

**SHORT-TERM  
HABITAT CONSERVATION PLAN  
FOR THE  
DESERT TORTOISE  
IN  
LAS VEGAS VALLEY,  
CLARK COUNTY, NEVADA**



*Nevada Department of Wildlife*

January 1991

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HABITAT CONSERVATION PLAN  
FOR THE  
DESERT TORTOISE  
IN  
LAS VEGAS VALLEY,  
CLARK COUNTY, NEVADA**

*Prepared for*

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## Summary

The Short-Term Habitat Conservation Plan (HCP) for the Desert Tortoise is a plan to conserve and manage at least 400,000 acres of tortoise habitat in Clark County for the benefit of the species. It has been prepared as part an application for a Section 10(a)(1)(B) permit under the federal Endangered Species Act (ESA) of 1973, as amended, for the incidental take of the species in Las Vegas Valley area over a three-year period. If the Section 10(a)(1)(B) permit is approved, the Short-Term HCP will be implemented to minimize, monitor, and mitigate the impacts of any incidental take for three years after approval.

## Background

Clark County is Nevada's most populated county, with an estimated 1990 population of 761,279, about 67 percent of the state total. The majority of this population (96 percent) is concentrated in Las Vegas Valley, as is the region's urban development and nonfederal lands (nine out of ten acres in Clark County are owned and managed by federal agencies). Over the next 10 years, the county's population is expected to grow by 235,000 persons to

A Long-Term HCP also is being prepared by which additional tortoise habitat will be conserved and managed. It will be used to support a Section 10(a)(1)(B) permit application that will cover incidental take in all of Clark County for a period of 20 years or more. The Long-Term HCP will be closely coordinated with the Resource Management Plan (RMP) that the Bureau of Land Management (BLM) is preparing for federal lands in Clark and Nye counties. Both the Long-Term HCP and RMP are scheduled to be complete in 1992.

997,100—a 30 percent increase, and 90 percent of the increase is expected to occur in Las Vegas Valley, where the amount of developed land has been increasing by seven percent annually since 1979.

In addition to its human population, Clark County contains a wide range of wildlife and natural habitats, including at least 775 species of plant life, 41 species of fish, 9 species of amphibians,



54 species of reptiles, 392 species of birds, and 142 species of mammals. Of these, over 50 are already listed by the U.S. Fish and Wildlife Service (USFWS) as endangered or threatened or are candidates for federal listing. The desert tortoise (*Gopherus agassizii*) has been a species of concern in Nevada since the late 1960s and has been listed by the Nevada Department of Wildlife (NDOW) as rare and protected since 1978. Federal listing of the species was considered in 1984 and was the subject of an emergency petition in 1989. Following an emergency listing of the tortoise as endangered on August 4, 1989, it was listed as threatened in a final rule-making by the USFWS on April 2, 1990.

In general, the federal laws that protect the tortoise take precedence over state and local statutes and prohibit any take of the species. As defined in the ESA, *take* means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct with regard to federally listed species. The prohibition applies equally to the activities of public agencies, private enterprise, and individuals. Even trapping conducted in connection with biological research requires a special permit. Violations are punishable by fines up to \$25,000 and sentences of up to six months in jail.

One form of take that the ESA may allow is referred to as incidental, meaning that it is incidental to and not the purpose of otherwise lawful activities. Authorization for such take is provided through a 10(a)(1)(B) permit or through Section 7

consultations. Section 7 consultations apply only to projects that involve federal land or a federal action. Section 10(a)(1)(B) permits are used primarily for projects that involve nonfederal actions and require that specific conditions be met. The key requirement is the preparation and implementation of an HCP that identifies the impacts of the proposed take, shows how the impacts will be minimized, monitored, and mitigated, and demonstrates that the plan will not appreciably reduce the likelihood of the survival and recovery of the species in the wild.

The Clark County HCP for the desert tortoise was initiated in September of 1989 by the area's local governments in response to the emergency listing of the species. At the time, it was assumed that an HCP for a long-term Section 10(a)(1)(B) permit would take two to three years to complete. Given the nature of the biological and land use issues to be addressed, the time frame seemed reasonable. However, given the number of projects already pending in urbanized portions of the county, the lengthy time period (2 to 3 years) was likely to exacerbate the problem of meeting the existing population's needs. Furthermore, additional protection for the desert tortoise in outlying areas was deemed to be an immediate need, which should not be delayed for 2 to 3 years. Consequently, the County and five Cities decided to seek a short-term Section 10(a)(1)(B) permit to allow some projects to proceed and to provide immediate protection for the desert tortoise while the Long-Term HCP is being completed.

## Focus of the Short-Term HCP

The Short-Term HCP focuses on initial establishment of tortoise management areas (TMAs) through the conservation and management of incrementally delineated blocks (100,000 acres) of habitat. Conservation and management of the blocks of habitat, together with other actions, will serve as mitigation for incidental take within the Las Vegas Valley occurring over a three-year period. Minimization and monitoring of the impacts of take will occur through requirements imposed on projects covered by the Section 10(a)(1)(B) permit. Once one or more TMAs are established by means of the Short-Term HCP, expansion in the size and/or number of those TMAs could occur through the Long-Term HCP. Further, designating the TMAs as "Areas of Critical Environmental Concern" (ACECs) could be achieved in the RMP being prepared by BLM.

### The Permit Area and Period

The area covered by the Section 10(a)(1)(B) permit will be limited to non-federal lands within the boundaries mapped in the Short-Term HCP (Figure A). In general, this area includes lands within the cities of Las Vegas, North Las Vegas, Henderson, and Boulder City; the unincorporated towns of Sunrise Manor, East Las Vegas, Winchester, Paradise, and Spring Valley; and portions of the unincorporated areas of Lone Mountain and Enterprise. The area covers approximately 299,700 acres, of which about 200,000 acres are privately owned

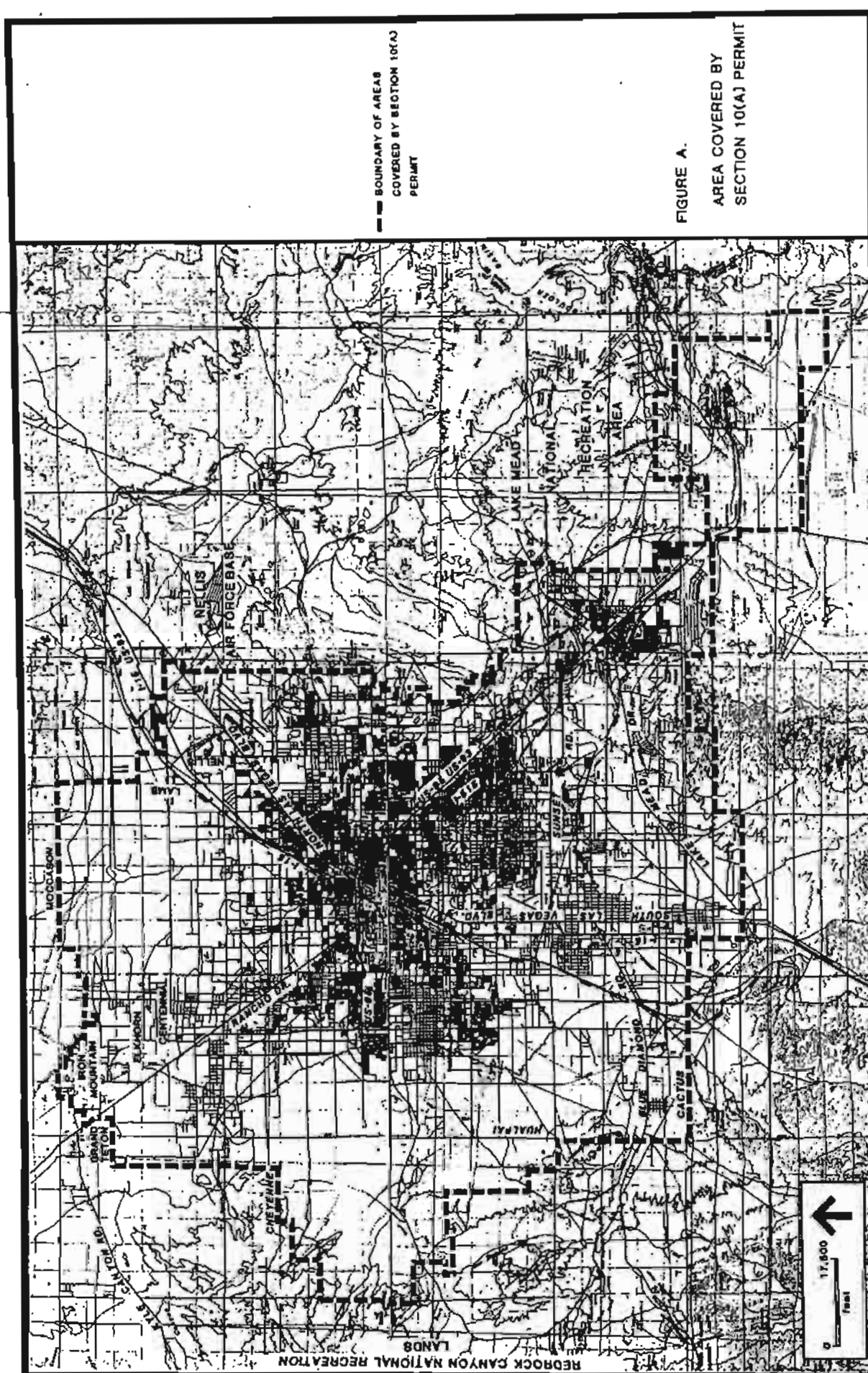
lands; currently, over 90,000 acres of these private lands have been developed.

The permit period will be limited to three years or completion of the Long-Term HCP, whichever occurs first. Authorization for incidental take will be valid only during the three-year period. Advance approval of take that would occur after the permit period will not be allowed. In addition, no take will be allowed until thresholds for the establishment of TMAs are met.

### Estimated Level of Take

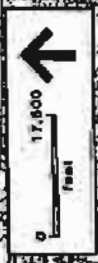
Over the permit period, the level of take is expected to be between 1,788 and 3,710 tortoises. This estimate is based on assumptions regarding development trends, tortoise habitat, and tortoise populations in the permit area (see Chapter 5 of this HCP). An alternative calculation based on collections conducted in Las Vegas Valley under a scientific collection permit for research purposes places take at 3,129 tortoises. Under this research permit, the maximum number of tortoises anticipated to be found on 11 parcels of land was estimated to be 871; tortoises actually collected totaled 841. Therefore, this approach is considered to be fairly accurate.

The amount of land likely to be developed in the permit area between 1991 and 1994 has been estimated at 22,352 acres. This estimate assumes that



--- BOUNDARY OF AREAS  
COVERED BY SECTION 10(A)  
PERMIT

FIGURE A.  
AREA COVERED BY  
SECTION 10(A) PERMIT



REDBROCK CANYON NATIONAL RECREATION  
LANDS

CHRYSTAL  
RANGE

ELKWOOD

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the amount of developed land in the permit area will total 99,324 acres in 1991 and will increase at an annual rate of seven percent. Not all development in the permit area will be on confirmed tortoise habitat. However, for purposes of estimating levels of take, it has been assumed that 22,352 acres of occupied tortoise habitat could be lost over the permit period.

### **Measures to Minimize and Monitor Impacts of Take**

To minimize and monitor the impacts of take, a combination of permit conditions and enforcement measures will be implemented in the permit area. These include tortoise survey and removal requirements, tortoise placement efforts, project review and monitoring, and a public information program.

A proponent of a project within the permit area must comply with tortoise survey and removal requirements prior to being authorized to disturb the site by grading, building, or other means. It is important to note that tortoise survey and removal requirements are also applicable to public utility projects, road improvements, or other such projects, even though these types of projects do not require a development permit from a local jurisdiction (but do impact private lands); if these types of projects affect public lands, the Section 7 consultation process applies. Tortoise surveys and removals will be conducted at the project proponent's expense and by a party of his or her choosing. Results will be documented on an HCP compliance

form and subject to various levels of audit by NDOW. Projects will be selected for audit on a random basis.

The primary purpose of the survey and removal requirements is to minimize the impact of take by removing individual tortoises from harm's way and maximizing efforts to place them in research, relocation, zoo, education, and adoption programs. All surveys and removals will be conducted according to protocols included in the Short-Term HCP, and all collected tortoises will be delivered to a single tortoise transfer facility. Final disposition of collected tortoises will be overseen by NDOW and USFWS, in consultation with the HCP Implementation and Monitoring Committee, who will screen and authorize all requests for tortoises. To assist the screening process and maximize efforts to place tortoises, an HCP Implementation and Monitoring Committee will be formed to evaluate proposals and maintain a current list of options, as well as other responsibilities. It is anticipated that most, but perhaps not all, tortoises will be removed as a result of the survey and removal procedures; however, a few tortoises may be inadvertently destroyed as a result of land development. The survey and removal requirements represent a reasonable and prudent effort to remove as many tortoises as possible from harm's way.

The only projects exempted from the survey and removal requirements will be those within exclusionary zones mapped in the Short-Term HCP and those that are outside of the zones but which meet exclusionary criteria.

The exclusionary zones encompass highly urbanized lands that do not include significant amounts of undeveloped tortoise habitat and where there is little likelihood of tortoises being present. The three zones that have been mapped include portions of the cities of Las Vegas, North Las Vegas, Henderson, and Boulder City and portions of the unincorporated towns of Sunrise Manor, Winchester, Paradise, and East Las Vegas. Exclusionary criteria are limited to reconstruction of a structure damaged by fire or other natural causes and rehabilitation or remodeling of existing structures or existing on- and off-site improvements. Should tortoises be found on property in the exclusionary zones or on sites that meet exclusionary criteria, collection services will be provided on request at no cost. A hotline number will be established at the tortoise transfer facility for such requests.

An HCP compliance form must be completed for all projects in the permit area, including those excluded from the survey and removal requirements. The form will be available at City and County offices and has three parts: (1) a project identification and signature page, (2) a form for reporting the results of a tortoise survey, and (3) a form for reporting the results of a tortoise removal. Once accepted by the local agency, the form will be held until the agency has authorized disturbance of the site, by grading, building, or other means. This includes public utility projects, road improvement projects, or other similar projects that do not require a development permit from a local juris-

diction (but do impact private lands). The form then will be sent to a central file that will be established and maintained by the County over the permit period. The County will use the information on forms to compile monthly reports on actual levels of tortoise take and habitat loss. The monthly reports will measure cumulative totals of take against the estimated levels and will be submitted to the HCP Implementation and Monitoring Committee and to USFWS for review. In consideration of the administrative costs associated with processing HCP compliance forms, the County and Cities will establish an administrative fee not to exceed \$25 per single-family residence and \$50 for all other development.

In addition to the survey and removal requirements, tortoise placement efforts, and project review process, a public information program will be conducted in the permit area. It will be used to advise local residents of the purpose and conditions of the Section 10(a)(1)(B) permit, promote the use of the hotline, distribute information about and promote support for tortoise adoption programs, sponsor workshops on survey and removal protocols, and promote a better understanding among the general public about the needs and plight of the desert tortoise and its habitat.

### **Measures to Mitigate the Impacts of Take**

Three types of measures have been proposed to mitigate the impacts of the incidental take: (1) conservation and

management of tortoise habitat, (2) initiation of a tortoise research and relocation program, and (3) imposition of a \$550 per acre mitigation fee on projects in the permit area.

Specifically, the HCP proposes to conserve and manage at least 400,000 acres of habitat in potential tortoise management areas (PTMAs) that have been identified through the HCP planning process (Figure B). The 14 areas contain over 2,750 square miles (1,764,285 acres) of tortoise habitat that has been categorized by BLM as having 20 to 250+ tortoises per square mile (Tables A and B). All 14 PTMAs are on federal lands.

Two priority conservation areas have been identified, composed of PTMAs 2, 6, 12, 13, and 14. Combined, these areas contain over 880,000 acres of tortoise habitat, including over 400,000 acres of Category 1 habitat. In addition, conservation thresholds have been established for the permit period:

1. At least 100,000 acres will be conserved within either of the two priority areas before any take is allowed in the permit area;
2. At least 200,000 acres will be conserved by the end of the fourth quarter after take is allowed;
3. At least 300,000 acres will be conserved before take exceeds 2,000 tortoises or habitat loss exceeds 13,000 acres;

4. At least 400,000 acres will be conserved, with at least 200,000 acres in either of the two priority areas before take exceeds 3,500 tortoises or habitat loss exceeds 18,000 acres.

Due progress in meeting these thresholds will be evaluated monthly and reported to USFWS.

To be counted as conserved habitat, the area in question must be within one of the PTMAs (or be approved by USFWS as suitable for inclusion in a TMA). In addition, land use controls must be in place to restrict or eliminate those uses which have adverse effects on the tortoise. Adequate funding also must be available for the ongoing management of the area. Because commercial and competitive OHV events may be permitted in portions of PTMA 12, each acre of conserved habitat within that PTMA shall be treated as 0.75 acre, for purposes of calculated conserved habitat under this section. Any area disturbed by new mining activity will not be counted towards conserved habitat. Additionally, any area utilized for the purposes of a grazing study will not be counted towards conserved habitat.

The following land use controls will apply in conserved habitat:

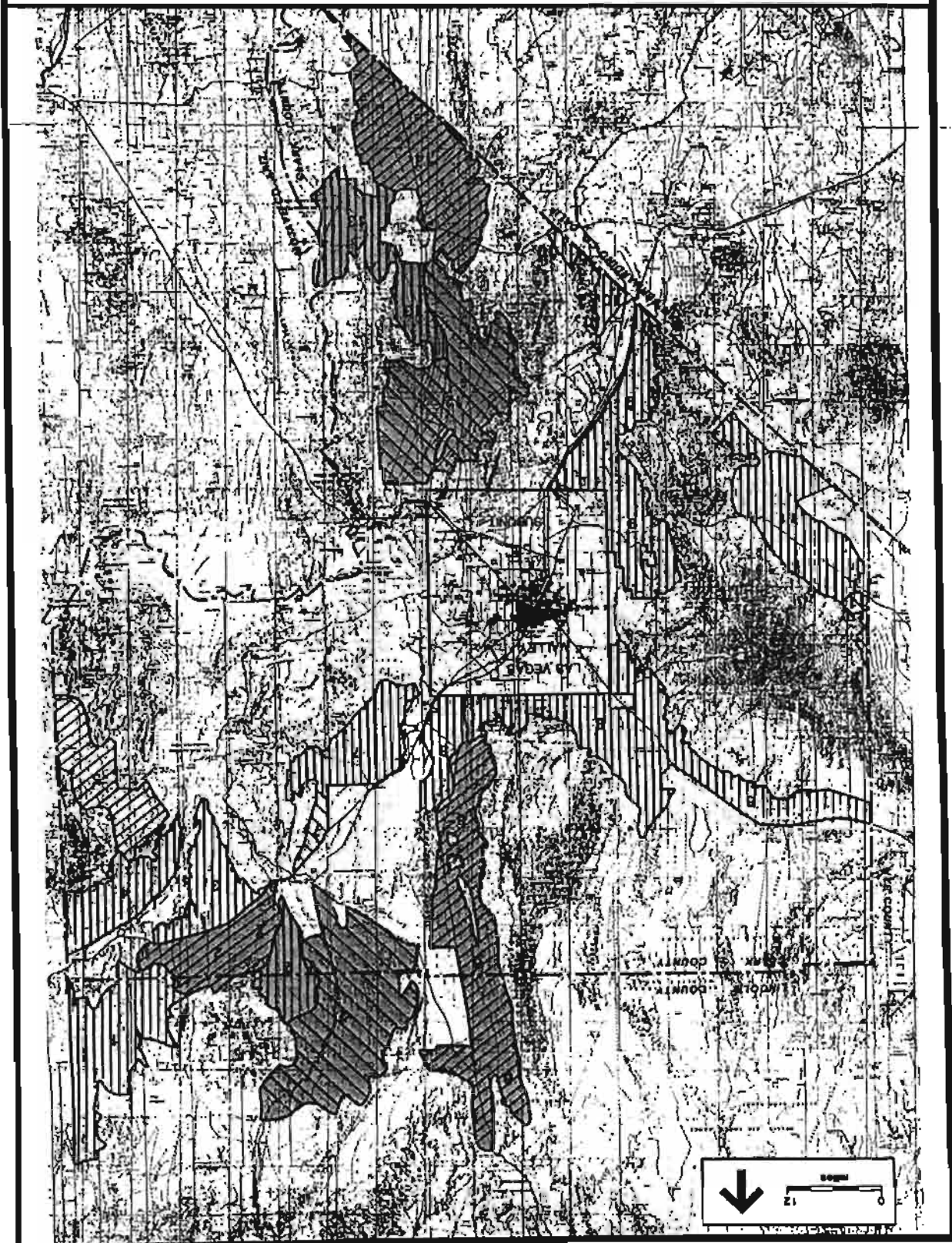
1. Grazing will be eliminated through the acquisition of grazing permits from willing sellers. Once such permits have been acquired, BLM will authorize non-use for conservation and protection purposes on these acquired permits, until such time that a



FIGURE 8. POTENTIAL TORTOISE MANAGEMENT AREAS AND PRIORITY CONSERVATION AREAS

- 1 CALIFORNIA WASH
- 2 NORTH HORNON MESA
- 3 NORTHWEST VEGAS
- 4 GOODSPINGS
- 5 NAMPAN
- 6 PAYSAND
- 7 EL DORADO
- 8 COTTONWOOD
- 9 PRUTE VALLEY

- 1 SAND HOLLOW
- 2 NORTH HORNON MESA
- 3 SOUTH HORNON MESA
- 4 BUNKERVILLE
- 5 GOLD BUTTE
- 6 COYOTE SPRING VALLEY
- PRIORITY CONSERVATION AREA



**TABLE A****TORTOISE HABITAT IN THE PTMAS  
(acres)**

PTMA	CATEGORY 1	CATEGORY 2	CATEGORY 3	TOTAL
1	0	121,455	0	121,455
2	72,193	42,533	141,449	256,175
3	0	58,318	0	58,318
4	0	68,108	0	68,108
5	76,588	0	0	76,588
6	191,113	0	0	191,113
7	0	77,267	0	77,267
8	0	190,691	0	190,691
9	0	140,402	0	140,402
10	0	19,125	0	19,125
11	0	121,312	7,663	128,975
12	0	0	194,353	194,353
13	0	95,481	0	95,481
14	146,239	0	0	146,239
<b>TOTAL</b>	<b>486,133</b>	<b>934,692</b>	<b>343,465</b>	<b>1,764,290</b>
<b>% of TOTAL</b>	<b>28%</b>	<b>53%</b>	<b>19%</b>	<b>100%</b>



**TABLE B****BLM'S CATEGORIES AND GOALS FOR DESERT TORTOISE HABITAT**

CATEGORY 1	CATEGORY 2	CATEGORY 3
Medium to high density or low density contiguous with medium or high density.	Medium to high density or low density contiguous with medium or high density.	Low to medium density not contiguous with medium or high density.
Increasing, stable, decreasing population.	Stable or decreasing population.	Stable or decreasing population.
Essential to maintenance of large, viable populations.	May be essential to maintenance of viable populations.	Not essential to maintenance of viable populations.
Conflicts resolvable.	Most conflicts resolvable.	Most conflicts unresolvable.
Goal: Maintain stable, viable populations and protect existing habitat values; increase populations where possible.	Goal: Maintain stable, viable populations and halt further declines in habitat values.	Goal: Limit habitat and population to the extent by mitigating impacts.

SOURCE: BLM, *Desert Tortoise Habitat Management on Public Lands: A Range-wide Plan* (1988).

Density ranges for southern Nevada:

low = 20 to 50 tortoises/sq. mile (0.03 to 0.08/acre)

medium = 50 to 100 tortoises/sq. mile (0.08 to 0.16/acre)

high = 100 to 250 tortoises/sq. mile (0.16 to 0.39/acre)

definitive study of livestock/desert tortoise interrelationships has been completed that scientifically demonstrates that livestock grazing can be conducted under conditions that will improve desert tortoise habitat and not jeopardize the recovery of the species. The Nature Conservancy will act as the acquisition agent on behalf of the County and the Cities. Grazing will not be permitted by the National Park Service on those lands within the PTMAs where permits have been acquired.

2. With the exception of the El Dorado PTMA, commercial and competitive OHV events will be prohibited. Through emergency closure, OHV designations within conserved habitat will be changed to allow non-competitive and noncommercial activity on designated roads and trails only. The delineation of designated roads and trails may be modified as necessary to meet desert tortoise objectives and management needs. Competitive events will be allowed within PTMA 12 existing courses. Such competitive events would be strictly monitored and policed by BLM and NDOW and evaluated by the HCP Implementation and Monitoring Committee. If it is determined that the desert tortoise is negatively impacted by such events, these events will no longer be allowed.
3. Intensive recreation uses of any kind (excluding OHV use) will be restricted to existing areas currently designated

for that purpose, and such areas will not be allowed to expand.

4. Mining claims will be reviewed by BLM for validity on an as-needed basis (existing claims by law retain valid rights), and Section 7 consultations will be conducted on mining plans of operations.
5. Landfills will be restricted to existing sites, and new or expanded ones will not be allowed. The area of an existing landfill will not be counted as conserved habitat.
6. Prior to permitting a new or modified land use, the requirements of the Council on Environmental Quality shall be fully complied with. In particular, all environmental documents, as well as biological assessments required for Section 7 consultations, shall, in addition to analyzing the direct and indirect effects of a proposed action, analyze the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or nonfederal) or person undertakes such other actions (40 CFR 1508.7 and 1508.8).
7. In the event that it is determined that any land use within a TMA is having an adverse effect upon the recovery of the desert tortoise, nothing in this HCP is intended to preclude the federal land manager from instituting or imposing additional restrictions and prohibitions with respect to that land use.

Once conserved, management of the area will be guided by an annual management plan and funded by the budgets of the federal land managers (BLM and NPS) and from funds generated by a trust fund that will be established during the permit period. The annual management plan will be formulated by the federal land managers in coordination with the HCP Implementation and Monitoring Committee and will be subject to the approval of USFWS. The annual management plan will have three components: (1) physical maintenance, including any signs and fencing required to protect highly sensitive areas, (2) enforcement of land use controls, including regular patrols, and (3) biological monitoring, including surveys and studies of the tortoise population.

Physical maintenance, enforcement, and biological monitoring will be the responsibility of the federal land managers (BLM and NPS). Maintenance, enforcement, and biological monitoring will be coordinated among those agencies through a cooperative agreement. Each of the federal land managers will prepare an annual management plan and report in consultation with the USFWS and in coordination with Clark County through its Implementation and Monitoring Committee. The plan shall be submitted to the USFWS and shall address proposed management plans and programs for the coming year and shall include a report evaluating management actions imposed or continued during the previous year, in order that the USFWS may ensure that the terms of

this HCP and the 10(a)(1)(B) permit are being fulfilled. As part of the annual plan and report, the federal land managers shall prepare and submit a budget for the management of the TMAs under its control, which shall outline, among other things, what portion shall be funded by the federal land manager, what portion it intends to seek from Section 7 mitigation funds, and what portion it intends to seek as supplemental funding from the HCP funds administered by Clark County. The federal land managers have agreed that they will meet regularly with the Clark County Implementation and Monitoring Committee and that the committee will play an important role in providing technical input in the design, formulation, and evaluation of the annual management plan.

The HCP Implementation and Monitoring Committee will also advise the County and Cities regarding proposed uses of HCP funds, as well as other responsibilities. This committee will be in addition to the HCP Steering Committee, which will continue to oversee preparation of the Long-Term HCP and its meetings will continue to serve as a public forum.

As additional mitigation for the impacts of take, a tortoise research and relocation program will be implemented to enhance the scientific basis for the design and management of TMAs. The program will focus on the effects of domestic livestock grazing and grazing by wild horses and burros, tortoise predators, tortoise genetics, the reintroduction of

tortoises into suitable habitat, and tortoise demography and dispersal.

Finally, a mitigation fee of \$550 per acre will be imposed on all projects in the permit area, including public utility projects, road improvement projects, and other public infrastructure projects. If a project has already undergone consultation under Section 7, credit will be given, up to \$300 per acre, towards the mitigation fee. The \$250-per-acre mitigation fee currently imposed on development in Clark County would still apply to all areas outside the permit area for the Short-Term HCP, to fund the Long-Term HCP. Additionally, this fee may be increased as necessary to fund mitigation measures required in the Long-Term HCP. The \$550-per-acre fee will be used for the conservation and mitigation measures presented in this HCP. If there are funds remaining at the end of the three-year permit period, these funds would be applied to the implementation of the Long-Term HCP. To provide immediate funding for the Short-Term HCP, funds from the \$250-per-acre fee for Clark County will be

advanced against the monies to be collected during the permit period, provided that funds "borrowed" from the Long-Term HCP budget are repaid for use in implementing the mitigation measures to be identified in the Long-Term HCP.

The level of funding required to implement the conservation and mitigation measures is estimated at \$6,075,000 over the period of the permit (Table C).

### Implementation Agreement

All of the participating agencies will enter into a binding agreement with USFWS regarding implementation of the Short-Term HCP. This agreement will specify the responsibilities of each agency, the conservation and mitigation measures to be implemented, reporting and enforcement procedures, and any other permit conditions.

If the Section 10(a)(1)(B) permit is approved, implementation of the Short-Term HCP is expected to begin in early 1991.

**TABLE C****ESTIMATED BUDGET FOR IMPLEMENTATION OF SHORT-TERM HCP**

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**Costs Related to Minimization/Monitoring of Impacts**

NDOW Audit of Survey/Removal Compliance (personnel and overhead for 3 years)	\$300,000
Hot-line/Collection Service in Exclusionary Zones (\$25,000/year)	75,000
Public Information Program in Permit Area (\$25,000/year)	75,000
Subtotal	\$350,000

**Costs Related to Mitigation of Impacts**

Grazing Permit/Base Property Acquisition	\$2,000,000
Trust Fund for TMA Management (yielding \$250,000/year at 8% interest)	3,125,000
Tortoise Research and Relocation Program	500,000
Subtotal	\$5,625,000
Permit Period Total	\$6,075,000

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# Chapter One

## Purpose and Scope

The Short-Term HCP for the Desert Tortoise is a plan to conserve and manage at least 400,000 acres of habitat in the Clark County region for the benefit of the species. It has been prepared as part an application for a Section 10(a)(1)(B) permit under the federal ESA for the incidental take of the species in Las Vegas Valley over a three-year period. If the Section 10(a)(1)(B) permit is approved, the Short-Term HCP will be implemented to minimize, monitor, and

mitigate the impacts of any incidental take for three years after permit approval.

A Long-Term HCP also is being prepared by which additional tortoise habitat will be conserved and managed. It will be used to support a Section 10(a)(1)(B) permit application that will cover any incidental take in all of Clark County for a period of 20 years or more.

## Background

On April 2, 1990, the desert tortoise was listed as threatened by the USFWS, thereby bringing it under full protection of the federal ESA. This listing was based on ongoing threats to the continued existence of the species, including loss of habitat to urban development and agriculture, degradation of habitat by grazing and OHV use, illegal collection, spread of an upper respiratory disease

syndrome, excessive predation of juvenile tortoises by common ravens, and other contributing factors (USFWS 1990). It was preceded by an emergency listing of the tortoise as endangered on August 4, 1989. In Nevada, the tortoise has been categorized as protected and rare since 1978.

## The Taking Prohibition

In general, the federal laws that protect the tortoise take precedence over state and local statutes and prohibit any taking of the species. This prohibition applies equally to the activities of public agencies, private enterprise, and individuals. Even trapping conducted in connection with biological research requires a special permit. Violations are punishable by fines up to \$25,000 and sentences of up to six months in jail.

### Definition of Take

As defined in the ESA, *take* means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or to attempt to engage in any such conduct with regard to a federally listed endangered species. Regulations have broadened this definition to include federally listed threatened species as well. In addition, *harm* has been further defined to include activities that would modify or degrade habitat in a way that significantly impairs essential behavioral patterns.

### Section 10(a)(1)(B) Permit

The principal exceptions to the federal prohibition of take are those activities for which a Section 10(a)(1)(B) permit is issued.

In general, a Section 10(a)(1)(B) permit allows incidental take in connection with otherwise lawful activities. It can be issued for an area in which several projects will occur, for activities connected to a

single project, or for takings as small as a single specimen.

To qualify for the permit, the applicant must present a HCP that shows how the impacts of take on the species will be minimized, what alternatives to take were considered, how the impacts on the species will be mitigated, and how implementation of the program will be funded. These requirements apply to all permit applications, regardless of the magnitude of the proposed take, the scale of the project, or the length of the proposed permit.

## Habitat Conservation Plans

The general purpose of an HCP is to minimize and mitigate, to the maximum extent practicable, the impacts of the proposed incidental take on the species. How this is done varies with the species in question, the level and type of impacts expected, and the size of the area covered by the plan. It also depends on the ability of the applicant to fund and enforce the terms of the plan.

### Benefits for Plan Participants

For plan participants, a HCP provides a way to coordinate mitigation measures for individual projects within a specific area. This coordination increases the effectiveness and ensures the continuity of conservation measures; it replaces project-by-project negotiations with a comprehensive program approved by the wildlife agencies in advance.

## Other HCPs

Among the HCPs that have been approved since Section 10(a)(1)(B) permits were authorized in 1982 are those for the Coachella Valley fringe-toed lizard in Riverside County, California; the Mission Blue butterfly in San Mateo County, California; the valley elderberry long-horn beetle on the Lennane property in Sacramento County, California; the Tipton kangaroo rat, the San Joaquin kit fox, and the blunt-nosed leopard lizard in the Delano Prison in Kern County, California; and the Stephens' kangaroo rat (SKR) in Riverside County, California. The SKR plan is a short-term program

designed to allow for a limited amount of habitat loss outside of areas identified as potential reserves for the species. As with the proposed Short-Term HCP for the Desert Tortoise, it was prepared in conjunction with a long-term program that will establish a network of permanent reserves. Other HCPs that have been drafted but not yet approved include those for the wood rat and cotton mouse (among other species) in north Key Largo, Florida, and the least Bell's vireo in San Diego County, California. Multi-species HCPs also have been initiated in Riverside and Kern counties in California.

## The Clark County HCP

The Clark County HCP for the Desert Tortoise was initiated in September of 1989 in response to the emergency listing of the species as endangered by the USFWS. Three factors differentiate the circumstances in Clark County from those that have prompted other HCPs:

- The majority of tortoise habitat within Clark County is on federal land managed by BLM;
- The current Management Framework Plan used by BLM in Clark County allows certain land uses that appear to be inconsistent with the preservation of tortoise habitat; and
- the most significant amount of development in the county is occurring within Las Vegas Valley, where BLM and privately-owned lands are intermixed.

These factors have necessitated a unique framework for the HCP process in Clark County, one that includes:

- Identification and preservation of tortoise habitat on federal lands;
- Development of appropriate habitat management programs based on biological research and other studies conducted in and out of Clark County; and
- Coordination of the development of the HCP with preparation of a RMP by BLM for federal lands in Clark County which will replace the current Management Framework Plan.



## Program Participants and Funding

The Clark County program began when the County and Cities of Las Vegas, North Las Vegas, Henderson, Boulder City, and Mesquite joined together with the intention of being the applicants for a Section 10(a)(1)(B) permit. To that end, they formed a Steering Committee to advise them regarding compliance with the ESA and to develop a HCP.

### Steering Committee

The primary purpose of the Steering Committee is to oversee preparation of the HCP. It also plays a vital role in the planning process by bringing together groups that have been affected by the listing of the desert tortoise and who have a significant stake in the HCP process. Current participants include representatives from:

- Clark County
- City of Las Vegas
- City of North Las Vegas
- City of Henderson
- Boulder City
- City of Mesquite
- Office of the Governor of the State of Nevada
- Nevada Congressional Delegation
- Nevada Department of Wildlife
- Nevada Department of Agriculture
- Nevada Farm Bureau
- U.S. Fish and Wildlife Service (ex officio)
- U.S. Bureau of Land Management
- National Park Service
- Summa Corporation

- Southern Nevada Homebuilders Association
- Joyce Advertising Inc.
- Nevada Off-Highway Users Council
- Nevada Cattleman's Association
- Nevada Mining Association
- Individual mining interests
- Individual cattlemen interests
- Desert Tortoise Council
- TORT Group Nevada
- Defenders of Wildlife
- Natural Resources Defense Council
- Environmental Defense Fund
- The Nature Conservancy
- University of Nevada, Las Vegas

The Steering Committee has been meeting since October, 1989. All of its meetings are open to the public.

### Technical Advisory Committee

A Technical Advisory Committee (TAC) composed of biologists and other wildlife experts also has been formed to review the environmental documentation and the conservation measures proposed in the HCP. TAC members include representatives from:

- Nevada Department of Wildlife
- Nevada Department of Agriculture
- U.S. Bureau of Land Management
- U.S. Fish and Wildlife Service (ex officio)
- National Park Service
- California Department of Fish and Game
- TORT Group Nevada
- University of Nevada, Las Vegas

Other members of the Steering Committee, together with consultants retained to prepare the HCP, also participate in TAC meetings.

### **General Contractor and Consultants**

In addition to establishing the committees, Clark County and the five cities retained The Nature Conservancy (TNC) as general contractor for HCP permit preparation; TNC also will act as acquisition agent when the HCP is implemented. Mr. Paul Selzer was hired to coordinate preparation of the HCP, and RECON was retained to help prepare the technical documentation for the Section 10(a)(1)(B) permit.

### **Funding**

Initial funding for the HCP has been supplied by means of an interlocal agreement among the County and Cities which provides for a prorata contribution of \$400,000. The county and cities have enacted local ordinances which impose a mitigation fee of \$250 per acre on new development within Clark County. Based on historic rates of development, the fee is expected to generate between \$650,000 and \$1,200,000 per year. In addition to this existing mitigation fee, a \$300-per-acre fee will be imposed upon development within the permit area for the Short-Term HCP to fund the mitigation measures specific to the Short-Term plan. Therefore, development within the permit area for the Short-Term HCP will be assessed a total fee of \$550 per acre.

## **Short-term Options**

### **Timing Issues**

When the Clark County program began, it was assumed that a HCP for a long-term Section 10(a)(1)(B) permit would take two to three years to complete. Given the nature of the biological studies to be conducted and the federal land use issues to be resolved, the time frame seemed realistic. However, given the number of projects already pending in Las Vegas Valley, two to three years would likely exacerbate the problem of meeting local housing and infrastructure needs. Furthermore, additional protection for the desert tortoise in outlying areas was deemed to be an immediate need, which should not be delayed for two to three years.

### **Approaches Considered**

The County and Cities then considered four options that would allow some projects to proceed while the RMP and Long-Term HCP were being prepared:

- A programmatic Section 7 consultation between USFWS and BLM for all land in Las Vegas Valley,
- Special rule making by USFWS,
- Special legislation by Congress, and
- A short-term Section 10(a)(1)(B) permit.

The decision to seek a short-term Section 10(a)(1)(B) permit was made primarily because the approach offered four key advantages:

- The Short-Term HCP process would allow the County and Cities to meet the growth needs of the existing population, while at the same time providing additional protection for the desert tortoise, an immediate need that should not be delayed.
- The HCP needed for the permit application could be based on work

already initiated for the long-term plan;

- Precedent for a Short-Term HCP and Section 10(a)(1)(B) permit had already been set by the SKR program in Riverside County, California; and
- The HCP process would give the county and cities more control over the development and implementation of conservation measures.

## Legal Requirements

Although the Short-Term HCP will be closely linked to the long-term plan, it must stand alone with respect to meeting the legal requirements for a Section 10(a)(1)(B) permit. Specifically, it must take into account a variety of federal, state, and local laws, including the federal ESA, the National Environmental Policy Act (NEPA), the Federal Land Policy and Management Act (FLPMA), Nevada Revised Statutes (NRS), the Nevada Administrative Code (NAC), and local land use ordinances.

### Federal Endangered Species Act

The federal ESA of 1973 protects listed species in several ways. In addition to prohibiting take (Section 9), it authorizes land acquisition, other preservation activities, and cooperative federal and state programs for the conservation and recovery of the species.

### Review and Approval of Projects

Two sections of the ESA typically are cited with respect to the review and approval of individual projects.

Section 7 requires all federal agencies to consult with the USFWS regarding any federal action that might affect a listed species. This consultation may result in authorization for incidental take.

Section 10(a)(1)(B), which was added as an amendment in 1982, permits incidental take under certain conditions in connection with otherwise lawful activities.

### Section 10(a)(1)(B) Permit Application

An application for a Section 10(a)(1)(B) permit must be submitted on an official form (Form 3-200) and be accompanied by the following attachments:

1. A complete description of the activity for which the permit is being sought;

2. The common and scientific names of the species to be covered by the permit; and

3. A HCP that specifies:

- The impact that will likely result from the proposed taking of the species;
- Steps the applicant will take to monitor, minimize, and mitigate such impacts;
- The level and source of funding available to implement such steps;
- Procedures that will be used to deal with unforeseen circumstances;
- The names of the responsible party or parties;
- Alternatives to the taking and the reasons why they were not pursued; and
- Other measures required by USFWS as necessary or appropriate.

