce Street
Riverside, California 92507

HEARINGS

A public hearing or hearings will be held on the Draft Environmental Impact Statement. Notice for dates, locations, and times for public hearing will be announced in advance to the public news media and in the Federal Register.

TABLE 5-1
 DEMOGRAPHIC DATA AND FORMS OF INPUT

	Contacts		Residence				Form of Input			
	No.	Percent	Clark County	Other Nevada	Western Region	Other	Letter	Post Card	Verbal Meeting	Verbal Telephone
Self/Selves	68	54.4	64	1	3	-	42	12	12	2
Commercial Mining	15	12.0	6	-	8	1	6	-	5	4
Other Commercial	7	5.6	1	1	5	-	4	-	1	2
Environmental Organization	9	7.2	6	2	1	-	5	-	3	1
Other Organization	9	7.2	9	-	-	-	3	-	6	-
Federal Agency	11	8.8	8	-	3	-	7	-	2	2
Nevada Agency	6	4.8	1	5	-	-	5	-	-	1
TOTAL	125	100	95	9	20	1	72	12	29	12
Percent			76	7	16	1	58	9.5	23	9.5

Source: Clark County Wilderness EIS Team 1983

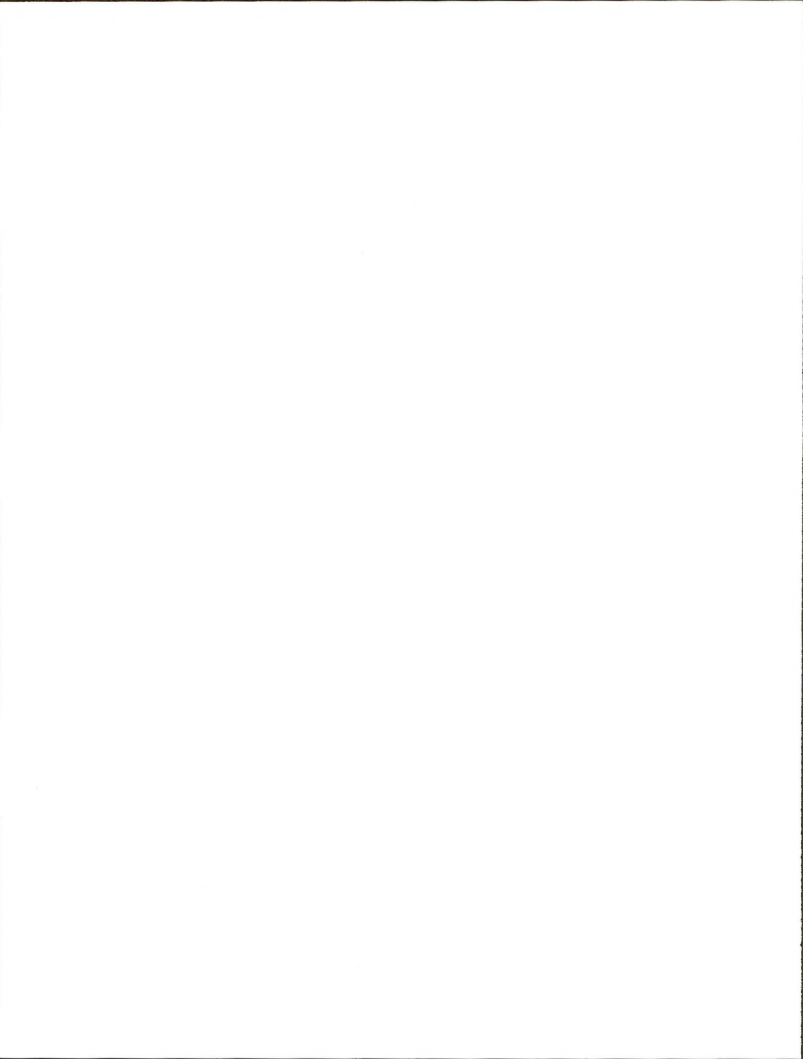
TABLE 5-2

ANALYSIS OF SPECIFIC WILDERNESS STUDY AREA (WSA) COMMENTS

WSA	Subject of Comments *a													
	<u>Physical Features</u>		<u>Opportunity</u>		<u>Other Resources</u>		<u>Support of Alternatives</u>		<u>Other</u>		<u>Recommended Change</u>		<u>Total</u>	
	S	N	S	N	S	N	S	N	S	N	S	N	S	N
Arrow Canyon Range	8	1	1	1	8	1	8	1	2	0	0	0	27	4
Muddy Mountains	10	6	9	2	16	0	12	1	3	0	34	3	84	12
Mt. Stirling	11	0	4	0	24	0	9	2	1	0	19	1	68	3
La Madre Mtns.	6	0	17	3	3	0	19	0	0	0	6	0	51	3
Pine Creek	11	0	23	2	8	0	8	0	1	0	18	0	69	2
North McCullough Mountains	10	0	4	2	23	0	12	0	2	0	5	0	56	2
South McCullough Mountains	6	1	4	3	10	0	6	0	0	1	20	1	46	6
TOTALS	62	8	62	13	92	1	74	4	9	1	102	5	401	32

Source: Clark County Wilderness EIS Team 1983

*a S = Suitable, N = Unsuitable



APPENDIX A

NON-WILDERNESS MANAGEMENT SCENARIO

Arrow Canyon Range

Oil, Gas, and Geothermal: The entire WSA has moderate potential for oil and gas, and in the eastern ridges for geothermal. Exploration activities would involve seismic lines and approximately 19 wells, disturbing a total of 299 acres (see Appendix B). Drilling could occur throughout the WSA generally on slopes of less than 30 percent.

Minerals: The Arrow Canyon Range WSA has moderate potential for nonmetallic minerals. The north central valley/Pahranagat Wash area would be explored for montmorillonite, diatomite, gypsum, and alluvium. Exploration would involve ORV travel, some road blading, and test pits. A mine may develop in this area. A well-used road would develop in the central valley. The range portion would be explored for silica in the Eureka quartzite and for limestone and dolomite. This would involve ORV travel, some road construction, and test pits. A mine would probably develop in this area. Access and mine development would likely involve a great deal of surface disturbance because of the steep nature of the terrain. The eastern ridges would be least affected by mining activities.

Communication Sites: No interest has been expressed in communication sites. Arrow Peak and the slightly higher peak to the south are the highest in their range but are considerably lower than the Sheep Range to the west. Any communication sites would be low maintenance, helicopter-installed and -served facilities due to terrain limitations on access.

Land Disposal: Some land would be patented for minerals. The Nevada Division of State Parks has expressed interest in acquiring the Arrow Canyon and Pahranagat Wash area for a State Park (see Recreation). No other land disposals are anticipated.

Range Improvements: No developments would occur in the WSA due to the low intensity of grazing use.