#### Permit Approval

The application is submitted to the USFWS Director, who, after a public comment period, may issue the permit if it is found that:

1. The take will be incidental;
2. The applicant will, to the maximum extent practicable, minimize and mitigate the impacts of the take;
3. The applicant will ensure that adequate funding for the plan will be provided;

4. The take will not appreciably reduce the likelihood of the survival and recovery of the species in the wild; and

5. Other measures required by USFWS will be met.

#### Impact Assessment

Draft guidelines issued by USFWS in 1990 emphasize that the identification of the impacts likely to result from the proposed incidental take is the most perplexing and difficult problem confronting all Section 10(a)(1)(B) permit applicants. The guidelines then define three critical subtasks that must be completed to determine probable impacts.

1. Delineation of plan boundaries, which, as stated in the guidelines, typically should encompass all areas to be affected during the length of the permit by activities that may result in the incidental take of a listed wildlife species;
2. Collection and synthesis of existing information on the distribution, occurrence, and ecology of federally listed species and other species of concern within the plan boundaries; and
3. Detailed description of the activities to be covered by the Section 10(a)(1)(B) permit, including activities that have already been proposed and those that are reasonably certain to occur.

## Mitigation Measures

Regarding mitigation measures in the HCP, the draft guidelines note that they can take many forms:

1. Preservation (via acquisition or conservation easement) of existing habitat;
2. Enhancement or restoration of degraded or former habitat;
3. Creation of new habitat;
4. Establishment of buffer areas around existing habitat;
5. Enactment of local ordinances or alteration of local zoning to reduce or eliminate some future impacts;
6. Habitat management plans;
7. Restrictions on vehicular access;
8. Restrictions on pesticides and herbicides; and
9. Education of the local public.

The guidelines also state that though the biological studies should provide guidance regarding the appropriateness or desirability of a given measure for a conservation plan, Congress indicated that "comprehensive" conservation plans would be developed jointly between the USFWS, the private sector, and local or state government (USFWS 1990).

Regarding funding, the guidelines indicate that the plan should detail the

collection, management, and auditing of all funds and, where the applicant intends to generate funding on a continuing basis, must establish programs and mechanisms to generate sufficient funds for perpetual operation of the plan.

## Additional Measures

Regarding additional measures, the guidelines note that the plan must demonstrate how monitoring and mitigation will be implemented and what steps will be taken to ensure that incidental take does not exceed what the plan specifies.

## National Environmental Policy Act

The National Environmental Policy Act of 1969 requires federal agencies to evaluate the effects of their proposed actions on the human environment in a written statement that addresses:

- The environmental impact of the proposed action;
- Any adverse environmental effects that cannot be avoided should the proposed action be implemented;
- Alternatives to the proposed action;
- The relationship between short-term uses of the human environment versus the maintenance and enhancement of long-term productivity; and
- Any irreversible and irretrievable commitments of resources that would be involved if the proposed action is implemented.

## Scoping Process

Compliance with NEPA generally begins with an internal scoping process.

1. If a preliminary review indicates that the proposed action has no or minimal environmental impacts, then a categorical exclusion may be determined and no further environmental documentation is required.
2. If the review indicates that the proposed action may have significant impacts, then an environmental assessment (EA) or an environmental impact statement (EIS) must be prepared. An EA is prepared when the preliminary review indicates that the proposed action is not likely to have significant impacts; an EIS is prepared when the expected impacts are significant.

## EA Preparation

An EA is a concise public document that briefly discusses the need for and alternatives to an action and provides sufficient evidence and analysis to determine whether the impacts of a proposed action are significant.

1. If the EA confirms that the impacts of the action are not significant, then a finding of no significant impact (FONSI) is issued and the NEPA review process is complete.
2. If the EA reveals a significant impact, then an EIS must be prepared.

## EIS Preparation

An EIS is a detailed document that requires extensive public involvement, facilitates interagency coordination, and provides the basis for permit approvals and other legal clearances that may be required for the proposed action. There are several mandatory steps in the EIS process, including public scoping meetings, publication of a notice of intent in the Federal Register, preparation and public circulation of draft and final versions of the document, formal public hearings, and inclusion of public comments and the responses to those comments in the final EIS.

## Environmental Documentation for HCPs

With respect to HCPs in general, compliance with NEPA is not a direct obligation or requirement of the applicant for the Section 10(a)(1)(B) permit; however, USFWS must comply with NEPA in making its decision on the application. Consequently, the appropriate environmental documentation must be prepared before a Section 10(a)(1)(B) permit can be issued.

## EA for HCP

For the Short-Term HCP, an EA will accompany the Section 10(a)(1)(B) permit application. The purpose of an EA is to determine whether or not to prepare an EIS. In addition, the Short-Term HCP is being prepared in a way that incorporates the public involvement goals and provides the documentation required by

NEPA. For the Long-Term HCP an EIS will be prepared in conjunction with or as part of the EIS for the RMP. The Long-Term HCP also will be developed with NEPA requirements in mind.

## **Federal Land Policy and Management Act**

### **Planning Requirements**

The Federal Land Policy and Management Act of 1976 directs the Secretary of the Interior to develop, maintain, and, where appropriate, revise plans for the use of public lands. Furthermore, the Code of Federal Regulations (CFR) requires all resource management authorizations and actions to conform to an approved land use plan. Where a proposed action does not conform but warrants further consideration, the land use plan may be amended. At a minimum, plan amendments require an EA under NEPA and must comply with the public involvement, inter-agency coordination, and consistency requirements of federal planning regulations.

### **Reporting Requirements**

FLPMA also requires the Secretary to report to Congress any management decision or action that excludes one or more principal land uses for two or more years on 100,000 acres or more of public lands. If Congress adopts a concurrent resolution of nonapproval within 90 days, the Secretary is required to promptly terminate the management decision or action. In addition, any permanent exclusion of principal uses of

public lands on 100,000 acres or more must be approved in a land use plan and receive the concurrence of Congress.

## **Nevada Revised Statutes**

The NRS requires that the state's wildlife be classified as either protected or un-protected and that protected species be further classified as sensitive, threatened, or endangered. This classification of protected species was introduced in 1987. Policies and regulations necessary to the preservation, protection, management, and restoration of wildlife and habitat are established by the Nevada Board of Wildlife Commissioners. NRS also provides for the creation of County advisory boards to manage wildlife in each of several counties.

## **Local Ordinances**

The County and five Cities have approved an interlocal agreement that authorizes preparation of the HCP and have adopted ordinances that assess a \$250 per acre fee on all surface development in Clark County.

## **Interlocal Agreement**

1. Establishes a Countywide Desert Tortoise Special Reserve Fund to be used solely to finance the HCP and Section 10(a)(1)(B) permit application.
2. Authorizes the initiation of studies required to prepare the HCP.
3. Stipulates that, to be included as a beneficiary of the Section 10(a)(1)(B)

permit, the participating parties must be prepared to adopt or amend the ordinances necessary to fund implementation of the HCP.

#### **Local Ordinance**

Pursuant to the interlocal agreement, a local ordinance has been adopted by all six local governments. This ordinance:

1. Designates all lands within the individual jurisdictions as the study area for the Clark County Desert Tortoise HCP and includes those lands in a fee assessment area;

2. Provides for an interim mitigation fee of \$250 per gross acre (or portion thereof) on a development, sets an appropriate fee for development of a single family residence, and identifies specific exemptions to the fee;

3. Allows the jurisdictions to adjust the mitigation fee in the future; and

4. Provides that all fees collected are to be deposited in the Desert Tortoise Special Reserve Fund.



## Chapter Two

# Regional Profile

One of the primary purposes of this Short-Term HCP is to help identify the ecological and land use characteristics within Clark County that will affect the selection and management of TMAs. These characteristics include soil and vegetation patterns, the presence of other habitats and species of concern, patterns of land ownership, land use

plans and policies, existing and proposed land uses, and growth forecasts. This profile, however, is intended only as an overview of the region. A more detailed evaluation of Clark County's natural and urban environment will occur in connection with preparation of the Long-Term HCP and the formation of individual TMAs.

## Boundaries

### Regional Context

Clark County is located in the southernmost tip of Nevada as shown in Figure 1. It is bordered on the north by Lincoln County, Nevada; on the east by Mojave County, Arizona; on the southwest by San Bernardino and Inyo counties, California; and on the west by Nye County, Nevada. It covers approximately 7,880 square miles or about seven percent of the state's total area. It is

Nevada's most populated county, with an estimated 1990 population of 761,279 or about 67 percent of the state total.

### Las Vegas Valley

The majority of Clark County's population (96 percent) is concentrated in Las Vegas Valley, as is the region's urban development. Definitions of the area included in the valley vary, depending on whether urbanization or natural features

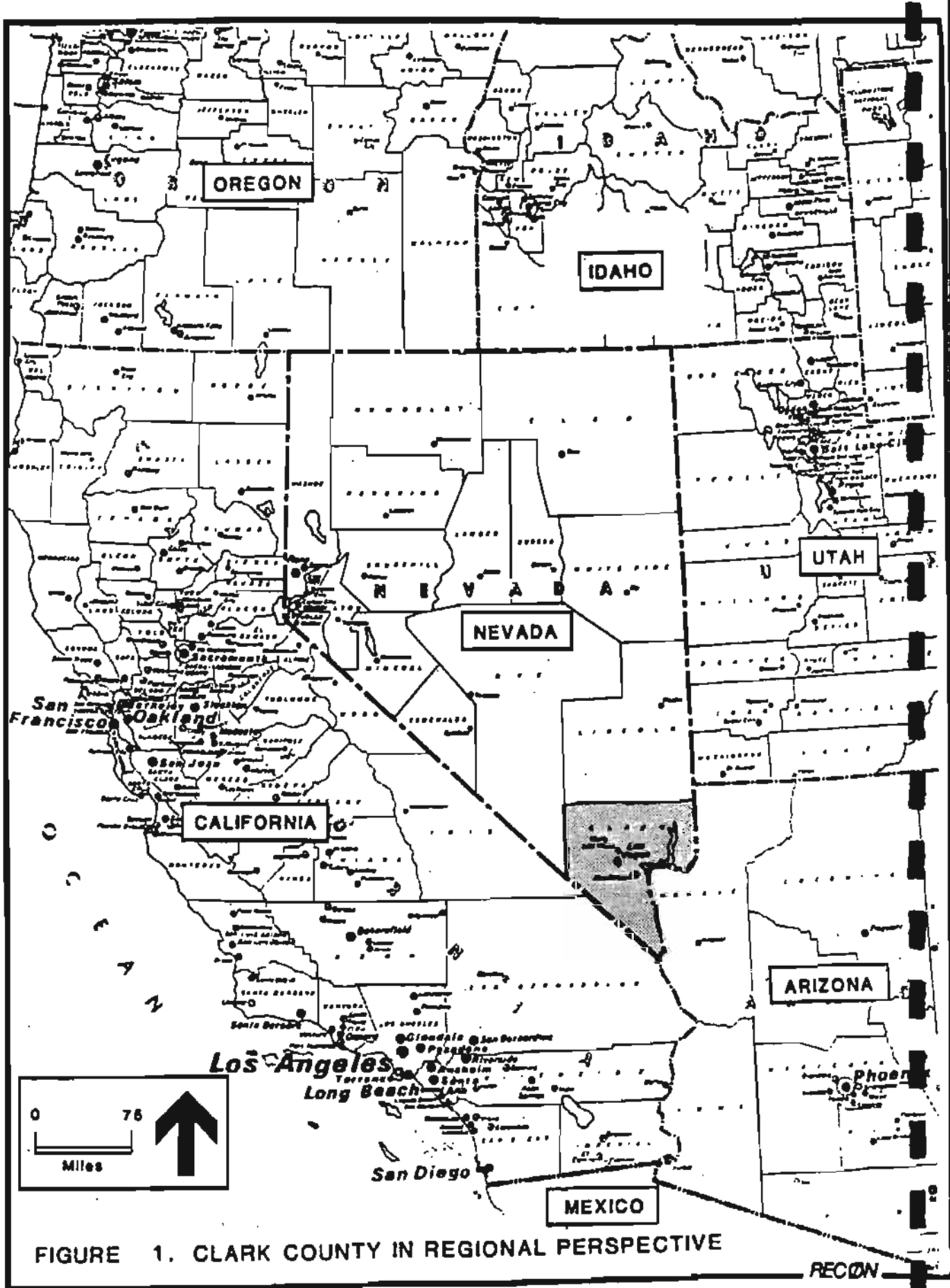


FIGURE 1. CLARK COUNTY IN REGIONAL PERSPECTIVE

are used as boundaries. For the purposes of this HCP, the valley is defined as the Las Vegas Valley hydrographic

unit plus Boulder City. It covers about 1,564 square miles or about 20 percent of Clark County.

## Ecological Characteristics

The ecological characteristics of Clark County vary with the terrain and past development patterns. In general, the area is marked by a highly diversified natural environment and variety of biotic communities.

### Topography

#### Clark County

Elevations within Clark County range from 450 feet above mean sea level (MSL) along the Colorado River to 11,918 feet at Charleston Peak. Much of the county has features that are characteristic of the Great Basin, mountain ranges that extend in a north-south direction and erode laterally to long, narrow desert valleys. The mountain ranges are generally steep and composed primarily of bedrock. Wide alluvial fans or aprons extend from the base of the mountains and level out to basin lowlands. The basin lowlands have been continually filling since the mountains were originally formed and have a surface generally composed of fine sand, silt, and clay.

#### Las Vegas Valley

Las Vegas Valley extends in a northwest-southeast direction with the Spring

Mountains to the west; the Pintwater, Desert, Sheep, and Las Vegas Mountains to the north; and Frenchman Mountain to the east. It drains toward the south and then easterly through Las Vegas Wash to Lake Mead and the Colorado River. Valley elevations range from 4,500 feet at the upper boundaries of the alluvial fan to 1,800 feet in the basin lowland.

### Hydrology

#### Hydrographic Region

Most of Clark County is within the Colorado River Basin but a portion falls within the central hydrographic region. The Las Vegas Valley Basin is the major watershed and encompasses the urbanized portions of the valley.

#### Subsurface Hydrology

Subsurface hydrology in the valley is characterized by laterally moving groundwater and artesian aquifers. Recharge in Las Vegas Valley results from precipitation in the Spring Mountains and Sheep Range, urban irrigation, treatment plant effluent, and some upward flow from deep artesian aquifers.

## Surface Hydrology

Surface hydrology is marked by complex flow patterns in the alluvial fans of the valley, with areas of concentrated but frequently shifting flows. The dynamic drainage pattern, topography, and soils of the alluvial fan generally are more conducive to sheeting runoff than to channelized flow. Consequently, pronounced gullies and ravines rarely develop, and flash floods are a recurrent problem.

## Surface Waters

Las Vegas Wash is the only perennial stream in the valley and one of few in the entire county. The other primary surface waters include Virgin River, Muddy River, Muddy Springs, Colorado River, and Lake Mead.

## Climate

Air masses moving across southern Nevada are usually low in moisture. This arid condition is characterized by low precipitation, low humidity, and cloudless skies.

## Temperature Range

Summer climate is marked by hot days and mild nights, with an average daily temperature of nearly 90 degrees. Winter temperatures drop below freezing about 12 days per year, with average daily temperatures of 46 degrees during the coldest period. Spring and autumn are generally moderate, with average daily temperatures of about 80 degrees.

## Growing Season

The growing season (or frost-free period) varies but averages 304 days. Generally the first killing frost occurs late in November, and the last occurs early in March. Mean annual precipitation is 5.4 inches, occurring primarily during the summer and winter months. The number of days with measurable precipitation averages 12 per year.

## Valley Conditions

Within Las Vegas Valley, average daily temperatures range from 75 to 104 degrees in summer and from 33 to 56 degrees in winter. Due to the rain shadow effect of the Sierra Nevada Range and Spring Mountains to the west, moisture associated with storms originating in the Pacific Ocean rarely reach the valley. Humidity is normally low, averaging 30 percent, but moist tropical air from the southwest invades the area from mid to late summer. Thunderstorms and flash flooding frequently occur during this period. Inversions or periods of stagnant air masses occur during winter months and prevail for several days to a week.

## Habitats

Clark County contains multiple habitats, including creosote bush scrub, black-brush, mountain shrub, chenopod scrub and alkali sink, desert riparian, pinyon-juniper, fir-pine, bristlecone pine, pseudo-alpine, desert springs and marsh, streamside and riparian, rock outcrops, and lake.

### Creosote Bush Scrub

The creosote bush community is found at elevations below 4,200 feet in fiat to sloping terrain. Shrubs dominate this community. Creosote bush (*Larrea tridentata*) and bursage (*Ambrosia dumosa*) are the aspect dominants, except on saline soils where saltbush (*Atriplex* spp.) replaces bursage as the co-dominant. Vertical diversity is largely achieved by the occasional to common presence of yuccas (*Yucca brevifolia* and *Y. schidigera*). The herbaceous understory is dominated by low annual grasses and forbs. Vegetative ground cover is sparse and usually ranges from one to five percent, with canopy cover ranging from 5 to 18 percent. Where aeolian sand deposits occur, the density and diversity of the herbaceous plant cover is increased.

### Blackbrush

The blackbrush community occurs largely at elevations between 4,200 to 6,000 feet where there is a near-surface hardpan. It is ecotonal between creosote bush scrub and the higher elevational big sagebrush or pinyon-juniper communities. It is dominated by a moderately dense cover of blackbrush (*Coleogyne ramosissima*). Joshua trees (*Yucca brevifolia*) are scattered to common. Herbaceous plants and grasses are primarily those also found in the creosote community.

### Mountain Shrub

This community is a narrow transitional zone between the creosote bush and blackbrush communities. Except for the

presence of yuccas, it is dominated by a diverse, low shrub and perennial grass community that includes menodora (*Menodora spinescens*), goldenbush (*Haplopappus* spp.), hopsage (*Grayia spinosaw*), three-awn (*Aristida* spp.) and needle grass (*Stipa* spp.). The understory is dense to moderately dense annual and low perennial grasses such as red brome (*Bromus rubens*), fluff-grass (*Erioneuron pulchellum*), and gramma grass (*Bouteloua* spp.)

### Chenopod Scrub and Alkali Sink

This community is found on poorly drained, saline soils in basins and valleys. Common dominant shrubs are shade-scale (*Atriplex confertifolia*), desert holly (*A. hymenelytra*), four-winged saltbush (*A. canescens*), and Torrey saltbush (*A. torreyi*). Along the edges of playas, salt-tolerant herbaceous species such as sea-blite (*Suaeda* sp.) and iodinebush (*Allenrolfea occidentalis*) are abundant. Playas themselves are devoid of plant life.

### Desert Riparian

The desert riparian community is found along washes. Plant species are fairly dense along wash edges and islands and depend on available water. Common species in shrubby drainages include bladder sage (*Salazaria mexicana*), cheese bush (*Hymenoclea salsola*), and rabbit-brush (*Chrysothamnus* spp.). Arboreal washes include these shrubs plus desert willow (*Chilopsis linearis*) and catclaw acacia (*Acacia greggii*). In the largest

washes, with subsurface water, cottonwoods (*Populus fremontii*) are scattered.

### Pinyon-Juniper

The pinyon-juniper community generally occurs at elevations between 6,000 and 7,300 feet on the Spring, Sheep, McCullough, Newberrys, and Virgin mountain ranges. It is composed of juniper (*Juniperus osteosperma*) and pinyon pine (*Pinus monophylla*). Common associates include big sagebrush (*Artemisia tridentata*), scrub oak (*Quercus turbinella*), and mountain mahogany (*Cercocarpus* spp.)

### Fir-Pine

The fir-pine community generally occurs at elevations between 7,500 and 9,000 feet. It is restricted to the Spring and Sheep ranges and the highest elevations of the Virgin Mountains. It consists primarily of white fir (*Abies concolor*) and yellow pine (*Pinus ponderosa*). Quaking aspen (*Populus tremuloides*) may be found in isolated mesic areas. The community also contains many other shrubs, small trees, and an abundance of herbaceous plants.

### Bristlecone Pine

The bristlecone pine community extends from about 9,000 along the uppermost ridges of the Spring Range to the timberline at 11,500 feet. At the lower elevations, limber pine (*Pinus flexilis*) is mixed with scattered white fir and bristlecone pine (*Pinus aristata*). At higher elevations, white fir and

bristlecone is more abundant. *Juniperus communis* is found throughout. This community lacks an understory of shrubs and has relatively sparse herbaceous vegetation.

### Pseudo-Alpine

The pseudo-alpine community is found above the timberline at elevations above 11,500 feet on Charleston Peak and below 10,000 feet on the Hayford and Sheep peaks. These areas are exposed to winds and lack a well-developed alpine flora and fauna. Only small sprawly woody plants and herbs are found in the community.

### Desert Springs and Marsh

The desert springs and marsh community is widely scattered throughout Clark County. Usually several localized springs form a associated group in larger valleys. Small marshes on the periphery of these areas include a number of sedges (*Carex*, *Scirpus* sp.), rushes (*Juncus* sp.), and cattails (*Typha angustifolia*). Trees growing near the springs include willows (*Salix* sp.), cottonwoods (*Populus fremontii*), salt cedar (*Tamarix gallica*), and mesquite (*Prosopis* sp.). Aquatic algae plants such as *Chara*, *Nasturtium*, *Najas*, *Potamogeton*, and *Ruppia* fill many of the springs.

### Streamside and Riparian

The streamside and riparian community is found along the Colorado River and its tributaries, the Moapa and Virgin rivers, and the permanent water flow

areas of the Meadow Valley and Las Vegas washes. Trees typically found along the river banks include willows (*Salix* sp.), cottonwoods (*Populus fremontii*), and salt cedars (*Tamarix gallica*). Dense thickets are often formed by shrubs such as arrowweed (*Pluchea sericea*), seep willow (*Baccharis glutinosa*), small willows, and salt cedars. Marsh areas consist of sedges (*Carex* sp.), rushes (*Juncus* sp.), cattails (*Typha* sp.), and various grasses. Mesquite bosque is a subset of this community and consists of dense thickets of low trees and large shrubs. Mesquite (*Prosopis juliflora*) dominates the subcommunity and grows in sandy, well-drained soils with subsurface moisture.

#### Rock Outcrops

Rock outcrops can occur in any of the communities, and include representatives of those communities in addition to a distinct flora dependent on the elevation.

#### Lake

The lake community in southern Nevada is restricted to two large human-made reservoirs, Lakes Mead and Mojave. The surrounding vegetation extends to the water's edge because of the artificial nature of the lakes.

Within Las Vegas Valley, at least six habitat types occur, creosote bush, chenopod scrub, desert riparian, desert springs and marsh, streamside and riparian, and lake. It also should be noted that the lower Las Vegas Wash is a

unique wetland habitat in an otherwise arid environment.

#### Wildlife

Based on studies included in the Clark County Comprehensive Plan, Clark County contains at least 775 species of plant life, 41 species of fish, 9 species of amphibians, 54 species of reptiles, 392 species of birds, and 142 species of mammals. Creosote bush and blackbrush communities contain about 430 species of wildlife and vegetation, including 30 of the 54 species of reptiles. Mountain communities contain the most species of plant life (414) and the most total species (579). In addition to containing all of the fish species (41), water-related communities (desert spring and marsh, stream riparian, stream, and lake) also have the most bird species (245). However, creosote bush, blackbrush, and desert riparian communities are the most heavily used by the majority of non-water birds.

#### Species of Concern

Species of concern are those that are rare, have declining populations, or are otherwise considered to have questionable chances for long-term survival. Of the species found in Clark County, over 50 are already federally listed as endangered or threatened or candidates for federal listing (Table 1). Other candidates for federal listing not included in Table 1 are the snowy plover, mountain plover, white-faced ibis, long-billed curlew, Meadow Valley speckled dace, and Meadow Valley desert sucker. The gila

TABLE 1

ENDANGERED, THREATENED, AND OTHER SPECIES OF CONCERN  
IN CLARK COUNTY

SPECIES	STATUS
PLANTS	
* <i>Angelica scabrida</i> (rough angelica)	F1
<i>Antennaria soliceps</i> (arching pussytoes)	F1
* <i>Arctomecon californica</i> (California bear poppy)	F2
<i>Arenaria kingii</i> var. <i>rosea</i> (rosy king's sandwort)	F1
<i>Astragalus aequalis</i> (Clokey's milk-vetch)	F2
<i>Astragalus funereus</i> (funeral milk-vetch)	F2
<i>Astragalus mohavensis</i> var. <i>hemigyris</i> (pod milk-vetch)	F2
<i>Astragalus oophorus</i> var. <i>clokeyanus</i> (Clokey's milk-vetch)	F1
<i>Astragalus remotus</i> (Spring Mountain milk-vetch)	F2
<i>Astragalus triquertus</i> (Geyer milk-vetch)	F2
* <i>Calochortus striatus</i> (alkali mariposa-lily)	F2
* <i>Crysantha insolita</i> (unusual cat's eye)	F2
<i>Draba jaegeri</i> (Jaeger's draba)	F2
<i>Draba pauciflora</i> (Charleston draba)	F2
<i>Erigeron ovinus</i> (sheep fleabane)	F2
<i>Eriogonum bifurcatum</i> (Pahrump Valley buckwheat)	F2
<i>Eriogonum viscidulum</i> (sticky buckwheat)	F2
<i>Ivesia cryptocaulis</i> (hidden ivesia)	F2
<i>Opuntia whipplei</i> var. <i>multigeni</i> (blue diamond cholla)	F2
* <i>Penstemon bicolor</i> var. <i>roseus</i> (bicolored penstemon)	F2
<i>Selaginella utahensis</i> (Utah spikemoss)	F2
<i>Silene clokeyi</i> (Clokey's catchfly)	F2
<i>Sphaeromeria compacta</i> (Charleston tansy)	F1
<i>Synthyris ranunculina</i> (Charleston kittentails)	F1
<i>Townsendia jonesii</i> var. <i>tumul</i> (Charleston ground dairy)	F2
INVERTEBRATES	
<i>Euphydryas anicia morandi</i> (Morand's checkerspot)	F2
<i>Plebejus shasta charlestonensis</i> (Mt. Charleston blue)	F2
<i>Pyrgulopsis avernalis</i> (Moapa pebblesnail)	F2
<i>Speyeria serene carolae</i> (Carol's fritillary)	F2
<i>Stenemis caldia moapa</i> (Moapa riffle beetle)	F2



**TABLE 1**

**ENDANGERED, THREATENED, AND OTHER SPECIES OF CONCERN  
IN CLARK COUNTY  
(continued)**

SPECIES	STATUS
<b>VERTEBRATES</b>	
<i>Crenichthys baileyi moapae</i> (Moapa springfish)	F2
<i>Cyprinodon diabolis</i> (devil's hole pupfish)	FE
<i>Empetrichthys latos latos</i> (Pahrump killfish)	FE
<i>Euderma maculatum</i> (spotted bat)	F2
* <i>Falco peregrinus</i> (American peregrine falcon)	FE
<i>Gila elegans</i> (bonytail chub)	F2
<i>Gila robusta seminuda</i> (Virgin River roundtail chub)	FE
<i>Gila robusta</i> ssp. (Moapa roundtail chub)	F2
* <i>Gopherus agassizii</i> (desert tortoise)	FT
<i>Hesperopsis gracieae</i> (MacNeill's sooty-wing skipper)	F2
<i>Lepidomeda mollispinis moll</i> (Virgin River spinedance)	F2
<i>Lutra canadensis sonora</i> (southwestern otter)	F2
<i>Moapa coriacea</i> (Moapa dace)	FE
<i>Myriceria americana</i> (wood stork)	FE
<i>Plagopterus argentissimus</i> (woodfin)	EX
<i>Ptychochoellus lucius</i> (Colorado squawfish)	EX
<i>Rana onca</i> (Vegas Valley leopard frog)	EX
<i>Rhinichthys osculus moapae</i> (Moapa speckled dace)	F2
<i>Tamias palmeri</i> (Palmer's chipmunk)	F2
<i>Tamias umbrinus nevadensis</i> (Uinta chipmunk)	F2
<i>Xyrauchen texanus</i> (razorback sucker)	F1

SOURCE: The Nevada Natural Heritage Program (1989)

\*Found in Las Vegas Valley.

F1 = Category 1 for federal listing

F2 = Category 2 for federal listing

FT = Federal list, threatened

FE = Federal list, endangered

EX = Extinct or locally extirpated

monster (*Heloderma suspectum*) is state listed as rare and protected (NAC 503.080). At least one other species is under consideration for state listing,

phainopepla (*Phainopepla nitens*). All cacti and yucca species also are state-protected (NRS 527.060-527-120).

## Land Use Characteristics

Land uses in Clark County have been dictated largely by patterns of land ownership and four decades of rapid population growth. Key issues to be addressed in this HCP include existing land uses on lands owned or managed by public agencies as well as proposed land uses within Las Vegas Valley.

## Patterns of Land Ownership

### Federal Lands

About 92 percent of the land in Clark County is owned and managed by eight federal agencies, five of which are agencies within the Department of Interior. The eight agencies include:

1. BLM, which administers about 3.1 million acres (including the Red Rock Canyon Recreation Area) or about 61 percent of the land in the county;
2. USFWS, which manages 506,363 acres (about 10 percent of the County's area), mainly in the Desert National Wildlife Range (DNWR), and jointly manages portions of the Nellis Test Range and DNWR in conjunction with the Department of Defense;
3. National Park Service, which administers the Lake Mead National

Recreational Area (nearly 500,000 acres of which are in Nevada);

4. U.S. Department of Defense, which manages about 7.5 percent of the county or about 378,111 acres, including Nellis Air Force Base and the Nevada Test Site;
5. U.S. Bureau of Indian Affairs, a part of the Department of the Interior, which is authorized to act as trustee for the Moapa Indian Reservation (about 72,000 acres), Mojave Indian Reservation (about 3,000 acres), and Piute Indian Reservation (10 acres);
6. U.S. Forest Service, an agency of the Department of Agriculture, which manages approximately 272,585 acres in the Spring Mountain Range; 216,584 acres of BLM lands in this range were transferred to the Forest Service on April 26, 1989, as a result of the National Forest and Public Lands of Nevada Enhancement Act of 1988;
7. U.S. Bureau of Reclamation, which maintains 50,690 acres (including Hoover Dam and Lake Mead) and whose primary mission is flood control; and

8. Federal Aeronautics Administration, which manages 140 acres in connection with its responsibilities for airport development and regulation.

#### **State and Local Government and Private Lands**

Lands held by the State of Nevada, local government, and private parties comprise only about eight percent of the county's area or about 412,000 acres. Major state holdings include Valley of Fire, Floyd Lamb, and Spring Mountain state parks. Local government holdings consist primarily of parks, office complexes, and storage and maintenance facilities. Sixty percent of all state, local government, and private holdings are located in Las Vegas Valley.

#### **Land Ownership in Las Vegas Valley**

Within the urban core of Las Vegas Valley, ownership patterns are more complex than in outlying areas but government ownership and management still predominates (Table 2). Combined, the holdings of four federal agencies account for 55 percent of the land.

1. BLM, the valley's largest landholder, manages 277,657 acres (including Red Rock Canyon Recreation Area) or about 50 percent of the area.
2. The Department of Defense manages 13,960 acres at Nellis Air Force Base and the Sheep Mountain Gunnery Range.

3. The Bureau of Reclamation manages 9,120 acres on the east end of the valley.

4. The National Park Service manages 5,120 acres in the east end of Las Vegas Wash.

The key change in land ownership scheduled in Clark County is within Las Vegas Valley and will entail the disposal of 134,272 acres of BLM holdings in its Las Vegas Subunit. The subunit contains a total of 398,562 acres, including the majority of the county's urbanized land. Land ownership patterns within the subunit vary from large blocks of federal land on the periphery to a checkerboard of interspersed federal and private holdings around existing urban development (Figure 2).

#### **Land Use Plans and Policies**

Land uses within Clark County are governed by the plans and policies established by federal, state, and local agencies for the areas within their jurisdiction. Key plans and policies include the Management Framework Plan (MFP) and related documents developed by BLM and the general plans and zoning ordinances developed by local governments.

#### **BLM's Management Framework Plan**

The current MFP for Clark County was completed in 1983. It outlines major land use decisions and guides the management of about 3.1 million acres of public lands in the county. In general, the plan classifies BLM holdings as

**TABLE 2****LAND OWNERSHIP IN CLARK COUNTY AND LAS VEGAS VALLEY**

OWNER	CLARK COUNTY		LAS VEGAS VALLEY	
	ACRES	%	ACRES	%
BLM	3,097,131	59	277,657	50
USFWS	506,363	10	0	0
Park Service	498,814	10	5,120	1
Defense Dept.*	378,111	7	13,960	2
Indian Affairs	75,112	1	10	0
Forest Service	272,885	5	0	0
Reclamation	50,690	0	9,120	2
Aeronautics	140	0	**	0
Non-federal***	412,048	8	247,103	45
<b>TOTAL</b>	<b>5,290,994</b>	<b>100</b>	<b>552,970</b>	<b>100</b>

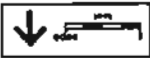
NOTE: Estimates for Las Vegas Valley are taken from the Clark County Comprehensive Plan for an area slightly smaller than the boundaries used for the valley in this HCP.

\*Includes land jointly managed with USFWS.

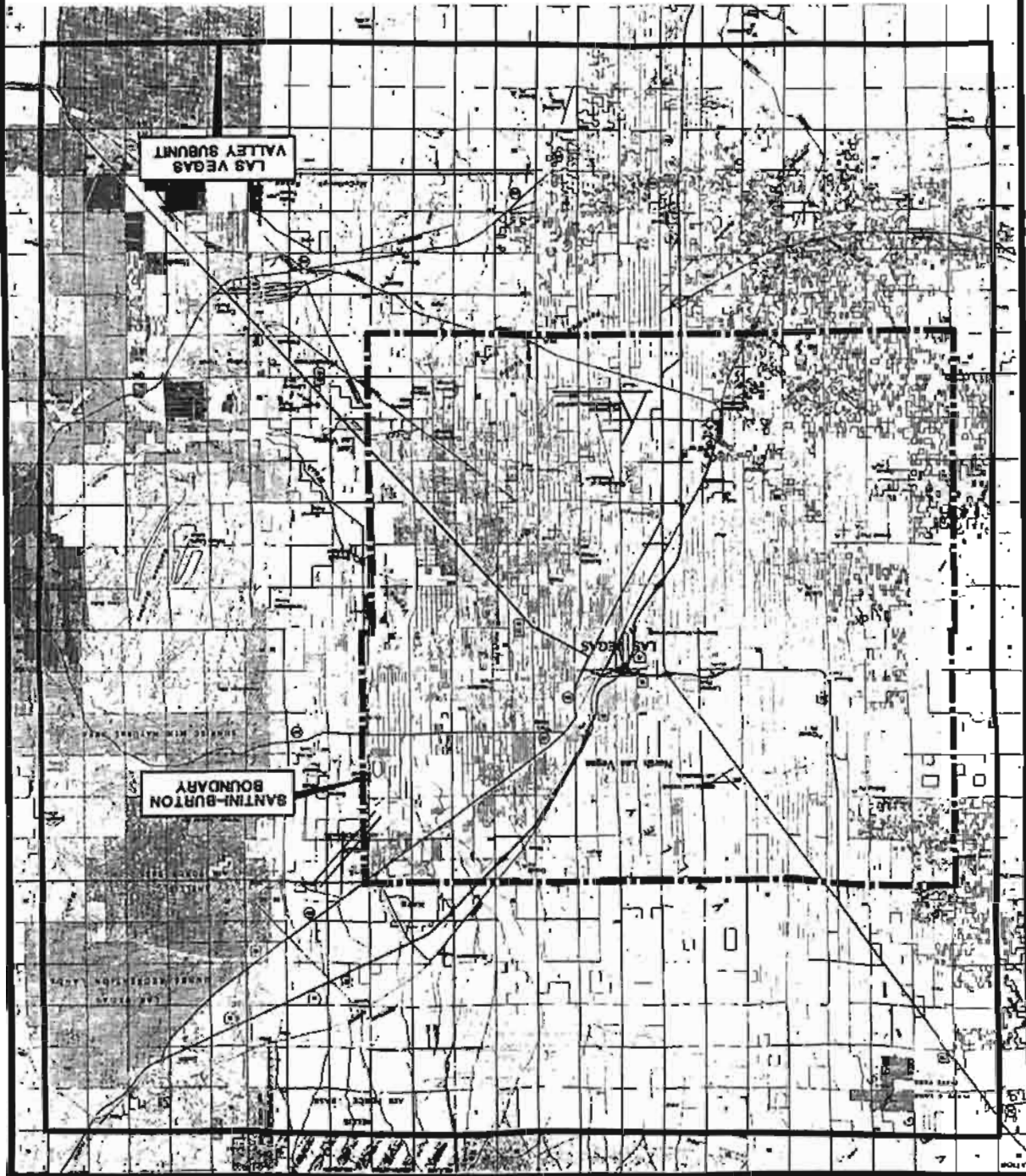
\*\*Bureau of Aeronautics lands not included in analysis of valley ownership.

\*\*\*Includes lands owned by state and local governments and private parties.

FIGURE 2. DISTRIBUTION OF PUBLIC LANDS WITHIN THE LAS VEGAS SUBUNIT



	PUBLIC LAND (BUREAU OF LAND MANAGEMENT) WITHDRAWALS
	FEDERAL AGENCY PROTECTIVE WITHDRAWALS
	MILITARY RESERVATIONS
	WILDLIFE REFUGES
	PATENTED LANDS
	BUREAU OF RECLAMATION
	POWER WITHDRAWALS
	PUBLIC WATER RESERVES
	RADIO AND AIR FACILITIES
	STATE, COUNTY, CITY, WILDLIFE, PARK AND OUTDOOR RECREATION AREAS
	ALL MINERAL RIGHTS, FEDERAL
	OIL AND GAS ONLY RIGHTS, FEDERAL



suitable for disposal or as lands to be retained for multiple use:

1. Lands classified for disposal (such as those in the Las Vegas Valley Subunit) can be transferred to states, counties, municipalities, and private interests; or
2. Lands to be retained are managed by BLM for domestic livestock grazing, fish and wildlife development, outdoor recreation, mineral production, watershed protection, wilderness preservation, and preservation of public values.

A summary of key decisions in the current plan related to the conservation of the tortoise and preparation of this HCP include those listed below. BLM's land use decisions can be reviewed in their entirety at the BLM Las Vegas District Office.

- Lands Decision 1.1, which calls for the disposal of public lands within the Las Vegas Valley, with lands in the Santini-Burton Act area given highest priority.
- Lands Decisions 1.2 and 1.3 (plus others), which call for the disposal of public parcels of land within five communities by 1990.
- Mineral Decision 1.1, which calls for continued authorization of mineral extraction but also requires mitigation measures in areas of desert tortoise habitat.
- Range Management Decision 1.2, which calls for continued livestock grazing on public rangelands but

also requires that adequate forage be made available to the desert tortoise in critical habitat areas.

- Range Management Decision 1.9, which calls for coordination and consultation between BLM and NDOW to monitor and provide for the needs of wildlife species, particularly the desert tortoise and bighorn sheep.
- Wildlife Decision 1.1, which calls for special attention to protecting riparian zones as wildlife habitat and associated native flora during the development of activity plans.

#### **BLM's Proposed Resource Management Plan**

In March, 1990, BLM initiated the scoping process for the preparation of a RMP for the entire Las Vegas District Stateline Resource Area. The resource area is currently administered under the Clark County MFP and Esmeralda-Southern Nye RMP.

Reasons given for the preparation of the RMP include the inadequacy of the existing plans with respect to meeting the demands of rapid growth in Las Vegas, Laughlin, Pahrump, and Mesquite and the federal listing of the desert tortoise. The proposed plan will cover 4.2 million acres in Clark and Nye counties and is scheduled to be completed by May 1992. It is anticipated that the Short-Term and Long-Term HCPs will be closely integrated into the provisions of the RMP.

### **BLM's Rangelwide Plan for Desert Tortoise Habitat Management on Public Lands**

In November, 1988, BLM issued guidelines for the management of desert tortoise habitat on public lands. The rangelwide plan establishes three categories of tortoise habitat based on four criteria: (1) importance of the habitat to maintaining viable populations, (2) potential for resolving of conflicts, (3) tortoise density, and (4) population status. It also commits BLM to maintaining viable tortoise populations in Category 1 and 2 habitats through the implementation of specific management actions. Management actions are grouped under 14 objectives and include ensuring that off-highway vehicle activities and livestock grazing on public lands are consistent with the goals established for each category of habitat.

### **Clark County Comprehensive Plan**

The Clark County Comprehensive Plan describes land uses throughout the county, provides for regional services and facilities, and governs development within unincorporated areas. In addition to the Comprehensive Plan, community plans have been prepared for five areas, Virgin Valley, Indian Springs, Moapa Valley, Laughlin, and Mt. Charleston. Other adopted plans related to habitat conservation and management include:

- Park and Open Space Plan, which covers the acquisition, expansion,

improvement, operation, and maintenance of parks and facilities in unincorporated areas;

- 208 Water Quality Management Plan, which addresses municipal wastewater treatment, groundwater management, storm-water programs, the Las Vegas Wash, agriculture diffuse sources, and water quality standards;
- Clark County Wetlands Park Master Plan, which contains a conceptual guide for the future development of the Clark County Wetlands Park and identifies the recreation potential for the Las Vegas Wash; and
- Comprehensive Stormwater Management Plan (Phases 1 and 2), which includes a valley-wide drainage inventory and recommends basic flood parameters.