Wildlife Habitat Improvements: At least one and possibly two large (over 80,000 gallons), catchments would be constructed in the WSA. This figure was arrived at by multiplying the number of catchments recommended in the Janke (1980) report times the percent of the range that lies within the WSA. A series of small bird guzzlers would be established in the vicinity of Pahranagat Wash.

Recreation: A State Park may be developed in the Arrow Canyon-Pahranagat Wash area. The developed portion of the park, campground, picnic ground, and visitor center would probably be north of the WSA boundary. Interpretive facilities would be located in and around Arrow Canyon.

The 1982 Clark County ORV CRMP Committee closed all of the WSA to racing because of its WSA status. A future CRMP of this unexamined area would likely open the eastern ridges and southern part of the central valley to racers. Bike and car racers have consistently expressed interest in this area, and it would tie in with the heavily used Dry Lake Valley area. Although it has been raced before, the Pahrnagat Wash/Arrow Canyon area would be closed because of conflicts with small game birds and the State Park.

Casual ORV use would increase throughout the WSA in response to increased population and improved access via mining and energy roads. Relatively inaccessible areas, such as the east-draining valleys of the range, would see increased use once mineral and energy roads open up the central valley. The WSA's extensive and widespread fossil deposits will attract more rockhounds most of whom will utilize ORVs.

Muddy Mountains

Oil, Gas, and Geothermal: The WSA has moderate potential for oil and gas and low potential for geothermal. Exploration activities would involve seismic lines and approximately 57 wells, disturbing a total of 898 acres (see Appendix B). Drilling could occur throughout the WSA generally on slopes of less than 30 percent.

Minerals: The G-E-M report considers the Muddy Mountains the "prime location for potential nonmetallic minerals" of all the WSAs in the Great Basin.

The northern bajada would be explored for montmorillonite, gypsum, and alluvium. This would involve use of ORVs, test pits, and some road blading. Mining would involve strip mining.

The entire Gale Hills area (all land west and south of the Muddy Mountain core) would be explored for colemanite, montmorillonite, silica, and building stone. Additionally, both the Gale Hills and White Basin/Bitter Spring Valley would be explored for potash, illite, smectite, opalized chalcedony, agate, magnesite, and gypsum. All driveable terrain would be utilized by 4x4s. Roads would be bladed into Big Valley, the West End Wash Basin, and Lovell Wash Basin. Test pits and drill holes would occur in various places and a silica mine would develop on existing claims in the West End Wash Basin (Sec. 5, 6, and 8, T.20S., R.65E.). A gypsum or bentonite mine is possible in Big Valley, and a borate mine in Lovell Wash Basin. The American Borate Company expects to reactivate their Anniversary Mine and has expressed interest in constructing a haul road across Lovell Basin to the Bitter Ridge area to avoid access problems through Lake Mead NRA.

Anaconda is including the Muddies in their 1983 borate exploration program (Mitchell, Atlantic Richfield Co., personal communication, 1983)

The White Basin/Bitter Spring Valley area would be thoroughly explored for limestone, dolomite, glauberite, and thenardite. This would involve test

pits, ORV travel, and occasional road blading. A mine for either of these minerals would be likely to develop in this area.

The Muddy Mountain core, Wild Sheep Valley and Hidden Valley areas would be least affected by mineral exploration and development. However, some exploration would occur in the area for limestone, dolomite, and building stone.

Communication Sites: No interest has been expressed in communication sites. However, Muddy Peak and neighboring peaks are the highest points between Las Vegas and the Overton Arm of Lake Mead. Any communication sites would be low maintenance, helicopter-installed and -serviced facilities due to terrain limitations on access.

Land Disposal: Some land would be patented for minerals. Other land disposals are not anticipated.

Range Improvements: No developments would occur on the Muddy Mountain allotment. There may be water improvements in the White Basin allotment.

Wildlife Habitat Developments: One small (5,000-gallon) and three large (80,000 gallon) catchments would be developed for bighorn. These estimates are based on multiplying the number of catchments recommended in the Janke (1980) report times the percent of the range within the WSA. These catchments would most likely be located in the Muddy Mountain core area or the West End Wash cliffs.

Recreation: The 1982 Clark County ORV CRMP Committee closed all of the WSA except the northern bajadas and the very west end to ORV racing because of the WSA status. A future CRMP of the unexamined area would likely open most of the Gale Hills and Big Valley to racing. Dirt bikers have consistently expressed interest in the Gale Hills and two race routes are already there. This area is close to town and would tie in with the high use areas of the Dry Lake Valley. Bighorn sheep interests would keep some buffer for the Muddy Mountain core and West End Wash cliffs. White Basin/Bitter Spring Valley would not be opened to racing. Casual ORV use would increase throughout the WSA in response to increased population and improved access via mining and energy roads. Relatively inaccessible areas, such as Wild Sheep Valley, Big Valley, and Lovell Wash, would be opened up by mineral and energy roads allowing travel into previously unused areas including the washes draining the Muddy Mountain core. The 1982 ORV CRMP Committee voted to close the access road into Hidden Valley and close the Hidden Valley area to ORV use. Continual energy interest in that valley may make such a closure difficult to carry out or enforce. No recreation developments are anticipated.

Mount Stirling

Oil, Gas, and Geothermal: The WSA has moderate potential for oil and gas and low potential for geothermal. Exploration activities would involve seismic lines and approximately 41 wells disturbing a total of 646 acres (see

Appendix B). Drilling could occur anywhere in the WSA generally on slopes of less than 30 percent.

Minerals: The WSA is considered moderate in potential for metallics and nonmetallics. The entire WSA would be explored, particularly for gold, silver, and lead. Exploration would involve use of ORVs, some road grading, drilling, and test pits. Small underground mines for metallics are most likely to be developed in the northwest and southeast corners of the WSA. A large strip mine for lime or cement could be developed anywhere but the northwest corner. A sand and gravel operation would develop in the northern bajada.

Communication Sites: No interest has been expressed in communication sites. Wheeler Peak, Horse Peak, Mt. Stirling, and the other high points of the ridge may have potential for sites even though they are lower than the peaks of the Mt. Charleston complex. Any sites would be low maintenance, helicopter-installed and -serviced facilities due to terrain limitations on access.

Land Disposal: Same land would be patented for minerals. Other land disposals are not anticipated.

Range Improvements: No new range developments would occur within the WSA.

Wildlife Habitat Improvements: Wildlife habitat improvements would include spring fencing on the periphery of the WSA, at least 1,000 acres of pinyon-juniper removal, at least one spring improvement, and development of a large catchment (over 80,000 gallons).