### **Boulder City Comprehensive Plan**

Boulder City's Comprehensive Plan includes individual plans and policies to conserve physical resources, coordinate future development, promote economic development, accommodate housing and transportation needs, and provide community services and facilities. Resource conservation and land use policies call for the protection of critical areas and maintenance of natural habitats, consistent with the public needs, health, and safety.

### **City of Henderson Comprehensive Plan**

The City of Henderson's Comprehensive Plan establishes goals and policies regarding city planning and manage-

ment, land use, public facilities and services, transportation, residential neighborhood design, and environmental quality. Environmental quality policies include denial of permits for uses not in compliance with federal, state, and local standards and cooperation with all environmental enforcement agencies.

#### **City of Las Vegas General Plan**

The City of Las Vegas General Plan includes long-, mid-, and short-range goals. The long-range plan sets general objectives and policies for the growth and management of the city through the year 2000 and beyond. The mid-range plan defines more specific policies and programs for economic development, land use, housing, public services and facilities, transportation, conservation, environmental hazards, parks and recreation, historic preservation, and the visual environment. Mid-range conservation policies and programs call for preservation of significant environmental resources. The short-range plan establishes three types of residential planning districts (urban, suburban, and rural) and sets planning standards and dwelling unit densities for each.

#### **City of Mesquite General Plan**

The City of Mesquite is the County's newest incorporated city. Past development of the area was covered by the County's community plans.

#### **City of North Las Vegas Master Plan**

The City of North Las Vegas's Master Plan states goals and policies for land use, transportation, municipal facilities, public utilities, housing, economic development, and conservation. Conservation objectives call for the preservation of the natural environment in and around the city.

#### **Existing and Proposed Land Uses**

Existing and proposed land uses of primary concern with respect to the tortoise include agriculture, flood control, livestock grazing, mineral extraction, off-road vehicle activities, parks and recreation, residential and commercial development, solid waste facilities, transportation, utilities, and water and sewage facilities.

##### **Agriculture**

Both farming and ranching occur within Clark County (see Livestock Grazing below). Irrigated agriculture occurs on a small scale, primarily along the Las Vegas Wash.

##### **Flood Control**

The Clark County Regional Flood Control District is developing a comprehensive, integrated flood control system for Las Vegas Valley and nearby areas. This system will include 21 detention basins, 1 debris basin, and over 100 miles of channels, pipelines, dikes, and levees. Many of the planned facilities are located



on BLM land and, because of local flooding problems, are deemed essential to the protection of existing as well as new development.

### **Livestock Grazing**

Livestock grazing is authorized on 49 allotments within Clark County (Figure 3). However, 26 allotments have not been grazed in the past three years. Grazing currently occurs on approximately 2.2 million acres, including National Park Service and Forest Service lands. Grazing by wild horses and burros also occurs in many portions of the county. All grazing on federal lands in the region is administered by BLM.

*Areas Excluded from Grazing.* The Clark County MFP identifies approximately 83,000 acres at Red Rock Recreation Area that are excluded from livestock grazing. Grazing also has been excluded from the Apex Industrial Park site (22,000 acres) and Mesquite land sale area (5,000 acres) by congressional action. Grazing also is automatically excluded from public land sale parcels within Las Vegas Valley.

*Allotments in Lincoln County.* Grazing allotments in northern Clark County are adjacent to those in southern Lincoln County (Figure 4). These allotments are administered through the BLM Caliente Resource Area.

*Average Animal Unit Months (AUMs).* Based on five-year averages, the number of AUMs for which permits have been issued on grazing allotments in Clark County is approximately 25,000 (Appendix A).

AUMs of allotments in or near tortoise habitat in the Caliente Resource area is approximately 13,000 (see Appendix A). (An AUM for cattle is the amount of forage required to support one cow and calf per month.)

### **Mineral Extraction**

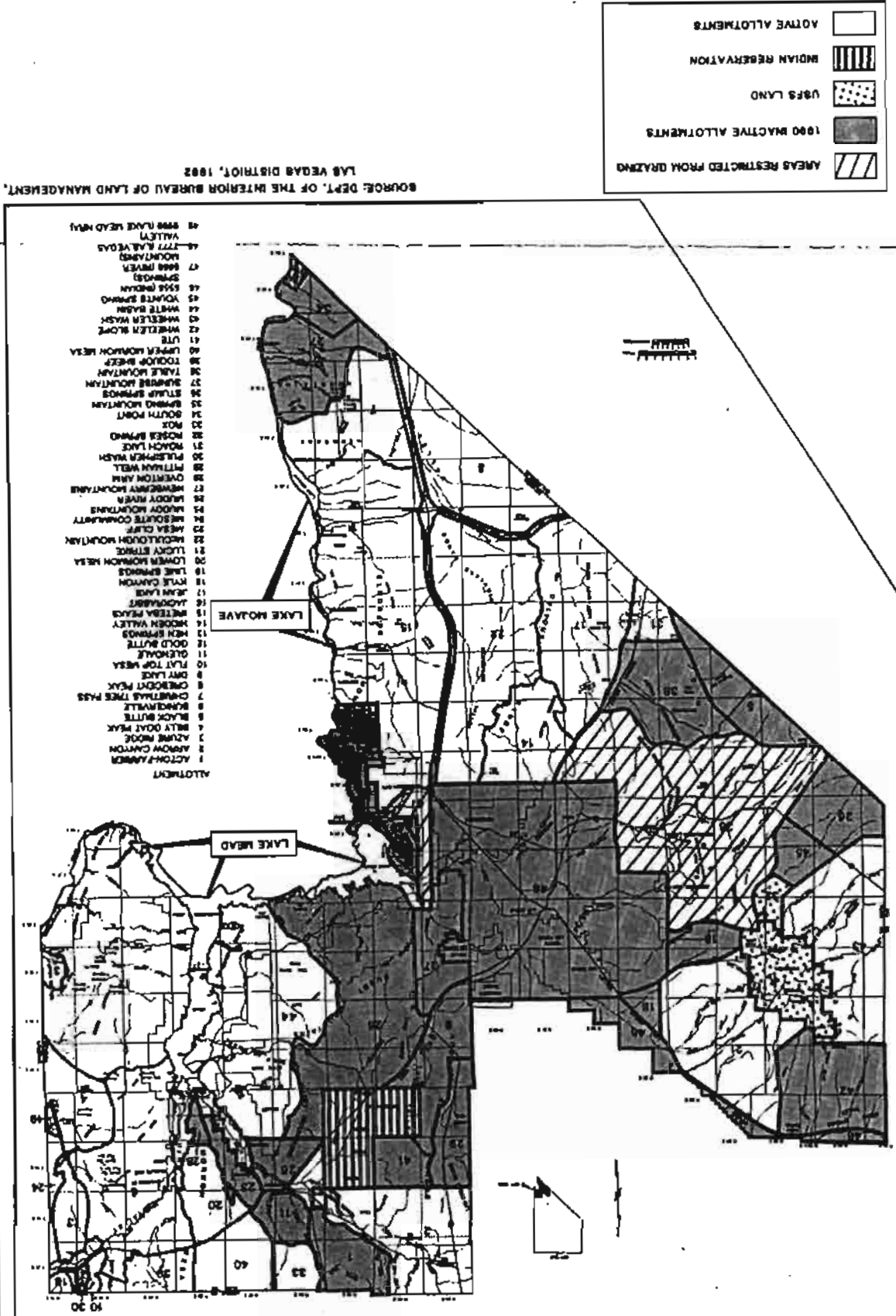
Mineral resources in Clark County have been extracted since the discovery of lead ore at the Potosi mine in 1855. Subsequently, the area became known for its gold and silver mines; today, however, the extraction of gypsum, limestone, sand, and gravel dominates. Mineral extraction on public lands occurs under unpatented claims, leases, and permits. Each year, BLM's Las Vegas District typically receives 25 to 30 mining plans of operation, 50 to 100 mining notices, 100 to 150 material sales contracts, and 10 to 15 free use permit applications for mineral materials. Within Las Vegas Valley, sand and gravel is the primary mining activity and occurs either through free-use permits or contractual sales and leases. There are three active community sand and gravel pits on BLM lands in the valley. Sand and gravel extraction also occurs on private lands.

### **OHV Activities**

BLM currently allows traditional OHV use and competitive races in all areas except nonattainment areas (such as Las Vegas Valley and Hidden Valley) (Figures 5a, 5b, and 6 and Table 3). In addition to those traditional events shown on Figure 6, several other events occur in northern Clark County, crossing

FIGURE 3. 1990 STATUS OF GRAZING ALLOTMENTS, BLM STATELINE RESOURCE MANAGEMENT AREA

SOURCE: DEPT. OF THE INTERIOR BUREAU OF LAND MANAGEMENT, LAS VEGAS DISTRICT, 1992



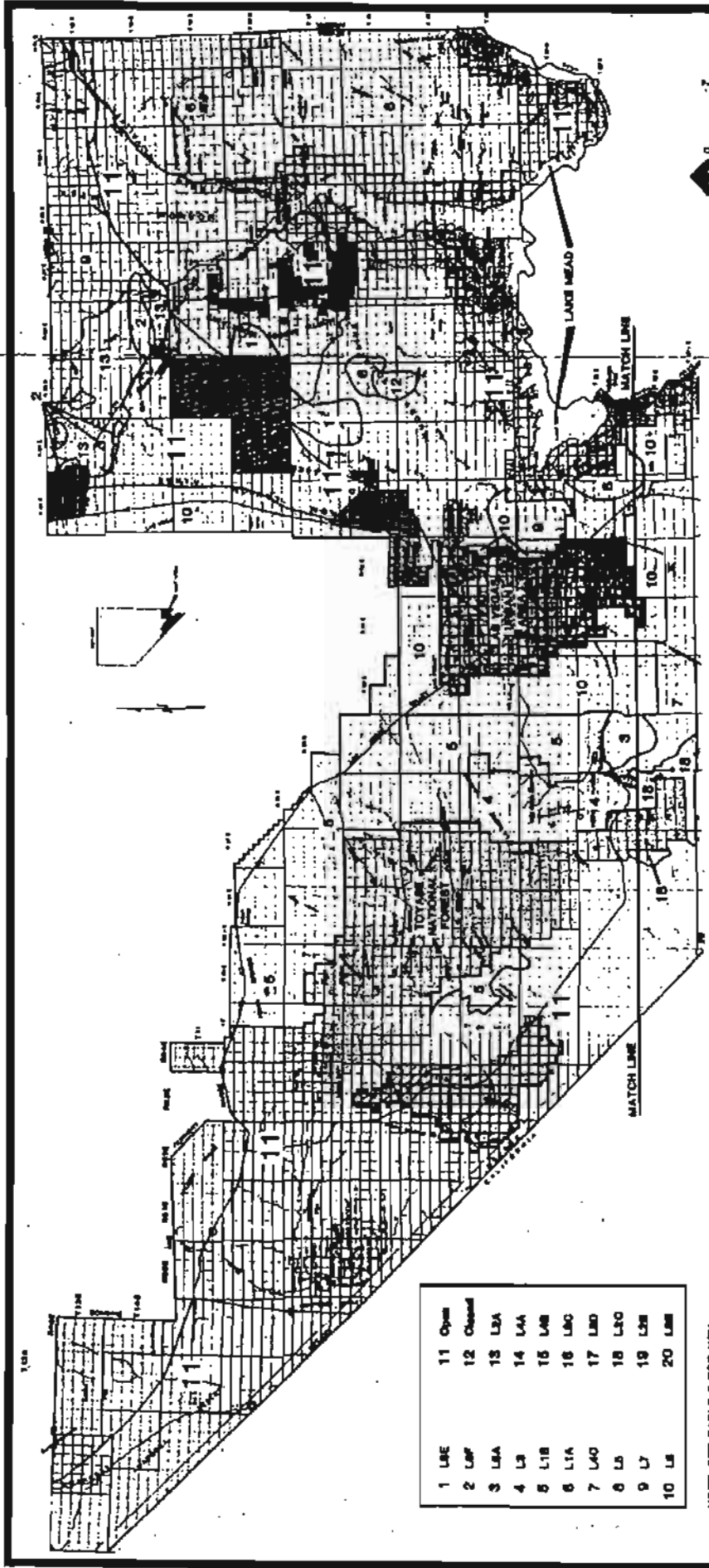


1978 CALIENTE ENVIRONMENTAL STATEMENT  
 SOURCE: UNITED STATES DEPARTMENT OF THE  
 INTERIOR BUREAU OF LAND MANAGEMENT

ALLOTMENTS

- |                     |                      |
|---------------------|----------------------|
| 1. Red Bluff        | 41. Lily Springs AMP |
| 2. Sand Springs AMP | 42. Lily Springs     |
| 3. McArthur Spring  | 43. Lily Spring      |
| 4. Meadow Hill      | 44. Hobbs Peak       |
| 5. Caliente         | 45. Hobbs            |
| 6. Nevada Basin     | 46. Cornett          |
| 7. Bald Mountain    | 47. Peck             |
| 8. Pine Cone        | 48. Peck             |
| 9. Crystal Springs  | 49. Peck             |
| 10. McArthur West   | 50. Peck             |
| 11. McArthur East   | 51. Peck             |
| 12. Six Mile        | 52. Peck             |
| 13. Lower Lake      | 53. Peck             |
| 14. Washburn        | 54. Peck             |
| 15. Peck            | 55. Peck             |
| 16. Peck            | 56. Peck             |
| 17. Peck            | 57. Peck             |
| 18. Oak Springs AMP | 58. Peck             |
| 19. Delamar         | 59. Peck             |
| 20. Grubman         | 60. Peck             |
| 21. Breckin         | 61. Peck             |
| 22. Breckin         | 62. Peck             |
| 23. Maricopa Path   | 63. Peck             |
| 24. Maricopa        | 64. Peck             |
| 25. Maricopa        | 65. Peck             |
| 26. Maricopa        | 66. Peck             |
| 27. Maricopa        | 67. Peck             |
| 28. Maricopa        | 68. Peck             |
| 29. Maricopa        | 69. Peck             |
| 30. Maricopa        | 70. Peck             |
| 31. Maricopa        | 71. Peck             |
| 32. Maricopa        | 72. Peck             |
| 33. Maricopa        | 73. Peck             |
| 34. Maricopa        | 74. Peck             |
| 35. Maricopa        | 75. Peck             |
| 36. Maricopa        | 76. Peck             |
| 37. Maricopa        | 77. Peck             |
| 38. Maricopa        | 78. Peck             |
| 39. Maricopa        | 79. Peck             |
| 40. Maricopa        | 80. Peck             |
| 41. Maricopa        | 81. Peck             |
| 42. Maricopa        | 82. Peck             |
| 43. Maricopa        | 83. Peck             |
| 44. Maricopa        | 84. Peck             |
| 45. Maricopa        | 85. Peck             |
| 46. Maricopa        | 86. Peck             |

FIGURE 4. GRAZING ALLOTMENTS, BLM CALIENTE RESOURCE MANAGEMENT AREA



1	LBE	11	Open
2	LBP	12	Cleared
3	LBA	13	L3A
4	L3	14	L4A
5	L1B	15	L4B
6	L1A	16	L4C
7	L4D	17	L4D
8	L5	18	L5C
9	L7	19	L5B
10	L8	20	L5E

NOTE: SEE TABLE 3 FOR KEY

FIGURE 5a. EXISTING OFF-HIGHWAY VEHICLE DESIGNATIONS, BLM STATELINE RESOURCE MANAGEMENT AREA

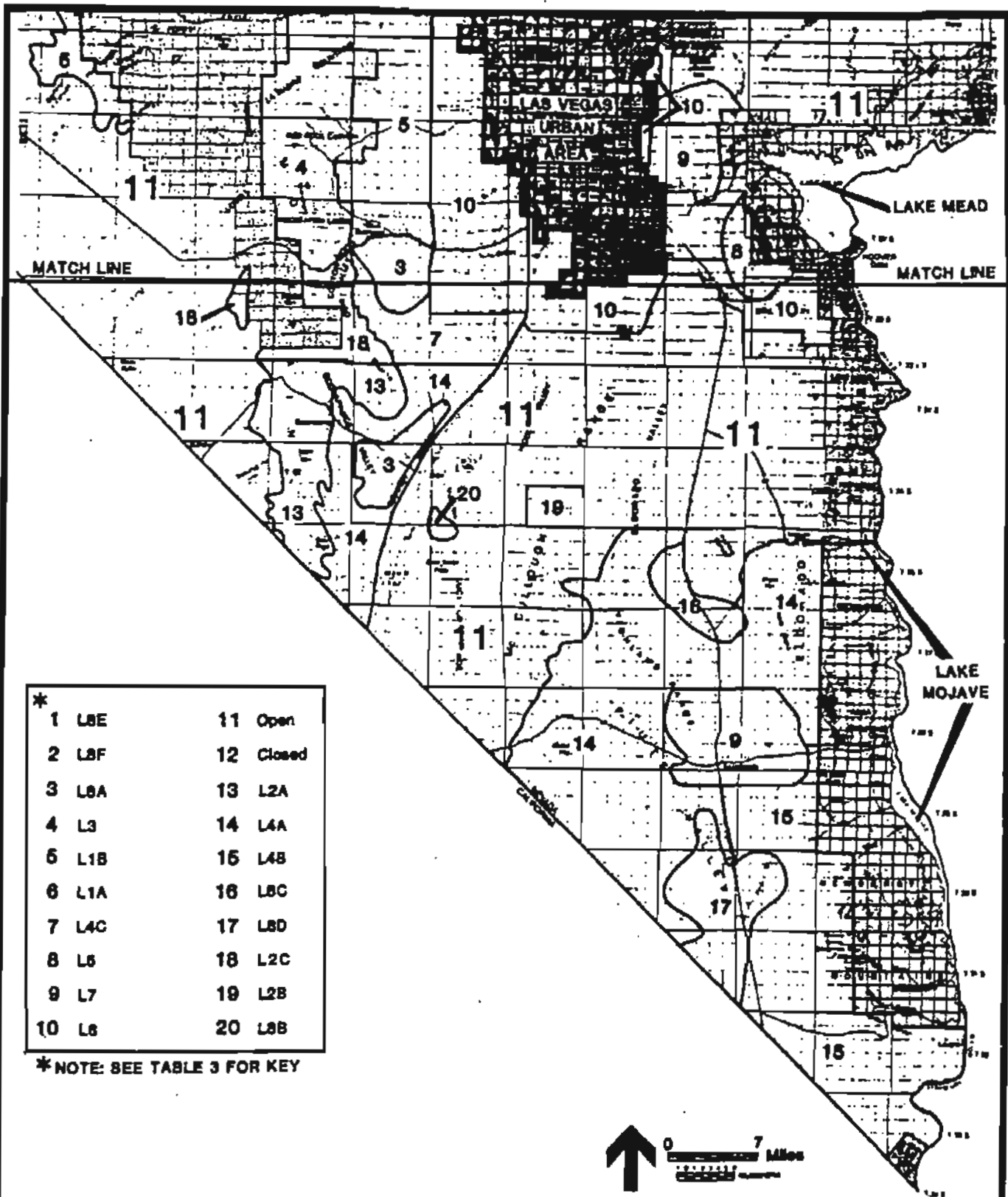


FIGURE 5b. EXISTING OFF-HIGHWAY VEHICLE DESIGNATIONS, BLM STATELINE RESOURCE MANAGEMENT AREA

- 1 LAUGHLIN
  - 2 HIGHLAND RANGE
  - 3 NELSON HILLS
  - 4 EL DORADO DRY LAKE
  - 5 JEAN/ROACH DRY LAKE
  - 6 MERCURY
  - 7 LAS VEGAS DUNES
  - 8 DRY LAKE VALLEY
- - - - - NEVADA 500 1980 APPROVED COURSE  
 - - - - - NISSAN 400/400 MINT 1990 APPROVED COURSE

NOTE: SEE TABLE 3 FOR KEY

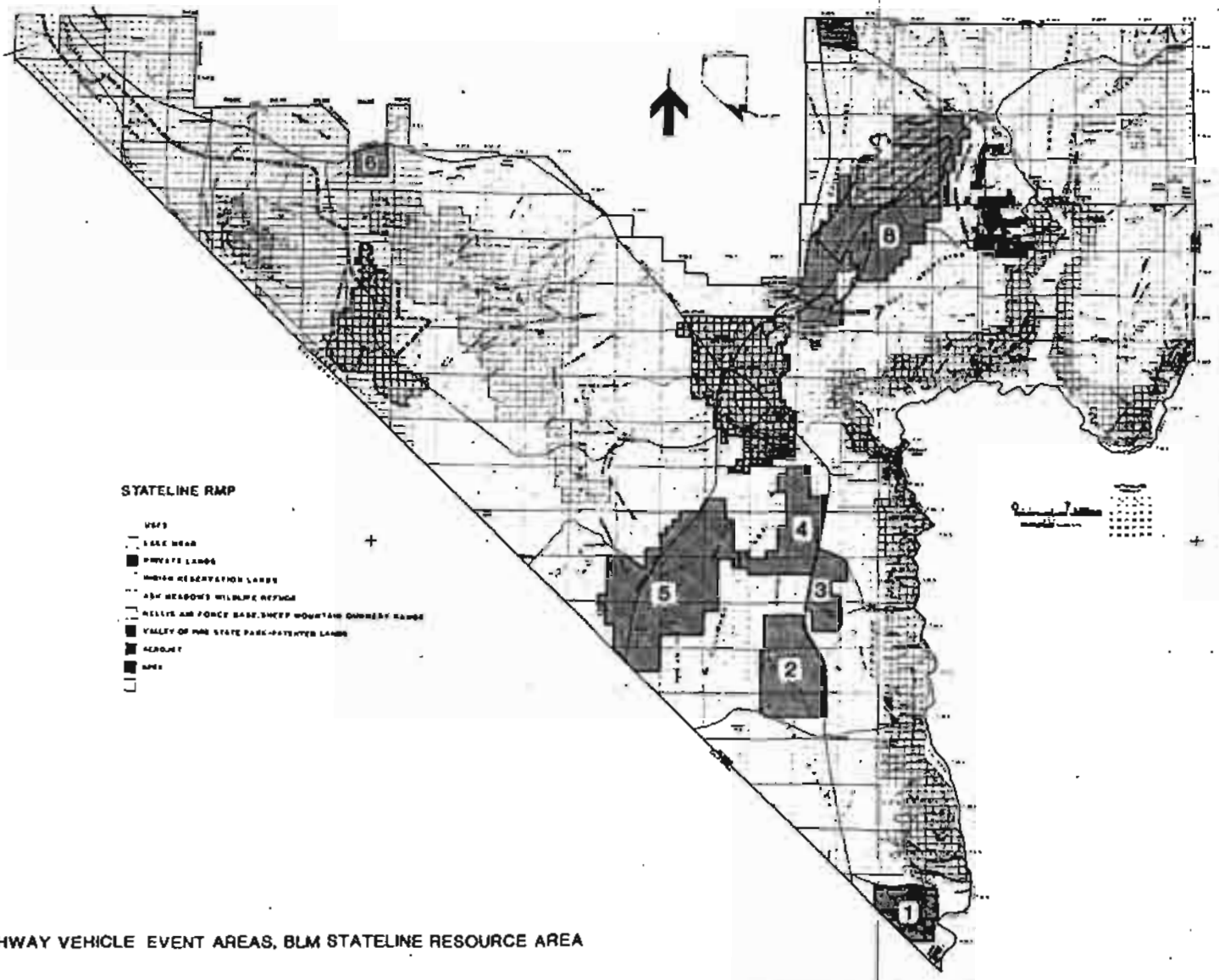


FIGURE 6. TRADITIONAL OFF-HIGHWAY VEHICLE EVENT AREAS, BLM STATELINE RESOURCE AREA

**TABLE 3**

**BLM OHV DESIGNATIONS**

---

OPEN	Open to individual, group, and competitive use. Competition, groups of over 50 vehicles, and commercial use require permits and are subject to permit stipulations, including a mile buffer zone from all water sources.
L1	Use limited to existing roads, trails, and sand washes. No cross-country travel. Applies to all vehicle users. L1A Also, no high speed competitive events. L1B Also, no high speed competitive events except for street or road rallies on the Trout Canyon to Lovell Canyon Road.
L2	Limited season of use. Applies to competitive events only. L2A Pahrangat/Meadow Valley Wash L2B McCullough Pass L2C Southern Spring Mountains/Bird Spring Range
L3	Use is limited to designated roads only in Red Rock Canyon Recreation Lands. Applies to all vehicle users. Closed trails and roads will be posted. Also, no high speed competitive events permitted north of Pahrump Highway.
L4	Limited type of use. Limitations do not apply to individuals. L4A Southern El Dorado/Northern Piute Valleys Events limited to 200 entrants and by other stipulations. L4B Southern Piute Valley, Laughlin Events limited to 200 entrants and by other stipulations. L4C Goodsprings Area: High speed competitive events limited to existing roads, trails, courses, and sand washes.
L5	Limited to use which will not conflict with big horn sheep management in the River Mountains above 2,400 feet. Applies to all vehicle use. Events requiring permits reviewed on a case-by-case basis.
L6	Limited to non-speed and non-competitive use.
L7	Limited to non-competitive use.
L8	Limitations to protect crucial tortoise habitat; limitations to apply to group and competitive use only. L8A Limits on areas west of I-15 and south of Pahrump Highway. L8B Limits on area south of Jean, east of I-15, west of South McCullough Range, and north of the Nevada-California border. L8C Limits on Southern El Dorado and Northern Piute Valleys. L8D Limits on Southern Piute Valley. L8E Limits on areas south and east of Moapa Indian Reservation. L8F Limits on Pahrangat/Meadow Valley Wash

**TABLE 3**

**BLM OHV DESIGNATIONS**  
(continued)

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**CLOSED** Closed to all vehicles use, both individual and groups. Applies to 3,308 acres in Hidden Valley in the south Muddy Mountains.

**WSA** Wilderness Study Area. Area may be designated as a wilderness area. During study period, OHV use in area is restricted to existing roads. If designated a WSA, area will be closed to vehicle use.

---



up into southern Lincoln County. These event areas typically include the Meadow Valley Wash and North Mormon Mesa areas. In recent years, as many as 50 competitive OHV events have been held in Clark County annually, with over 5,000 participants and over 100,000 spectators. Since the listing of the tortoise, however, only 10 competitive events have been allowed.

### **Parks and Recreation**

The Clark County Comprehensive Plan differentiates between regional and urban parks and recreation facilities.

*Regional Sites.* Regional sites are those composed primarily of federal and state agency lands and serve the dual function of protecting resources and providing recreation opportunities. Such sites include Lake Mead National Recreation Area, Red Rock Canyon Recreation Area, Valley of Fire State Park, Floyd Lamb State Park, Toiyabe National Forest, Desert National Wildlife Range, Spring Mountain Ranch State Park, and Overton Wildlife Management Area.

*Urban Sites.* Urban sites are those within the jurisdiction of the local governments and allow for playing fields, tennis courts, swimming pools, stables, golf courses, and arenas.

### **Residential/Commercial/Industrial Development**

Historically, the urbanized core of Clark County has centered around the axis formed by Boulder Highway, Interstate

15 (I-15), and the Union Pacific Railroad. By the 1970s, however, urbanization had spread in a somewhat loosely knit, leap-frog fashion to outlying areas. This pattern continued through the 1980s and is apparent in the land use analysis prepared for Clark County in 1989 by Planning Information Corporation. The analysis covers 235,391 acres in Las Vegas Valley, including the cities of Las Vegas, Henderson, and North Las Vegas and the communities of East Las Vegas, Paradise, Sunrise Mountain, Winchester, Spring Valley, Enterprise, and Lone Mountain. It indicates that urban development within the unincorporated areas covers 42,298 acres, compared with the 33,512 acres of urban development in the three cities (Table 4).

### **Solid Waste**

According to the Clark County Comprehensive Plan, there are 24 refuse disposal sites in the county. The sites range from small open dumps in rural areas to a sanitary landfill (Sunrise Mountain) that serves all of Las Vegas Valley. Of the 24 sites, 13 are operated by the county, 6 by the federal government, 1 by Boulder City, 2 by industry, and 2 by private contractors. The Sunrise Mountain site currently occupies about 320 acres of BLM land under a lease that is due to expire in 2012. In May, 1990, the County temporarily leased an additional 400 acres, bringing the total landfill site to 720 acres. The temporary lease is due to expire in 1992 but is expected to be renewed. Under both leases, the estimated capacity of the landfill is

**TABLE 4****LAND USES IN THE URBAN CORE OF LAS VEGAS VALLEY  
(acres)**

USE	HENDERSON	LAS VEGAS	N. LAS VEGAS	UNINCORP.	TOTAL
Residential	3,535	13,845	2,662	22,312	42,354
Commercial	422	2,122	405	3,926	6,875
Industrial	1,458	1,065	439	5,966	8,928
Public Works	2,941	1,069	574	4,077	6,014
Gov't & Public	264	1,182	307	4,177	5,930
Open Space/Rec	339	625	258	1,840	3,062
Agri & Vacant	35,907	19,997	15,933	90,303	162,140
Not Classified	0	65	0	23	88
<b>TOTAL</b>	<b>42,219</b>	<b>39,970</b>	<b>20,578</b>	<b>132,624</b>	<b>235,391</b>

SOURCE: Planning Information Corporation, *Las Vegas Valley Land Use Inventory: 1986* (February 1990).

adequate to serve the valley for the next 40 years.

### **Transportation**

Major transportation facilities in Clark County include I-15; Highways 91, 93, 95, and 466; State Routes 29, 31, 40, and 163; McCarran International Airport; and the Union Pacific Railroad. In general, road construction throughout Las Vegas Valley has accelerated over the past 10 years in response to urban growth. I-95 and I-515 were expanded over the period, using mostly public lands and, as with other local transportation projects, sand and gravel from local mines. Planned improvements include a beltway around Las Vegas from I-15 to the East Leg Freeway; eventual widening of route 160 between Las Vegas and Pahrump; addition of new routes to serve growing communities such as Sandy Valley and Mesquite; a 55.5 acre expansion of McCarran Airport; and a proposed high-speed train from California to Nevada.

### **Utilities**

Three major utility rights-of-way transect Clark County from north to south. None of these rights-of-way are within a designated corridor as none have been designated on BLM lands in Clark County. Each federal agency is responsible for the permitting of utility rights-of-way across lands under their jurisdiction. Establishment of designated corridors for utility rights-of-way must be identified in the agency's land use plan.

### **Water and Sewage**

Water supplies in Clark County include the Colorado River, groundwater in Las Vegas Valley, and wastewater reuse. Water from the Colorado River is highly regulated, and the net depletion of the mainstream for all of Nevada is limited to 300,000 acre-feet per year. Las Vegas Valley relies on the Southern Nevada Water System and groundwater wells; however, current forecasts indicate that, at current rates of use, existing supplies will not be able to meet local needs when the valley's population exceeds one million. Sewerage and wastewater treatment needs are currently handled at facilities managed by the County and individual cities. Expansions have been proposed for three wastewater treatment plants in the valley. Clark County also is planning a central activated sludge treatment plant to process sewage from the unincorporated area. Completion of the new treatment facility is scheduled for 1994.

### **Growth Trends and Forecast**

#### **Population**

Over the past decade, Clark County's population has increased from 463,100 to 761,279—a 64 percent rise. Over the next 10 years, it is expected to grow by another 235,000 persons to over 997,100—a 30 percent rise (Table 5). By 2000, the County is likely to have over 75 percent of the state's population and will pass the one million mark before 2005.

**TABLE 5****CLARK COUNTY GROWTH TRENDS AND FORECAST  
1980-2005**

	1980	1990	2000	2005
<b>Clark County</b>				
Population	461,000	761,300	997,200	1,074,200
Employment*	216,700	367,000	552,100	—
<b>Las Vegas Valley**</b>				
Population	442,560	728,500	944,600	1,012,900

SOURCES: *Planning Information Corporation, June 1989; Robert Charles Lester & Company, 1990.*

\*Based on higher population forecast for 1990 and 2000.

\*\*Covers same area as on Table 3.

## Employment

Over the past decade, countywide employment increased by nearly 70 percent, rising from a total of 216,700 jobs in 1980 to an estimated 367,000 in 1990. By 2000, it is expected to grow by another 40 percent to over 522,000. This employment forecast, however, is based on a slightly higher population projection for Clark County in 2000.

## Housing

Housing estimates indicate that more than 125,000 units have been added since 1980, with two-thirds of the growth occurring in the past five years. To accommodate the expected population growth over the next 10 years, another 92,000 units will be needed. Based on historical trends, nearly two-thirds of the new units are likely to be single-family homes.

## Subregional Trends and Forecasts

On the subregional level, population forecasts indicate that Las Vegas Valley

will continue to contain more than 90 percent of the County population well into the next century. Likewise, the unincorporated area is expected to maintain slightly less than a 50 percent share of the valley's population for the next 40 years.

- Over the next 10 years, the valley as a whole is expected to gain over 215,000 residents; of that increase, about 43 percent is expected to occur in the valley's unincorporated area.
- New construction is likely to occur throughout the valley, with major increases expected in four master planned communities, Summerlin, Green Valley, The Lakes, and Desert Shores. Other master planned communities expected to begin construction soon are Cosmo World, Lake Las Vegas, MacDonald Ranch, Rancho Del Norte, and Peccole Ranch.
- Between 1979 and 1986, the amount of developed land in the valley increased annually by about seven percent. That trend is expected to continue well into the 1990s.

## Chapter Three

# Desert Tortoise Profile

The type of habitat required by the desert tortoise, in terms of both its natural characteristics and the species' use of it, will have a special bearing on the selection and management of tortoise reserves.

This profile briefly summarizes those characteristics, together with the conditions that have contributed to the species' decline.

### Physical Characteristics

The desert tortoise (*Gopherus agassizii*) is one of five species of tortoises in North America; the other four are Berlandier's tortoise (*G. berlandieri*), the gopher tortoise (*G. polyphemus*), the bolson tortoise (*G. flavo-marginatus*), and the scaly headed tortoise (*G. lepidocephalus*) (Ottley and Velazquez 1989). All five species are strictly terrestrial and herbivorous.

#### Appearance and Size

##### Appearance

An adult desert tortoise has a domed carapace and relatively flat, unhinged plastron (ventral portion of shell) (Fig-

ure 7). The shell comprises an epidermis of keratinaceous scales over bony dermal plates; the ribs and vertebrae are fused to the carapace. Shell color is brownish, with yellow to tan scute centers and mottling on the plastron (Stebbins 1954). The forelimbs are adapted for burrowing, with laterally extended limbs and flattened feet, enlarged and horny scales, and broad nail-like claws. Rear legs are rounded and elephantine. The head is rounded in the front and has a blunt, horny beak; eyes have greenish irises. Skin that is unprotected by horny plates is thin and easily penetrated. Males are distinguished from females by a rounded

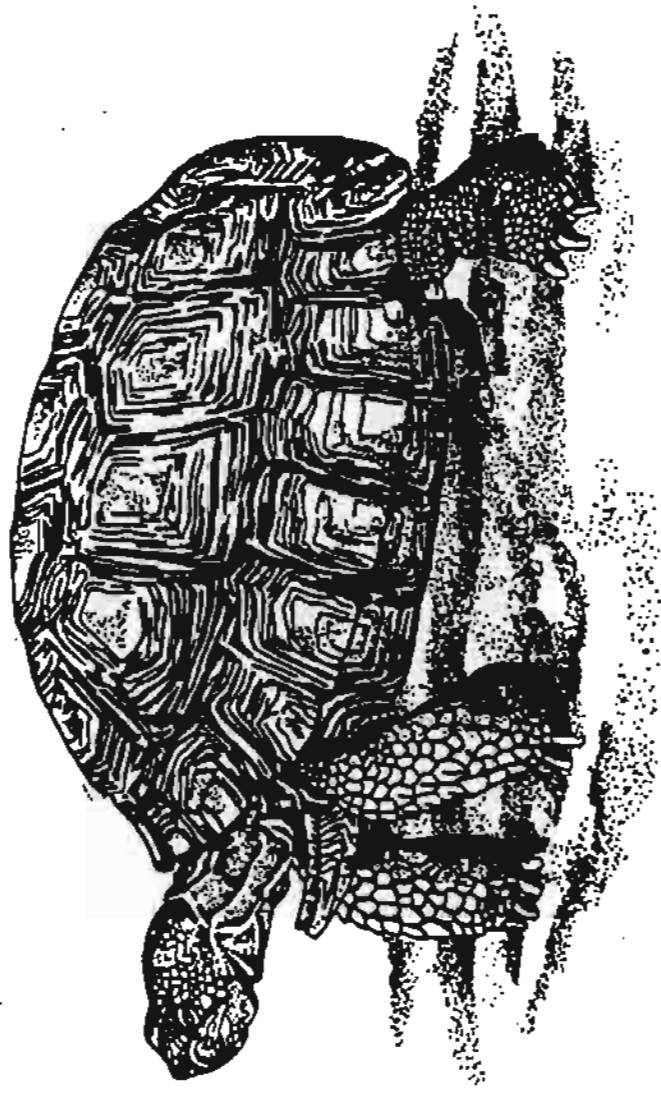


FIGURE 7. DESERT TORTOISE (*Gopherus agassizii*)

posterior carapace (Karl unpublished data); longer, upcurved gular plates on the anterior portion of the plastron; chin glands; concave plastron; and longer tail (Ernst and Barbour 1972).

### Size

Adult desert tortoises range in size from 9.25 to 14.5 inches (23.5 to 36.8 cm). Hatchlings are about the size of a silver dollar, 1.4 to 1.8 inches long (36 to 45 mm). They resemble adults except that their shells are spongy and paler and their eyes more gold (Stebbins 1954). By the time tortoises reach approximately five years of age (about 3 inches [80 mm] in length), their shells have hardened considerably. Epidermal scales, or scutes, form conspicuous growth annually, which wear away due to abrasion with soil and rocks. The shells of old tortoises are quite smooth and somewhat concave in the scute centers.

### Age and Sex Structure

Desert tortoises are a long-lived species. One captive female tortoise lived to be 80+ years (Glenn 1983). Although it has not been possible to verify in the wild, the life span of an adult tortoise has been estimated at 50 to 100 years. Mortality is highest in young tortoises and decreases with size and shell ossification.

### BLM Size/Age Categories

BLM has categorized tortoise size based on length using the following classes: hatchlings and very young tortoises (4 inches), juveniles (4 to 7 inches), sub-

adults (7 to 8.5 inches) and adults (>8.5 inches). It should be noted that these classes, while commonly used, are artificial. Breeding-age tortoises, for example, may end up being classed as subadults because of their size even though they have reached maturity.

### Age Structure

The age structure of stable tortoise populations is not known and difficult to assess. Hatchlings and juveniles are difficult to detect and are assumed to have significantly higher mortality rates than adult tortoises. Desert tortoises are considered to be a K-selected species, meaning that they have a low birthrate, low recruitment of juveniles into the breeding population, low mortality in older age categories, and a low population turnover rate (Hohman et al. 1980). As a result, the number of adults may remain constant for relatively long periods, during which the ratio of adults to other age groups may vary widely. Next to the number of breeding adults, the number of juveniles likely to join the ranks of adults is a critical component of a stable population. However, it is not currently known what the ratio of adults to juveniles is among local tortoise populations.

### Sex Ratios

Sex ratios often provide a profile of the general health and stability of a population but are not well known for the tortoise. One study of tortoises at 18 sites in California showed sex ratios that approximated 1:1 (Turner and Berry 1984).



As with age structure, this aspect of tortoise population requires additional study.

## Genetic Subunits

### Genetics

The desert tortoise, as well as other members of the family of Testudinidae (land tortoises), has a chromosome number of  $2N=52$ . The desert tortoise differs in karyotypic details from other genera in this family (Stock 1972) and has hybridized successfully in captivity with both *Gopherus berlandieri* and *Gopherus polyphemus* (Hohman et al. 1980).

### Genetic Subunits

Based on electrophoresis of alloenzymes in serum and tissue (Jennings 1985) and on mitochondrial DNA analysis (Lamb et al. 1988), two major genetic subunits of desert tortoises have been identified.

## Behavior

The complete habits and life history of the desert tortoise are not fully known, but certain aspects of its behavior have been well documented (Auffenberg 1969). These traits include burrowing, seasonal activity, foraging, reproduction, and other behavior that marks its use of habitat areas.

1. One unit is located north and west of the Colorado River and is referred to in the federal listing of the species as the Mojave population. The other is located south and east of the Colorado and is referred to as the Sonoran population.
2. The Mojave population has been further divided into eastern and western subgroups (see Distribution of Species and Habitat).
3. It should be noted, however, that there are no fixed allelic differences between the two genetic subunits based on electrophoretic migration of proteins (Jennings 1985). Moreover, the exact boundaries of the genetic subgroups and the genetic structure of tortoise populations have not been established.

## Burrowing

Desert tortoises rely on burrows and other forms of cover to regulate body heat, using them to escape extremes of hot and cold during the day and night.