Recreation: This WSA would never be raced by ORVs. Current policy set by the 1982 ORV CRMP Committee is for no racing above 5,000 feet in this portion of the Spring Mountain Range. Casual ORV use would increase in response to increased population and improved access. Dense tree cover and rugged terrain would limit most users to the washes. The interior of the WSA would become accessible after development of a high quality road through the center. Dispersed camping, pine nut and firewood collecting, hiking, and ORV use would take place along the road. A campground would be developed either by BLM or the State in the vicinity of Wheeler Well.

La Madre Mountains

Oil, Gas, and Geothermal: The WSA has moderate potential for oil and gas and low potential for geothermal. Exploration activities would involve seismic lines and approximately 34 wells, disturbing a total of 536 acres (see Appendix B). The final management decision (USDI, BLM, Las Vegas District, 1982) on the Environmental Assessment of Oil and Gas Leasing in the Red Rock Canyon Recreation Lands (USDI, BLM, Las Vegas District, 1980) determined that there will be no-surface-occupancy stipulations in leases on certain sensitive lands. Approximately 14,080 acres of no-surface-occupancy lands are within the WSA (see the Occupancy Stipulations Map in this Appendix) and include the

White Rock Hills, the Calico Hills, Turtlehead Mountain, Brownstone Basin, and everything on the southeast side of the ridgeline and the ridgeline from T.20S., R.58E., Sec. 30, eastward to T.20S., R.59E., Sec. 19. So long as there is no change in management policy, all drilling would be expected to occur on the western end of the WSA, the northwest slope, and the eastern end of the WSA. Generally, drilling could occur on slopes less than 30 percent.

Minerals: Approximately 33 percent of the WSA is included in the Red Rock Canyon Recreation Lands and was segregated from the mining laws by Multiple Use Classification N-257 in 1966. These lands include Brownstone Basin, Turtlehead Mountain, Calico Hills, White Rock Hills, and most of the La Madre Ridgeline. The validity of this classification has yet to be challenged in court. This classification is presently under review and will probably be revoked. For the short term, it will protect these lands from mineral entry. A permanent withdrawal is unlikely over the long term. The WSA would be explored for metallics and nonmetallics, including gold, silver, copper, lead, zinc, gypsum, limestone, dolomite, silica, building stone, and alluvium. Exploration would involve use of ORVs, some road construction, drilling, and test pits. A gypsum strip mine would develop on the existing claims in Sections 27 and 34, T.19S., R.58E. and Sec. 3, T.20S., R.58E. Gravel pits would be developed on the east end of the WSA off of the Kyle Canyon and Lone Mountain Roads. Strip mines for limestone are also possible in this area. Small lead mines may occur anywhere.

Communication Sites: No interest has been expressed in communication sites in the WSA. The peaks of the ridgeline have some potential for sites. However, they are much lower than the National Forest peaks to the northwest.

Land Disposals: Some land would be patented for minerals. The Desert Research Institute would acquire Little Red Rocks for a research facility. Sky Mountain Ranch may acquire through trade some lands in Lovell Canyon. No other land disposals are anticipated.

Range Improvements: No improvements would occur in the WSA. The area has not been grazed in many years.

Wildlife Habitat Improvements: One guzzler would be constructed in the north-central portion of the WSA, south of Harris Springs.

Recreation: The WSA would never be raced by ORVs. The 1982 OKV CRMP Committee eliminated racing between the Spring Mountains and U.S. Highway 95. Casual ORV use would increase in all the washes that drain to the north and to Lovell Canyon in response to increased population. A trails network would be developed that would tie together the Harris Peak area, Rocky Gap Road, La Madre Spring, Brownstone Canyon, Sandstone Quarry, White Rock Spring, and Willow Spring picnic area. Use would increase for hiking, horseback riding, sightseeing, and other recreation.

Pine Creek

Oil, Gas, and Geothermal: The WSA has moderate potential for oil and gas and low potential for geothermal. Exploration activities would involve seismic lines and approximately 14 wells, disturbing a total of 221 acres (see Appendix B). The final management decision (USDI, BLM, Las Vegas District, 1982) on the Final Environmental Assessment on Oil and Gas Leasing in the Red Rock Canyon Recreation Lands (USDI, BLM, Las Vegas District, 1980) determined that there will be no-surface-occupancy stipulations in leases on certain sensitive lands. Approximately 12,800 acres of no-surface-occupancy lands are within the WSA (see the Occupancy Stipulations Map in this Appendix) and include all of the sandstone escarpment and canyons and 95 percent of the ridgeline. So long as there is no change in management policy, all drilling would be expected to occur on the western slope of the limestone ridge. Generally drilling occurs on slopes of less than 30 percent.

Minerals: Approximately 65 percent of the WSA is included in the Red Rock Canyon Recreation Lands and was segregated from the mining laws by Multiple Use Classification N-257 in 1966. The validity of this classification has yet to be challenged in court. This classification is under review and will probably be revoked. For the short term, it will protect these lands from mineral entry. A permanent withdrawal from mineral entry is unlikely. Over the long term, the WSA would be explored for metallic and nonmetallics, including gold, silver, copper, lead, zinc, gypsum, silica, limestone, dolomite, building stone, and alluvium. Exploration would involve use of ORVs, some road grading, drilling, and test pits. The most likely developments would be small underground lead mines or large strip mines for lime or cement materials. Most activity would occur in the limestone portion of the WSA because the sandstone has less mineral value. There is some possibility of mining at the base of the escarpment itself.

Communication Sites: No interest has been expressed in communication sites. It is unlikely that any of the peaks would be developed due to the recreational importance of the area and the presence of higher peaks to the north and south.

Land Disposals: Some land would be patented for minerals. No other land disposals are anticipated.

Range Improvements: No more range developments would be constructed. The WSA has not been grazed for many years.

Wildlife Habitat Improvements: No wildlife developments would be constructed.

Recreation: The WSA would never be raced by ORVs. The 1982 ORV CRMP Committee closed the Spring Mountain Range below 5,000 feet. Casual ORV use would increase on the west slope of the WSA in response to increased population, the paving of the Lovell Canyon Road, and new mining roads. A trail along the summit of the limestone ridge would be constructed.

North McCullough Mountains

Oil, Gas, and Geothermal: The entire WSA has moderate potential for oil and gas, and a small area with moderate geothermal potential is located northeast of Hanna Peak and southeast of Lava Valley. Exploration activities would involve seismic lines and approximately 28 wells, disturbing a total of 441 acres (see Appendix B). Drilling could occur throughout the WSA generally on slopes of less than 30 percent.

Minerals: The WSA has minimal potential for mineral development. However, the edges of the WSA have moderate favorability for nonmetallic minerals based upon alluvium. Several sand and gravel operations would develop in Hidden Valley and the valleys draining into it, and in Lava Valley, the large north-draining valley. High quality roads would access these operations. Demand from the nearby Las Vegas Valley will encourage development. Some exploration for other minerals would occur throughout the WSA but development is not likely.