### Burrow Construction

Tortoises dig burrows by scraping alternately with their forelimbs. When the hole becomes deep enough, the tortoise

may turn around and push the dirt out with its forelimbs (Ernst and Barbour 1972). In areas with sandy-loamy soil, a burrow the length of the tortoise can be completed in a little more than one hour (Marlow 1979).

### **Types of Cover**

In southern Nevada, tortoises have been observed using three types of cover, pallets or soil depressions with no soil cover, burrows the approximate width of a tortoise and at least as long as the tortoise, and large openings in rock or caliche which can accommodate several tortoises (Figure 8).

### **Number of Cover Sites**

Tortoises often reuse the same burrows and use between 12 and 25 primary cover sites in a single year (Burge 1977). Individual sites are often used by more than one tortoise, sometimes simultaneously. In Utah, 20+ tortoises have been found in dens 30 feet long (Woodbury and Hardy 1940).

### **Commensal Species**

Tortoise burrows also have been reported to be occupied by several commensal species, including western banded gecko, desert spiny lizard, zebra-tailed lizard, side-blotched lizard, whiptail lizard, desert iguana, night snake, gopher snake, rattlesnakes, coachwhip, burrowing owl, poorwill, desert woodrat, Merriam's kangaroo rat, pocket mouse, canyon mouse, white-footed mouse, white-tailed antelope

squirrel, desert cottontail, black-tailed jack-rabbit, kit fox, feral house cat, and various invertebrates including tarantulas, black widow spiders, brown recluse spiders, and scorpions.

## **Seasonal and Daily Activity**

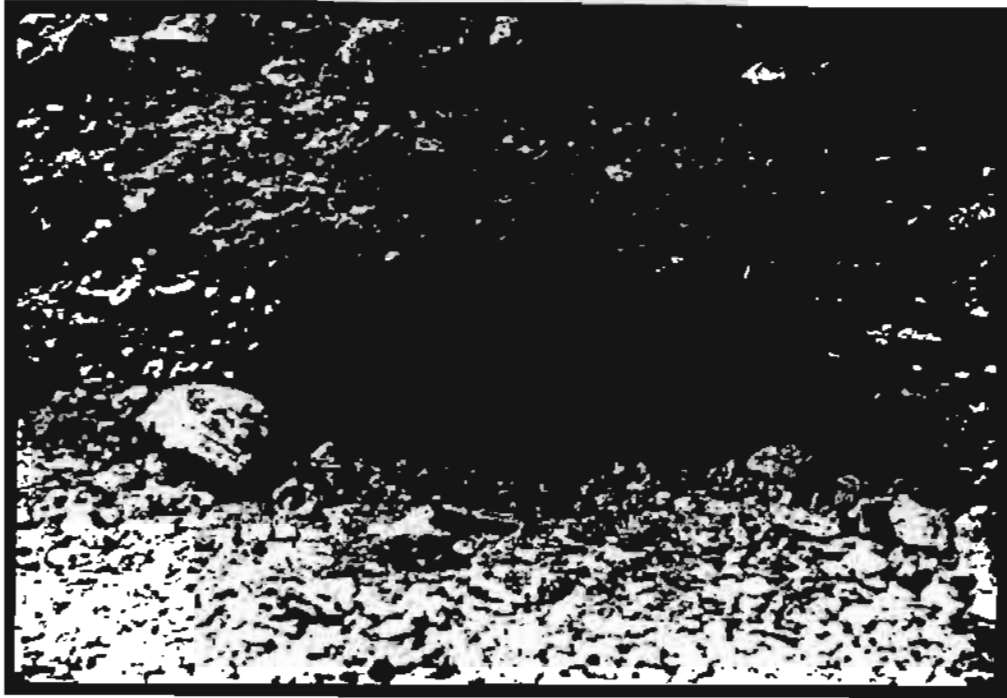
Desert tortoises are ectotherms and depend on external sources for body heat. They also are heterotherms and regulate their body temperature behaviorally.

### **Seasonal Activity**

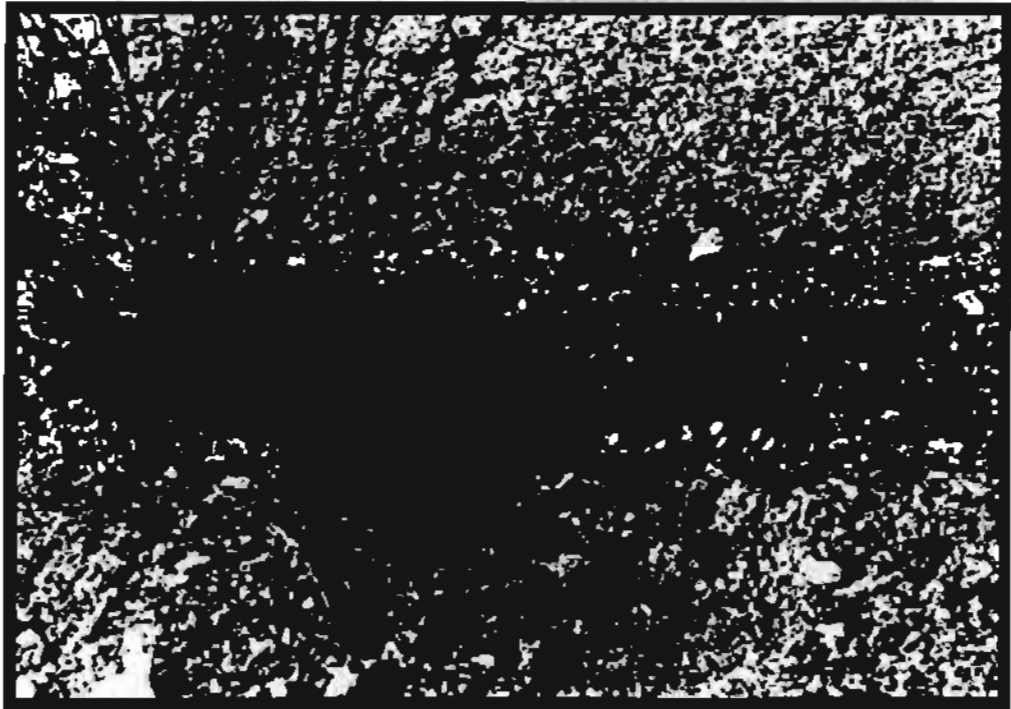
Tortoises are active only during the warmer months of the year, with greatest activity in the spring. Their active season begins in early March and ends in late October or early November, when they retreat to burrows and remain dormant through the winter. Tortoises also are relatively inactive during the peak of summer, except during cool spells or storms.

### **Daily Activity**

Daily activity during their active season is dictated largely by temperature. Tortoises are active between ambient temperatures of 65 to 105 degrees Fahrenheit (18 to 42 degrees Celsius) (Karl, unpublished data). They show a bimodal pattern of daily activity, becoming active in the morning shortly after daylight, retreating to burrows when ambient temperatures rise above 105 degrees Fahrenheit, and becoming active again in late afternoon. Nocturnal activity is rare. It is likely that individual



CALICHE BURROW



TYPICAL TORTOISE BURROW, SANDY-LOAMY SOIL

FIGURE 8. TYPICAL DESERT TORTOISE BURROWS

RECØN

activity bouts are shorter for juvenile tortoises than adults, since their surface area to volume ratios are larger, resulting in faster heating and cooling rates.

### Other

Rainfall appears to have an effect on activity patterns. When summer monsoons bring rainfall, tortoises have been observed to emerge from burrows to drink rainwater, even in suboptimal temperatures (Medica et al. 1980). This ingestion of rainwater is considered critical to maintaining water balance in desert tortoises. It also has been associated with a resumption of feeding during dry summer months when available forage is low in water content and high in salts.

### Foraging

Tortoises typically forage in the early morning and late afternoon and may range up to several hundred yards away from their burrows during normal daily forays (Marlow 1979).

### Forage Type

In general, their diet is composed mainly of forbs (small annual flowering plants) and grasses (Table 6). In southern Nevada, these plants bloom primarily from March to May and, depending on rainfall, in early fall. Other forage includes desert mallow, succulents, and weeds that have been introduced in connection with livestock grazing (Berry and Burge 1984).

### Nutrition Trade-offs

Tortoise diets may entail trade-offs between the nutritional and water value of plants.

During dry periods, succulents may be the tortoise's sole source of water and primary source of forage. However, a tortoise would have to consume about three times as much cactus as bush muhly to meet its caloric requirements.

Introduced annual weeds present yet another trade-off. They may be abundant in areas where grazing is allowed but, compared with native vegetation, fail to provide the moisture available in perennials, are potentially high in potassium, and may have poor calcium to phosphorus ratios for tortoise nutrition. Most importantly, they are only available for consumption briefly, during spring and some during fall, whereas perennials are available continuously.

### Forage Preferences

Tortoises also exhibit definite preferences for plant types, primarily consuming ephemeral forbs and grasses and perennial grasses (Burge and Bradley 1976; Hansen et al. 1976; Coombs 1979; Nagy and Medica 1986.) Preferences appear to vary with geographic location and plant community composition but seem to be somewhat independent of forage availability. Coombs (1979) and Burge and Bradley (1976) found a high preference for perennial grasses despite their low availability relative to forbs. Burge and Bradley (1976) also found a

**TABLE 6**

**DESERT TORTOISE FORAGE PLANTS**

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**Genera of Annual Plants**

*Astragalus*  
*Comissonia*  
*Coreopsis*  
*Cryptantha*  
*Erodium*  
*Euphorbia*  
*Gilia*  
*Lupinus*  
*Malacothrix*  
*Mentzelia*  
*Phacelia*  
*Plantago*

**Species of Annual Grasses**

Six-weeks grama  
Brome grass  
Red brome  
Red chess  
Six-weeks fescue  
Schismus grass

**Species of Perennial Grasses**

Galleta grass  
Bush molly  
Indian ricegrass

**Succulents**

Cottonhop cactus  
Beavertail cactus  
Pencil cholla  
Pencil cactus

**Other**

Flowers  
Fruits  
Range ratany  
Desert straw  
Desert mallow

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SOURCE: Burge and Bradley (1976) and Berry (1978) as cited in Clement (1990).

preference for the annual, plantain (*Plantago insularis*), far in excess of its availability.

## Reproduction

Desert tortoises are believed to reach sexual maturity at approximately 20 years of age (using growth data from Turner et al. [1980] and reproductive data from Turner et al. [1986]).

### Courtship and Mating

Courtship and mating typically occur in the spring but also have been reported in early summer and fall (Ernst and Barbour 1972; Hampton 1981). Courtship involves ritualized head bobs, gaping, and biting by males; shell drop, withdrawal, and walking away by females. Not all courting tortoises copulate (Berry 1986), and not all adult tortoises within a population reproduce.

### Nesting

Nest construction and egg deposition occur primarily in early to mid summer, and females lay one to three clutches in a summer (Turner et al. 1984, 1986). Preferred nesting times are early morning and late afternoon, consistent with activity periods (Hampton 1981; Ernst and Barbour 1972). The nest is dug by the female with its hind feet and is limited in size by the distance that the hind legs can be extended. Sometimes it is constructed in the bottoms of or near the opening of burrows (Hampton 1981; Hohman et al. 1980; Turner et al. 1986). Maximum nest diameter and depth is

about 14 inches (104 mm). Soil is scratched back into the nest cavity after the eggs are laid, and the female may urinate into the cavity before or after covering it with soil.

### Eggs

Eggs are elliptical to nearly spherical in shape, about 1.6 inches (40 mm) in length. Clutch size varies from 2 to 14 eggs, with an average of 4 to 5 (Ernst and Barbour 1972; Turner et al. 1986). Hatching occurs from mid-August to October, with a peak in September and early October (Ernst and Barbour 1972). Natural incubation periods range from 98 to 135 days, although intervals longer than 180 days have been reported (Hohman et al. 1980).

## Home Range and Movement Patterns

### Home Ranges

Based on data for desert tortoises in California, Arizona, Nevada, and Utah, the average home range of a tortoise is estimated to be between 27 and 131 acres (11 and 53 hectares) (Berry 1986).

### Variations

Observed ranges appear to vary seasonally, growing larger even when forage is relatively abundant (Burge 1977). Females typically have smaller home range areas than males. Hatchlings and juveniles restrict their activities to small home ranges associated with one or two burrows. The average radius

of a juvenile's home range may be 164 feet (50 m) or less (Berry 1975 as cited in Luckenbach 1972).

### **Movement Patterns**

Long-term movement patterns for individual tortoises and whole population groups are not well known. For example, it is not known how far an individual tortoise travels over the course of its lifetime and in what patterns. It also is not known which individuals and groups are likely to migrate to other habitat areas, how long such migrations take, and what conditions prompt or prohibit such movement.

## **Habitat Characteristics**

The characteristics of the habitat occupied by the desert tortoise reflect the species' burrowing and foraging behavior and physiological climatic constraints. Conditions include but are not limited to an appropriate mix of vegetation and soils, together with access to seasonal food and water sources.

### **Vegetation**

#### **Function**

Perennial vegetation is essential to the desert tortoise for cover and also protects some types of annuals found in the understory. The roots of perennials also provide stability to soils, thereby improving the suitability of burrow sites.

### **Social Behavior**

Social behavior of desert tortoises is not well known but may be similar to that exhibited by large, highly aggressive, polygynous lizards (Berry 1986). Dominance hierarchies established by agonistic encounters are believed to exist among wild populations and are thought to be maintained by visual and chemical signals rather than by frequent physical contact. Passive avoidance of larger, more dominant tortoises by subordinates may be a common feature of the social system and may have implications for relocation efforts (Berry 1986).

#### **Creosote Bush**

Creosote bush is the dominant perennial shrub in the Mojave desert and is an indicator of tortoise habitat (Karl 1983) (Figure 9). In Nevada, California, and Utah, tortoises are found in low densities in creosote bush-blackbrush ecotones and in creosote bush-saltbush communities, but rarely where creosote bush is entirely absent from the surrounding community.

### **Soils and Topography**

#### **Soil Type and Texture**

Tortoises generally are found in areas where the soil is suitable for burrow construction, such as loamy sand and sandy

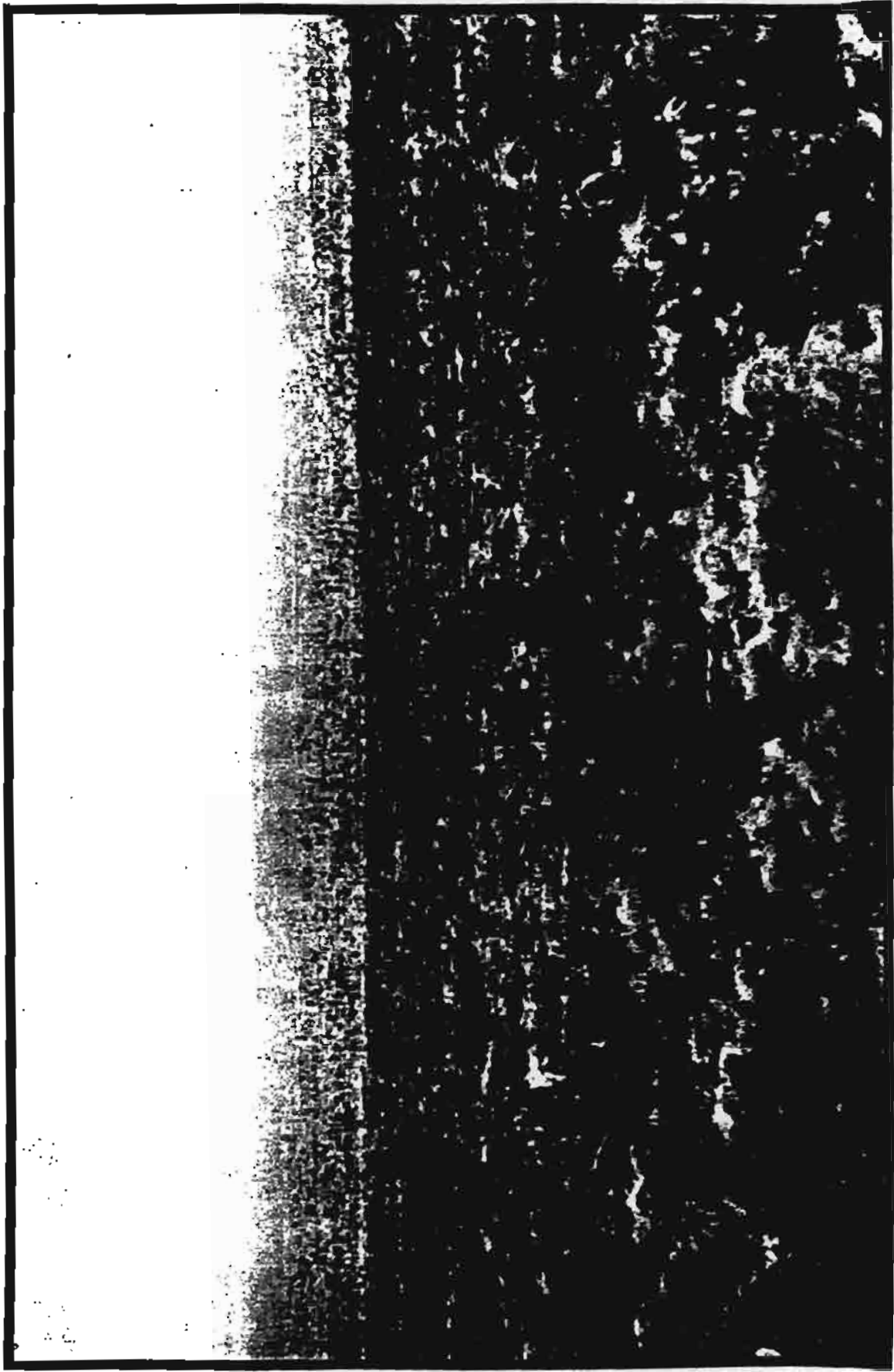


FIGURE 9. TYPICAL DESERT TORTOISE HABITAT - CREOSOTE SCRUB / YUCCA PLANT COMMUNITY



loams; aeolian sand, talus, and cobbly substrates are not preferred and rarely occupied (Karl 1983; Wilson 1989). They also occupy cavities in overhanging ledges, caliche, and rocks (Woodbury and Hardy 1948; Burge 1969; Karl 1983). Burrow construction occurs on flats and sloping bajadas, as well as on the relief provided by wash banks, berms, hillsides, and mountain slopes (Karl 1983).

1. It is thought that soils largely determine habitat and distribution of the desert tortoise. Hardy determined that the soil must be sufficiently free from rocks to permit digging and compact enough to maintain a strong archway over the burrow.
2. Woodbury and Hardy (1948) found that tortoise habitat types are restricted to suitable soils for den construction. Luckenbach (1976) noted that preferred habitat types in the Providence Mountains region were areas with good denning potential, having soil characteristics of sandy loam to light gravel clay. Data collected by Wilson and Stager (1988) in Piute Valley corroborate earlier findings and go further to suggest an association between specific soil properties and tortoise density and distribution.

3. Soil characteristics identified in the above studies were available water capacity (AWC), soil consistence, depth to a limiting layer, rock fragment content, soil salinity, soil temperature, and frequency of flooding.

- Generally, the greater the AWC the more vegetation produced for forage and cover.
- Soils with good structural stability and little to no digging limitations appear to provide better burrow locations. Shallow soils have limited burrowing potential. Inset fans and washes cutting through some shallow soils often expose caliche, where some burrowing occurs.
- Mean annual soil temperature of 59 degrees Fahrenheit at a depth of 20 inches seems to coincide with the northern most geographic distribution of the desert tortoise in Nevada.

#### Elevations

Tortoises are primarily found between 1,300 and 4,000 feet elevations, coincident with climatic conditions. However, they have been found as high as 4,800 feet in Nevada (Karl 1989), at 7,000 feet in the Providence Mountains of California, and below mean sea level in the Death Valley National Monument.

## Distribution of Species and Habitat

Tortoise population densities vary widely within the species' range from 0 to more than 1,500 animals per square mile (577 per square kilometer). Densities appear to be controlled largely by habitat suitability but also are likely to be influenced by disease, predation, and degrees of illegal collection and vandalism. In southern Nevada, densities are estimated to range up to about 250 tortoises per square mile.

### Historic and Current Distribution

Historically, the desert tortoise was distributed widely throughout the deserts of California, Nevada, Utah, Arizona, Sonora, New Mexico, extending as far south as Sinaloa (Iverson 1987). Current distribution is considerably more patchy within the range as a whole.

### Genetic Subunits

As previously noted, two genetically distinct groups have evolved, the Mojave and Sonoran, with the Mojave group further divided into eastern and western subgroups (Figure 10).

### Recent Declines

The USFWS estimates that, based on plot data from eight sites in California, populations have declined at rates of 10 percent or more for the last six to eight years (USFWS 1989). Growth rates calculated for 16 study plots in California,

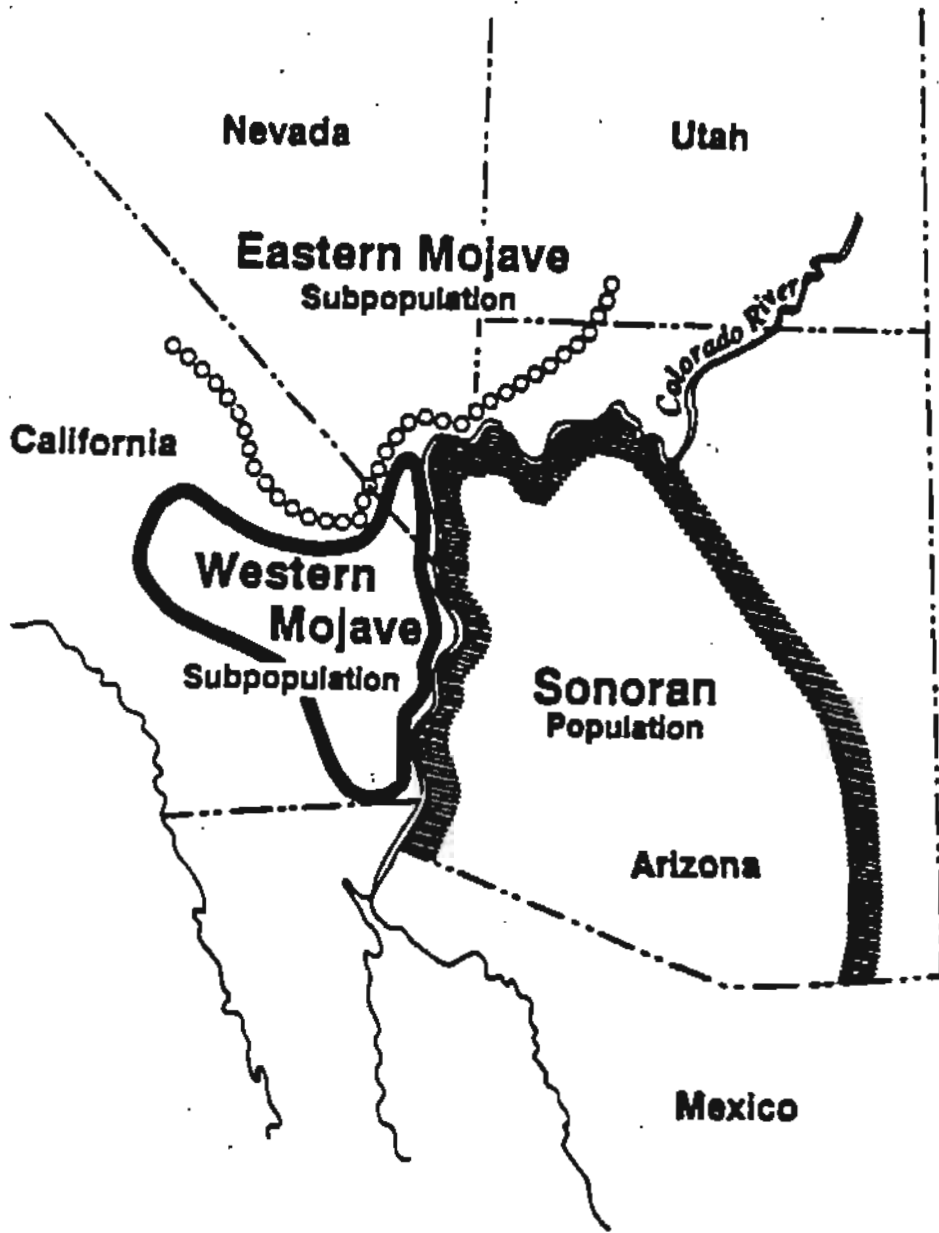
Nevada, and Arizona indicate that some local populations may be decreasing by as much as 20 percent per year (see Gilpin 1990, Appendix B).

### Distribution in Nevada

In Nevada, 90 percent of the remaining habitat is believed to have population densities of less than 50 tortoises per square mile (<19 per square kilometer). The USFWS noted declines in tortoises on the Beaver Dam Slope of Utah and Arizona and a decline of juveniles in the remaining East Mojave population (including Clark County), but data are insufficient to indicate a clear trend in overall populations in Nevada.

### Distribution in Clark County

Except for Las Vegas Valley and other urban areas, tortoise distribution in Clark County is widespread though local population densities may be very patchy. Urban development in Las Vegas Valley has all but eliminated what may have been one of the largest and densest tortoise populations in Nevada. In addition, the remaining habitat in Clark County has been fragmented by major roads, power-line corridors, urban development, OHV activities, and other land uses. In fact, fragmentation may be such that tortoises in Las Vegas Valley have already been effectively isolated from other local populations.



NOT TO SCALE

----- State Boundary

Source: Adapted from Soong et al. (1983)

FIGURE 10. DESERT TORTOISE POPULATION DISTRIBUTION

## Crucial Habitat in Southern Nevada

### 1979-1981 Study

In 1983, 10 areas with estimated densities in excess of 50 tortoises per square mile were identified in southern Nevada based on regional strip transects conducted between 1979 and 1981 (Karl 1983). These areas included:

- Virgin Mountains
- Goodsprings Valley
- Arden
- Piute Valley
- El Dorado Valley
- Moapa Valley
- Dry Lake Valley
- Coyote Springs Valley
- Hidden Valley
- Pahrump

### Crucial Habitat Areas

Based on a review of 871 regional transects, Berry and Burge (1984) then identified six areas as crucial habitat, including most of the 10 areas identified in 1983. The six areas were:

- Gold Butte (Virgin Mountains)
- Piute Valley
- Moapa
- Arrow Canyon (Hidden Valley/  
Coyote Springs Valley)
- California Wash (Dry Lake Valley)
- Goodsprings

Crucial habitat is a BLM term that describes a portion of the habitats of sensitive species that, if destroyed or modified, could result in their being listed as rare, threatened, or endangered.

### BLM Density Classifications

Habitat in Nevada was further classified by BLM in terms of low, medium, and high tortoise densities. These classifications are used in the rangewide plan prepared by BLM in 1988 for the management of tortoise habitat on public lands.

### BLM Categories

Based on BLM's density assessment and other considerations such as the importance of the habitat to the ongoing survival of the tortoise; and the degree to which other land uses in the area could be made compatible with tortoise conservation goal, BLM classified 1.8 million acres of tortoise habitat in southern Nevada into three categories, Category 1, 2, and 3. These categories are described in more detail in Chapter 4, Potential Tortoise Management Areas. It should be noted that the 1.8 million acres only includes habitat that meets the definition of BLM's categories. All of Clark County falls within the historic range of the tortoise.

## Decline Factors

The single greatest threat to the continued existence of the desert tortoise in Clark County has been and continues to be loss and degradation of habitat. Other factors are believed to include predation of juvenile tortoise by common ravens, spread of an upper respiratory disease syndrome (URDS), and illegal collection, vandalism, and road kills. The opinion of most biologists familiar with the species is that tortoise is unlikely to survive over the long term in southern Nevada without the direct aid of some form of habitat conservation or recovery plan.

### Habitat Loss and Degradation

Tortoise habitat has been lost to and deteriorated by urban development, highways, power-line corridors, large-scale water development, mineral extraction, military activities, OHV activities, livestock grazing, and other land uses (USFWS 1989; Spang et al. 1988). Fragmentation of the remaining habitat, especially within Las Vegas Valley, poses the additional threat of isolating already low density populations and further reducing their genetic viability.

### Urban Development

As previously noted, existing urban development has already removed prime habitat in Clark County. Ongoing development will result in additional loss of habitat and is likely to have in-

direct and cumulative adverse impacts on surrounding habitat areas.

1. Highways and roads displace habitat when being built; act as mortality sinks for local tortoises, especially breeding cohort; and isolate local tortoise populations by imposing physical barriers to tortoise movement (Nicholson 1978). Nicholson (1978) found that tortoise densities were negatively affected within one mile of a road with >180 average daily traffic (ADT), especially within the first half mile.
2. Karl (personal communication) found similar results in a study of an 18-year-old freeway, with a significant decrease in density within the first one-half mile from the freeway; more importantly, however, the density of the breeding cohort of the local population appeared to be strongly depressed within two miles of the freeway.
3. It is estimated that existing highways and roads in Clark County currently affect 2,000 square miles of tortoise habitat.

### OHV Activities

OHV activities pose direct and indirect impacts, including destruction of tortoises and damage to their habitat (Bury 1978; Adams et al. 1982, 1984; Bury and Luckenbach 1983; Brattstrom and

Bondello 1983). Most OHV activity in Clark County is on public lands, including known habitat areas.

### Grazing

The overall effects of livestock grazing on the tortoise must be studied but are believed to include competition for forage, loss of habitat, damage to burrows, destruction of tortoises, and introduction of plant species with limited nutritional value for the tortoise. Given the vast acres of land permitted by BLM for grazing in Clark County, the potential damage to the species and its habitat over the long term could be enormous. Grazing by wild horses and burros occurs throughout the county and could also contribute to negative impacts to tortoises, as discussed above.

### Disease

URDS is considered a clinical manifestation of an unspecified respiratory disease that may be responsible for or may have contributed significantly to the decline of local tortoise populations.

URDS has been observed in wild desert tortoise populations in the western Mojave Desert in southern California, Saguaro National Monument in Arizona, and the Beaver Dam Slope in Utah-Arizona (Roskopf 1988, 1989; FaunaWest Consultants 1989). Until 1990, there were anecdotal reports that the disease occurs in Clark County (Berry and Slone 1989). However, recent reports indicate that URDS has become extensive (see Appendix B).

The etiology of URDS is unknown. However, it has been postulated that an infectious agent or agents may play primary and/or secondary roles. One prevalent theory is that it has been transmitted to the wild population by released captive tortoises who carry the disease. Clinical signs of respiratory diseases in captive tortoises have been recognized for two decades. However, this may be the artifact of sampling and URDS may be an endemic to which stressed tortoises are subject. Moreover, URDS symptoms were observed in wild populations in the 1930s.

Environmental factors, such as the severe several-year drought in the Mojave Desert and probable long-term effects from livestock grazing also may have weakened tortoises. Other effects, such as the toxic effects of mercury, pesticide residues, and air pollution, also may influence the effects of URDS.

### Predation

#### Ravens

In California, predation of young tortoises by ravens is considered a serious problem (BLM 1989). The raven was considered to be uncommon in California before the 1940s but its population has grown dramatically since then.

1. Breeding bird surveys in the Mojave Desert of California, Nevada, and Utah measured a 15-fold increase in ravens between 1968 and 1990. In general, the spread of the raven population has been attributed to the

urbanization of desert areas, including highways and transmission lines that create opportunities for raven foraging, roosting, and nesting.

2. Raven predation is suspected of being responsible for reduced numbers of hatchlings, reduced recruitment of juveniles into the adult population, overall shift in the age structure of tortoise populations, and general population decline.
3. In Clark County and Las Vegas Valley in particular, the raven is still considered an uncommon species but is increasing in number. Raven predation on juvenile tortoises has been documented in Piute Valley and at Sheep Mountain, but the extent of such predation is not known.

#### **Other Predators**

Other predators of the tortoise and tortoise eggs include coyotes, bobcats, badgers, skunks, kit foxes, ring-tailed cats, domestic dogs, golden eagles, hawks, roadrunners, burrowing owls, gopher snakes, larger rattlesnakes, and larger coachwhips. Predation by prairie falcons also has been reported (D. Stevens, Southern California Edison Company).

#### **Illegal Collection**

USFWS cited illegal collection as one of the reasons for the tortoise's decline and subsequent listing. Within Las Vegas Valley, however, illegal collection may have declined somewhat in recent years

due to the fact that a supply of domesticated tortoises is readily available for adoption through the TORT Group, a volunteer organization. However, there is some concern that local restrictions on owning tortoises outside of urban areas of Clark County may be providing an incentive for people living in other communities to obtain tortoises illegally.

#### **Other Factors**

Other factors which may contribute to the tortoise's decline include drought, air pollution, and fire.

#### **Drought**

Long-term effects of drought on the tortoise are not known. However, prolonged periods of drought clearly limit the tortoise's primary food and water sources. Such conditions are likely to directly affect the tortoise's ability to maintain body condition and water balance. Also, prolonged drought conditions may indirectly affect breeding because tortoises are likely to respond with reduced activity levels. In addition, drought conditions may affect survival rates among the nonadult cohort because of their low storage capacity and special forage requirements. The long-term effects of this condition would not be felt by the population for as many as 20 years, when the nonadult cohort would become breeders.

#### **Air Pollution**

Air pollution may affect desert tortoises directly through inhalation of toxins and

indirectly through damage to vegetation. However, toxic effects of criteria air pollutants on reptilia have not been studied. In mammals, pollutants can cause irritation of the respiratory tract, eyes, and other sensitive membranes and inhibit oxygen transport (Clement 1990). Studies also suggest that some desert plants used by the tortoise are sensitive to ozone.

#### **Fire**

The role of fire in tortoise habitat is poorly understood, but tortoises are not typi-

cally found in early successional stages following fires. OHV use has been identified as an ignition source for wildfires in Clark County and as such increases the potential for fire damage in many habitat areas.

#### **Other**

Other factors that may be adversely affecting tortoises in Clark County include illegal dumping, illegal gravel mining, illegal OHV use, domestic and feral pets, and squatting on undeveloped lands.



## Chapter Four

# Potential Tortoise Management Areas

This section of the HCP identifies 14 PTMAs that will be the focus of conservation measures proposed to mitigate the impacts of incidental take. It focuses on:

- Categories of tortoise habitat in the PTMAs;
- General characteristics of each area; and
- The process by which potential sites will become TMAs.

## Tortoise Habitat in the PTMAs

The PTMAs in this HCP were identified by the TAC based primarily on habitat categories and management goals proposed in BLM's rangewide plan, the crucial habitat areas identified in southern Nevada prior to the listing of the species, and the committee's collective knowledge of actual conditions in the field. In general, the areas include tortoise habitat that has been mapped and categorized by BLM on land it manages in southern Nevada.

## BLM's Habitat Categories

As discussed in the Desert Tortoise Profile chapter, the three categories used by BLM to classify tortoise habitat take into account different levels of habitat quality based on the density of tortoises inhabiting habitat areas; the importance of the habitat to the ongoing survival of the tortoise; and the degree to which other land uses in the area could be made compatible with tortoise conservation goals (Table 7). It should be emphasized, however, that the habitat in BLM Categories 1, 2, or 3 includes most but

**TABLE 7****BLM'S CATEGORIES AND GOALS FOR DESERT TORTOISE HABITAT**

CATEGORY 1	CATEGORY 2	CATEGORY 3
Medium to high density or low density contiguous with medium or high density.	Medium to high density or low density contiguous with medium or high density.	Low to medium density not contiguous with medium or high density.
Increasing, stable, decreasing population.	Stable or decreasing population.	Stable or decreasing population.
Essential to maintenance of large, viable populations.	May be essential to maintenance of viable populations.	Not essential to maintenance of viable populations.
Conflicts resolvable.	Most conflicts resolvable.	Most conflicts unresolvable.
Goal: Maintain stable, viable populations and protect existing habitat values; increase populations where possible.	Goal: Maintain stable, viable populations and halt further declines in habitat values.	Goal: Limit habitat and population to the extent by mitigating impacts.

SOURCE: BLM, *Desert Tortoise Habitat Management on Public Lands: A Range-wide Plan* (1988).

Density ranges for southern Nevada:

low = 20 to 50 tortoises/sq. mile (0.03 to 0.08/acre)

medium = 50 to 100 tortoises/sq. mile (0.08 to 0.16/acre)

high = 100 to 250 tortoises/sq. mile (0.16 to 0.39/acre)

not all tortoise habitat in southern Nevada.

## **Categorized Habitat in the PTMAs**

The 14 PTMAs roughly form 6 clusters and contain about 1.8 million acres of tortoise habitat (Figure 11 and Table 8). About 28 percent of the habitat is Category 1, 53 percent is Category 2, and 19 percent is Category 3. With the exception of PTMA 12, all of the PTMAs contain either Category 1 or 2 habitat.

## **General Characteristics**


1. With few exceptions, individual PTMAs are part of continuous stretches of tortoise habitat in southern Nevada and neighboring states. Three of the areas (PTMAs 1, 2, and 6) extend from Clark County into Lincoln County. Three (PTMAs 9, 10, and 14) are linked to habitat in California, two (PTMAs 4 and 5) border on Arizona, and one (PTMA 1) continues into Utah. Habitat estimates reflect acres in Clark and Lincoln counties only.
2. PTMA 2 is the largest of the areas, with 256,000 acres; PTMA 10 is the smallest, with 19,125 acres. PTMAs 6 and 14 contain the majority of the Category 1 habitat in southern Nevada, approximately 350,000 acres combined.
3. Preliminary population estimates based on assumed habitat densities indicate that the PTMAs contain between 80,000 and 160,000 tortoises.


This preliminary estimate extrapolates from habitat densities assigned to the PTMAs based on the results of transect field studies in 1984 and 1988. The studies recorded actual numbers of tortoises sighted, together with the number and type of tortoise sign encountered (for example, burrows and droppings). A relative tortoise density was assigned to each transect area based on adjusted tortoise sign: very low (0), low (1-3), moderate (4-7), moderate to high (8-11), and high to very high (>12). Data for 788 transects within PTMAs indicate that portions of all 14 have moderate densities and seven include moderate to high densities (Table 9).