Communication Sites: Black Mountain would be developed as a helicopter-installed and -serviced communications site for the Las Vegas Metropolitan Police Department. Overcrowding at the large communications site to the north and the development of the Eldorado Valley may create demands for additional sites. A roaded communication site may be established at Hanna Peak.

Land Disposal: No land disposals are anticipated.

Range Improvements: Some grazing improvement may occur in the valleys emptying into Hidden Valley.

Wildlife Habitat Developments: Janke's report (1980) on bighorn habitat improvement advocates three large (over 80,000 gallons), water catchments for the WSA.

Recreation: The 1982 ORV CRMP recommended the WSA be closed to racing due to its WSA status. Future CRMP committees would not open it to racing due to the nature of the volcanic block terrain. Casual dirt bike use would increase dramatically in Lava Valley and the valleys draining into Hidden Valley, as the population of Las Vegas grows and the sand and gravel roads provide better access. Lava Valley would become a "from the back door" riding area for suburban Las Vegas. The rest of the range would not see much increased use because the terrain is not conducive to ORV travel. The east face of the North McCullough Range would become important for recreation as the Eldorado Valley Act lands are developed. It would receive much more ORV, hiking, and picnic use.

South McCullough Mountains

Oil and Gas: The WSA has moderate potential for oil and gas. Exploration activities would involve seismic lines and approximately 33 wells, disturbing a total of 520 acres (see Appendix B). Drilling could occur throughout the WSA generally on slopes of less than 30 percent.

Minerals: The south and center of the WSA have moderate favorability for metallic minerals. The entire WSA would be explored for minerals, particularly gold, silver, copper, lead, zinc, beryllium, and alluvium. Most activity would be concentrated in the southwest end. The NUPEC Resources Company of Wyoming is currently exploring and claiming in that area. Exploration would involve use of ORVs, some road grading, drilling, and test pits. Mines would most likely to be underground.

Communication Sites: No interest has been expressed in communication sites. McCullough Mountain is the highest peak south of Las Vegas. Road access could be constructed to the top of the mountain; however, it is more likely any communication site would be helicopter-installed and -serviced.

Land Disposals: Some land would be patented for minerals. No other land disposals are anticipated.

Range Improvements: No new range improvements would be constructed.

Wildlife Habitat Developments: Janke's report (1980) on bighorn habitat improvement advocates 5,000 acres of pinyon-juniper removal and two large water catchments (over 80,000 gallons) in this WSA.

Recreation: The 1982 ORV CRMP Committee opened the western bajadas from Railroad Spring west to racing. The rest of the WSA was not examined. Future CRMP committees would not open any more area to racing because of bighorn sheep conflicts. Racing would increase in the western bajada.

Casual ORV use would increase throughout the WSA as the population grew and access was improved by energy and mineral companies. This area could become a very important trail bike riding area as it has more moderate slopes than other ranges in the Las Vegas region.

APPENDIX B

ENERGY DEVELOPMENT SCENARIO

Oil and Gas

To analyze certain impacts, the amount of surface disturbance must be identified. Since little is known about the subsurface geology of the WSAs, assumptions must be made based on exploration and development data from other areas. BLM's Kemmerer Resource Area in western Wyoming is the area where the Bureau has the highest amount of Overthrust Belt exploration, development, and production. The Kemmerer experience was used as a starting point in developing analysis assumptions for Clark County.

From 1884 to 1977 a total of 424 oil and gas wells were drilled in the Kemmerer area. Of the 424 drilled, 85 (about 20 percent) were producing wells. There are some three million acres in the Kemmerer study area. The ratio of drilled wells to total acreage is about one to every 7,000 acres. It was predicted that, due to increased exploration activity, an additional 3,000 wells may be drilled in the area between 1977 and the year 2000 (USDI, BLM, Rock Springs District, 1979). The total number of drilled wells in the entire Kemmerer study area would then be approximately 3,500. This computes to an average of one well to every 850 acres.

The correlation of the Kemmerer study and WSAs in Clark County is not entirely appropriate, since Kemmerer is a proven oil and gas discovery area, while the WSAs are classified "rank wildcat" areas with a much lower probability of success. To compensate for that disparity and lacking local data, the number of wells will be reduced by 50 percent to one well for each 1,700 acres in the WSA.

For each well, approximately 4.5 acres of land will be disturbed by seismic activity. Each drill pad will be 5.0 acres in size. Each well will have an average of 1.25 miles of road (5 acres disturbance per acre) for 6.25 acres per well. The total acreage disturbance per well is 15.75 acres per well in 1,700 acres. Appendix Table B-1 displays the projected number of wells and acreage disturbed per WSA if not designated wilderness.

Geothermal

Moderate geothermal potential has been identified in the G-E-M Technical Reports (1982) and by the U.S. Geological Survey reports, for small portions on the eastern sides of the Arrow Canyon Range and North McCullough Mountains WSAs.

The State of Nevada in 1973 projected no geothermal power facilities for Clark County through the year 2020. This information coincides with the U.S. Department of the Interior report (USDI, Office of the Secretary, 1973) that concluded that the county has no significant potential for geothermal development. It seems unlikely that any geothermal activity in the WSAs would exceed the level of activities that are projected for exploration and development of oil and gas. For impact analysis purposes, this EIS will project geothermal disturbance along with oil and gas impacts (see Appendix Table B-1).

TABLE B-1
PROJECTED OIL, GAS, AND GEOTHERMAL DEVELOPMENT

WSA	Alternatives									
	All		Management		Wilderness		Minerals		Preferred	
	Wilderness		Enhancement		Accent		Development			
	Wells	Acres	Wells	Acres	Wells	Acres	Wells	Acres	Wells	Acres
Arrow Canyon	0	0	3*	47*	3	47*	19	299*	19	299*
Muddy Mountains	0	0	35	551	31	488	57	898	57	898
Mt. Stirling	0	0	16	252	15	236	41	646	23	362
La Madre Mountains	0	0	9	142	9	142	34	536	9	142
Pine Creek	0	0	1	16	1	16	14	221	1	16
No. McCullough	0	0	28*	441*	4*	63*	28*	441*	28*	441*
So. McCullough	0	0	20	315	14	221	33	520	33	520
	0	0	112*	1,764*	77*	1,213*	226*	3,561*	170*	2,848*

(*) Includes projected geothermal

Source: Clark County Wilderness EIS Team 1983; USDI, BLM Las Vegas District, 1980.

GLOSSARY

ACRONYMS

ACEC - Area of Critical Environmental Concern
BLM - Bureau of Land Management
CRMP - Coordinated Resource Management and Planning
EIS - Environmental Impact Statement
FLPMA - Federal Land Policy and Management Act
HMAP - Herd Management Area Plan
HMP - Habitat Management Plan
MFP - Management Framework Plan
NDW - Nevada Department of Wildlife
NPS - National Park Service
NRA - National Recreation Area
ORV - Off-Road Vehicle
URA - Unit Resource Analysis
USDI - U.S. Department of the Interior
WSA - Wilderness Study Area

AGAVE ROASTING PITS: Doughnut-shaped mounds of fire-cracked limestone rocks and charcoal. These pits were used to cook agave plants in.

ALLOTMENT: An area designated for the use of a prescribed number and class of livestock under one plan of management.

ALLUVIAL FANS: Cone-shaped deposits of alluvium, generally formed where streams issue from mountains upon the lowland.

ALLUVIUM: Sand and gravel.

ANIMAL UNIT MONTH (AUM): The amount of forage necessary for the sustenance of one mature cow or its equivalent (e.g., one cow and her calf, four deer, five antelope, five bighorn sheep, five domestic sheep, or one mature horse or burro) for a period of one month.

AREAS OF CRITICAL ENVIRONMENTAL CONCERN (ACEC): Areas within the public lands where special management

attention is required (when such areas are developed or used or where no development is required) to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources, or other natural systems or processes, or to protect life and safety from natural hazards.

BAJADA: A series of confluent alluvial fans along the base of a mountain range.

BASIN AND RANGE: A geomorphic province characterized by faultblock mountains and intervening basins.

CATCHMENT: A structure, such as a basin or reservoir, for collecting or draining water.

CENOZOIC: The latest era, beginning approximately 60 million years ago, into which geologic time is divided; the rocks deposited during that era.

CERAMIC SCATTER: A surface distribution of pottery sherds from broken prehistoric ceramic vessels.

CHERRYSTEM: A boundary configuration in which the boundary of a wilderness study area or proposed wilderness is drawn around a dead-end road or other feature so as to exclude that road or feature from the wilderness study area or proposed wilderness.

CHERRYSTEM ROADS: Dead-end roads into a WSA which form part of the boundaries of that WSA.

CHERT: Cryptocrystalline (fine-grained) quartz; favored by aboriginals for knapping purposes. This material fractures conchoidally, lending itself to the manufacture of stone tools and projectile points.

CLASS II: A sample-oriented field inventory of cultural resources.

CRETACEOUS: The latest of the periods of the Mesozoic era; the rocks of that period.

CULTURAL RESOURCES: Nonrenewable remains of human activity, reflected in sites, artifacts, ruins, works of art, and natural features, that were of importance in human events. These resources consist of (1) physical remains, (2) areas where significant human events occurred--even though evidence of the event may no longer remain, and (3) the environment immediately surrounding the resource.

ELDORADO VALLEY ACT (LANDS): (P.L. 85-339) This law was enacted on March 6, 1958, and set aside federal lands in the Eldorado Valley in southern Nevada as an option for purchase by the Colorado River Commission acting on behalf of the State of Nevada. The lands are to be conveyed at fair market value based on the appraised value of the lands as of the effective date of the Act. At this time, the State of Nevada has not exercised its option. The lands are segregated from all forms of entry under the public land laws.

ENDANGERED SPECIES: Any species in danger of extinction throughout all or a significant portion of its range.

EPHEMERAL CLASSIFICATION: The management classification of grazing allotments which are generally located below 3,200 feet in elevation, receive less than 5 inches of precipitation annually, show little or no perennial vegetation, and lack potential for improvement of any perennial vegetation that may exist.

EPHEMERAL-PERENNIAL: A management classification of grazing allotments which are generally above 3,200 feet in elevation, receive 5 or more inches of precipitation annually, and show both perennial vegetation and potential for improvement of that

perennial vegetation.

FAULT: A fracture or fracture zone along which there has been displacement of the sides relative to one another parallel to the fracture. The displacement may be a few inches or many miles.

FIRELINE: The part of a control line around a fire that is scraped or dug to mineral soil or that is made by a continuous strip of the surface wet down with water.

FLPMA: Federal Land Policy and Management Act of 1976 (Public Law 94-579, 90 Stat. 2743, 43 USC 1701).

GRANDFATHERED USE: An authorized use taking place on the public lands as of the date of the enactment of the Federal Land Policy and Management Act (October 21, 1976).

HABITAT MANAGEMENT PLAN: A written and officially approved plan for a specific geographic area which identifies wildlife habitat and related objectives, establishes the sequence of actions for achieving objectives, and outlines procedures for evaluating accomplishments.

HELIPORT: A permanent or semipermanent base for helicopters.

HERD MANAGEMENT AREA PLAN: A written program of action designed to protect manage and control wild and free roaming horses and burros to maintain a natural ecological balance on the public lands.

HIGH-ANGLE FAULTS: Faults with dips greater than 45 degrees.

HOSE LAY - The arrangement of connected lengths of fire hose and accessories on the ground beginning at the first pumping unit and ending at the point of water delivery.

INTENSIVE RANGE MANAGEMENT: A level of grazing management of an allotment in which the management objective is to improve current range condition and productivity; variable (up to high) use supervision and monitoring would be conducted, focusing on evaluation of the effectiveness of actions taken to achieve the objective.

KEYSTONE THRUST FAULT: A low-angle fault which placed older rock on top of younger rock and forms the top of the escarpment at Red Rock Canyon Recreation Lands.

LITHIC SCATTERS: A surface disturbance of stone flakes and tools, indicative of aboriginal stone knapping activities.

LONG TERM: The period of twenty years following the short term.

MANAGEMENT FRAMEWORK PLAN (MFP): Land use plan for public lands that provides a set of goals, objectives, and constraints for a specific planning unit to guide the development of detailed plans for the management of each resource. The planning process is divided into three steps. Specialists prepare management recommendations for their respective resources in Step One. The manager, through a conflict resolution process, develops a proposed plan from the recommendations in Step Two. The final decision to adopt a plan is made in Step Three.

MESOZOIC: An era of geologic time following the Paleozoic era and succeeded by the Cenozoic era.

METATES: Grinding stones used by native American peoples for the processing of plant foods, such as wild grasses, seeds, etc.

MINERAL POTENTIAL:
High Mineral Potential: The geologic environment, the inferred

geologic processes, the reported mineral occurrences, and the known mines or deposits indicate high favorability for accumulation of mineral resources.

Moderate Mineral Potential: The geologic environment, the inferred geologic processes, and the reported mineral occurrences indicate moderate favorability for accumulation of mineral resources.

Low Mineral Potential: The geologic environment and the inferred geologic processes indicate low favorability for accumulation of mineral resources.

Unfavorable Mineral Potential: The geologic environment and the inferred geologic processes do not indicate favorability for accumulation of mineral resources.

MINING DISTRICT: A section of country usually designated by name and described or understood as being confined within certain natural boundaries, in which gold or silver or other minerals may be found in paying quantities.