4. Preliminary land use analyses indicate that all 14 PTMAs include grazing and mining. Appendix A contains baseline grazing information for both the BLM Stateline Resource Area and the BLM Caliente Resource Area. Within the 14 PTMAs, it is estimated that there are currently over 13,000 mining claims (Ann Schrieber, personal communication, 12/14/90). There are hundreds, even thousands, of mining claims located within each PTMA. However, this does not mean that all such sites will ever be mined. Significantly fewer mining notices and plans of operations (required for site disturbance) than claims are filed. Major highways in the region cross or border at least 10 PTMAs. OHV use in most PTMAs is already subject to various limitations, especially in those areas that coincide with crucial habitat identified by BLM in 1984 (see Crucial

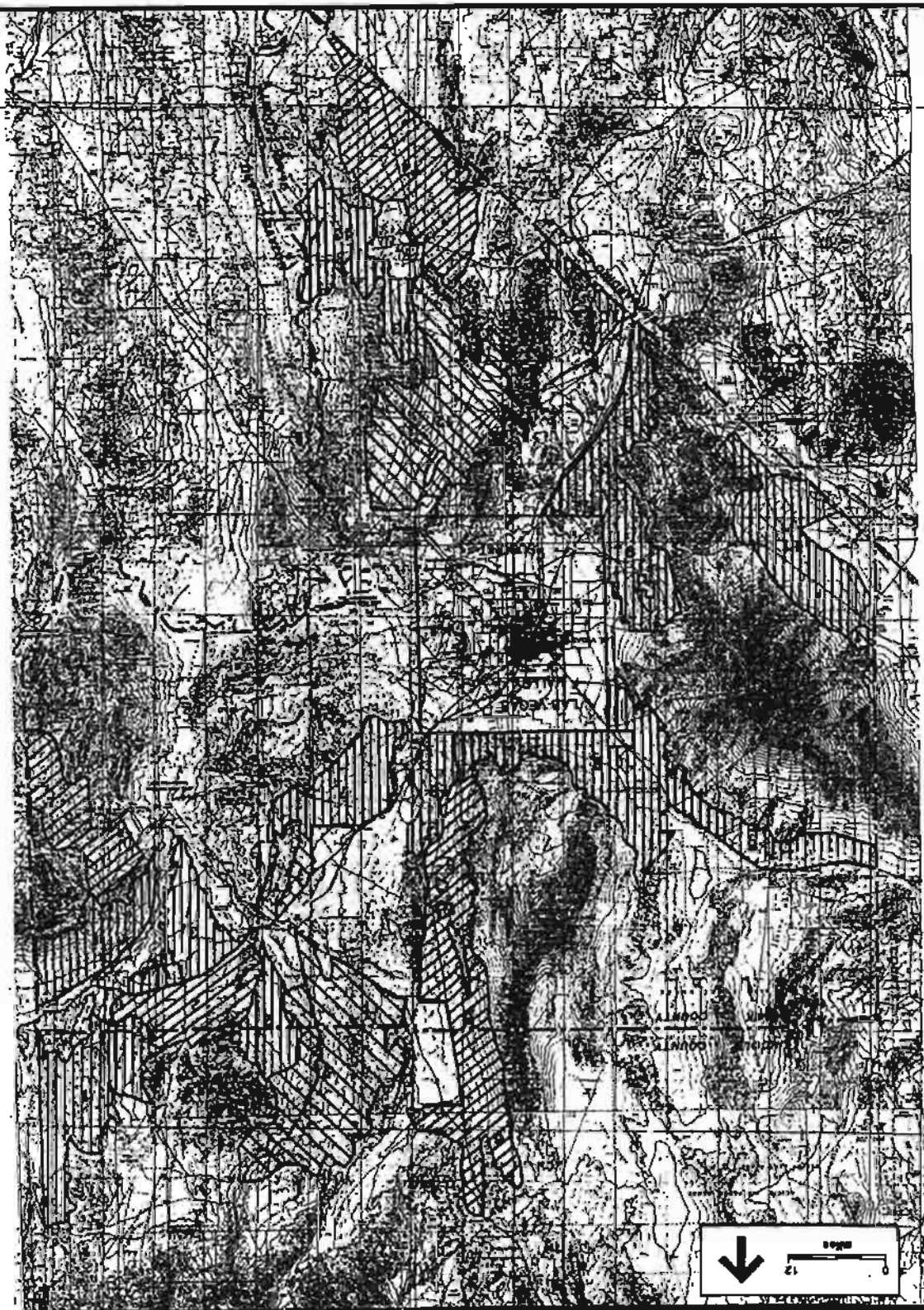
FIGURE 11. POTENTIAL TORTOISE MANAGEMENT AREAS

- 1 SAND HOLLOW
- 2 NORTH HORN MESA
- 3 SOUTH HORN MESA
- 4 BLAKEVILLE
- 5 GOLD BUTTE
- 6 COYOTE SPRING VALLEY
- 7 CALIFORNIA WASH
- 8 NORTHWEST VEGAS
- 9 GOLDSPRINGS
- 10 HANRAH
- 11 PARRISH
- 12 EL DORADO
- 13 COTTONWOOD
- 14 PUTE VALLEY

CATEGORY 1 

CATEGORY 2 

CATEGORY 3 



**TABLE 8****TORTOISE HABITAT IN THE PTMAS  
(acres)**

PTMA	CATBOORY 1	CATBOORY 2	CATBOORY 3	TOTAL
1	0	121,455	0	121,455
2	72,193	42,533	141,449	256,175
3	0	58,318	0	58,318
4	0	68,108	0	68,108
5	76,588	0	0	76,588
6	191,113	0	0	191,113
7	0	77,267	0	77,267
8	0	190,691	0	190,691
9	0	140,402	0	140,402
10	0	19,125	0	19,125
11	0	121,312	7,663	128,975
12	0	0	194,353	194,353
13	0	95,481	0	95,481
14	146,239	0	0	146,239
<b>TOTAL</b>	<b>486,133</b>	<b>934,692</b>	<b>343,465</b>	<b>1,764,290</b>
<b>% of TOTAL</b>	<b>28%</b>	<b>53%</b>	<b>19%</b>	<b>100%</b>

**TABLE 9****RELATIVE DENSITIES ASSIGNED TO TRANSECTS WITHIN PTMAS  
(Number of Transects per Assigned Density)**

DENSITY (Sign)	Low (0)	Low (0-3)	MODERATE (4-7)	MOD/HIGH (8-11)	HIGH (12)	TOTAL # OF PLOTS*
PTMA 1	20	27	4	0	0	51
PTMA 2	29	40	35	16	17	137
PTMA 3	9	15	3	2	0	21
PTMA 4	2	9	8	2	0	29
PTMA 5	3	14	18	9	6	50
PTMA 6	28	48	37	20	9	142
PTMA 7	3	8	8	0	0	19
PTMA 8	11	13	1	0	0	25
PTMA 9	17	28	32	3	8	88
PTMA 10	2	1	2	0	0	5
PTMA 11	2	7	4	0	0	13
PTMA 12	18	40	17	0	0	75
PTMA 13	3	9	5	0	1	18
PTMA 14	7	20	34	13	41	115
Total # of Plots	154	279	208	65	82	788

\*NOTE: Transects/plots are the areas monitored for tortoise sign.

Habitat in Southern Nevada section and OHV Activities in Chapter 2).

## Descriptions of the PTMAs

Each PTMA is briefly described here as an individual site to help identify the biological and land use issues that must be addressed in the selection and management of TMA's. Actual TMA's are likely to include portions and combinations of individual PTMA's.

### Sand Hollow (PTMA 1)

#### General Location

PTMA 1 is located in southeastern Lincoln County, near the Utah border. It is part of a continuous stretch of habitat that overlaps county and state boundaries.

#### Habitat Acreage and Quality

PTMA 1 contains 122,455 acres of habitat, all Category 2. Habitat distribution is considered patchy and the quality is fair.

#### Land Use Issues

Potential development to the south in Mesquite is likely to occur. Grazing is the greatest conflict in the PTMA. Although linked to habitat in Clark County, the area is in BLM's Caliente Resource Area, in Lincoln County, which is outside of the area covered in the RMP being prepared by BLM.

### North Mormon Mesa (PTMA 2)

#### General Location

North Mormon Mesa (PTMA 2) is located on the northern boundary of Clark County and extends into Lincoln County. The Moapa Indian Reservation and communities of Moapa and Glendale are located south of the PTMA.

#### Habitat Acreage and Quality

PTMA 2 is the largest of the identified areas. It contains 256,175 acres of habitat—72,193 acres of Category 1, 42,533 acres of Category 2, and 141,449 acres of Category 3. Additional Category 3 habitat also extends southward between PTMA 2 and 6. Overall habitat quality is considered good.

#### Land Use Issues

Sheep grazing occurs on the east half of PTMA 2, and cattle grazing occurs on the west. OHV uses are generally restricted because of the habitat categories. Utility lines bisect the PTMA, and additional utility projects (WyCal Gas pipeline and Kern River Gas pipeline) are planned for the near future. In addition, a high-speed train traveling between Anaheim, California, and Las Vegas, Nevada,

could traverse this PTMA. I-15 marks its southern border. Of the crucial habitats identified in 1984, this area has some of the highest density habitat and the highest density of roads and trails. A significant amount of mining occurs in this area.

### **South Mormon Mesa (PTMA 3)**

#### **General Location**

PTMA 3 is located in northeastern Clark County, south of I-15, which divides it from PTMA 2. Its southern edge is near Lake Mead National Recreation Area.

#### **Habitat Acreage and Quality**

PTMA 3 contains 58,318 acres of habitat, all Category 2. Habitat distribution is considered patchy and its quality is fair.

#### **Land Use Issues**

I-15 abuts the PTMA on its northern border.

### **Bunkerville (PTMA 4)**

#### **General Location**

PTMA 4 is located in the northeastern corner of Clark County, below I-15 near the Arizona border. It is adjacent to PTMA 5, which joins it near its southern edge. The city of Mesquite and community of Riverside are north of the PTMA, and Lake Mead National Recreation Area is located to the south.

#### **Habitat Acreage and Quality**

PTMA 4 contains 68,108 acres of habitat, all Category 2. Habitat quality is considered fair to good.

#### **Land Use Issues**

Mining occurs on the eastern boundary, and the Bakerville deposit is located within the PTMA.

### **Gold Butte (PTMA 5)**

#### **General Location**

PTMA 5 is located near the Arizona border, on the eastern side of the Overton arm of Lake Mead. It is adjacent to the southern portion of PTMA 4.

#### **Habitat Acreage and Quality**

PTMA 5 contains 76,588 acres of habitat, all Category 1. Habitat quality is considered good.

#### **Land Use Issues**

The remote location of the PTMA provides it with some protection from developing utility corridors and the impacts associated with proximity to urban areas. The area is not fragmented by major roads, but two minor roads (primarily associated with mining) cross the area. One of these minor roads is a BLM backcountry byway.



## **Coyote Spring Valley (PTMA 6)**

### **General Location**

Coyote Spring Valley (PTMA 6) extends from north of Las Vegas Valley into Lincoln County. Historically, it may have been continuous with PTMA 2, but the habitat between the two has been fragmented by roads. It is bordered on the west by the DNWR; to the north is the Pahrangat National Wildlife Refuge; to the southeast is the Sheep Mountain Gunnery Range; and to the east is the Moapa Indian Reservation.

### **Habitat Acreage and Quality**

PTMA 6 contains 191,113 acres of habitat, all Category 1. Habitat quality is considered good to excellent.

### **Land Use Issues**

OHV uses are generally restricted because of the habitat categories. No competitive races are permitted, but the approved course for the 1990 Nissan 400 (Mint 400) follows part of the PTMA's southern border. A portion of the PTMA may be designated as a Special Recreation Management Area in the RMP being prepared by BLM. The area is bisected by Highway 93, and Highway 168 cuts through low-density habitat between PTMA 2 and 6. There are existing transmission lines in this area, and several others are proposed. Additional proposed land uses include an industrial park and hazardous waste treatment facility on approximately 20,000 acres at

the south border of the PTMA. About 43,000 acres in the northern portion of the PTMA has been transferred from BLM to Aerojet, who has initiated a Section 7 consultation with USFWS. Aerojet has proposed to build and test jet turbines on the property. These proposed land uses would occur in high-density tortoise areas of the PTMA.

## **California Wash (PTMA 7)**

### **General Location**

PTMA 7 is located northeast of the Las Vegas Valley Subunit, below I-15, which separates all but a tip of the area from PTMA 8. It is bordered on the northeast by Valley of Fire State Park.

### **Habitat Acreage and Quality**

PTMA 7 contains 77,267 acres of habitat, all Category 2. Habitat quality is considered fair to moderate.

### **Land Use Issues**

Human use of the area is quite extensive due primarily to access roads and trails. This area receives a high level of casual OHV use.

## **Northwest Vegas (PTMA 8)**

### **General Location**

PTMA 8 stretches from the Clark County border with Nye along Highway 95 to just north of the Las Vegas Valley Subunit, above I-15. The southernmost tip of PTMA 6 joins PTMA 8. PTMA 7 also

is adjacent but is separated from PTMA 8 by I-15. It includes portions of Nellis Air Force Base and Ground Gunnery Range and is bordered on the north by Nellis Air Force Range and DNWR.

#### **Habitat Acreage and Quality**

PTMA 8 contains 190,691 acres of habitat, all Category 2. Habitat quality is considered fair. Prior to the urbanization of the valley, habitat in this area may have been continuous with that in PTMA 9. At present, however, the two are not linked by a functioning corridor.

#### **Land Use Issues**

Military operations at Nellis and proximity to rapidly growing Las Vegas Valley have already disturbed the widest portions of habitat in the PTMA. Highway 95 borders the western length of the PTMA and bisects the habitat within Las Vegas Valley. Portions of the area are fragmented by local roads, powerlines, OHV activities, residential development, some grazing, and other land uses.

### **Goodsprings (PTMA 9)**

#### **General Location**

PTMA 9 is located below the Las Vegas Valley Subunit, west of I-15, which runs the length of its eastern border and separates it from PTMA 10 at the San Bernardino County, California, border.

#### **Habitat Acreage and Quality**

PTMA 9 contains 140,402 acres of habitat, all Category 2. Habitat quality is considered good. Prior to the urbanization of the valley, habitat in the area may have been continuous with that in PTMA 8. At present, however, the two are not linked by a functioning corridor.

#### **Land Use Issues**

As in PTMA 8, the area is fragmented by major roads, power-line corridors, towns, residential developments, OHV activities, and other land uses. Several transmission lines are proposed to traverse this area. Over 25,000 acres in the PTMA are in private ownership. Livestock grazing is restricted in the area, and human-caused fires have been a problem.

### **Ivanpah (PTMA 10)**

#### **General Location**

PTMA 10 is located at the Clark County border with San Bernardino County, California, west of I-15. It is connected to one of four important high-density areas in California.

#### **Habitat Acreage and Quality**

PTMA 10 contains 19,125 acres of habitat, all Category 2. Habitat quality is considered fair to good.

### **Land Use Issues**

Both competitive and casual OHV use occurs. Development of casinos and other facilities at Stateline pose significant impacts for the area. Illegal dumping also occurs in the area.

## **Pahrump (PTMA 11)**

### **General Location**

PTMA 11 is located in the southwestern corner of Clark County, where the Nye County and San Bernardino/Inyo counties, California, borders meet. It is not connected or immediately adjacent to any other PTMA.

### **Habitat Acreage and Quality**

PTMA 11 contains 128,975 acres of habitat, 121,312 acres of Category 2, and 7,663 acres of Category 3. Habitat quality is considered fair.

### **Land Use Issues**

The PTMA is bisected by a highway.

## **El Dorado (PTMA 12)**

### **General Location**

PTMA 12 is located south of the Las Vegas Valley Subunit and is bisected by Highway 95. It joins PTMA 14 at its southern tip and is adjacent to but largely separated from PTMA 13. Lake Mead National Recreation Area is located to its east. This PTMA contains the El Dorado Valley Act lands, approximately 107,432

acres. The state of Nevada applied to purchase the land March 1, 1968. However, the Colorado River Commission has not exercised its option to request patent to any of the land nor has the state appropriated any money.

### **Habitat Acreage and Quality**

PTMA 12 contains 194,353 acres of habitat, all Category 3. Habitat quality is considered fair to good.

### **Land Use Issues**

Urbanization in Boulder City affects the northern portion of the PTMA. The west side of El Dorado Valley is presently grazed. Highway 95 and the culvert associated with it bisect the area. Numerous transmission lines cross the area. Casual and competitive OHV use is widespread.

## **Cottonwood (PTMA 13)**

### **General Location**

PTMA 13 is located in the southwestern portion of Clark County, east of Highway 95. It joins PTMA 14 at its southern tip and is adjacent to but largely separated from PTMA 12 by Highway 95. To the east is Lake Mead National Recreation Area.

### **Habitat Acreage and Quality**

PTMA 13 contains 95,481 acres of habitat, all Category 2. Approximately 43,000 acres are within Lake Mead National Recreation Area and are currently

managed by the National Park Service. Habitat quality is considered moderate to good.

#### **Land Use Issues**

The narrowness of the PTMA has been caused by a combination of human and natural factors, including Highway 95 to the west and the El Dorado Mountains to the east. Non-habitat areas west of the PTMA are heavily mined. There is grazing throughout the PTMA, and feral burro populations in the area are expanding. Outside of the El Dorado Land Act area, located to the west, this PTMA is also impacted by mining activities.

### **Piute Valley (PTMA 14)**

#### **General Location**

PTMA 14 is located in southern Clark County near the San Bernardino County, California, border, between the Piute and Newberry mountains. It is connected to PTMAs 12 and 13 at its northern edge and bisected by Highway 95. Fort Mojave Lands-Colorado River Commission is located immediately adjacent to and south of the valley. Lake Mead National Recreation Area is to the east.

### **Formation of TMAs**

The establishment of TMAs must take into account several factors, including the fact that formation of TMAs is being

#### **Habitat Acreage and Quality**

PTMA 14 contains 146,239 acres of habitat, all Category 1. Habitat quality is good. It is connected to a large and high density tortoise population in California.

#### **Land Use Issues**

Two major highways transect the PTMA, Highways 95 and 163. Power lines bisect the area, running parallel with the highways, and a fiber-optic line is proposed along Highway 95. Searchlight and Cal-NevAri are significant and expanding urban areas within the PTMAs, and gaming development is planned for the area near the intersection of Highways 95 and 163. Mining occurs throughout. There are three BLM-designated grazing allotments in the PTMA, two of which are active. A portion of the Laughlin OHV event area is located in the southern tip of the PTMA, and several jeep trails cross the western portion. A small airfield also is located in the center of the PTMA, near Highway 95. Significant competitive and casual OHV activity occurred on each side of Highway 95 in this PTMA prior to the listing of the tortoise.

proposed as mitigation for incidental take. Other key considerations are:

- The biological information available about conditions in a TMA must support the contention that, with prudent management, the area's tortoise population is likely to persist;
- The nature and number of land uses in a TMA must be such that adverse impacts on the tortoise can be eliminated or fully mitigated;
- The boundaries of a TMA must be flexible enough to allow for modifications as more is learned about tortoises and TMA management; and
- The formation of a TMA must be coordinated with the agencies responsible for the management of that land.

To address these concerns, a building block approach will be taken to the establishment of TMAs. This approach entails three interrelated steps:

1. Completion of the research and studies required for both the Short-Term HCP and the Long-Term HCP;
2. Identification of a reasonable unit of measure for TMA building blocks; and
3. Coordination of the HCP with other plans and studies, especially the RMP being prepared by BLM.

The goal is to establish one or more TMAs by means of the Short-Term HCP, expand the size and/or number of those TMAs through the Long-Term HCP, and have the TMAs designated as ACECs in the RMP being prepared by BLM.

## HCP Research and Studies

As noted in the Desert Tortoise Profile section, additional information about tortoises and tortoise habitat is needed to develop management strategies that will aid the species. Some of that information will be provided through the biological and land use analyses for the Long-Term HCP. These analyses include:

1. A survey of the historic and current distribution of the tortoise in Clark County and adjacent areas, based on interviews, available literature, and documentation;
2. Analysis of the ecology and life history of the tortoise, including current effects of disease and predation, based on available scientific literature and other sources;
3. Identification of current land uses in each PTMA and selected historic localities;
4. Identification of current federal land use plans and management guidelines;
5. Identification of current and planned zoning, general plan designations, and other information on nonfederal lands in or adjacent to PTMAs;
6. Definition of criteria to be met by proposed conservation measures;
7. Mapping of conservation area boundaries and other tortoise habitat areas;

8. Assessment of the viability of tortoise populations within proposed TMAs; and
9. Preparation of a population vulnerability assessment to determine minimum population sizes in TMAs.

Work completed to date on the above has been included in this Short-Term HCP and will be continued and expanded with implementation of the HCP.

### **TMA Building Block Concept**

In addition to building on HCP research and studies, the formation of TMAs will begin with "building blocks" of tortoise habitat. This concept was developed by Dr. Michael Gilpin, in his minimum viable population (MVP) analysis of the desert tortoise in Clark County, included as Appendix B of this Short-Term HCP. In Appendix B, Gilpin demonstrates that a reasonable basic building block of habitat for protection of tortoises is roughly 100,000 acres.

### **Minimum Viable Population Analysis**

Gilpin determined that in order to protect the desert tortoise in Clark County, several viable populations will have to be established. In order to do this, it is necessary to first determine what an MVP of desert tortoises is in this area. The question "What is an MVP?" is difficult to answer, since it requires data that often are not collected for the rare and difficult-to-study species that end up being listed. For the desert tortoise,

MVP is especially difficult, not only because of the reason just given but also because the species has a long generation time (at least 25 years), has a complex demography not yet fully understood, and is being assaulted by some major ecological factors (URDS, habitat fragmentation) to which it may not have been previously exposed during its evolutionary history. Some of the factors important in the MVP analysis for the desert tortoise are discussed below.

*Time Frame Considerations.* The minimum viable population for an endangered species often is defined by answering the following question: Will a population of size  $N$  have better than a 95 percent probability of being extant  $T$  years from now? The minimum  $N$  for which the answer to this question is yes defines the MVP. Frequently,  $T$  is expressed as 100 or 200 years. However, such time frames are particularly short for the desert tortoise, since individuals may live 100 years and genetic generation time is around 30 years. For purposes of defining a reasonable building block for TMAs,  $T$  has been set at 500 years.  $N$  has not yet been calculated for tortoises in TMAs. However, based on preliminary population estimates, Gilpin assumed that there are a minimum of 20,000 adult tortoises in southern Nevada.

*Population Growth Rate Considerations.* Growth rates for tortoise populations vary from time to time and from local population to local population. With variable growth rates comes the possibility the population will have a

run of bad luck and will drop below the threshold of extinction. Based on data collected from 16 study plots over the past decade, the mean growth rate for the local tortoise population is 0.985. This means that the population as a whole is not increasing or replacing itself. Specifically, the data for the study plots show some groups decreasing by 20 percent per year and some groups increasing by 15 percent. Assuming that these growth rates continue, the mean time to extinction for these populations would be 505 years, not long by tortoise standards. But if the mean growth rate could be raised from 0.985 to 1.000 (i.e., the size of the population could be made stable through conservation measures), time to extinction would increase fivefold to 2,474 years.

#### **TMA Building Blocks**

Based upon the above factors and others important to an MVP analysis, for habitat that supports 100 adult tortoises per square mile, approximately 100,000 acres would be needed to support 20,000 adults for at least 500 years (based on current population trend data, 100,000-acre blocks of habitat have a mean time to extinction of about 500 years). It should be noted that this conclusion ignores the possibility of catastrophes and spatial structure considerations. Also, additional research on population dynamics of tortoises is required. Nonetheless, the MVP analysis shows that a reasonable basic building block for protection of desert tortoise habitat is on the order of 100,000 acres of contiguous tortoise habitat.

#### **Coordination with Other Plans and Studies**

Finally, selection and management of TMAs will be coordinated with other plans and studies currently under way or likely to be initiated in the near future. These include:

1. Preparation of an RMP by BLM for the entire Las Vegas District Stateline Resource Area;
2. Initiation of a grazing study by BLM to determine the effects of livestock grazing on the desert tortoise and other species of concern;
3. Potential amendments to the Caliente Resource Area MFP that may be required to conserve tortoise habitat contiguous with areas in Clark County;
4. Conservation plans prepared for habitat areas in adjacent areas of California, Utah, Arizona, and Nevada;
5. Recovery plans prepared by USFWS for the desert tortoise in all or parts of its range;
6. HCPs for other or multiple species within Clark County; and
7. Other plans and studies that are likely to be undertaken within Clark County by local government, the scientific community, and private developers.

## Chapter Five

# Conservation and Mitigation Measures

This section of the HCP specifies:

- The location and level of incidental take for which a Section 10(a)(1)(B) permit is being sought,
- Steps that will be taken to minimize and monitor the impacts of that take, and

- Conservation measures that will be implemented to mitigate the impacts of take.

It also identifies the parties responsible for implementation and enforcement, required levels and sources of funding, and alternatives to the proposed take that were considered.

## Location and Level of Incidental Take

Clark County and the Cities of Las Vegas, North Las Vegas, Henderson, and Boulder City are seeking a Section 10(a)(1)(B) permit for the incidental take of desert tortoise within a portion of Las Vegas Valley for a three-year period.

### Permit Area and Period

#### Permit Area

The area covered by the Section 10(a)(1)(B) permit will be limited to non-federal lands within the boundaries mapped in this HCP (Figure 12). In general, this area includes lands within the cities of Las Vegas, North Las Vegas,





Henderson, and Boulder City; the unincorporated towns of Sunrise Manor, East Las Vegas, Winchester, Paradise, and Spring Valley; and portions of the unincorporated areas of Lone Mountain and Enterprise. The area covers approximately 299,700 acres, of which about 200,000 acres are privately owned lands. Over 90,000 acres of these private lands contain existing urban development.

This permit area has been proposed because it is outside of PTMAs and consequently will not affect the formation of TMAs. The tortoise habitat that is included within the permit area has already been degraded and fragmented by existing land uses, and it contains most but not all urban development in Clark County.

#### **Permit Period**

The permit period will be limited to three years or completion of the Long-Term HCP, whichever occurs first. Authorization for incidental take will be valid only during the three-year permit period. Advance approval of take that would occur after the permit period will not be allowed. In addition, no take will be allowed until thresholds for the establishment of TMAs are met (discussed later in this chapter).

This permit period has been proposed because it imposes a time limit that will further restrict the amount of take that occurs, provides an incentive to complete the long-term HCP, and acknowledges the time required for BLM to complete the RMP.

#### **Estimated Level of Take**

Over the permit period, the level of take is expected to be between 1,788 and 3,710 tortoises. This estimate is based on the assumptions regarding development trends, tortoise habitat, and tortoise populations in the permit area listed below.

#### **Habitat Conditions in the Permit Area**

Desert tortoise habitat in the permit area has been severely affected by existing development and human activities (see Appendixes B and C). Specifically, habitat has been fragmented by the proliferation of roads and scattered urban land uses and degraded by dumping, off-road vehicle use, vandalism, and vehicle traffic. The TAC also supports these findings. Incidence of URDS in Las Vegas Valley is extensive (see Appendix B). For these reasons, the MVP analysis presented in Appendix B notes that habitat in the Las Vegas Valley will probably not support a viable tortoise population in the long term.

In general, habitat conditions in the Permit Area are summarized below:

1. Where roads and urban development have been in place for several years, some tortoises persist but the fragments of remaining habitat have been severely degraded;
2. Where roads and development are new, the islands of remaining habitat are relatively larger and contain more tortoises. However, these areas are

already subject to impacts that negate their long-term viability; and

3. Even if all development were immediately halted in the permit area and the most stringent management measures applied to the remaining habitat, the extirpation of the tortoise population in the permit area is likely to occur due to cumulative affects of existing impacts.

The condition of tortoise habitat around the perimeter of the permit area is described in Appendix C, Field Reconnaissance of the Permit Area, by Alice Karl. In general, Karl found that habitat quality along the permit area perimeter is largely only fair or poor (i.e., it supports low densities of tortoises at best). The poorest habitat is along the eastern and northern borders. Moderate or better habitat (i.e., supporting densities in excess of about 35 tortoises/square mile) is found along the southern and western borders.

#### Habitat Corridor

The permit boundary shown in Figure 12 would foreclose the option of a habitat corridor on the west side of the Las Vegas Valley connecting populations located north and south of Las Vegas. However, it is the opinion of the TAC, biologists that are consultants to this Short-Term HCP, and eminent conservation biologists Dr. Peter Brussard and Dr. Michael Gilpin that the areas north and south of Las Vegas have already been decoupled by the intervening urbanization surrounding Las Vegas. Also,

included in this determination are the following:

1. The areas north and west of Las Vegas Valley are ineffective as corridors;
2. The urban impacts associated with Las Vegas growth have already rendered the corridor ineffective;
3. Genetic exchange can be accomplished mechanically;
4. Gene flow that occurs now through the area is likely negligible; and
5. Other corridors may exist around the Las Vegas Valley.

#### Estimated Loss of Tortoise Habitat

The amount of land likely to be developed in the permit area between 1991 and 1994 has been estimated at 22,352 acres. This estimate is based on the assumption that the amount of developed land in the permit area will total 99,324 acres in 1991 and will increase at an annual rate of seven percent. These assumptions are consistent with recent growth trends in the Las Vegas Valley, where the amount of developed land increased seven percent annually between 1979 and 1986. Not all development in the permit area will be on tortoise habitat (see Appendix C). However, for purposes of calculating levels of take, it has been assumed that 22,352 acres of occupied tortoise habitat could be lost over the permit period.

### Estimated Level of Tortoise Take

The amount of take expected over the permit period has been estimated to be between 1,788 to 3,710 tortoises.

1. The 1,788 estimate is based on the assumption that the permit area as a whole is low-density tortoise habitat. Estimated population densities for such habitat in Clark County range from 0.03 to 0.08 tortoise per acre. Using the high end of this range (0.08 tortoise per acre), the number of tortoises on 22,352 acres was calculated to be 1,788.
2. The 3,710 estimate takes into account pockets of higher-density habitat in the permit area. Solely for the purpose of estimating take, it was assumed that 20 percent of the 22,352 acres would be high-density habitat (0.16 to 0.39 tortoise per acre), 30 percent would be medium-density (0.08 to 0.16 tortoise per acre), and 50 percent would be low-density. Using the high end of each density estimate, the level of take was calculated to be 3,710 tortoises  $[(0.39 \text{ tortoise} \times 4,470 \text{ acres}) + (0.16 \text{ tortoise} \times 6,706 \text{ acres}) + (0.08 \text{ tortoise} \times 11,176 \text{ acres})]$ .

### Alternative Calculation of Take

As an alternative to the above calculations, a habitat density of 0.14 tortoise

per acre was assumed for the entire permit area. This density is based on the number of tortoises collected (475) and number of acres cleared (3,300) in Las Vegas Valley as of August of 1990 in connection with a scientific collection permit for research purposes. Under this approach, the estimated level of take is 3,129 tortoises (0.14 tortoise  $\times$  22,352 acres). Under the research permit mentioned above, the maximum number of tortoises expected to be found on 11 parcels of land was estimated to total 871; tortoises actually collected totaled 841. Therefore, this approach is considered to be fairly accurate.

### Percentage of Tortoises Affected by Take

The total number of tortoises in the Clark County region is not known. However, for the purpose of evaluating potential impacts of take, the number within PTMAs has been estimated to be between 80,000 and 160,000. This estimate is based on the density ranges (tortoises per acre) assigned to categories of habitat in the PTMAs. Weighed against the 80,000 estimate, the expected level of take would be the equivalent of 2.2 to 4.6 percent of the PTMA tortoise population. Weighed against the 160,000 estimate, take would be the equivalent of 1.1 to 2.3 percent of the PTMA total.

## Measures to Minimize and Monitor Impacts of Take

To minimize and monitor the impacts of the incidental take on the species, a combination of permit conditions and enforcement measures will be implemented in the permit area. The conditions and measures include tortoise survey and removal requirements, tortoise placement efforts, project review and monitoring, and a public information program. These provisions are in addition to limitations on the permit area and period, and measures to mitigate the impacts of take.

### Tortoise Survey and Removal Requirements

The primary purpose of the tortoise survey and removal requirements is to minimize the impact of take by using reasonable and prudent measures to remove most tortoises from harm's way and maximizing efforts to place them in research, relocation, zoo, education, and adoption programs. It is anticipated that most, but perhaps not all, tortoises will be removed as a result of the survey and removal procedures; however, a few tortoises may be inadvertently destroyed as a result of land development. The survey and removal requirements represent a reasonable and prudent effort to remove as many tortoises as possible from harm's way. The requirements also provide a way to document and monitor actual levels of take.

1. A proponent of a project within the permit area, except as stated under exclusionary zones and criteria below, must survey for and remove tortoises from his or her property prior to disturbing the site by grading, development, or other means. It is important to note that tortoise survey and removal requirements are also applicable to public utility projects, road improvements, or other such projects, even though these types of projects do not require a development permit from a local jurisdiction (but do impact private lands); if these types of projects affect public lands, the Section 7 consultation process applies.

- a. Tortoise surveys and removal will be conducted at the project proponent's expense, by a party of his or her choosing, and according to protocols developed by the TAC for this HCP (Appendix D).
- b. A project proponent's compliance with the survey and removal requirements will be documented on a HCP Compliance Form that will be available at City and County offices (see Appendix D). The form has three parts: (1) a project identification and signature page that must be completed for all projects in the permit area, including those exempt from survey and removal requirements; (2) a form for reporting the results of the tortoise

survey; and (3) a form for reporting the results of tortoise removal. In consideration of the administrative costs associated with processing tortoise survey forms, the County and Cities will establish an administrative fee not to exceed \$25 per single-family residence and \$50 for all other development.

- c. A project proponent's compliance with the survey and removal requirements also will be subject to various levels of audit (Figure 13). The audits will be conducted by NDOW, and projects will be selected for audit on a random basis. Funds for the audits are included in the HCP implementation budget.
2. Survey results will be reported on the HCP Compliance form and will be considered valid for 90 days. After 90 days, a new survey must be completed prior to removal of tortoises or to disturbance of the property.
    - a. If the survey indicates that tortoises are not on the property, the completed survey form will be submitted to the appropriate local agency. The completed form will be held by the local agency for one week, during which the survey findings will be subject to audit. If selected, the audit of the findings will be completed within one week after the form has been submitted. If the findings are found to be invalid, a new survey will be required, under the direct supervision of NDOW.
    - b. If the survey indicates that tortoises are on the property, the project proponent shall arrange for the removal of the tortoises and notify the tortoise transfer facility in writing at least 10 days in advance of the collection. During the 10-day period, the project may be selected for in-field inspection of collection procedures.
    - c. If a project proponent wishes to survey for and collect tortoises at the same time, the tortoise transfer facility must be notified in writing at least 10 days in advance. During the 10-day period, the project may be selected for in-field inspection of survey and collection procedures.
3. The results of a tortoise removal will be reported on the HCP compliance form and will be considered valid for 60 days. However, once the tortoise removal process is complete, any tortoises found on the property shall be collected also. After 60 days, a new survey and, if necessary, a second collection will be required prior to disturbance.
    - a. All tortoises removed from properties covered by the Section 10(a)(1)(B) permit will be delivered to a single tortoise transfer facility.
    - b. The project proponent will pay the tortoise transfer facility a flat fee to

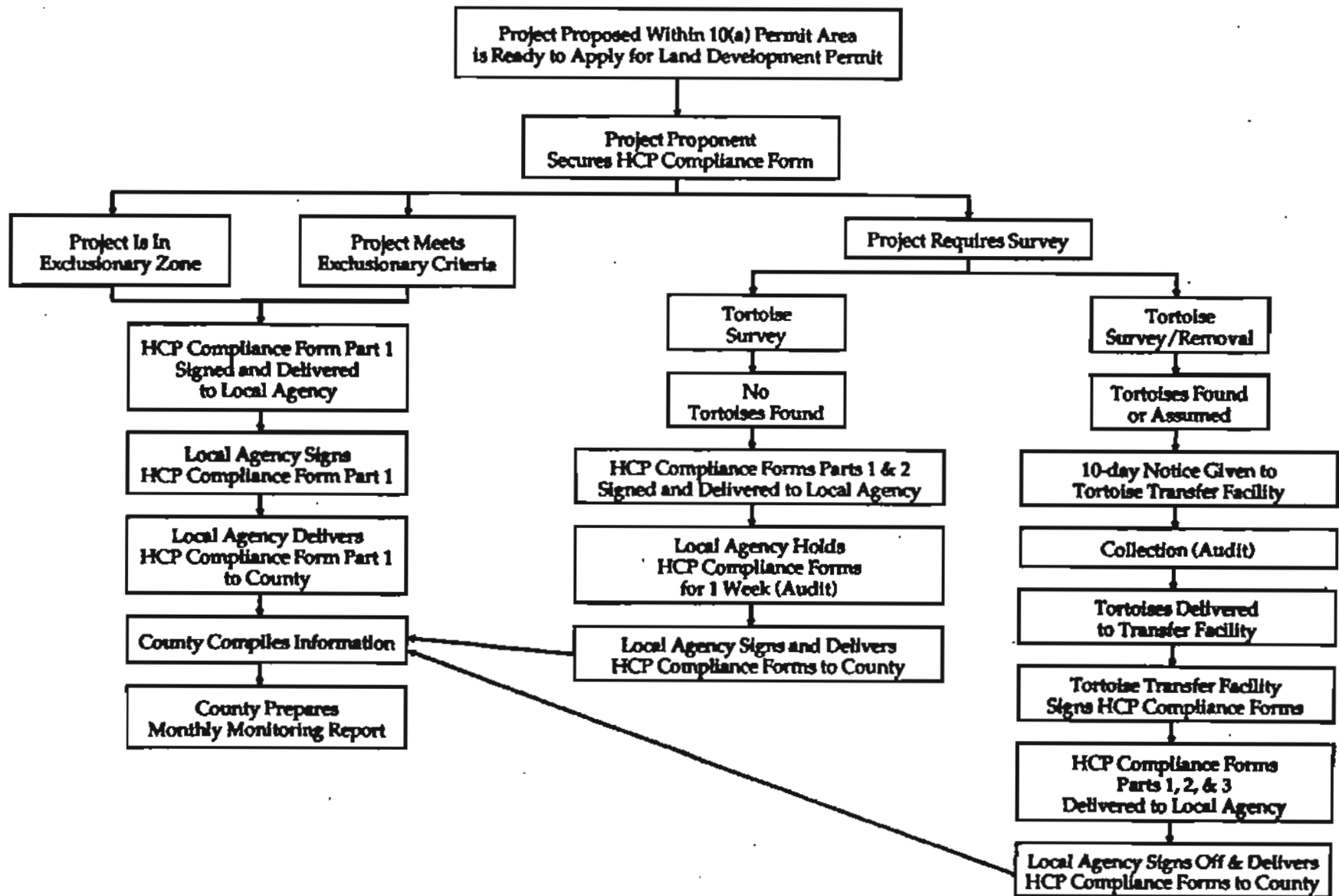


FIGURE 13. OVERVIEW OF HCP COMPLIANCE PROCESS FOR PROJECTS WITHIN 10(a) PERMIT AREA

cover handling expenses at the facility.

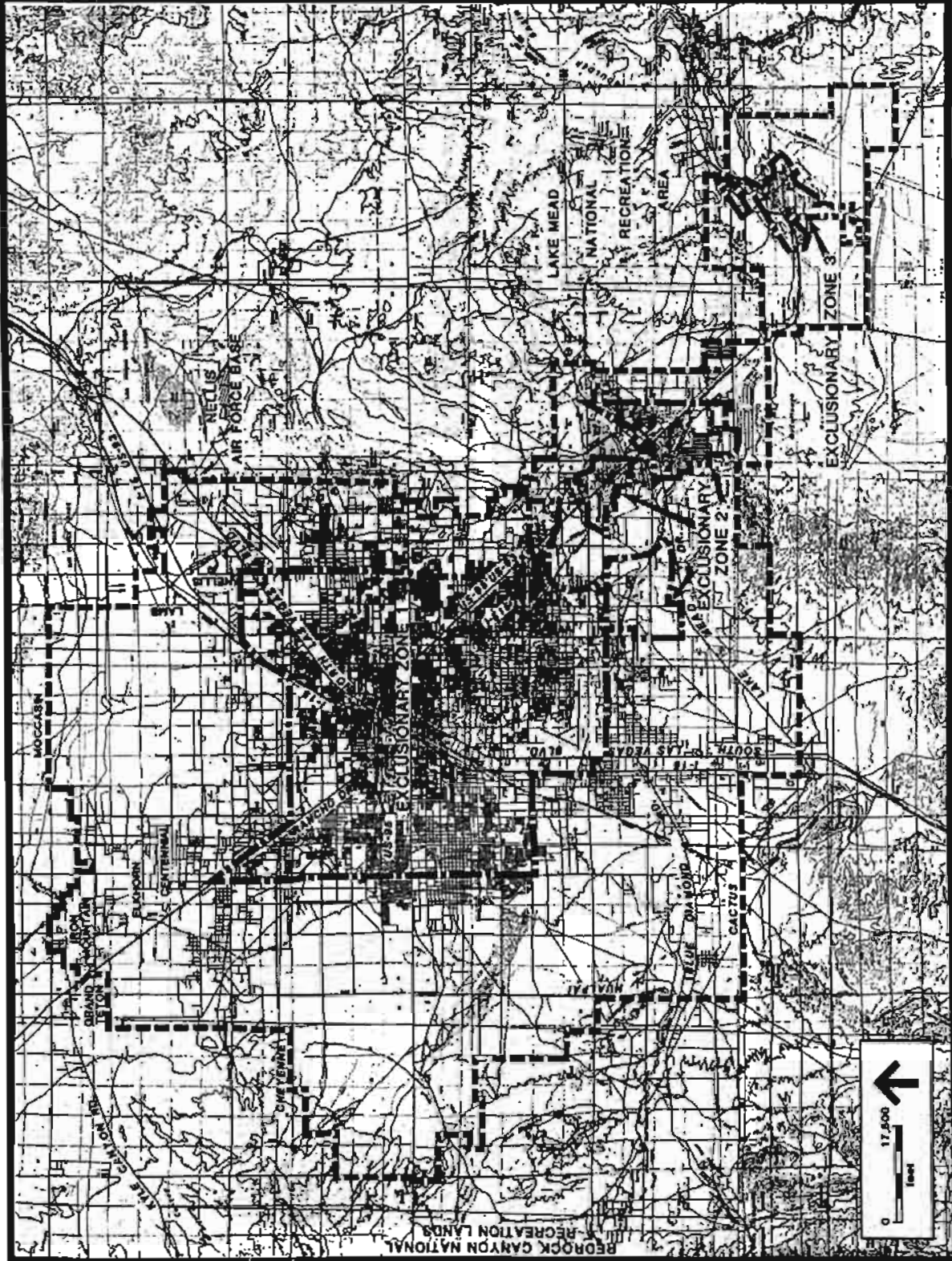
- c. Upon delivery of the tortoises, an authorized representative of the transfer facility will countersign the removal form, which then will be submitted to the appropriate local agency, together with the survey form.
  - d. All tortoises shall be kept and maintained at the transfer facility in a clean, orderly, and humane manner for a period which shall not be less than three days nor more than five days (the holding period).
  - e. The tortoises will be delivered from the tortoise transfer facility only to such persons, firms, and entities as directed by NDOW or USFWS.
  - f. Those tortoises that the transfer facility has not been directed to deliver pursuant to e above shall be humanely euthanized after the holding period has expired.
  - g. Accurate records will be kept and maintained regarding all tortoises which have been accepted, delivered, or euthanized by the tortoise transfer facility.
4. Projects excluded from the survey and removal requirement are limited to those within exclusionary zones and those outside of exclusionary zones but which meet exclusionary criteria.

- a. The exclusionary zones are those mapped in this Short-Term HCP (Figures 14 through 17b). These zones encompass highly urbanized lands that do not include significant amounts of undeveloped tortoise habitat and very little likelihood that tortoises are present. The three zones that have been mapped include portions of the cities of Las Vegas, North Las Vegas, Henderson, and Boulder City and portions of the unincorporated towns of Sunrise Manor, Winchester, Paradise, and East Las Vegas.
- b. Exclusionary criteria are limited to reconstruction of any structure damaged or destroyed by fire or other natural causes and rehabilitation or remodeling of existing structures or existing off-site improvements.
- c. Should tortoises be found on property within exclusionary zones or on sites that meet exclusionary criteria, collection services will be provided on request at no cost. A hotline number will be established for such requests and will be handled through the tortoise transfer facility. Funds for the hotline and collection service are included in the HCP implementation budget.