MITIGATION: Measures taken to minimize or eliminate adverse impacts.

MORTARS: A receptacle made of a hard material in which substances are crushed or ground with a pestle.

NATIONAL REGISTER OF HISTORIC PLACES: The official list, established by the Historic Preservation Act of 1966, of the nation's cultural resources worthy of preservation.

NATURALNESS: Refers to an area which "generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable." (From Section 2(cc), Wilderness Act.)

OFF-ROAD VEHICLE (ORV): Any motorized vehicle designed for or capable of cross-country travel on or immediately

over land, water, sand, snow, ice, marsh, swampland, or other terrain.

OPERATOR: One who holds a permit to graze livestock on public lands.

PALEOZOIC: The era of geologic time which began approximately 550 million years ago and ended approximately 190 million years ago; in the geologic time scale, the Paleozoic era lies between the Precambrian and Mesozoic eras.

PETROGLYPHS: A carving on rock.

PICTOGRAPHS: A drawing or painting on rock.

POST-FLPMA: The period of time after the enactment of the Federal Land Policy and Management Act (October 21, 1976).

PRECAMBRIAN: All rocks formed before Cambrian time (prior to approximately 550 million years ago).

PRE-FLPMA: On or before October 21, 1976.

PRELIMINARY WILDERNESS RECOMMENDATION: Refers to a wilderness recommendation at any stage prior to the time when the Secretary of the Interior reports his recommendation to the President. Until the Secretary acts, the recommendation is "preliminary" because it is subject to change during administrative review.

PRIMITIVE AND UNCONFINED RECREATION: Nonmotorized and nondeveloped types of outdoor recreational activities.

PUBLIC LAND: Vacant, unappropriated, and unreserved lands which have never left Federal ownership; also, lands in Federal ownership which were obtained by the Government in exchange for public lands or for timber on public lands. Land administered by the Bureau of Land Management.

RANK WILDCAT:

RETARDANT: Any substance that, by chemical or physical action, reduces flammability of combustibles. The rate of spread of the flame front is thereby slowed or retarded.

ROAD: Vehicle routes which have been improved and maintained by mechanical means to insure relatively regular and continuous use.

ROCK ALIGNMENTS: Humanly arranged alignments of cobbles on the desert pavement.

SHELTER CAVES: Cavities in the rock which are frequently used as habitations by native American peoples. Artifacts are sometimes present, as are rock art, which sometimes adorn the walls.

SHORT TERM: The five years following the final decision by Congress on designation or nondesignation of an area as wilderness.

SMOKE JUMPER: A well-trained and equipped firefighter who travels to wildfires by aircraft and parachute.

STANDARD METROPOLITAN STATISTICAL AREA (SMSA): A population center which has a population of 100,000 or greater. An SMSA is a county which contains at least one city of 50,000 inhabitants or more plus as many adjacent counties as are metropolitan in character and are socially integrated with that central city or cities.

SUITABLE FOR PRESERVATION AS WILDERNESS: Refers to a recommendation that certain Federal lands satisfy the definition of wilderness in the Wilderness Act and have been found appropriate for designation as wilderness on the basis of an analysis of the existing and potential uses of the land.

SUPPLEMENTAL VALUES: Values that may be present in an area under consideration for wilderness, such as ecological, geological, or other features, or scientific, educational, scenic, or historical values. They are not required for wilderness designation, but their presence will enhance an area's wilderness quality.

TERTIARY: The earlier of the two geologic periods comprised in the Cenozoic era, and the rocks deposited during that period.

THREATENED SPECIES: Any species likely to become endangered within the foreseeable future throughout all or a significant part of its range.

UNIMOG: A specialized 4-wheel drive combination fire engine/fire plow, specifically built for off-road travel.

UNIT RESOURCE ANALYSIS (URA): A BLM planning document which contains a comprehensive display of physical resource data and an analysis of the current use, production, condition, and trend of the resources and the potentials and opportunities within a planning unit, including a profile of ecological values.

URBAN-WILDLAND INTERFACE: That line, area, or zone where structures and other human development meets or intermingles with undeveloped wildland or vegetative fuels.

VALUE AT RISK: Values placed on a section or area of land that depends on its priority for protection from wildfire. Values can be put on property, such as houses or developments, or on natural resources, such as unique vegetation, wildlife habitat, or watershed.

WAY: A vehicle route established and maintained solely by the passage of motor vehicles.

WILDERNESS CHARACTERISTICS: Key characteristics of a wilderness listed in Section 2(c) of the Wilderness Act of 1964 and used by BLM in its wilderness inventory. These characteristics include size, naturalness, outstanding opportunities for solitude, outstanding opportunities for primitive and unconfined recreation, and supplemental values.

WILDERNESS MANAGEMENT POLICY: This policy document prescribes the general objectives, policies, and specific activity guidance applicable to all designated BLM wilderness areas. Specific management objectives, requirements, and decisions implementing administrative practices and visitor activities in individual wilderness areas are developed and described in the wilderness management plan for each unit.

WILDERNESS STUDY AREA (WSA): A roadless area which has been found to have wilderness characteristics.



BIBLIOGRAPHY

- Ayers, R.S. and Westcot, D.W. 1976. Water Quality for Agriculture. Food and Agricultural Organization (FAO) Irrigation and Drainage Paper 29. Rome, Italy.
- Bailey, Robert G. 1976. Ecoregions of the United States. U.S. Department of Agriculture, Forest Service.
- Boynnton, Robert S., and Gutschick, Kenneth A. 1960. "Lime." Industrial Minerals and Rocks. American Institute of Mining, Metallurgical, and Petroleum Engineers. New York.
- California Department of Forestry. 1980. Fire Safety Guides For Residential Development in California (In or Near Forest, Brush and Grassland Areas).
- Chin, E. 1975. "Magnesium." Mineral Facts and Problems. U.S. Department of the Interior, Bureau of Mines. Washington, D.C.
- Clark County Department of Comprehensive Planning. 1980. Air Quality Implementation Plan. Las Vegas, Nevada.
- Clark County Department of Comprehensive Planning. 1981. "Comprehensive Plan for Clark County, Nevada, Task One - Existing Conditions." Las Vegas, Nevada.
- Clark County District Board of Health. 1978. Air Pollution Control Regulations. Las Vegas, Nevada.
- Clark County MFP. 1981-1983. See USDI, BLM, Las Vegas District.
- Clark County PAA. 1981. See USDI, BLM, Las Vegas District.
- Clark County URA. 1980-1981. See USDI, BLM. Las Vegas District.
- Clausen, C.F. 1960. "Cement Materials." Industrial Minerals and Rocks. American Institute of Mining, Metallurgical, and Petroleum Engineers. New York.
- Don Coop et al. v. United States, 61 IBLA 300 (1982).
- Eyring Research Institute. 1976. "Socioeconomic Impacts Associated with the Harry Allen Station in Southern Nevada." Under contract (#YA-512-RFP6-103) to the U.S. Department of the Interior, Bureau of Land Management, Denver Service Center. Provo, Utah.
- Federal Register. 1982. "Nevada; Elimination of Bureau of Reclamation Withdrawal Lands From Wilderness Study Areas." Volume 47, Number 238, pp. 55525-55526, December 10, 1982. Washington, D.C.
- Federal Register. 1982. "Nevada; Elimination of Eldorado Valley Act Lands From Wilderness Study Areas." Volume 47, Number 238, p.55526, December 10, 1982. Washington, D.C.
- Federal Register. 1982. "Wilderness Study Policy; Policies, Criteria and Guidelines for conducting Wilderness Studies on Public Lands." Volume 47, Number 23, pp. 5098-5122, February 3, 1982. Washington, D.C.
- Gaylor, Harry P. 1974. Wildfires-Prevention and Control. Boure, Maryland: Robert J. Brady Company.
- Goudge, M.F., and Tomkins, R.V. 1960. "Sodium Sulfate from Natural Sources." Industrial Minerals and Rocks. American Institute of Mining, Metallurgical, and Petroleum Engineers. New York.