### **Tortoise Placement Efforts**

Final disposition of collected tortoises will be overseen by NDOW and USFWS, who, working with the Implementation and Monitoring Committee, will screen





- BOUNDARY OF AREAS COVERED BY SECTION 10(A) PERMIT
- - - BOUNDARY OF EXCLUSION AREAS

FIGURE 14.

AREAS EXCLUDED FROM TORTOISE SURVEY/COLLECTION REQUIREMENT

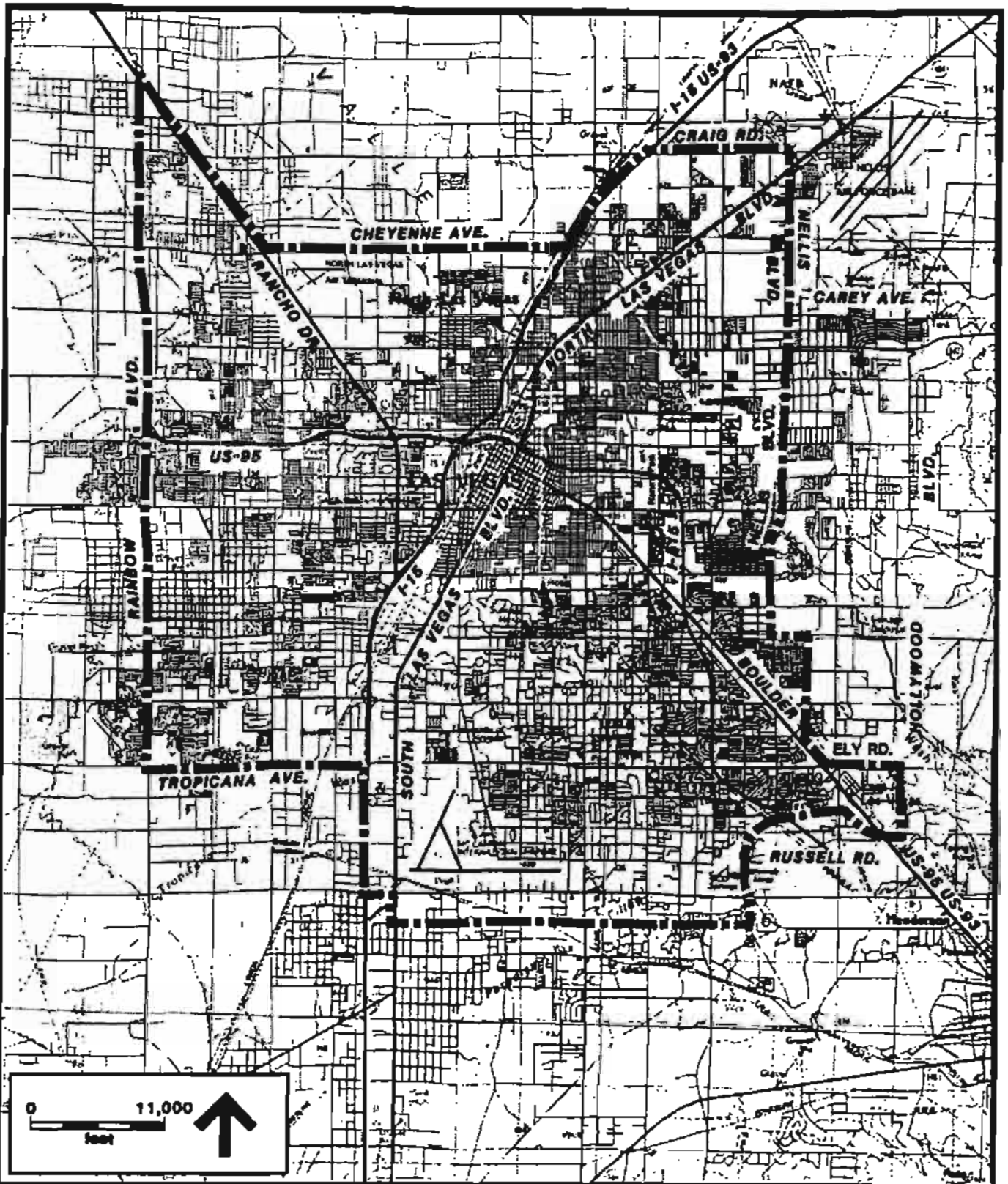
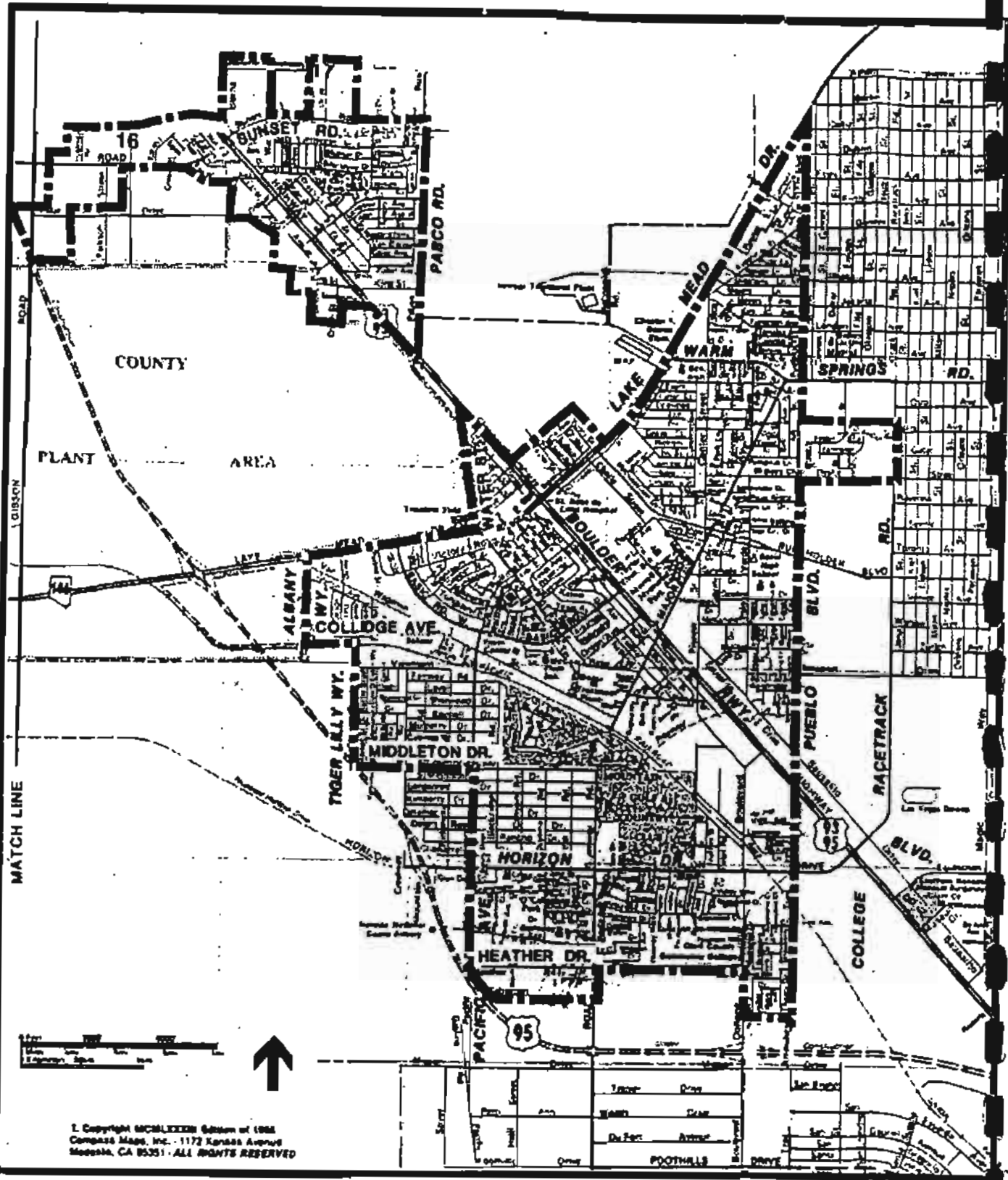
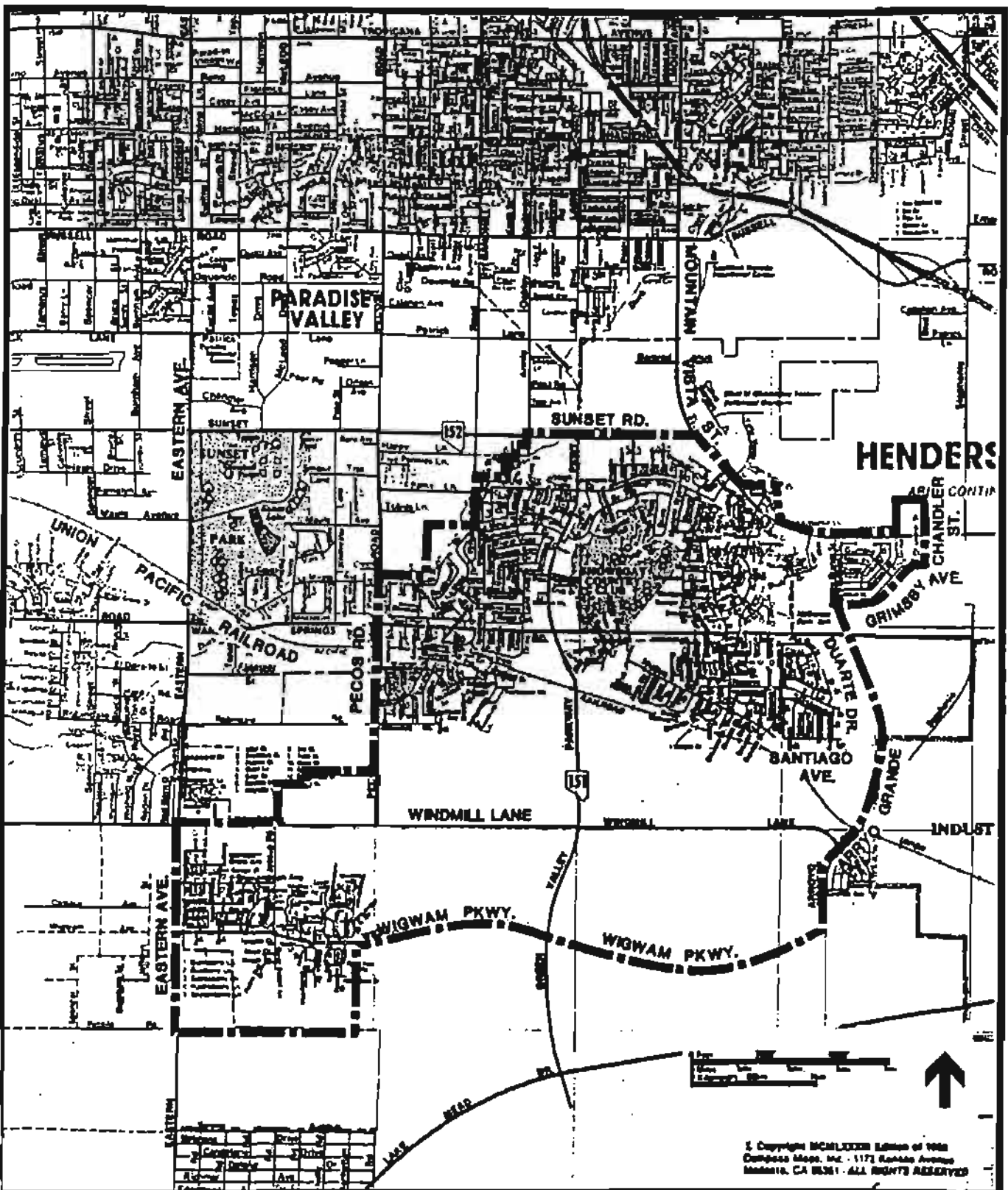


FIGURE 15. EXCLUSIONARY ZONE ONE



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FIGURE 16A. EXCLUSIONARY ZONE TWO



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FIGURE 16b. - EXCLUSIONARY ZONE 2 CONTINUED

REC'D

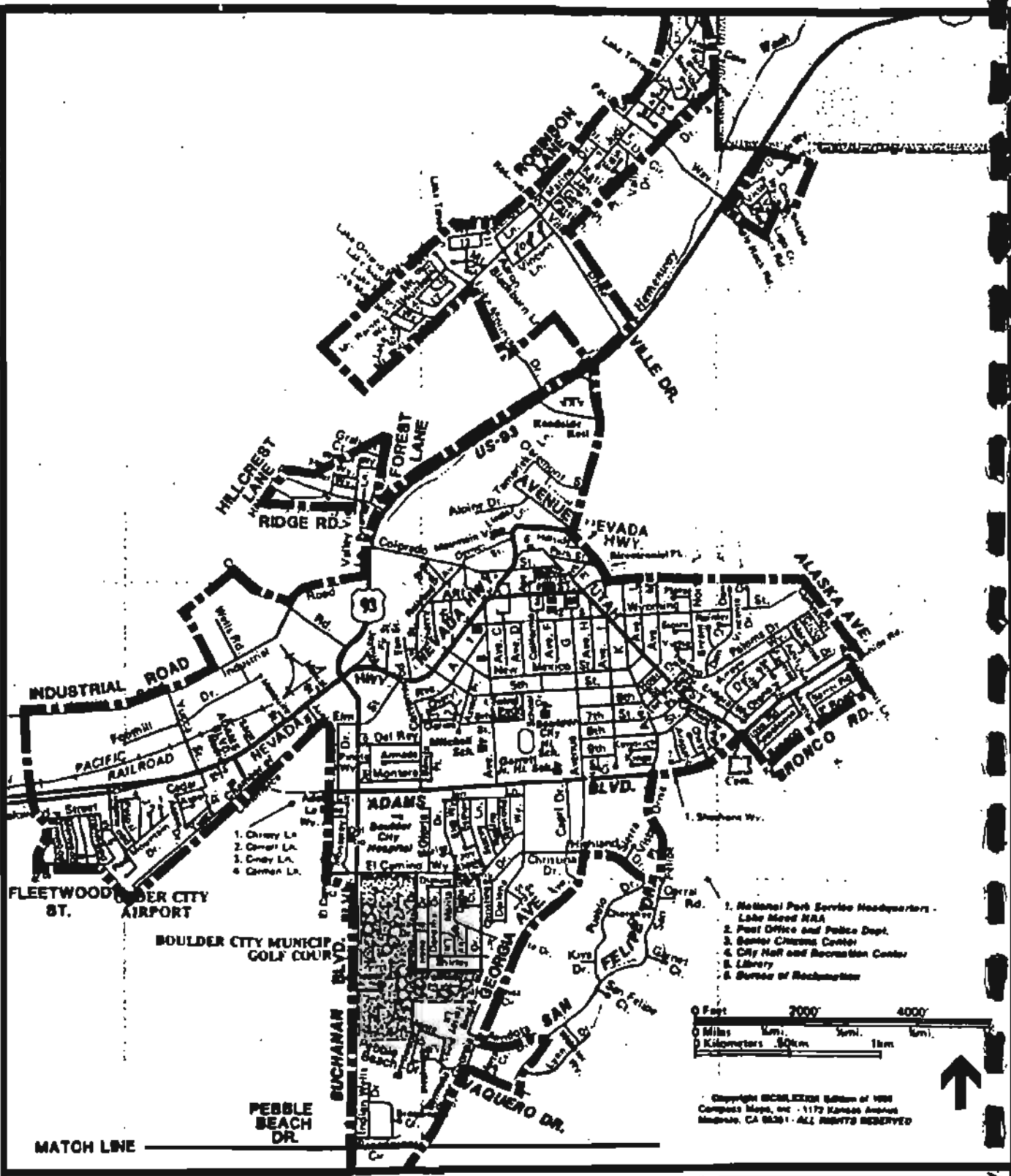


FIGURE 17A. EXCLUSIONARY ZONE THREE



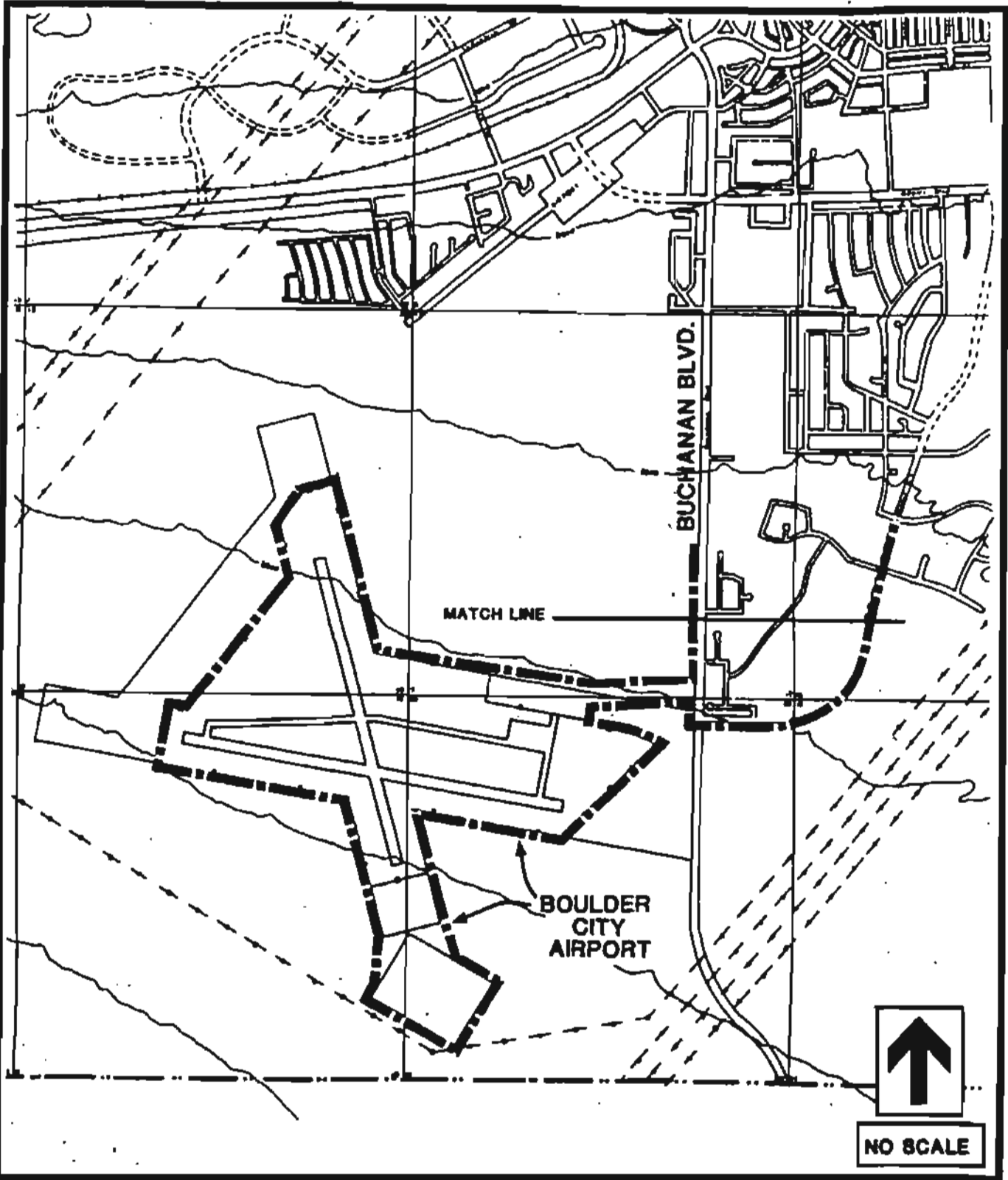


FIGURE 17B. EXCLUSIONARY ZONE THREE CONTINUED

and authorize requests for tortoises for research, relocation programs, zoos, museum exhibits, educational facilities, and adoption programs.

1. To assist the screening process and maximize efforts to place tortoises, an HCP Implementation and Monitoring Committee will be formed to evaluate proposals and maintain a current list of options.
2. Funds also are included in the HCP implementation budget for research and studies aimed at helping the tortoise persist and recover in the wild (see Tortoise Research and Relocation Program).
3. Every reasonable effort will be made to place tortoises delivered to the transfer facility; euthanasia will be used only when no feasible option is available.
4. Collected tortoises will be placed in projects and programs only with the explicit authorization of NDOW or USFWS; the tortoise transfer facility will not have the authority to make such decisions.
5. Except for the handling costs paid by the project proponent on delivery of the tortoises, the cost of placing tortoises will be borne entirely by the party proposing to use them. That party also will be responsible for (a) securing advance authorization from NDOW or USFWS, (b) making all arrangements to move the tortoises from the transfer facility, and (c) mark-

ing the received tortoises for identification purposes in a way prescribed by USFWS or NDOW.

6. An official certificate will be developed by wildlife agencies so recipients of tortoises will have proof of legal acquisition and/or possession.
7. A record of the final disposition of the collected tortoises will be maintained by the transfer facility and provided to the HCP Implementation and Monitoring Committee on a monthly basis.

### **Project Review and Monitoring Process**

For all projects in the permit area, the HCP Compliance Form must be completed before disturbance of the site by grading, building, or other means is allowed to proceed. This includes public utility projects, road improvement projects, or other similar projects that do not require a development permit from a local jurisdiction (but do impact private lands); if public lands are affected by these projects, the Section 7 consultation process applies. Once accepted by the local agency, the form will be held until the agency has authorized site disturbance; the form then will be sent to a central file that will be established and maintained by the County over the permit period.

1. If the project is excluded from the tortoise survey/removal requirements, the local agency with land use authority will sign the form to verify the exclusion and, when it has

authorized disturbance of the site, send the form to the central file.

2. If the project requires a survey and the survey indicates no presence of tortoises, the compliance form must be signed by the person who conducted the survey and the completed survey form must be attached. The two forms will be held for one week, during which the results of the survey will be subject to audit.
3. If the project requires a survey and tortoise removal, the compliance form must be signed by the person who conducted the survey and an authorized representative of the tortoise transfer facility. The HCP Compliance Form then will be submitted to the local agency and sent to the central file after that agency has authorized disturbance of the site.
4. Forms sent to the central file will be used to compile monthly reports. USFWS also will use the forms to audit the compliance of local agencies with project review and reporting requirements.
5. Compliance monitoring and quality controls are built into the protocols for tortoise surveys, removal, and the audit of forms and procedures. Specific quality control and corrective measures are as follows.
  - a. If an audit reveals that tortoises are present where a survey states no obvious signs were found, the project proponent will be required

to select another party to conduct a new survey. The new survey and any required removal of tortoises will be conducted under the direct supervision of NDOW and will be scheduled at its convenience. NDOW may charge a fee to cover its expenses for scheduling and conducting the additional survey.

- b. If an in-field inspection indicates that collection is not proceeding according to the required protocol, the collection will be halted and the project proponent will be required to select another party to do the collection. The new collection will be conducted under the direct supervision of NDOW and will be scheduled at its convenience.
- c. If an audit indicates that a survey or removal form has been intentionally falsified, the project will be excluded from coverage by the Section 10(a)(1)(B) permit for the duration of the permit period. Moreover, if take occurred on such property, it was not incidental to an otherwise lawful activity and will be referred directly to USFWS for prosecution under the terms of the federal ESA. Violations of the Section 9 of the ESA are punishable by fines of up to \$25,000 for each instance of take and by sentences up to six months in jail.
- d. Finally, if the participating local governments fail to require HCP Compliance Forms prior to authorization of disturbance of the land



or fail to make such forms available for random audits and monitoring reports, USFWS will have grounds to suspend or revoke the 10(a)(1)(B) permit within the defaulting jurisdiction.

6. Based on information recorded on the forms sent to the central file, the County will compile monthly reports on actual numbers of tortoises take and habitat loss.
  - a. The reports will be submitted to the HCP Implementation and Monitoring Committee, the HCP Steering Committee, and USFWS for review and will measure cumulative totals of take against the estimated levels and conservation thresholds, which are discussed in detail in the Measures to Mitigate the Impacts of Take section of this chapter. The purpose for these thresholds is to ensure that 400,000 acres of desert tortoise habitat will be preserved at the end of the three-year permit period.
  - b. Should the report indicate that take has exceeded the originally stated or revised estimates or that it has occurred without due progress in

meeting conservation thresholds, USFWS would have grounds to suspend or revoke the Section 10(a)(1)(B) permit.

### **Public Information Program**

A public information program also will be conducted in the permit area to:

1. Advise local residents of the purpose and conditions of the Section 10(a)(1)(B) permit and the reasons for establishing TMAs;
2. Promote use of the hotline and collection service within the exclusionary zones;
3. Provide educational materials (including one or more short videos) and sponsor workshops on tortoise survey and removal protocols;
4. Distribute information on and help promote tortoise adoption programs for tortoises incidentally taken under the Section 10(a)(1)(B) permit; and
5. Promote a better understanding among the general public about the needs and plight of the desert tortoise.

### **Measures to Mitigate Impacts of Take**

To mitigate the impacts of actual take on the species, a combination of measures outside and within the permit area will be implemented. These measures include conservation of tortoise habitat in poten-

tial tortoise management areas, management and monitoring of conserved habitat, initiation of a tortoise research and relocation program, and imposition of a mitigation fee on projects in the

permit area. The primary purpose of the mitigation and conservation measures is to offset the take of tortoises and loss of habitat in the permit area by enhancing the species' chances for survival and recovery in the wild.

## **Conservation of Tortoise Habitat**

As mitigation for the impacts of take in the permit area, at least 400,000 acres of tortoise habitat within PTMAs will be preserved and managed as conserved habitat over the permit period.

### **Definition of Conserved Habitat**

For purposes of this HCP, conserved habitat is defined as tortoise habitat that is being preserved and managed for the specific benefit of the tortoise. To be counted as conserved habitat, the area in question must meet the following conditions:

1. Grazing permits must be acquired;
2. It must be within one of the PTMAs identified in this HCP or be approved by USFWS as suitable for inclusion in a TMA;
3. Land use controls must be in place to restrict or eliminate those uses with adverse effects on the tortoise (see Land Use Controls below);
4. Adequate funding must be available for the ongoing management of the area;

5. TMAs should be designed to have an area of habitat adequate to support viable populations of desert tortoises or be modified through management to meet this goal; and

6. TMAs should be designed to minimize land use conflicts including roads, urbanization, and so on.

### **Amount, Location, and Timing of Habitat Conservation**

As stated in Chapter 4, 100,000 acres of tortoise habitat has been identified as an appropriate building block for TMAs. The building-block concept has been used here to set conservation thresholds over the permit period.

1. At least 100,000 acres of conserved habitat will be established within either of two priority areas (PTMAs 2 and 6 and PTMAs 12 to 14) before any take is allowed in the permit area.
2. At least 200,000 acres of conserved habitat will be established by the end of the first year of the permit after take is allowed.
3. At least 300,000 acres of conserved habitat will be established before take exceeds 2,000 tortoises or habitat loss exceeds 13,000 acres.
4. At least 400,000 acres of conserved habitat will be established, with at least 200,000 acres in either of the two priority areas, before take exceeds 3,500 tortoises or habitat loss exceeds 18,000 acres.

5. Due progress in meeting these thresholds will be reported monthly.

The 400,000 acres of conserved habitat proposed to be protected for the tortoise equals 23 percent of the 1,764,285 acres in the PTMAs (Figure 18). It also translates into a mitigation ratio of 18 acres conserved for every 1 acre lost in the permit area.

Because commercial and competitive OHV events may be permitted in portions of PTMA 12, each acre of conserved habitat within that PTMA shall be treated as 0.75 acre, for purposes of calculated conserved habitat under this section. Any area disturbed by new mining activity will not be counted towards conserved habitat. Additionally, any area that is utilized for the purposes of a grazing study will not be counted towards conserved habitat.

#### Land Use Controls

The following land use controls will apply in conserved habitat:


1. Grazing will be eliminated through the acquisition of grazing permits from willing sellers. Funds for such acquisitions are included in the HCP implementation budget. TNC has been identified as the acquisition agent, representing the Section 10(a)(1)(B) permit applicants. Once these grazing permits have been acquired, TNC will apply for non-use of these permits annually, as required by BLM. BLM will authorize non-use for conservation and protection purposes


for base property owners who have grazing privileges in the identified PTMAs. The approved non-use will not be activated (i.e., grazing will not be permitted during the non-use period) on those allotments until a definitive study of livestock/desert tortoise interrelationships has been completed that would scientifically demonstrate that livestock grazing can be conducted under conditions that will improve desert tortoise habitat and not jeopardize recovery of the species. Grazing will not be permitted by the National Park Service on those lands within the PTMAs where permits have been acquired.


2. With the exception of the El Dorado PTMA (PTMA 12), competitive and commercial events will be prohibited. Through emergency closure, OHV designations within the conserved habitat will be changed to allow non-competitive and noncommercial activity on designated roads and trails only. The delineation of designated roads and trails may be modified as necessary to meet desert tortoise objectives and management needs. Competitive events would be allowed within PTMA 12 on existing courses. Such competitive events would be strictly monitored and policed by BLM and NDOW and evaluated by the HCP Implementation and Monitoring Committee. If it is determined that the desert tortoise is negatively impacted by such events, these events will no longer be allowed.

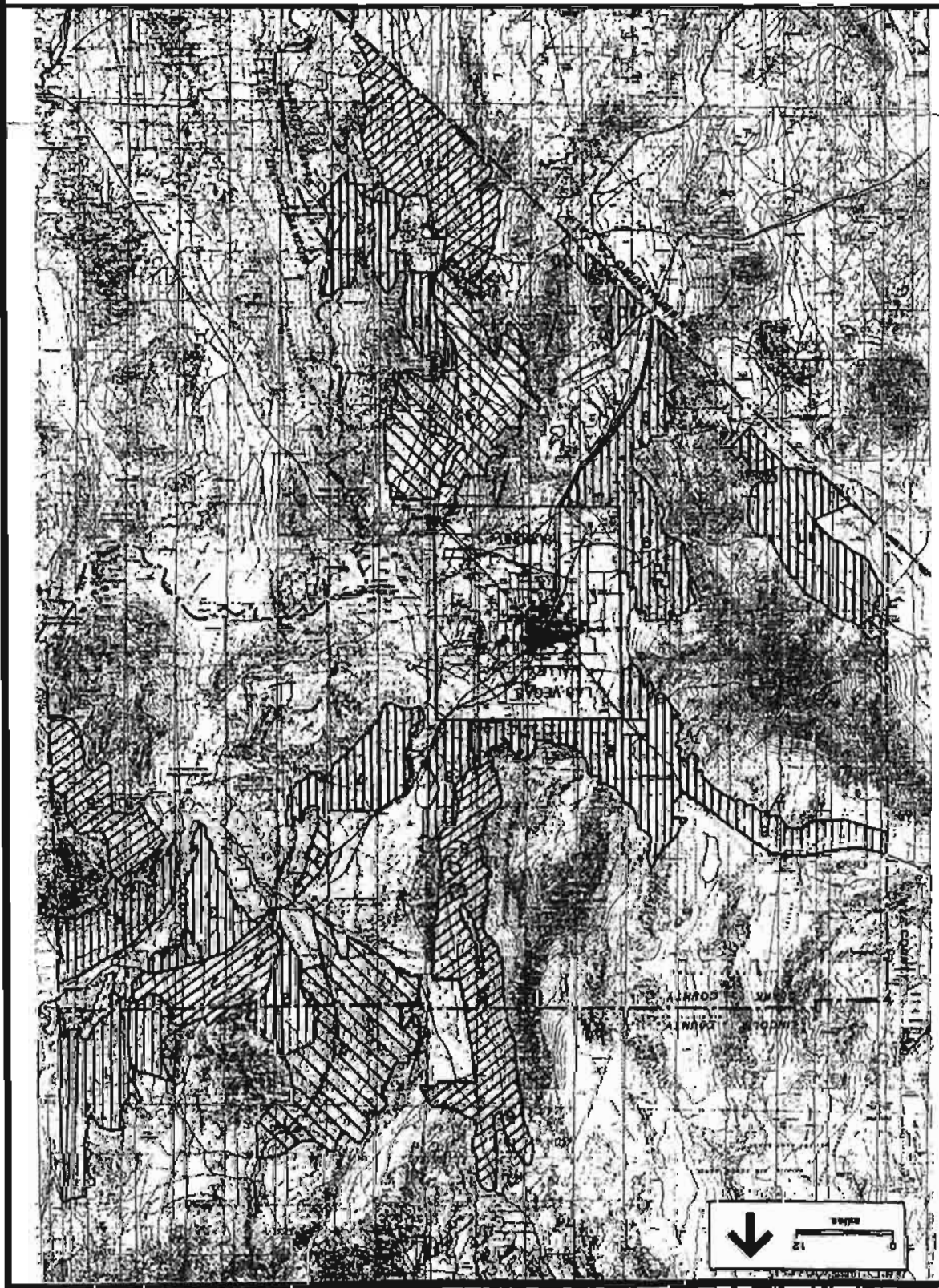
FIGURE 18. POTENTIAL TORTOISE MANAGEMENT AREAS

- 1 SAND HOLLOW
- 2 NORTH FORNON MESA
- 3 SOUTH FORNON MESA
- 4 BUNKERVILLE
- 5 GOLD BUTTE
- 6 COYOTE SPRING VALLEY
- 7 CALIFORNIA WASH
- 8 NORTHWEST VEGAS
- 9 GOOSEBRIDS
- 10 NAVAJO
- 11 PARRISH
- 12 EL DORADO
- 13 COTTONWOOD
- 14 PUTE VALLEY

CATEGORY 1 

CATEGORY 2 

CATEGORY 3 



3. Intensive recreation uses of any kind (excluding OHV use) will be restricted to existing areas currently designated for that purpose. Such areas shall not be expanded.

4. Mining claims will be reviewed by BLM for validity on an as-needed basis (existing claims by law retain valid rights), and Section 7 consultations will be conducted on all mining plans of operations.

5. Landfills will be restricted to existing sites, and new or expanded ones will not be allowed. The area of an existing landfill will not be counted as conserved habitat.

6. Prior to permitting a new or modified land use, the requirements of the Council on Environmental Quality shall be fully complied with. In particular, all environmental documents, as well as biological assessments required for Section 7 consultations, shall, in addition to analyzing the direct and indirect effects of a proposed action, analyze the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or nonfederal) or person undertakes such other actions (40 CFR 1508.7 and 1508.8).

7. In the event it is determined that any land use within a TMA is having an adverse effect upon the recovery of the desert tortoise, nothing in this HCP is intended to preclude the federal land manager from instituting or imposing

additional restrictions and prohibitions with respect to that land use, and it is anticipated that in such case, the federal land manager would institute such restrictions and prohibitions.

### Acquisition of Grazing Permits

The acquisition of grazing permits from willing sellers will be a primary focus of conservation efforts during the permit period.

1. The HCP implementation budget includes \$2 million for acquisition of grazing permits and base property within PTMAs.

2. Priority will be given to acquisition of grazing permits in areas with Category 1 or 2 tortoise habitat. In areas where blocks of conserved habitat have been established, acquisition of permits for adjacent habitat (including Category 3 habitat) will be given equal priority.

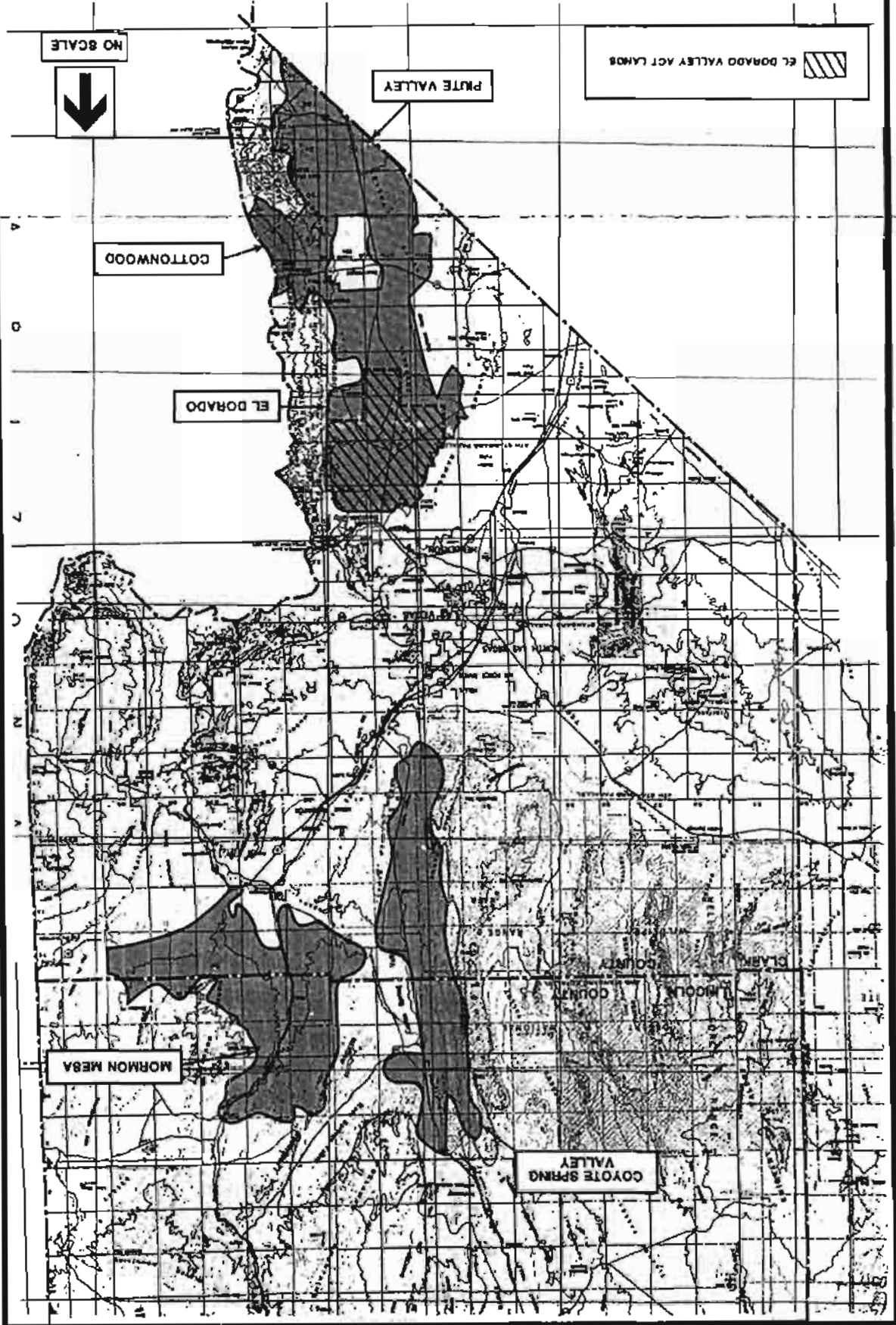
3. TNC will be the acquisition agent and will negotiate transactions with willing sellers. Appropriation of funds for such transactions will be subject to the review of the HCP Implementation and Monitoring Committee and the HCP Steering Committee and authorization by the Clark County Board of Commissioners.

### Priority Conservation Areas

Two priority areas have been identified for the establishment and expansion of the first TMA building blocks, PTMAs 2 and 6 and PTMAs 12 to 14 (Figure 19).



FIGURE 18. PRIORITY CONSERVATION AREAS



The size and configuration of a TMA in either or both of these areas, or in any other PTMA, will depend on the amount and location of habitat within the area that can be meet the conditions of conserved habitat as defined above.

1. The amount of tortoise habitat in PTMAs 2 and 6 has been estimated at 450,288 acres, including 308,839 acres of Category 1 and 2 habitat. Category 3 habitat is located in the north-western portion PTMA 2 and covers approximately 141,449 acres. Habitat in these PTMAs has been designated as a priority area because it:

- Contains more than one local tortoise population, including groups representing the northernmost extent of the tortoise's current range;
- Is relatively undisturbed, compared with other PTMAs;
- Is adjacent to other Category 1 and 2 habitat that could be added to a TMA established in the area; and
- Is relatively remote from the urbanized portions of Las Vegas Valley.

2. The amount of tortoise habitat in PTMAs 12, 13, and 14 has been estimated at 436,073 acres, including 241,640 acres of Category 1 and 2 habitat. The area has an estimated 194,353 acres of Category 3 habitat in PTMA 12, of which approximately 115,000 acres is scheduled for sale to the State of Nevada. Habitat in these PTMAs has been designated as a priority area because it:

- Contains one of the three distinct genetic groups of tortoises identified in Clark County;
- Is located entirely within Clark County and the area covered by the RMP;
- Includes areas that have been the focus of detailed studies; and
- Is connected to habitat that contains the largest important population of tortoises in California.

## **Management of Conserved Habitat**

Active management of a conserved area will begin when a TMA building block has been established. Funds for ongoing management will be provided through a trust fund that will be established during the permit period.

### **Definition of TMA Building Block**

As defined in Chapter 4, a "TMA building block" is an area of contiguous tortoise habitat roughly 100,000 acres in size. The actual size of such a TMA will depend on habitat conditions and the level of management proposed. For planning purposes, however, 100,000 acres has been established as the basic unit.