- Great Basin GEM Joint Venture. 1982. "G-E-M Resources Area Technical Reports." Under contract (YA-554-RFP2-1054) to U.S. Department of the Interior, Bureau of Land Management, Denver Service Center. Reno, Nevada.
- Hart, John. 1981. Hiking the Great Basin. San Francisco: Sierra Club Books.
- Havard, J.F. 1960. "Gypsum." Industrial Minerals and Rocks. American Institute of Mining, Metallurgical, and Petroleum Engineers. New York.
- Janke, Doug. 1980. "Desert Bighorn Sheep Habitat Status and Cooperative Action Plan in the Las Vegas District." A Cooperative Study by the U.S. Department of Interior, Bureau of Land Management, and the Nevada Department of Wildlife. Las Vegas, Nevada.
- Jensen, Mead L., and Bateman, Alan M. 1981. Economic Mineral Deposits. New York: John Wiley and Sons.
- Keys, William F. 1975. "Potash." Mineral Facts and Problems. U.S. Department of the Interior, Bureau of Mines. Washington, D.C.
- Kuchler, A.W. 1966. Potential Natural Vegetation of the United States. U.S. Department of the Interior, Geological Survey.
- Las Vegas Convention & Visitors Authority, 1982. Marketing Bulletin. Las Vegas, Nevada. (LVCVA, 1982)
- Lincoln, Francis Church. Mining Districts and Mineral Resources of Nevada. Las Vegas, 1982. Nevada Publications. (Photographic reproduction of the 1923 first edition which was published by the Nevada Newsletter Publishing Company in Reno. Advertisements are omitted in this
- reissue.)
- Longwell, C.R., Pampeyan, E.H., Bowger, Ben and Roberts, R.J. Geology and Mineral Deposits of Clark County, Nevada; Nevada Bureau of Mines Bulletin 62. Reno, 1965. Mackay School of Mines; University of Nevada, Reno.
- McQuivey, Robert, P. 1976. "The Status and Trend of Desert Bighorn Sheep in Nevada, the McCullough Range." Nevada Department of Wildlife. Special Report 76-3. Federal Aid Project W-48-7, Study R-III, Job 2.
- McQuivey, Robert, P. 1978. "The Desert Bighorn Sheep of Nevada." Nevada Department of Wildlife. Biological Bulletin No. 6.
- Mozingo, Hugh N. and Margaret Williams. 1980. Threatened and Endangered Plants of Nevada. U.S. Department of the Interior, Bureau of Land Management and Fish and Wildlife Service. University of Nevada, Reno, Bress. Reno, Nevada.
- Murphy, T.D. 1960. "Silica Sand and Pebble." Industrial Minerals and Rocks. American Institute of Mining, Metallurgical, and Petroleum Engineers. New York.
- Nevada Department of Taxation. 1982. "1981-82 Net Proceeds of Mines, Division of Assessment Standards for Certification by the Nevada Tax Commission." Carson City, Nevada.
- Nevada Division of Environmental Protection, Department of Conservation and Natural Resources. 1979. State of Nevada Water Pollution Control Regulation. Carson City, Nevada.
- Nevada Division of Environmental Protection. 1980. Regulation for Control of Water Pollution from Diffuse Sources. Carson City, Nevada.

Nevada Division of State Parks. 1982. Statewide Comprehensive Outdoor Recreation Plan (SCORP) 1982, Carson City, Nevada.

Nevada Employment Security Research Section. 1982. Nevada Area Labor Review Las Vegas SMSA 1982, Carson City, Nevada.

Nevada, State Engineers Office and the Nevada Bureau of Mines and Geology, MacKay School of Mines, University of Nevada Reno. 1973. Water for Nevada. Report No. 4. Carson City, Nevada.

Pajalich, Walter. 1975. "Sand and Gravel." Mineral Facts and Problems. U.S. Department of the Interior, Bureau of Mines. Washington, D.C.

Petkof, Benjamin. 1975. "Beryllium." Mineral Facts and Problems. U.S. Department of the Interior, Bureau of Mines. Washington, D.C.

Porter, Dave. February 10, 1983. U.S. Department of the Interior, Bureau of Land Management, Washington Office (WO-340). Washington, D.C. Personal Communication.

Pough, Frederick H. 1976. A Field Guide to Rocks and Minerals. Boston: Houghton Mifflin Company.

"Profile 2." 1982. "A Program to Selectively Search and List Information on Wilderness Diversity. Created May 15, 1981 by Ron Kidner, Kirk Duffin, and Guy Tanaka. Revised September 1, 1982 by Kirk Duffin." Shoshone, Idaho.

Reed, Avery H. 1975. "Gypsum." Mineral Facts and Problems. U.S. Department of the Interior, Bureau of Mines. Washington, D.C.

Ruhlman, E. Robert. 1960. "Potash." Industrial Minerals and Rocks. American Institute of Mining,

Metallurgical, and Petroleum Engineers. New York.

Ryan, J. Patrick, and Hague, John M. 1975. "Lead." Mineral Facts and Problems. U.S. Department of the Interior, Bureau of Mines. Washington, D.C.

Schilling, John H. 1981. The Nevada Mineral Industry. Nevada Bureau of Mines and Geology, Reno, Nevada.

Schroeder, Harold J. 1975. "Copper." Mineral Facts and Problems. U.S. Department of the Interior, Bureau of Mines. Washington, D.C.

Shekarchi, E. 1975. "Silicon." Mineral Facts and Problems. U.S. Department of the Interior, Bureau of Mines. Washington, D.C.