### **Components of Management**

Management of conserved habitat will include three components: (1) physical maintenance, (2) enforcement of land use controls, and (3) biological monitoring of the area.

1. Physical maintenance of conserved habitat, including any required signs and fencing, will be the responsibility of the federal land manager. If the conserved area includes land managed by more than one agency, maintenance will be coordinated among those agencies through a cooperative agreement.
2. Enforcement of land use controls, including regular patrols, will be the responsibility of the federal land manager. If the conserved habitat area includes land managed by more than one agency, enforcement will be coordinated among those agencies through a cooperative agreement.
3. Biological monitoring of the area shall also be the responsibility of the federal land manager and shall include, but not be limited to:
  - TMA mapping and inventory;
  - Tortoise monitoring and census;
  - Habitat monitoring and evaluation;
  - Evaluation of public land use activities and the effects they are having upon tortoise habitat;
  - Monitoring of other species of concern; and
  - Predator monitoring.

#### **Annual TMA Management Plan**

1. Because management and each of the three components comprise a significant aspect of the mitigation required pursuant to this HCP, each of the federal land managers will

prepare an annual management plan and report in consultation with the USFWS and in coordination with Clark County through its Implementation and Monitoring Committee. The plan shall be submitted to the USFWS and shall address proposed management plans and programs for the coming year as well as a report evaluating management actions imposed or continued during the previous year, in order that the USFWS may ensure that the terms of this HCP and the 10(a)(1)(B) permit are being fulfilled. As part of the annual plan and report, the federal land managers shall prepare and submit a budget for the management of the TMAs under its control, which shall outline, among other things, what portion shall be funded by the federal land manager, what portion it intends to seek from Section 7 mitigation funds, and what portion it intends to seek as supplemental funding from the HCP funds administered by Clark County.

2. While it is clear that the federal land managers have the responsibility to both plan for and implement the required management within TMAs, both the BLM and the NPS recognize the substantial interest that Clark County and the Cities have in assuring that the Section 10(a)(1)(B) permit is not suspended or revoked. With that interest in mind, the federal land managers have agreed that they will meet regularly with the Clark County HCP Implementation and Monitoring Committee and that the committee will play an important role in providing



input in the formulation and evaluation of the annual management plan. In addition, the federal land managers have agreed that, except for emergency situations that require immediate action, all proposals for maintenance, enforcement of land use controls, and biological monitoring of the TMAs, including research projects (design, requests for proposals, interim and final reports, and evaluations), shall be presented to and reviewed by that committee on behalf of the County and the Cities prior to implementation or acceptance by the federal land managers. Notwithstanding the agreement of the federal land managers to cooperate and coordinate in the formulation, implementation, and evaluation of management plans for the TMAs and to submit annual plans and budgets to the committee and the USFWS, final decisions regarding all aspects of the formulation and implementation of the annual management plan as well as the management of the land shall remain the sole province of the federal land manager.

#### **Funding for Management of Conserved Habitat**

To assist ongoing management of conserved habitat, a \$3,125,000 trust fund will be established.

1. Assuming an eight percent yield, the \$3,125,000 trust fund would provide \$250,000 for implementation of the annual TMA management plan. These monies will be used to cover the cost of specific measures in the plan and

will be in addition to, not instead of, amounts budgeted by BLM and NPS or other agencies for the management of TMAs. As with other HCP monies, the trust fund will be administered by the Clark County Board of Commissioners.

2. Funds in the HCP implementation budget for the tortoise research and relocation program also may be used during the permit period for work directly related to TMA management, subject to review by the HCP Implementation and Monitoring Committee.

#### **Tortoise Research and Relocation Program**

Conservation and management of 400,000 acres of tortoise habitat is the primary mitigation proposed to offset the impacts of take. As additional mitigation, a tortoise research and relocation program will be implemented to enhance the scientific basis for the design and management of TMAs. The research conducted through this program will be evaluated, reviewed, and monitored by the HCP Implementation and Monitoring Committee.

#### **Focus and Funding of Program**

The tortoise research and relocation program will focus on data, studies, and field work aimed at improving the tortoise's chances of survival and recovery in the wild. A geographic information system database will be utilized to assimilate and analyze the biological and

land use data collected during research studies. This information will then be applied to land management techniques recommended in the annual management plan. Over the permit period, \$500,000 will be allocated for the research program.

### **Program Components and Priorities**

The program will give priority to studies that focus on the effects of domestic livestock grazing and grazing by wild horses and burros, tortoise predators, tortoise genetics, the reintroduction of tortoises into suitable habitat, and tortoise demography and dispersal. Other research and studies will be undertaken to the degree that funding is available.

*Grazing Study.* Grazing by domestic livestock and wild horses and burros is believed to result in competition between tortoises and grazing animals for food, trampling of tortoises and burrows, change in the composition of floral species, and other ecological impacts. To help resolve the debate over the level of such impacts, a grazing study will be initiated, possibly within a conserved habitat area. Use of a portion of conserved habitat is recommended because the land use controls on such areas will provide a way to further isolate and monitor the specific effects of grazing on the tortoise. The grazing study will be designed to assess the individual level of grazing impacts on tortoise physiology, behavior, reproduction, and other biological parameters, and monitor the effects on tortoise populations in control and experimental areas over a five to

seven year period. The grazing study will be closely coordinated with and complimentary to the BLM's proposed livestock grazing study.

*Predator Survey.* Reports from California indicate that ravens are preying selectively on younger tortoises and the level of predation is affecting the number of tortoises that survive to become reproducing adults. Other reports also suggest that predation by coyotes has increased in certain areas. To determine if raven or coyote predation is a problem in southern Nevada and, if so, how best to reduce it, a predator survey will be conducted in and adjacent to the PTMAs. This study will survey roads, powerlines, and other features for raven and coyote presence and density; examine raven perch and nest sites for tortoise shells; monitor waste disposal sites, landfills, and other human activity areas that may attract ravens or other predators; and study the ecology, behavior, development, and learning of ravens, with emphasis on their potential role as tortoise predators.

*Genetic Survey.* Preliminary mitochondrial DNA studies have indicated that there are three genetic subunits of desert tortoise in Clark County. However, the studies provide little information on the geographical boundaries of the units and the genetic structure of tortoise populations. To ensure that the TMAs preserve genetic diversity and to provide data necessary for tortoise relocation studies, a detailed analysis of gene flow, genetic structure, and effective population size will be conducted.

This analysis will sample 15 to 30 tortoise populations throughout the county, analyze the samples for mitochondrial DNA and allozymes, determine relationships between tortoise populations north and south of the Las Vegas Valley, and establish geographical boundaries for genetic subunits.

**Tortoise Relocation Study.** Can wild tortoises be reintroduced into suitable habitat, and can relocation be used to help the species survive and recover? The tortoise relocation study proposes to help answer these questions and provide a placement option for tortoises removed from the permit area. Specifically, it will test the reintroduction of tortoises into habitat that has been degraded by highways but can be made suitable with some modifications and controls. A study site with suitable habitat will be selected adjacent to a highway but outside of conserved areas. It then will be surveyed for tortoises and other species of concern and equipped with appropriate fences or other barriers. Following appropriate tests for genetic compatibility and disease, a select number of tortoises removed from the permit area will be relocated to the study site and monitored. The primary objectives of the study are to establish successful relocation procedures, determine the effects on the relocated tortoises, and determine the effects on the resident tortoises. Pending the results of the study, controlled relocation areas may be identified in one or more of the conserved habitat areas.

**Tortoise Demography and Dispersal.** Mathematical models that predict the persistence of populations depend on variations caused by the demographic parameters, social structure, and life history of a species. Such data regarding the tortoise are largely missing but crucial to establishing the size, management parameters, and safety margins for individual TMAs. To help gather such data, this component of the program will establish a long-term study (20+ years) of a marked tortoise population and provide for an annual census of tortoises in conserved areas during the permit period. The primary objective is to collect data on natural history, behavior, reproduction, movement, mortality, and other demographic parameters.

**Other Studies.** To the degree that other funding is available, other research and studies will be considered on a case-by-case basis.

#### **Review and Selection of Research Proposals**

Proposals to conduct one or more of the above studies will be solicited and reviewed by the HCP Implementation and Monitoring Committee and other outside experts as applicable, beginning in the first quarter of the permit period. Selection of one or more research teams to conduct the studies, or allocation of funds to federal land managers for such studies, will be subject to the review of the HCP Implementation and Monitoring Committee.

## Mitigation Fee

Within the Section 10(a)(1)(B) permit area, a mitigation fee of \$550 per acre will be imposed on all projects in the permit area. This includes public utility projects, road improvement projects, or other similar projects that do not require a development permit from a local jurisdiction (but do impact private lands); if public lands are affected by these types of projects, the Section 7 consultation process applies. Mitigation measures recommended as a result of Section 7 consultations should be consistent with the mitigation proposed in the Short-Term HCP. However, if Section 7 consul-

tation has been conducted for a project and a mitigation fee has been paid, up to \$300 per acre will be applied towards the HCP mitigation fee. The imposition of this fee does not affect the \$250-per-acre fee that has already been imposed on development in Clark County to fund the Long-Term HCP. Additionally, this fee may be increased as necessary to fund mitigation measures required in the Long-Term HCP. The \$550-per-acre fee will be used for the conservation and mitigation measures presented in this Short-Term HCP. At the end of the three-year permit period, if any monies remain unspent, these funds will be contributed to the Long-Term HCP fund.

## Implementation Measures

To ensure implementation of the proposed conservation and mitigation measures, the permit applicants propose to (1) sign an implementation agreement; (2) form an HCP Implementation and Monitoring committee; (3) secure adequate funding for implementation; and (4) complete the Long-Term HCP.

### Implementation Agreement

All of the participating agencies will enter into an agreement with USFWS regarding implementation of the HCP. This agreement will specify the responsibilities of each agency, the conservation and mitigation measures to be implemented, reporting and enforcement procedures, and any other permit conditions USFWS may require.

### HCP Implementation and Monitoring Committee

1. An HCP Implementation and Monitoring Committee will be established to assist in the ongoing aspects of this HCP. Its duties and responsibilities shall include:
  - a. Help formulate and evaluate the annual management plan in cooperation and consultation with the federal land managers;
  - b. Review proposals for maintenance and enforcement of land use controls and biological monitoring of the TMAs, including research projects (design, requests for proposals, interim and final

reports, and evaluations) prior to implementation or acceptance by the federal land managers;

c. Advise the County and the Cities regarding proposed expenditures of HCP funds, including proposed acquisition of grazing permits, research proposals, and supplements to federal land manager budgets;

d. Upon request from the USFWS, review and comment upon the proposed expenditure of Section 7 mitigation funds;

e. Review monthly reports regarding cumulative acreage, desert tortoises taken within the permit area, and amount of habitat conserved;

f. Consult with NDOW and USFWS regarding final disposition of tortoises collected within the permit area; and

g. Perform such further duties and responsibilities as the Clark County Board of Commissioners shall from time to time direct.

2. Agencies and organizations to be represented on the HCP Implementation and Monitoring Committee include:

- USFWS (ex officio)
- BLM (ex officio)
- National Park Service (ex officio)
- NDOW (ex officio)
- Nevada Department of Agriculture (ex officio)
- Clark County and the Cities

- Clark County Wildlife Advisory Board
- Environmental Defense Fund/Defenders of Wildlife
- TORT Group
- The Nature Conservancy
- University of Nevada at Las Vegas
- Southern Nevada Homebuilders Association
- Two representatives of "multiple land use" interests (i.e., mining, grazing, OHV)
- A representative from the Recovery Team appointed by USFWS for the desert tortoise (until the recovery plan is finalized)

3. The Clark County Board of Commissioners will appoint representatives to the committee. This committee will be in addition to the HCP Steering Committee, which will continue to oversee preparation of the Long-Term HCP and whose meetings will serve as a public forum.

### Funding Sources and Budget

The level of funding required to implement the conservation and mitigation measures is estimated at \$6,075,000 over the period permit (Table 10). The funding source will be the \$550-per-acre mitigation fee on projects in the permit area.

To provide an immediate source of funds for grazing permit acquisition and habitat management; monies generated to date by the \$250-per-acre fee for Clark County will be advanced against the monies to be collected during the permit

**TABLE 10****ESTIMATED BUDGET FOR IMPLEMENTATION OF SHORT-TERM HCP**

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**Costs Related to Minimization/Monitoring of Impacts**

NDOW Audit of Survey/Removal Compliance (personnel and overhead for 3 years)	\$300,000
Hot-line/Collection Service in Exclusionary Zones (\$25,000/year)	75,000
Public Information Program in Permit Area (\$25,000/year)	75,000
Subtotal	\$350,000

**Costs Related to Mitigation of Impacts**

Grazing Permit/Base Property Acquisition	\$2,000,000
Trust Fund for TMA Management (yielding \$250,000/year at 8% interest)	3,125,000
Tortoise Research and Relocation Program	500,000
Subtotal	\$5,625,000
Permit Period Total	\$6,075,000

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period. Other potential funding sources that will be pursued if necessary include:

- Parks and Wildlife Bond (Question 5 on the November 1990 Nevada referendum), which will raise \$47.2 million to support existing state parks and programs and will include \$13 million for wildlife projects;
- Publicland sales through an amendment to the Santini-Burton Act, by which proceeds from the sale of lands in the Santini-Burton area could be redirected to habitat preservation and management;
- Federal funding, granted to BLM in the amount of approximately \$250,000 to perform a comprehensive grazing study on BLM lands;
- Federal funding under Section 6 of the federal ESA for research projects or from the Federal Land and Water Conservation Fund; and
- Private funding through the Nature Conservancy, Conservation Fund, Irvine Foundation, Ford Foundation, Keck Foundation, and/or other institutions.

### **Completion of the Long-Term HCP**

Completion of the Long-Term HCP will provide for the expansion (in size and/or

number) of TMAs established during the short-term permit period, and the \$250-per-acre fee imposed on development in Clark County will continue through the permit period to provide funds for expansions. Additionally, this fee may be increased as necessary to fund mitigation measures required in the Long-Term HCP. To the extent that expenditures for development and implementation of the Short-Term HCP exceed the funds generated by the \$300-per-acre augmentation to the \$250-per-acre fee currently being collected for development of the Long-Term HCP, those additional funds required will be "borrowed" from the \$250-per-acre HCP fund, provided that the \$300-per-acre fee augmentation for the Short-Term HCP will be continued beyond the three-year term until such time as the funds "borrowed" from the Long-Term HCP are repaid. The Long-Term HCP also entails coordination with and completion of the RMP, by which conserved habitat can be formally classified as a sensitive resource and designated as an ACEC in BLM's plans. Work on both the Long-Term HCP and RMP has already been initiated and is scheduled to be completed in 1992.

## Chapter Six

# Alternatives Considered

Alternatives to the proposed incidental take and to the proposed conservation measures, including those suggested by the SC, TAC, and members of the public,

were considered in preparing this HCP. All public comments on the Short-Term HCP are included in Appendix E.

## Alternatives to Proposed Take

Three alternatives to the proposed incidental take were considered: no project, delay of take until completion of the Long-Term HCP, and additional restrictions on the level of take.

1. The No Project alternative assumes that a Section 10(a)(1)(B) permit would not be issued and that projects involving take would be prohibited under Section 9 of the ESA or, if federal land or action was involved, handled through Section 7 consultations. Such an approach would indefinitely delay development on nonfederal land and, because of the Section 7 option and land ownership patterns, would promote urban development outside

of the urban core. It was rejected because it would do more to protect relatively poor quality tortoise habitat in urban areas than to protect the tortoise in the wild. It also was rejected because it eliminates the opportunity to implement conservation measures on a scale not possible through individual projects or by individual federal agencies.

2. The Long-Term HCP alternative assumes that a Section 10(a)(1)(B) permit would not be sought until the long-term plan and RMP are complete. This scenario is similar to the no project alternative except that the delay in development on nonfederal



land would be limited to two or three years. It was rejected primarily because, over the two or three years, it would have the same drawbacks as no project. In addition, the approach would delay conservation measures in relatively undisturbed tortoise habitat for the sake of postponing incidental take in an already urbanized area.

3. Additional restrictions on incidental take also were considered, including a numeric cap on take and a smaller permit area. Such alternatives assume

that a Section 10(a)(1)(B) permit would be issued. The concept of a numeric cap was rejected because, in addition to being arbitrary, it would be extremely difficult to administer. It also would do more to promote competition among jurisdictions and developers than to promote their cooperation in implementing the HCP. A smaller permit area was also rejected largely for the same reasons. A smaller permit area also might require that a significantly higher mitigation fee be imposed to fund the proposed conservation measures.

## Alternative Conservation Strategy

The preliminary drafts of the HCP proposed the establishment of one TMA as the primary conservation measure outside the permit area. This approach has been modified based on a minimum viable population analysis that established 100,000 acres as a reasonable building block for TMAs. The revised approach calls for the establishment of TMA building blocks in more than one area and uses the areas recommended as TMAs in the earlier drafts as priority

conservation areas. The building block concept has been incorporated into the HCP because it allows for habitat conservation in more than one area, establishes areas of conserved habitat that can be expanded through the Long-Term HCP, and provides more flexibility in the design and management of TMAs. It also does not limit the total amount of habitat conserved over the permit period to that within one area.

## Chapter Seven

### HCP Preparation

**Paul Selzer—Attorney, Best, Best and Krieger**

Mr. Selzer directed and coordinated preparation of the Clark County Desert Tortoise Short-Term Habitat Conservation Plan (Short-Term HCP) for the Section 10(a)(1)(B) permit applicants, including coordination of the Steering Committee. Mr. Selzer has 25 years' experience in real estate law and has coordinated preparation of the Coachella Valley Fringe-toed Lizard HCP and the Stephens' Kangaroo Rat HCP.

**Paul Fromer—Endangered Species Specialist/Conservation Biologist, RECON**

Mr. Fromer was responsible for the technical preparation of the Short-Term HCP, including direction and moderation of the Technical Advisory Committee (TAC). Mr. Fromer has over 10 years' experience as a senior biologist. He has

directed the preparation of the Least Bell's Vireo HCP, San Diego, and the Stephens' Kangaroo Rat HCP.

**Jean Carr—Project Manager, RECON**

Ms. Carr was the principal author of the Short-Term HCP, which required close coordination with the TAC, Steering Committee, and special interest groups. Ms. Carr has over 10 years' experience in land use planning and public information programs; she was also the principal author of both the Least Bell's Vireo and Stephens' Kangaroo Rat HCPs.

**Tara Wood—Environmental Analyst, RECON**

Principal responsibilities included scoping and preparation of the Short-Term HCP. Ms. Wood has over five years' experience in the preparation of state and federal environmental documents. She prepared the Environmental

Assessment for the Scientific Collection Permit for the Desert Tortoise in the Las Vegas Valley and participated in the preparation of the Stephens' Kangaroo Rat HCP.

**Ron Marlow**—Tortoise Biologist,  
RECON, University of Nevada, Las Vegas

Dr. Marlow has been involved in desert tortoise research and conservation for 23 years. He has worked on tortoise conservation in North and South America, Europe, and Asia.

**Kris Kemman**—Graphic Artist,  
RECON

**Harry Price**—Graphic Artist, RECON

**Denise Brown**—Production Typist,  
RECON

**Loretta Gross**—Production Supervisor,  
RECON

**Stacey Tomlinson**—Production Specialist,  
RECON

In addition to Mr. Selzer and the RECON staff, the Technical Advisory Committee also participated in the preparation of the Short-Term HCP. TAC members are noted below.

**Kristin H. Berry**, Bureau of Land Management

**Betty Burge**, TORT Group

**John Donaldson**, Nevada Department of Wildlife, Region III

**Brad Hardenbrook**, Nevada Department of Wildlife, Region III

**David Harlow**, U.S. Fish and Wildlife Service

**Karin Hoff**, University of Nevada, Las Vegas

**Mark Maley**, U.S. Fish and Wildlife Service

**Sid Stone**, Bureau of Land Management, Las Vegas District

**Thomas Smigel**, Nevada Department of Agriculture

**Jim St. Amant**, California Department of Fish and Game

**Bob Turner**, Nevada Department of Wildlife, Region III

**Kent Turner**, Lake Mead National Recreation Area

## Chapter Eight

### References Cited

- Adams, J. A., A. A. Endo, L. H. Stolzy, P. G. Rowlands, and H. B. Johnson  
1982 Controlled Experiments on Soil Compaction Produced by Off-road Vehicles in the Mojave Desert, California. *Journal of Applied Ecology* 19:167-175.
- 1984 Controlled Experiments on Soil Compaction Produced by Off-road Vehicles in the Mojave Desert, California. Desert Tortoise Council, Riverside, California.
- Berry, K. H.  
1986 Desert Tortoise (*Gopherus agassizii*) Relocation: Implications of Social Behavior and Movements. *Herpetologica* 42(1):113-125.
- Berry, K. H., and B. L. Burge  
1984 The Desert Tortoise in Nevada. In *The Status of the Desert Tortoise (Gopherus agassizii) in the United States*, edited by K. H. Berry, pp. 308-396. Report to the U.S. Fish and Wildlife Service from the Desert Tortoise Council on Order No. 11310-0083-81.
- Berry, K. H., and S. Stone  
1989 Draft notes from two meetings on the upper respiratory disease syndrome in desert tortoises. October 13, 1989, in Las Vegas, Nevada.
- Brattstrom, B. H., and M. C. Bondello  
1983 Effects of Off-road Vehicle Noise on Desert Vertebrates. In *Environmental Effects of Off-Road Vehicles: Impacts and Management in Arid Regions*, edited by R. H. Webb and H. G. Wilshire, pp. 167-221. Springer-Verlag, New York.

**Bureau of Land Management**

1989 Draft Raven Management Plan for the California Desert Conservation Area.

**Burge, B. L.**

1977 Daily and Seasonal Behavior and Areas Utilized by the Desert Tortoise (*Gopherus agassizii*) in Southern Nevada. Desert Tortoise Council.

**Burge, B. L., and W. G. Bradley**

1976 Population Density, Structure, and Feeding Habits of the Desert Tortoise, *Gopherus agassizii*, in a Low Desert Study Area in Southern Nevada. In Proceedings of the 1976 Desert Tortoise Council Symposium, edited by N. J. Engberg, S. Allen, and R. L. Young, pp. 51-74. Las Vegas.

**Bury, R. B.**

1978 Desert Tortoises and Off-road Vehicles: Do They Mix? Desert Tortoise Council.

**Bury, R. B., and R. A. Luckenbach**

1983 Vehicular Recreation in Arid Land Dunes: Biotic Responses and Management Alternatives. In Environmental Effects of Off-Road Vehicles: Impacts and Management in Arid Regions, edited by R. H. Webb and H. G. Wilshire, pp. 207-221. New York.

**Clement Associates**

1990 The Status and Viability of the Desert Tortoise in Las Vegas Valley.

**Coombs, E. M.**

1979 Food Habits and Livestock Competition with the Desert Tortoise on the Beaver Dam Slope, Utah. In Proceedings of the 1979 Desert Tortoise Council Symposium, edited by E. St. Amant, pp. 132-147. San Diego.

**Ernst, C. H., and R. W. Barbour**

1972 Turtles of the United States. Lexington, Kentucky.

**FaunaWest Wildlife**

1989 A Survey for Diseased Desert Tortoises in and near the Desert Tortoise Natural Area, Spring, 1989. Preliminary Report. Contract No. CA950-CT9-23. U.S. Department of the Interior, Bureau of Land Management.

Gilpin, M.

- 1990 Minimum Viable Population Consideration for Eastern Mojave Desert Tortoise Populations in Clark County Nevada. Draft report for HCP. University of California, San Diego, La Jolla, California.

Glenn, J. L.

- 1983 A Note of the Longevity of a Captive Desert Tortoise (*Gopherus agassizii*). In Proceedings of the 1983 Desert Tortoise Council Symposium, edited by K. Hashagen, pp. 131-132. Lake Havasu City, Arizona.

Hampton, A. M.

- 1981 Field Studies of Natality in the Desert Tortoise (*Gopherus agassizii*). Desert Tortoise Council Symposium.

Hansen, R. M., M. K. Johnson, and T. R. Van Devender

- 1976 Foods of the Desert Tortoise, *Gopherus agassizii*, in Arizona and Utah. Herp. 32:247-251.

Hohman, J. P., R. D. Ohmart, and J. Schwartzmann

- 1980 An Annotated Bibliography of the Desert Tortoise. Desert Tortoise Council Special Publication No. 1, Long Beach, California.

Iverson, J. P.

- 1987 A Checklist with Distribution Maps of the Turtles of the World. Richmond, Indiana.

Jennings, R. D.

- 1985 Biochemical Variation of the Desert Tortoise, *Gopherus agassizii*. Master's thesis, University of New Mexico, Albuquerque.

Karl, A. E.

- 1983 The Distribution, Relative Densities, and Habitat Associations of the Desert Tortoise (*Gopherus agassizii*) in Nevada. Master's thesis, California State University, Northridge.

Kennedy, W. A., T. Cordery, G. W. Lamb, J. Ross, B. Douglas, R. G. Robinson, and G. Tsukamoto

- 1987 Management of Desert Tortoise Habitat. U.S. Department of the Interior, Bureau of Land Management, Washington, D.C.

Lamb, T., and J. C. Avise

- 1988 Phylogeographic Patterns in Mitochondrial DNA of the Desert Tortoise (*Xerobates agassizii*), and Evolutionary Relationships Among the Northern American Gopher Tortoises. *Evolution* 43:76-87.

Luckenbach, R. A.

- 1976 Field Estimates of California Populations of *Gopherus agassizii*. Desert Tortoise Council Symposium.

- 1982 Comprehensive Plan, Task Two: Growth Forecast and Impact Analysis.

Marlow, R. W.

- 1979 Energy Relations in the Desert Tortoise, *Gopherus agassizii*. Ph.D. dissertation, University of California, Berkeley.

Medica, P. A., R. D. Bury, and R. A. Luckenbach

- 1980 Drinking and Construction of Water Catchments by the Desert Tortoise *Gopherus agassizii* in the Mojave Desert, California. *Herp.* 36(4):301-304.

Nagy, K. A., and P. A. Medica

- 1986 Physiological Ecology of Desert Tortoises in Southern Nevada. *Herp.* 42(1):73-92.

Nicholson, L.

- 1978 The Effects of Roads on Tortoise Populations. Contract No. CA-060-CT8-000024. U.S. Department of the Interior, Bureau of Land Management, Riverside, California.

Ottley, John R., and Victor M. Velasquez

- 1989 An Extant, Indigenous Tortoise Population in Baja California Sur, Mexico, with the Description of a New Species of *Xerobates* (Testudines: Testudinidae). *Great Basin Nat.* 49(4):496-502.

RECON

- 1990 Draft Environmental Assessment and Biological Assessment for a Proposed Scientific Collection Permit to Take Desert Tortoises in Clark County, Nevada.

Roskopf, W.

- 1988 Protocol for Treating Diseased Tortoises (Respiratory Disease) at the Desert Tortoise Natural Area. Report 1 to U.S. Bureau of Land Management Riverside. Contract No. CA950-CT8-51.

- 1989 Findings Concerning Desert Tortoises (*Xerobates agassizii*) submitted from the Chuckwalla Bench Site in 1988. Report 2 to U.S. Bureau of Land Management, Riverside, California. Contract No. CA950-CT8-51.
- Spang, E. F., G. W. Lamb, F. Rowley, W. H. Radtkey, R. R. Olendorff, E. A. Dahlem, and S. Slone  
1988 Desert Tortoise Habitat Management on Public Lands: A Rangewide Plan. Copies available from Division of Wildlife and Fisheries, Bureau of Land Management, Washington, D.C.
- Stebbins, R. C.  
1954 Amphibians and Reptiles of Western North America. McGraw-Hill, New York.
- Stock, A. D.  
1972 Karyological Relationships in Turtles, Reptilia, Chelonia. Canadian Journal of Genetic Cytology 14(4):859-868.
- Stuart, R. C.  
1954 Observations on Reproduction in the Tortoise (*Gopherus agassizii*) in Captivity. Copela 1954:61-62.
- Turner, F. B., and K. Berry  
1984 Population Ecology of the Desert Tortoise at Goffs, California. Southern California Edison Co., NTIS No. 94-RD-4.
- Turner, F. B., P. Hayden, B. L. Burge, and J. B. Roberson  
1986 Egg Production by the Desert Tortoise in California. Herp. 42(1):93-104.
- Turner, F. B., P. A. Medica, and C. L. Lyons  
1984 Reproduction and Survival of the Desert Tortoise (*Scaptochelys agassizii*) in Ivanpah Valley, California. Copela 1984:811-820.
- U.S. Fish and Wildlife Service  
1989a Endangered and Threatened Wildlife and Plants: Emergency Determination of Endangered Status for the Mojave Population of the Desert Tortoise. Federal Register 54:32326-32331. August 14, 1989.  
1989b Endangered and Threatened Wildlife and Plants; Desert Tortoise: Proposed Rule. Federal Register 54:42270-42278. October 13, 1989.



1990a Endangered and Threatened Wildlife and Plants, Desert Tortoise: Final Rule. Federal Register 55:12176-12191. April 2, 1990.

1990b Draft Conservation Planning Guidelines. Portland, Oregon, and Sacramento, California.

Wilson, R. W.

1989 The Relationship Between Soil Types and Population Densities of the Desert Tortoise (*Gopherus agassizii*). Unpublished draft report available from USDA Soil Conservation Service, Las Vegas, Nevada.

Wilson, R. W., and R. D. Stager

1988 Association Between Soils and Desert Tortoise Population Densities and Distribution, Piute Valley, Nevada. Unpublished manuscript.

Woodbury, A., and R. Hardy

1940 The Dens and Behavior of the Desert Tortoise. *Science* 92(529).

1948 Studies of the Desert Tortoise (*Gopherus agassizii*). *Ecol. Monogr.* 18:145-200.

## Chapter Nine

### Glossary

**Blackbrush:** Family Rosaceae. A dark, moderately small shrub, usually shorter than 0.5 m. Typically grows on shallow hardpan in dense stands above 1,300 m or on north-facing slopes in lower elevation. Transitional between Mojave Desert scrub and Great Basin Desert scrub.

**Caliche:** The accumulation of a fenestrated, cement-like layer at or near the soil surface, formed as calcium carbonate and other minerals are precipitated in pore spaces in gravel, especially in arid regions.

**Carapace:** Upper part of a turtle's shell.

**Categorical Exclusion:** A category of actions that do not individually or cumulatively have a significant effect on the human environment and have been found to have no such effect in procedures adopted by a federal agency pursuant to NEPA.

**Compensation Measures:** Measures undertaken by public and private landowners to offset the adverse environmental impacts of development. The measures are implemented through agreements and may include dedication of land, provision of funds for wildlife conservation, design modification, habitat reclamation or enhancement, and/or other protective actions.

**Conservation:** Methods and procedures necessary to recover an endangered or threatened species, including research, census, law enforcement, habitat acquisition, habitat protection, habitat maintenance, species propagation, and live trapping and transportation.

**Critical Habitat:** Defined in the federal ESA (1973) to include the area occupied by a species at the time it is listed, specific areas in the vicinity of the occupied habitat, and specific areas away from the occupied habitat considered essential for the conservation of the species.

**Crucial Habitat:** A BLM term used to denote a portion of the habitats of sensitive species that, if destroyed or modified, could result in their being listed as rare, threatened, or endangered.

**Cumulative Impact:** The incremental environmental impact of an action together with impacts of past, present, and reasonably foreseeable actions (regardless of the source of the other actions).

**Desert Tortoise (*Gopherus agassizii*):** A relatively large, terrestrial, herbivorous, burrowing tortoise found in the deserts of the southwest; federally listed as a threatened species in 1990.

**Endangered Species:** Any plant or animal species in danger of extinction in all or a significant part of its range.

**Endangered Species Act:** Federal act of 1973, as amended, 16 U.S.C. 1531-1543.

**Environmental Assessment (EA):** A concise public document prepared in compliance with NEPA, which briefly discusses the need for an action and alternatives to such action and provides sufficient evidence and analysis to determine whether to prepare an environmental impact statement or a finding of no significant impact.

**Environmental Impact Statement (EIS):** Document prepared in accordance with federal law to describe, analyze, and consider mitigation of the significant environmental effects of a project, plan, or action.

**Extinct:** Disappeared as a species due to failure to reproduce sufficient numbers to maintain succeeding generations.

**Finding of No Significant Impact (FONSI):** A document prepared in compliance with NEPA, usually supported by an environmental assessment, that briefly states why a federal action will not have a significant effect on the human environment and for which an environmental impact statement, therefore, will not be prepared.

**Grazing:** Herbivory, referring generally to domestic livestock.

**Grazing Allotment:** A legally defined area of public land which is leased for the purpose of grazing domestic livestock.

**Habitat:** Native environment of an animal or plant.

**Habitat Conservation Plan (HCP):** An implementable program for the long-term protection and benefit of a species in a defined area; required as part of a Section 10(a)(1)(B) permit application under the federal ESA.

**Historic Habitat:** Areas that have supported a species in the past and may or may not continue to do so.

**Historic Range:** The known general distribution of a species or subspecies as reported in current scientific literature.

**Incidental Take:** The taking of a federally listed wildlife species, if such taking is incidental to, and not the purpose of, carrying out otherwise lawful activities.

**Mitigation:** Measures undertaken to diminish or compensate for the negative impacts of a project or activity on the environment. Includes avoiding the impact altogether by not taking a certain action or parts of an action; minimizing impacts by limiting the degree or magnitude of the action and its implementation; rectifying the impact by repairing, rehabilitating, or restoring the affected environment; reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; or compensating for the impact by replacing or providing substitute resources or environments.

**Monitoring:** Regular observation of biological processes, conservation measures, and land uses with and adjacent to conserved habitat. Within the context of the short-term HCP, the term refers to the process by which the applicant jurisdictions will evaluate and regulate proposed developments within Las Vegas Valley during the three-year period covered by the proposed Section 10(a)(1)(B) permit.

**Pinyon-Juniper:** The arboreal plant community immediately above the shrub layer, at approximately 6,000 feet; aspect dominants are *Pinus monophylla* and *Juniperus osteosperma*.

**Plastron:** Lower part of a turtle's shell.

**Potential Tortoise Management Area (PTMA):** An area identified as a possible site for a permanent tortoise reserve, based primarily on known habitat conditions and estimated tortoise population densities.

**Recovery Plan:** A plan to ensure the conservation and survival of endangered and threatened species. Recovery plans give priority, to the extent feasible, to those endangered or threatened species that are or may be in conflict with construction or other development projects or other forms of economic activity.

**Saltbush:** The common name for several species of *Atriplex* (family Chenopodiaceae). Usually occurs in or near sinks and dry lakes.

**Scute:** A large scale; horny shields or plates covering a turtle's shell

**Section 7:** A section of the federal ESA that provides for consultation between federal agencies and the USFWS to ensure that any action authorized, funded, or carried out by such agencies is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of critical habitat of such species.

**Section 9:** A section of the federal Endangered Species Act that prohibits the taking of any endangered species.

**Section 10(a)(1)(B):** An amendment to the federal ESA that allows for incidental takings of an endangered species if the permit for the proposed activity is accompanied a habitat conservation plan that will demonstrably benefit the species.

**Species:** Any distinct population of wildlife that interbreeds when mature.

**Species of Concern:** Species which are rare, have preternaturally small or declining populations, or whose probability for long-term survival is questioned.

**Stephens' Kangaroo Rat:** Small, nocturnal mammal related to squirrel family of rodents, native to flat grasslands and coastal sage habitat of western Riverside County and northern San Diego County.

**Take:** To harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect a species, or attempt to do so.

**Threatened Species:** Any species or subspecies that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

**Tortoise Management Area:** Area(s) to be preserved and managed for the specific benefit of the desert tortoise.

**Upper Respiratory Disease Syndrome (URDS):** An upper respiratory ailment of unknown etiology observed in desert tortoise and believed to contribute to the species recent decline.

**APPENDIXES**

**APPENDIX A**



## APPENDIX A

### SUMMARY OF BLM GRAZING ALLOTMENT DATA

Appendix A contains a summary of BLM grazing allotment data.

Table 1 describes approximately how many acres of each grazing allotment is within each PTMA. The PTMAs are listed in the first column; the grazing allotment which overlaps with the PTMA is indicated in the second column; and the number of acres of the grazing allotment within the PTMA is shown in the third column.

Table 2 describes each BLM grazing allotment within both the Stateline Resource Area and the Caliente Resource Area, its status (active or inactive), total acreage, livestock class, and the number of permittees within the allotment.

**TABLE 1  
GRAZING ALLOTMENTS WITHIN  
POTENTIAL TORTOISE MANAGEMENT AREAS**

PTMA	Grazing Allotment	Approximate Number of Acres of Grazing Allotment within PTMA
Sand Hollow	Toquop Sheep	6,500
North Mormon Mesa	Action-Parrier	31,800
	Arrow Canyon	12,877
	Bunkerville	795
	Glendale	5,179
	Lower Mormon Mesa	608
	Mesa Cliff	168
	Muddy River	125
	Rox	16,748
	Toquop Sheep	26,600
	Upper Mormon Mesa	39,653
South Mormon Mesa	Bunkerville	12,024
	Glendale	27
	Lower Mormon Mesa	36,280
	Mesa Cliff	4,516
	Overton Arm	5,311
	Toquop Sheep	51
	Upper Mormon Mesa	104
Bunkerville	Bunkerville	44,568
	Hen Springs	17,817
	Mesquite Community	5,383
Gold Butte	Billy Goat Peak	28,492
	Bunkerville	22,607
	Gold Butte	25,060
Coyote Springs Valley	Arrow Canyon	28,960
	Dry Lake	1,760
	Pitman Well	31,960
California Wash	Dry Lake	148
	Muddy Mountains	75,388
	Muddy River	5,789
	Sunrise Mountain	397
	White Basin	4,358
Northwest Vegas	Dry Lake	1,258
	Kyle Canyon	8,388
	Lucky strike	18,843
	Wheeler Slope	28,164

**TABLE 1**  
**GRAZING ALLOTMENTS WITHIN**  
**POTENTIAL TORTOISE MANAGEMENT AREAS**  
 (continued)

PTMA	Grazing Allotment	Approximate Number of Acres of Grazing Allotment within PTMA
Goodsprings	Black Butte	69
	Hidden Valley	57
	Roach Lake	8,429
	Table Mountain	29,495
Ivanpah	Crescent Peak	354
	Jean Lake	11,516
	Roach Lake	888
Pahrump	Black Butte	15,305
	Stump Springs	32,532
	Table Mountain	47
	Wheeler Wash	22,601
	Younts Spring	13,828
El Dorado	Hidden Valley	924
	Iretoba Peaks	67,215
Cottonwood (NPS land area not included)	Iretoba Peaks	91,443
Piute Valley	Christmas Tree Pass	47,837
	Crescent Peak	76,712
	Iretoba Peaks	1,522
	Newberry Mountains	8,368
	South Point	1,690
Sand Hollow	Gourd Spring*	42,366
	Beacon*	4,290
	Flat Top Mesa*	57
	Jackrabbit*	1,710
	Sand Hollow*	35,589
	Summit Spring*	11
	Snow Springs*	8,153
	Terry*	22,324
Lime Mountains*	441	

**TABLE 1**  
**GRAZING ALLOTMENTS WITHIN**  
**POTENTIAL TORTOISE MANAGEMENT AREAS**  
 (continued)

PTMA	Grazing Allotment	Approximate Number of Acres of Grazing Allotment within PTMA
North Mormon Mesa	Delamar*	8,473
	Grapevine*	16
	Breedlove*	88,452
	Rox/Tule*	25,677
	Mormon Peak*	889
	Henrie*	31,523
	Gourd Spring*	4,320
Coyote Springs Valley	Lower Lake*	11,307
	Delamar*	19,536

Stateline Resource Area  
 \*Caliente Resource Area

TABLE 2  
SUMMARY OF BLM GRAZING ALLOTMENT DATA

STATELINE RESOURCE AREA

ALLOTMENT	Status * Active/Inactive	Acres	5-yr Ave AUM**	No. of Permittees
ACTON-FARRIER	Inactive(89)	45,536		
ARROW CANYON	Active(88)	88,448	63	1
AZURE RIDGE***	Active(89)	6,154		
BILLY GOAT PEAK	Active(89)	49,133	1,480	1
BLACK BUTTE	Inactive(85)	36,312		
BUNKERVILLE	Active(89)	128,869	2,747	5
CHRISTMAS TREE PASS	Active(89)	72,112	802	1
CRESCENT PEAK	Active(89)	119,320	4,738	1
DRY LAKE	Inactive	69,399		
FLAT TOP MESA	Active(89)	5,338	104	1
GLENDALE	Inactive(85)	22,353		
GOLD BUTTE	Active(89)	172,549	2,931	1
HEN SPRINGS	Active(89)	22,756	823	2
HIDDEN VALLEY	Active(89)	69,436	483	1
IRETEBA PEAKS	Active(89)	252,313	1,580	1
JACKRABBIT	Active(89)	3,054	61	2
JEAN LAKE	Active(89)	137,217	2,506	1
KYLE CANYON	Inactive(85)	29,620		
LIME SPRINGS	Inactive	2,384		
LOWER MORMON MESA	Active(89)	43,640	260	1
LUCKY STRIKE	Active(89)	98,420	204(horse)	1
McCULLOUGH MOUNTAIN	Active(89)	230,272	3213	1
MESA CLIFF	Inactive(87)	14,072		
MESQUITE COMMUNITY***	Active(89)	13,106		
MUDDY MOUNTAINS	Inactive(85)	189,409		
MUDDY RIVER	Inactive	20,081		
NEWBERRY MOUNTAINS	Inactive(85)	35,352		
OVERTON ARM	Inactive	2,716		
PITTMAN WELL	Inactive(85)	39,595		
PULSIPHER WASH	Inactive	3,328		
ROACH LAKE	Active(88)	18,718	172	1
ROX	Active(89)	21,736	71	1

TABLE 2  
(continued)

SUMMARY OF BLM GRAZING ALLOTMENT DATA, STATELINE RESOURCE AREA  
(continued)

ALLOTMENT	Status * Active/Inactive	Acres	5-yr Ave AUM**	No. of Permittees
SOUTH POINT	Inactive(85)	13,980		
SPRING MOUNTAIN	Inactive(85)	237,890		
STUMP SPRING	Inactive(85)	50,535		
SUNRISE MOUNTAIN	Inactive	34,272		
TABLE MOUNTAIN	Inactive	88,537		
TOQUOP SHEEP	Active(89)	29,793	636(sheep)	2
UPPER MORMON MESA	Active(89)	47,659	334	1
UTE	Inactive	70,280		
WHEELER SLOPE	Inactive(85)	72,277		
WHEELER WASH	Active(89)	70,115	709	1
WHITE BASIN	Active(89)	89,790	510	1
YOUNTS SPRING	Inactive(85)	14,401		
5555 INDIAN SPRING	Inactive	6,786		
6666 RIVER MOUNTAINS	Inactive	10,371		
7777 LAS VEGAS VALLEY	Inactive	62,243		
9999 LAKE MEAD NRA	Inactive	-		
ASH MEADOW	Inactive	120		
CARSON SLOUGH	Inactive	67,801		
COUNTY LINE	Inactive	6,720		
GRAPEVINE-ROCK VALLEY	Inactive	7,605		

TABLE 2  
(continued)  
CALIENTE RESOURCE AREA\*\*\*\*

ALLOTMENT	Status* Active/Inactive	Acres	5-yr. Ave AUM**	No. of Permittees
LOWER LAKE EAST	Active		640	1
SAND HOLLOW	Active		1,460	3
BEACON	Active		6	2
SNOW SPRINGS	Active		2,096	5
BREEDLOVE	Active		864	1
ROX/TULE	Active		765	1
MORMON PEAK	Active		600	1
SUMMIT SPRING	Active		566	1
GOURD SPRING	Active		1,699	1
MORRISON-WANGERT	Active		2,210	1
HENRI	Active		1,950	2
TOTAL AUM STATELINE			24,687	
TOTAL AUM CALIENTE****			12,856	

\* Active status was determined by use in the past three years, unless otherwise noted; ( ) indicate last year of use.