Shelton, John E., and Drake, Harold J. 1975. "Stone." Mineral Facts and Problems. U.S. Department of the Interior, Bureau of Mines. Washington, D.C.

Smith, Ward C. 1960. "Borax and Borates." Industrial Minerals and Rocks. American Institute of Mining, Metallurgical, and Petroleum Engineers. New York.

Sorrell, Charles A. 1973. A Field Guide and Introduction to the Geology and Chemistry of Rocks and Minerals. Racine: Western Publishing Company, Inc.

Stateline Land Use Guide 1975. See USDI, BLM, Las Vegas District.

Stout, K.S. 1967. "Mining Methods and Equipment Illustrated." Montana Bureau of Mines and Geology Bulletin 63, Montana College of Mineral Science and Technology. Butte, Montana.

U.S. Department of Commerce, Bureau of the Census. 1981. "1980 Census of

Population and Housing." Washington, D.C.

U.S. Department of the Interior, Bureau of Land Management. 1981. Wilderness Management Policy. September 24, 1981. U.S. Government Printing Office: Washington, D.C.

U.S. Department of the Interior, Bureau of Land Management and the Nevada Division of Environmental Protection. 1980. "Memorandum of Understanding Between the Bureau of Land Management and the Division of Environmental Protection." Reno, Nevada.

U.S. Department of the Interior, Bureau of Land Management and Nevada Division of State Parks. 1982. Final Environmental Assessment of Oil and Gas Leasing in the Valley of Fire State Park. (INT FEA NV-050-2-47) Las Vegas, Nevada.

U.S. Department of the Interior, Bureau of Land Management, Las Vegas District. 1975. Stateline Land Use Guide. Las Vegas, Nevada.

U.S. Department of the Interior, Bureau of Land Management, Las Vegas District. 1975. Virgin Valley Land Use Guide. Las Vegas, Nevada.

U.S. Department of the Interior, Bureau of Land Management, Las Vegas District. 1979. "Water Quality Analysis Report." Las Vegas, Nevada.

U.S. Department of the Interior, Bureau of Land Management, Las Vegas District. 1980. "Class 2 Cultural Resources Inventory for a Portion of the Oil and Gas Overthrust Belt." Archaeological Research Center, Museum of Natural History, University of Nevada, Las Vegas. Contract Number YA-553-CT0-1033.

U.S. Department of the Interior, Bureau of Land Management, Las Vegas

District. 1980. "Field Research of Rare Plants in Clark County, Las Vegas, NV." Contract # YA-512-C79-127. Westec Services, Inc. Las Vegas, Nevada.

U.S. Department of the Interior, Bureau of Land Management, Las Vegas District. 1980. Final Environmental Assessment on Oil and Gas Leasing in the Red Rock Canyon Recreation Lands. (INT FEA NV-050-9-30.) Las Vegas, Nevada.

U.S. Department of the Interior, Bureau of Land Management, Las Vegas District. 1980-1981. "Clark County Unit Resource Analysis." Las Vegas, Nevada.

U.S. Department of the Interior, Bureau of Land Management, Las Vegas District. 1981. "Clark County Planning Area Analysis." Las Vegas, Nevada.

U.S. Department of the Interior, Bureau of Land Management, Las Vegas District. 1981. "Special Stipulations to Streamline Environmental Assessments, Contracts, and Other Project Work Documentation." (Instruction Memorandum No. M5-82-7) Las Vegas, Nevada.

U.S. Department of the Interior, Bureau of Land Management, Las Vegas District. 1981. "Test Excavations at the Happy Face Site and the Barbeque Site, Hidden Valley within the Muddy Mountains, Clark County, Nevada." Archaeological Research Center, Museum of Natural History, University of Nevada, Las Vegas. Contract Number YA-553-CT1-88.

U.S. Department of the Interior, Bureau of Land Management, Las Vegas District. 1981, 1983. "Clark County Management Framework Plan." Las Vegas, Nevada.

U.S. Department of the Interior,
Bureau of Land Management, Las Vegas
District. 1982. Final Clark County
Grazing Environmental Impact
Statement. (INT FEIS 82-35) Las
Vegas, Nevada.

U.S. Department of the Interior,
Bureau of Land Management, Las Vegas
District. 1982. Final Environmental
Assessment of the Proposed Frontier
500. INT FEA NV-050-9-30. Las Vegas,
Nevada.

U.S. Department of the Interior,
Bureau of Land Management, Las Vegas
District. April 21, 1982. Memo from
Kemp Conn, District Manager, to Ed
Spang, State Director (N-943), on "Oil
and Gas Leasing in the Red Rock Canyon
Recreation Lands (RRCL)."

U.S. Department of the Interior,
Bureau of Land Management, Nevada
State Office. 1978. "An
Archaeological, Ethnological and
Historic Inventory and Overview (Class
I Study) of Eight Proposed Wilderness
Areas in Central and Southern Nevada.
Pine Creek Canyon, Virgin Mountains,
Swamp Cedar, Moret Peak, Mount Wilson,
Mount Stirling, Lunar Crater, Hicks
Station." Archaeological Research
Center, Museum of Natural History,
University of Nevada, Las Vegas, P.O.
NV 950-PH7-2790. Las Vegas, Nevada.

U.S. Department of the Interior,
Bureau of Land Management, Rock
Springs District. 1979. Kemmerer
Resource Area, Oil and Gas Leasing
Environmental Assessment Record. Rock
Springs, Wyoming.

U.S. Department of the Interior,
Bureau of Mines. 1982. Mineral
Commodity Summaries: 1982.
Washington, D.C.

U.S. Department of the Interior,
Geological Survey. 1979. Assessment
of Geothermal Resources of the United
States - 1978. Geological Survey

Circular 790. Washington, D.C.

U.S. Department of Interior, Office of
the Secretary. 1973. Final
Environmental Statement for the
Geothermal Leasing Program.
Washington, D.C.

U.S. Department of the Interior,
Office of the Solicitor, Washington,
D.C. December 15, 1982. Memo from
William H. Coldiron, Solicitor, to
James Watt, Secretary, on "Review of
Certain Interior Board of Land Appeals
Decisions on Wilderness Study Areas
(WSAs) (Tri-County Cattlemen's
Association, 60 IBLA 305 (1981); Don
Coops, 61 IBLA 300 (1982); Santa Fe
Pacific Railroad Co., 64 IBLA 27
(1982))."

Virgin Valley Land Use Guide. 1975.
See USDI, BLM, Las Vegas District.

Vogel, Ed. 1982. "County Population
Leaps to 500,000." In Las Vegas
Review-Journal. 1 January 1982, 1A.

Western Regional Corridor Study.
1980. Western Utility Group.

Wheelock, Walt. 1975. Desert Peaks
Guide, Part II, Death Valley Country.
Glendale, California: LaSiesta Press.



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