\*\* Livestock class for Stateline allotments is cattle, unless otherwise noted. AUM for Caliente allotments include all livestock classes.

\*\*\* Managed by BLM Arizona Strip District.

\*\*\*\* Caliente allotments are only those with or near categorized habitat; acreage for Caliente allotments not included.

**APPENDIX B**



## MVP Considerations for Eastern Mojave Desert Tortoise Populations in Clark County, Nevada

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## 1. Introduction

In April, 1990, the Mojave population of the Desert Tortoise (*Gopherus agassisi*) was declared a threatened species under the Endangered Species Act. Several genetic and ecological units are thought to exist over its range. A major division is between Eastern Mojave and Western Mojave subpopulations (see Figure 10 of the Short-Term Habitat Conservation Plan [cf Berry 1989 and USFWS Predecision Document 1990]) and each of these may deserve special protection under the Endangered Species Act. Both of these two major subpopulations are present in Clark County, Nevada.

The desert tortoise populations in Clark County are being fragmented by development in and radiating from Las Vegas Valley, Nevada. To protect the desert tortoise in Clark County, several viable populations will have to be established. There is thus the management need to determine what is a Minimum Viable Population (MVP) of desert tortoises in this region.

MVP is never an easy question to answer, since it requires data that are often not collected for the sort of rare and difficult-to-study species that commonly end up as listed by state and federal agencies. And for the desert tortoise MVP may be an especially difficult question to answer, for, beyond the population biology considerations of the population subunits just mentioned, the species has a long generation time and a complex demography, and it is being assaulted by some major ecological factors to which it may not have been previously exposed during its evolutionary history.

Conservation managers and conservation biologists must be clear about a number of terms, definitions and standards before launching a Population Viability Analysis (Gilpin and Soule 1986) that has as its goal the determination of some form of MVP for an endangered or threatened species. Several important considerations that may be of importance in considering the desert tortoise are listed below:

**Time Frame.** An MVP must be defined out to a specific time horizon; i.e., an MVP is often defined through use of the question: will a population of size  $N$  have better than a 95% probability of being extant  $T$  years from now? The minimum population size  $N$  for which the answer to this question is "yes" defines the MVP for the time span  $T$  initially assumed. Frequently, time spans,  $T$ , of 100 or 200 years are used in Population Viability Analyses that attempt to answer this question of MVP. Such time frames are particularly short for the desert tortoise, since individuals may live 100 years or more, and since the genetic generation time is around 30 years. Clearly, some time horizon 500 or 1000

years into the future is more reasonable for this threatened species. Arbitrarily, 500 years is used in the analyses to follow.

**MVP and Population Size.** Early work on MVP (Shaffer 1981 and Franklin 1980) postulated that extinction probabilities were a function of population size alone. Shaffer, working with data from the Yellowstone National Park grizzly bear population, looked solely to demographic and environmental factors that influenced population fluctuations. And Franklin (1980) looked solely at loss of genetic variation through genetic drift, which erodes the long-term adaptability of a species. Genetic drift is a process whose rate is inversely proportional to population size. Thus, both of these early efforts at MVP determination were monofactorial.

**MVP and Population Density.** In a social species, the growth dynamics may depend on density per unit area rather than the total population number remaining in the region. When animals are too thinly distributed, various survival mechanisms may become dysfunctional. The ease or likelihood of finding a mate is one important mechanism that clearly depends on density. There are, however, many others. For example, the availability (i.e., density per unit area) of temporary burrows, which afford desert tortoises protection from heat and predation, is proportional to the density of burrow-digging tortoises in the area. Below a threshold density, the unavailability of burrows may lead to increased death rates. Also, in colder areas at the northern range limit of the desert tortoise species, there may be an energetic advantage to clustering in small natural caves during the winter. Thus, a higher density of desert tortoises in an area may allow desert tortoises to cluster in large numbers in the winter and thereby to minimize the problems associated with cold temperature.

**MVP and Spatial Fragmentation.** In situations where the species population is divided into a set of loosely coupled local populations that exchange of less than ten animals per year between these spatial units, the configuration of these local populations in two-dimensional space may be more important than their summed total population. Gilpin's chapter in Soule's Viable Populations for Conservation (1987) book discusses this at some length (see also the forthcoming book [Academic Press 1991] on Metapopulation Dynamics edited by Gilpin and Hanski).

It is important to understand in this context that a system of local populations, each of which is nonviable, can nonetheless form a viable system. This is, of course, only possible when the locally extinct populations can be quickly recolonized from another local population in the system. For example, the Jack Ward Thomas plan to sustain the northern spotted owl utilizes a number of small habitat patches of old growth Douglas Fir, none of which itself would have a long time to extinction for resident spotted owl populations.

**Deterministic vs. Stochastic Factors.** A population that has, on average, negative population growth is doomed to extinction. The time to extinction is straightforwardly calculated from the exponential growth equation,  $dN/dt = rN$ . If  $r$  is the negative per year growth rate, the time to extinction,  $T^{ext}$ , is

$$T^{ext} = \log(N/2)/r,$$

where  $N$  is the current (i.e., initial) population size. Suppose, for example, that a population of 25,000 is decreasing at 10% per year, as some would suggest is the situation for local populations of the desert tortoise, then the expected time to extinction is 95 years. Note in this equation that a doubling of the current population size produces only a small, arithmetic increase in time to extinction. If, instead, the current population size were 50,000, then the time to extinction is increased to 102 years, hardly any gain at all. The following table shows  $T^{ext}$  for some other negative growth rates:

negative $r$	$T^{ext}$ (years)
2%/yr	475

---

4%/yr	237
6%/yr	158
8%/yr	118

Clearly, conservation managers must be able to adjust the detrimental impacts on a small threatened or endangered population so that the expected growth is at least zero. That is, the deterministic tendency for the population growth must at least be to stay constant in total size.

However, even with such management of the expected features of the deterministic factors on a population, there are still random, year-to-year forces that impel a population both up and down. These are the so-called stochastic factors. There is often a threshold in total population size, or population density, or with the arrangement of local populations, below which these factors can threaten extinction. This situation of the combined action of both deterministic and stochastic forces is the situation where Population Viability Analysis can produce an MVP for the species population.

**Catastrophes.** A catastrophe is an extreme event which, all by itself, can threaten population extinction. Fires, floods and epidemics are commonly cited catastrophes. In general, catastrophes are rare events whose probabilities are hard to estimate. Because of the difficulty of using current or recent historical data to parameterize their impact, they are typically handled in ad hoc fashion outside the formal Population Viability Analysis.

The Upper Respiratory Disease Syndrome (URDS) is a possible catastrophe that threatens desert tortoises. Its rate of spread and ultimate impact have not yet been calculated by epidemiological models. But, it is clearly the most serious challenge to conserving the desert tortoise.

A second situation that has sometimes been regarded as catastrophic to the desert tortoise is the increase of raven populations, the individuals of which can consume large numbers of juvenile desert tortoises. It is hard to imagine at this point in time that raven predation poses a truly catastrophic threat to the entire desert tortoise species, since ravens do not yet have a range-wide distribution over tortoise habitat. However, for local subpopulations in the western and southern Mojave Desert, ravens could be catastrophic. Another threat that can impact local subpopulations, especially those in a single watershed, is flash floods.

The only protection against catastrophes to a local population is to have redundancy built into the management system; that is, to have backup populations available that would not be likely to be struck by the same catastrophic event. For threats such as flooding, this suggests that local populations be distributed over a region that is large compared to the total spatial scale of flood-producing storms. For URDS this means that epidemiologically isolated populations are required. However, since the scheme of transmission of URDS is not yet fully understood, actually arranging for this is problematical.

**Extinction Vortices.** In 1986, Gilpin and Soule integrated the various, above mentioned approaches to MVP to a new technique, Population Viability Analysis (PVA). This analysis recognized not only these monofactorial approaches to MVP, but their interaction. Gilpin and Soule used a metaphorical term to describe these interactions—"extinction vortices"—and they described several modes of interaction. For example, a fragmented population structure increases the rate of genetic heterozygosity loss in local populations, which, in turn, raises, through inbreeding depression, local extinction probabilities and produces more extreme fragmentation.

The difficulty in dealing with extinction vortices is that at least two fairly accurate process models are needed, together with an accurate description of how these two processes interact. That is, such modeling has high demands for good data. Nonetheless, it is possible with Population Viability Analysis to estimate many of the important parameter values and to construct models that allow

relative predictions of the consequences of management alternatives; that is, which plan may be better and which worse.

## 2. Desert Tortoise Genetics.

Most PVAs involve considerations of population genetics—loss of heterozygosity, inbreeding depression, long-term loss of adaptability, pedigrees, paternities, population structure and so forth. However, most PVA involve much smaller populations than currently exist for the desert tortoise. For example,

Blackfooted Ferrets	6
California Condors	28
Whooping Cranes	50
Yellowstone Grizzlies	200
Northern Spotted Owls	2000

The desert tortoise population in Clark County is at least 20,000 adults, an order of magnitude larger than even the largest of these above-cited cases. Furthermore, the generation time of the desert tortoise is long, at least 25 years, which slows the process of heterozygosity loss in calendar time. Beyond this, the current information about the genetics of the desert tortoise is extremely scant. All of these facts suggest that, at this point in the management of the desert tortoise, genetics must play a secondary role to other aspects of dynamics that are better understood and that pose a more immediate threat. Thus, genetics will be largely ignored in the analysis to follow.

This is not to say that genetics will not soon become important in the management of the desert tortoise if local population sizes continue to decline. Furthermore, under recommended research in the ST HCP, proposals are made to conduct genetic surveys of both mitochondrial and electrophoretic variation and other investigations, such as those focused on gene flow, that will illuminate the role of the genetics of the desert tortoise in its battle for survival. As data from these investigations become available, they can serve to fine-tune the initial estimates and predictions from the model. It is, however, extremely unlikely that, whatever the outcome of these studies, genetics could bear importantly on the early decisions in the conservation management of the desert tortoise—that is, on the initial choice of tortoise management area, the initial TMAs, in Clark County, Nevada.

One can make some educated guesses about the genetics of the desert tortoise. Most importantly, the desert tortoise is likely to show inbreeding depression when its local populations become small. The desert tortoise formerly had a relatively continuous distribution, so there would probably have been genetic exchange over relatively large areas. Sewell Wright's neighborhood  $N_e$  is reasonably large (greater than 500), based on current estimates of movement (greater than 1 km during the lifetime) and population density. Thus, there would not have been a continual purging of deleterious recessive alleles through the recent history of the desert tortoise.

Inbreeding depression coupled with a low intrinsic rate of population increase (see Section 3 on tortoise demography, below) means that local extinction rates will be increased as local populations become and remain small. Some quantification of this effect is an important research goal.

## 3. Desert Tortoise Demography.

Tortoise demography is complex. The overall features are well known. First, there is a long prereproductive period. Females first reproduce at ages between 12 and 25 years. It seems that animal size may be more important than age in determining vital rates. As a general rule-of-thumb, 180 mm is the shell size diameter for first reproduction. There seems to be no senescence; adults die off at a slow rate and may live over 100 years. Adults continue to reproduce throughout their lives.

In general, females reproduce in most years and may have two clutches per year. The survival of juveniles is low and probably varies from year to year.

3.1. A Projection Model. The only data for a demographic analysis come from the work of Turner and Berry (1986) on the Goffs population. From these data, it is straightforward to construct an age or stage projection matrix. For simplicity, a stage structured matrix is illustrated below. It is constructed by collapsing Turner and Berry's more finely resolved data. The five stages used in this model are:

- Stage 1 = hatchlings
- Stage 2 = 1-5 years old
- Stage 3 = 6-10 years old
- Stage 4 = Subadults
- Stage 5 = Adults

These correspond to a five element column vector. The output from one run of the program is:

Here's the projection matrix:

Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
.000	.000	.000	.000	6.200
.620	.706	.000	.000	.000
.000	.093	.802	.000	.000
.000	.000	.031	.719	.000
.000	.000	.000	.111	.937

lambda is 1.007 and the corresponding r is .0065

Stage 1 had 23.4485 percent of the individuals.  
 Stage 2 had 48.3691 percent of the individuals.  
 Stage 3 had 21.9897 percent of the individuals.  
 Stage 4 had 2.38581 percent of the individuals.  
 Stage 5 had 3.80685 percent of the individuals.

Stage 1 Reproductive value = 1  
 Stage 2 Reproductive value = 1.62349  
 Stage 3 Reproductive value = 5.24694  
 Stage 4 Reproductive value = 34.402  
 Stage 5 Reproductive value = 89.1247

This output is for a single run of the model. One must remember that each of the parameters in the transition matrix has some uncertainties associated with it. Thus, one must do a sensitivity analysis on the matrix before one can draw any conclusions from the model. Some of this work has been done. The important conclusions to date are given in the following sections.

3.2. The per year growth rate of desert tortoises is low. The Turner and Berry study found only 2% per year. If this rate is a maximum that is generally true for all populations, desert tortoises have low resistance to negative deterministic impacts (harvesting by humans, predation, disease, kills by motor vehicles, competitive interactions from sheep, etc.) to the population. Figure 3.1 illustrates this schematically:

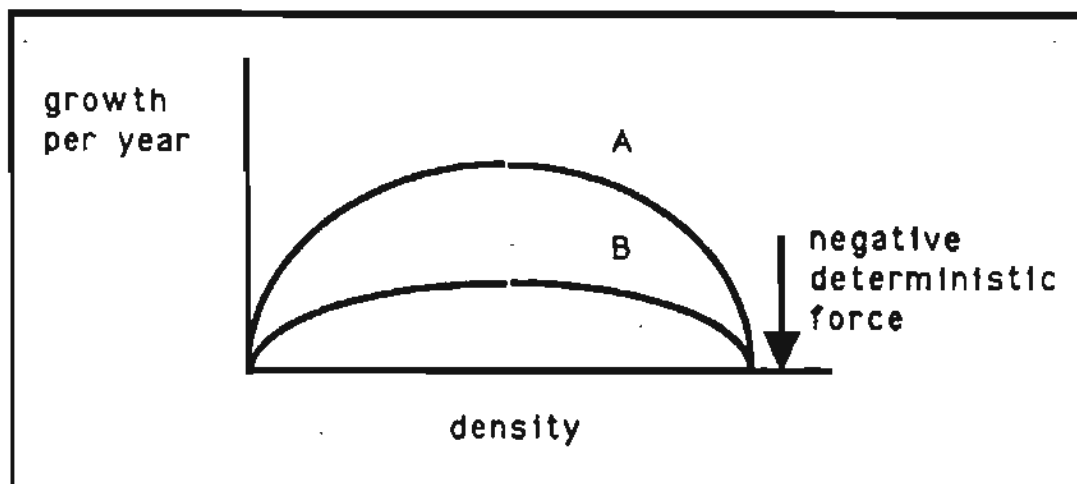


Figure 3.1. Two population growth curves. Both A and B have the same carrying capacity (the rightmost point on the abscissa where the growth curves intersect). Curve A has a higher intrinsic rate of increase. If a deterministic force indicated by the downward arrow at the right of the figure impacts the population, the population following curve A could adjust to a lower equilibrium density and could persist. Curve B, however, has too low a rate of increase and would be overwhelmed by the negative deterministic force and the population would go extinct.

3.2. Because of the extremely long prereproductive period (to an age as great as 20 years old), the reproductive values of tortoises varies greatly. Figure 3.2 shows the reproductive values versus age for the Turner and Berry data.

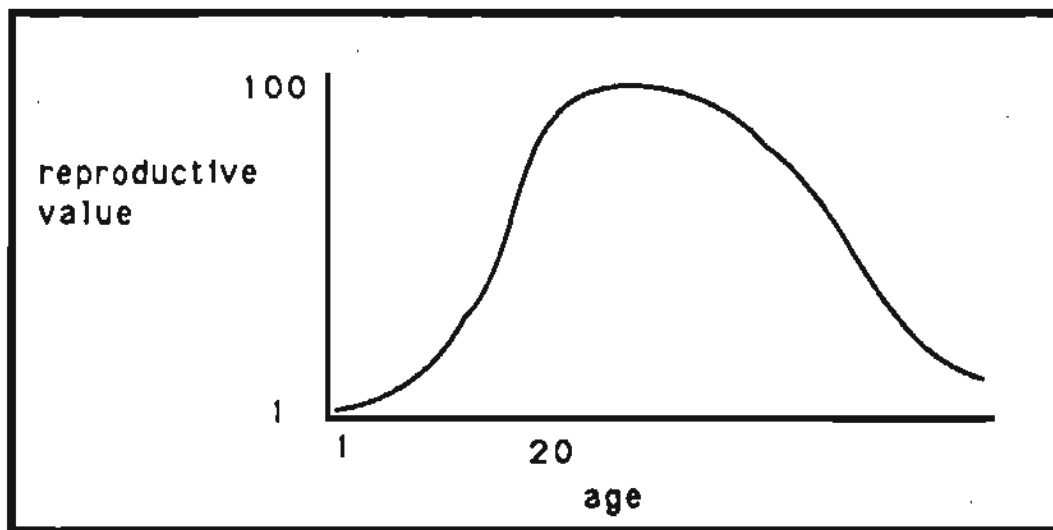


Figure 3.2 Reproductive values.

One consequence of this is that introductions of desert tortoises to empty habitat should best be accomplished with the addition of high reproductive value individuals, i.e., young adults. Of course, this mathematical result is consistent with common sense.

3.3. The age and size structure of a population of desert tortoises is very slow to return to the stable distribution following a perturbation. This is much like the human population, where in the United States the consequences of the baby boom will be felt for a century. An out-of-equilibrium age/size distribution could have implications for tortoise social structure. For instance, too many large males could produce disruptive aggression.

3.4. Density dependence. Nothing is known about the mechanism of density dependent population regulation in the desert tortoise. That is, what sets a carrying capacity,  $K$ ? Are tortoises limited by food resources? By soil structure considerations? Are they held down by predation? Do they have social regulation of population density?

3.5. Demography and URDS. Does URDS strike all age groups equally? If it does now, what consequences does this have? It seems that the mechanism of URDS transmission is nose-to-nose social interaction among adults. Juvenile tortoises may not engage in this interaction, and thus may be immune from catching URDS. This could mean that local populations will have a buffer population that will forestall extinction from URDS for as long as 15 or 20 years. It might even be possible that URDS could exterminate the adults, and thus itself, leaving the region to be repopulated by the maturation of juveniles. This is speculative.

3.6. Demography and deterministic population regulation is an area that needs further research and study. And it must be kept in mind that these processes may vary over the range of the tortoise. That is, it is inappropriate to apply details from the Goffs study to desert tortoise populations in the far western Mojave or to northern populations in Nevada and Utah. Although the general character of desert tortoise demography as revealed by the Goffs study is probably valid throughout the range.

#### 4. Variable Growth Rates of Desert Tortoises (Environmental Stochasticity)

Environmental stochasticity is a fancy way of saying that growth rates for desert tortoise populations are variable from time period to time period and from one local population to the next local population. With variable growth rates comes the possibility of stochastic extinction: the population will have a run of bad luck and its density will drop below the threshold of extinction.

A simple discrete equation for stochastic growth is:

$$N_{t+1} = \{\lambda\} N_t \quad \text{if } N \leq K \quad (4.1a),$$

$$N_{t+1} = K \quad \text{if } N > K \quad (4.1b),$$

where  $N_t$  is the current population size and where  $N_{t+1}$  is the size the next time period, and where  $\{\lambda\}$  represents a random variable for discrete growth described below. So, if the current population is above  $K$ , the carrying capacity, the population size drops to  $K$  the next year. But if the population is below  $K$ , the new population size is determined by drawing a discrete growth rate,  $\lambda$ , from a probability distribution with a known mean and variance. In most explorations of this model, it is assumed that the mean  $\lambda$  is greater than 1, which corresponds to an  $r$  of greater than 0. Recall that the relationship between  $r$  and  $\lambda$  is

$$r = \log_e (\lambda). \quad (4.2)$$

In more sophisticated models (e.g., Goodman 1987), the mean and variance of the distribution of  $\lambda$  values may change with the density of the population, that is, they may be functions of  $N$ . For populations in natural environments, it is almost impossible to determine the relationship of mean and variance of  $\lambda$  to  $N$ , if for no other reason than the problem of obtaining a sufficiently large

sample size. Thus, it will almost always be the case that the variation of population growth will be modeled as independent of N.

During the last decade, desert tortoise populations have been censused at 16 location throughout the Mojave desert:

California Sites:            Chemehuevi  
                                 Chuckwalla Bench  
                                 Goffs  
                                 Ivanpah Valley  
                                 Upper Ward Valley  
                                 Desert Tortoise Natural Area  
                                 Fremont Valley  
                                 Johnson Valley  
                                 Kramer Hills  
                                 Lucerne Valley  
                                 Stoddard Valley

Nevada Sites:                Piute Valley

Arizona Sites:               Littlefield

Censuses of adult tortoises have been taken at these study locations at various years. From these censuses, the discrete growth rate lambdas can be computed. These lambdas are based on per year growth intervals. For censuses on two successive years, the lambda is given by

$$\lambda = \text{final\_census}/\text{initial\_census}. \quad (4.3a)$$

If the period is more than one year, the relationship is

$$\lambda = (\text{final\_census}/\text{initial\_census})^{(1/\text{no\_of\_years})}. \quad (4.3b),$$

where the "A" sign indicates exponentiation. From these study locations, some of which had more than two censuses, 27 different values of lambda can be determined, which define a probability distribution. The mean lambda is .985, with a standard deviation of .08. The probability distribution of lambdas is shown in Figure 4.1.



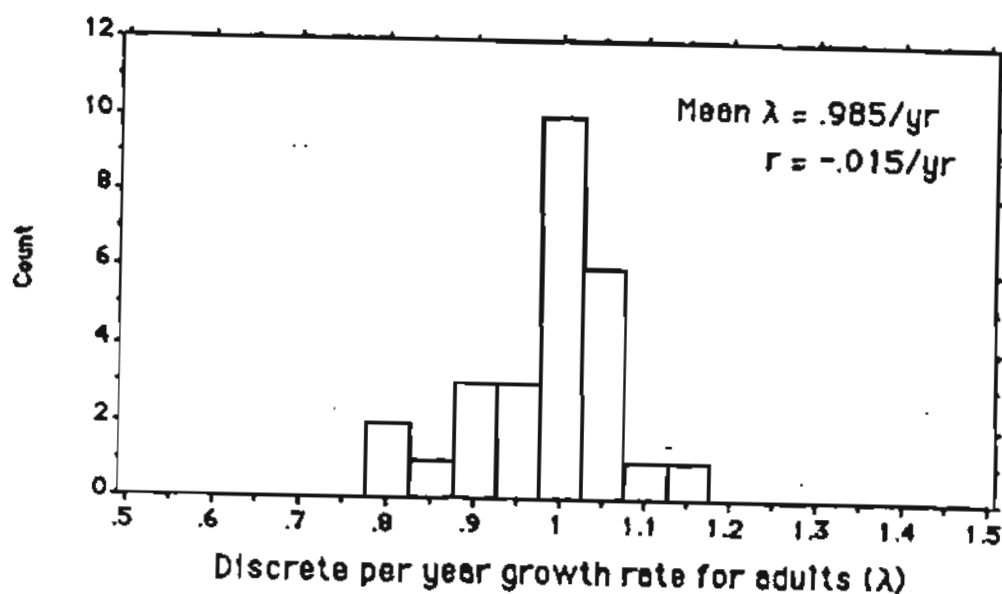


Figure 4.1. The distribution of 27 lambdas from 16 desert tortoise study plots.

The lowest lambda is .8 and the highest is 1.15. These correspond to per year changes of roughly -20% and +15%, with a mean of -1.5%/year. That the average growth rate from these sites is only -1.5% does not mean that the entire tortoise population is only shrinking at this rate, for these study populations represent for the most part local populations in the centers of good habitat. The entire species population of desert tortoises could simultaneously be shrinking in its spatial extent, and this would not be represented in these figures. Furthermore, these are pre-URDS studies. Kristin Berry (personal communication) has shown that not long after URDS is first identified in these populations, the adult dieoff accelerates by as much as an order of magnitude. Also, the extreme growth rates of -20% and +15% probably correspond to cases where the age structure of the population is badly out of stable age distribution (see Section 3), or where there is some form of animal movement in to or out of the local population.

Nonetheless, the variance in lambda values possibly represents the variance that would be present in reserve systems that had their edges protected by fences, and which were free of URDS. Thus, these are good numbers to use in a first-pass simulation study of local extinction of desert tortoise populations on reserves. But understand that these are best-case scenarios. They may set one kind of lower limit to the scale of reserve units, suggesting that anything smaller is certain to be inadequate. They do not, however, guarantee such reserves from considerations of disease or predation, since the consequences of these are not reflected in the data.

To model time to extinction, one utilizes equations (4.1) using the empirical distribution of lambdas in Figure 4.1. For the first study, assume an initial  $N$  of 20,000 adult tortoises, and that the  $K$  is the same value; that is, the population is assumed to be at equilibrium. An extinction threshold is taken as 2 individuals, which is quite liberal. The distribution of times (in years) to extinction is given in Figure 4.2.

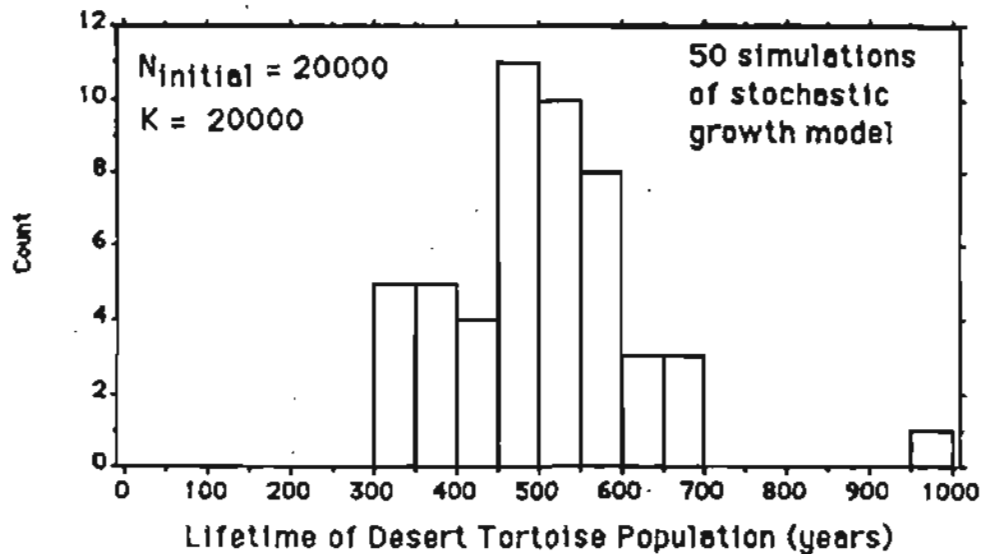


Figure 4.2 Times to extinction based on current best estimates of stochastic growth.

The descriptive statistics for this distribution of times to extinction are given in the following table.

X<sub>1</sub>: Column 1

Mean:	Std. Dev.:	Std. Error:	Variance:	Coef. Var.:	Count:
504.8	115.427	16.324	13323.429	22.866	50
Minimum:	Maximum:	Range:	Sum:	Sum Squared:	# Missing:
332	987	655	25240	13394000	0
# < 10th %:	10th %:	25th %:	50th %:	75th %:	90th %:
5	350	423	499.5	562	633.5
# > 90th %:					
5					

From this table it can be seen that, among other things, 90% of the populations will survive at least 350 years, and that the mean time to extinction is 505 years, with a standard deviation of 115 years.

These projections are based on a relatively simple model and on data collected over the last decade on desert tortoise population growth. One way to get a feeling for the reasonableness or "stability" of such projections is to change the model slightly. Assume that the mean lambda is raised from 0.985 to 1.000 (a growth rate for maintaining stable population size), but that the variance in growth remains the same; that is, that the histogram in Figure 4.1 is shifted rightwards by an amount 0.015. Now the mean tendency is for the population to remain stable in size. However, it cannot increase above its  $K$ , while at the same time it has no lower bound other than extinction. If the model is now run with the slight increase in mean lambda, the growth distributions are as shown in Figure 4.2.

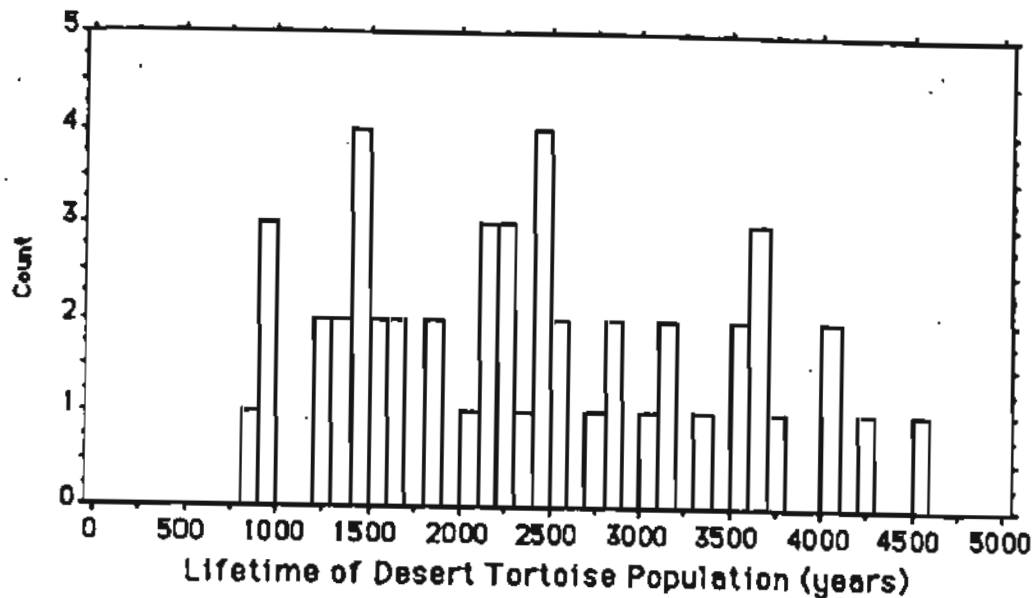


Figure 4.2 Extinction time under hypothesized good management (see text).

The mean time to extinction has now increased fivefold to 2474 years, with a standard deviation of 1150 years. That is, given the situation for growth that now obtains for the desert tortoise, a 1.5% elevation of the growth rate leads to a 500% increase in time to extinction. This suggests that a little management of tortoise habitat may go a long way to help local tortoise populations. This has significance for mitigation as discussed in Section 7, below.

A second manipulation may be done to the model. Keep the mean lambda at 1.000, but make the local population (i.e., the reserve) ten times smaller: take  $N_{initial} = 2000$  and  $K = 2000$ . This gives the results shown in Figure 4.3, where the mean time to extinction is 361 years. Thus, the size of the reserve matters greatly given the observed fluctuation in growth rates. Thus, even with improved management, a reserve with a  $K$  of 2000 desert tortoises (roughly 10,000 acres) is too small.

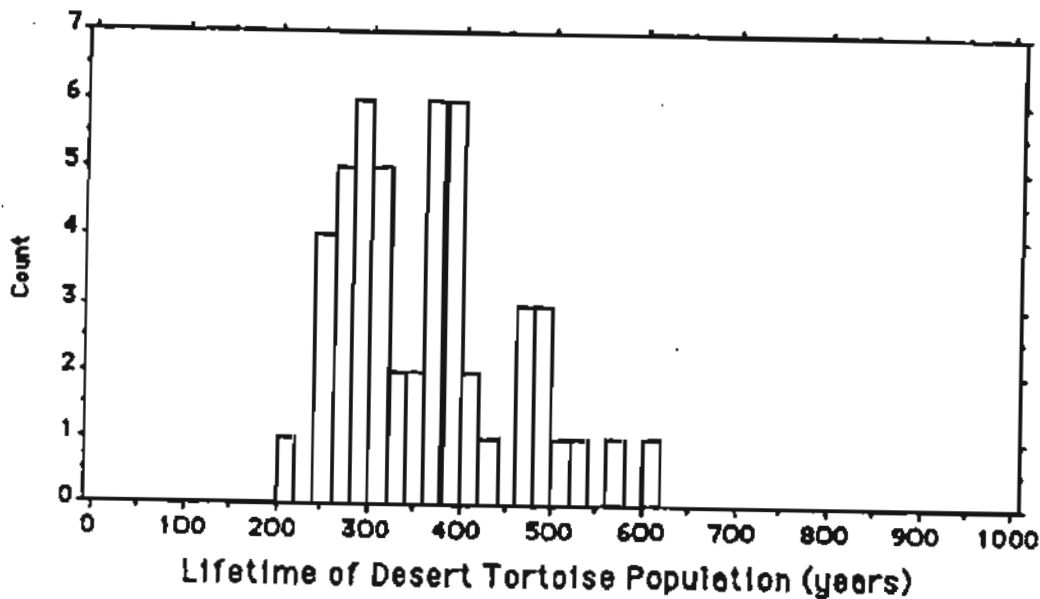


Figure 4.3. Extinction times in a small, managed reserve.

What do these simulations say about the fate of the desert tortoise? Recall that earlier the time horizon of 500 years was chosen as appropriate for the desert tortoise. For habitat that supports 100 adult tortoises per square mile, 128,000 acres are needed to support 20,000 adults. From the best information we have, this will have an expected life of just longer than 500 years. Roughly speaking, the tortoise habitat in North Mormon Mesa, Piute Valley and Coyote Springs Valley, can support these numbers of adult tortoises. Thus, this size of tortoise reserve just barely meets the MVP threshold established in the introduction.

These conclusions must be taken with a large grain of the salt of experience. This form of modeling ignored three important features of ecological realism. First, it ignored catastrophes. Second, it extrapolated from the last decade of tortoise history hundreds of years into the future; climate change, for instance, could invalidate these numbers. Third, it ignored spatial structure (see Section 5, below) and the possible interaction of local populations. Nonetheless, these analyses show that a reasonable basic building block of habitat for tortoise protection is roughly 100,000 acres.

##### 5. Fragmentation of Desert Tortoise Habitat (Metapopulation Analysis)

Figure B (page 9) of the RECON Short-Term HCP shows the BLM's categorization of desert tortoise habitat. This habitat is already quite fragmented, and it will only become more fragmented in the years ahead. The local populations on these remnants of habitat may or may not interact through the exchange of migrants. If there is such interaction between local populations, the total system is termed a "metapopulation"—a population of populations—and special forms of analysis apply to the entire system. Even in the absence of natural interaction between habitat patches, conservation managers might want to exchange animals between isolated habitat fragments, in which case the techniques of metapopulation analysis become applicable.

The computer program METAPOP (Gilpin 1986) has been used to analyze fragmented species populations (e.g., Brussard and Gilpin's [1990] analysis of reintroduction schemes for the reintroduction of the blackfooted ferret). This model incorporates environmental stochasticity of local populations, and migration (colonization) between these local populations. Local extinction

probabilities are based on the size of local populations. Colonization probabilities are based both on the size and the isolation of extant source populations. As the model runs, local populations "wink" on and off. In some cases, a large fraction of the patches are occupied at any point in time, and the entire system, the metapopulation, will persist indefinitely. In other cases, the number of patches occupied at any point in time will decline and the metapopulation will go extinct.

The model has graphical input and graphical output. Users define patch sizes and patch locations. These may be modified within the program. The model is particularly suited to sensitivity analyses, where better may be distinguished from worse. Even without complete data, the model may be used to predict relative times to extinction. Historical evidence and a current survey of local presence and absence can usually establish a ratio between the extinction probability and the colonization probability, which is all that is necessary for many forms of comparative analysis.

Absolute times to extinction require knowledge of both extinction probabilities and colonization probabilities. Since we know very little about long range movement of desert tortoises, it is not possible at this point in time to have accurate estimates of colonization probabilities.

Figure 5.1 shows how the North Mormon Mesa and the Coyote Spring Valley habitats would be analyzed with this model. The major roads and the Las Vegas Valley subunit have been superimposed on the map.

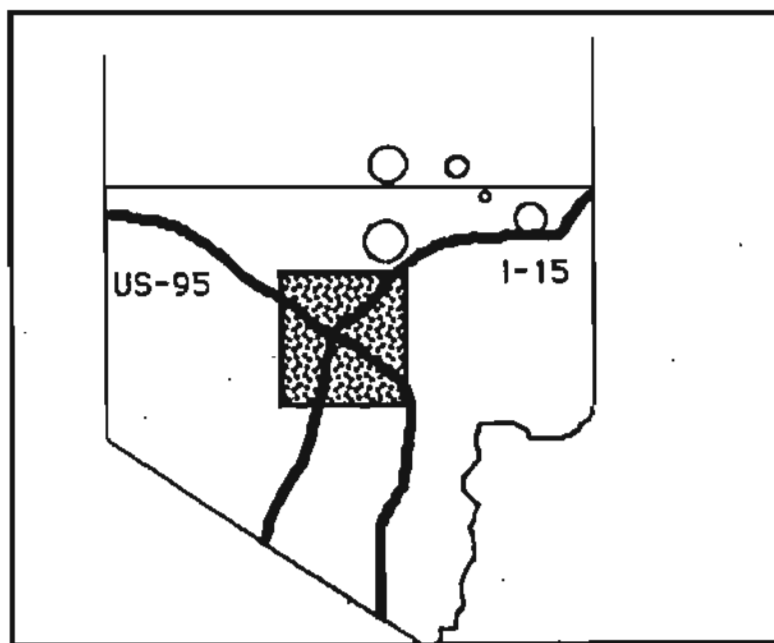


Fig 5.1. The five circles north of highway I-15 indicate the five local populations comprising Coyote Spring Valley and North Mormon Mesa. The relative sizes of these patches have been adjusted so that the rates of local extinction and recolonization provide a reasonable basis for comparison (which is performed in Section 6, below).

In a typical run of the METAPOPOP model for this configuration, the time to extinction for the system is roughly 100 time units. **THESE TIME UNITS ARE COMPLETELY ARBITRARY AT THIS POINT IN THE ANALYSIS.** They are used only for comparison with other alternatives. Better data on local extinction probabilities and patterns of animal movement are needed before it is possible to utilize this

model for accurate projection of time to metapopulation extinction. This is also an important area for research.

A run of this baseline model is shown in Figure 5.2.

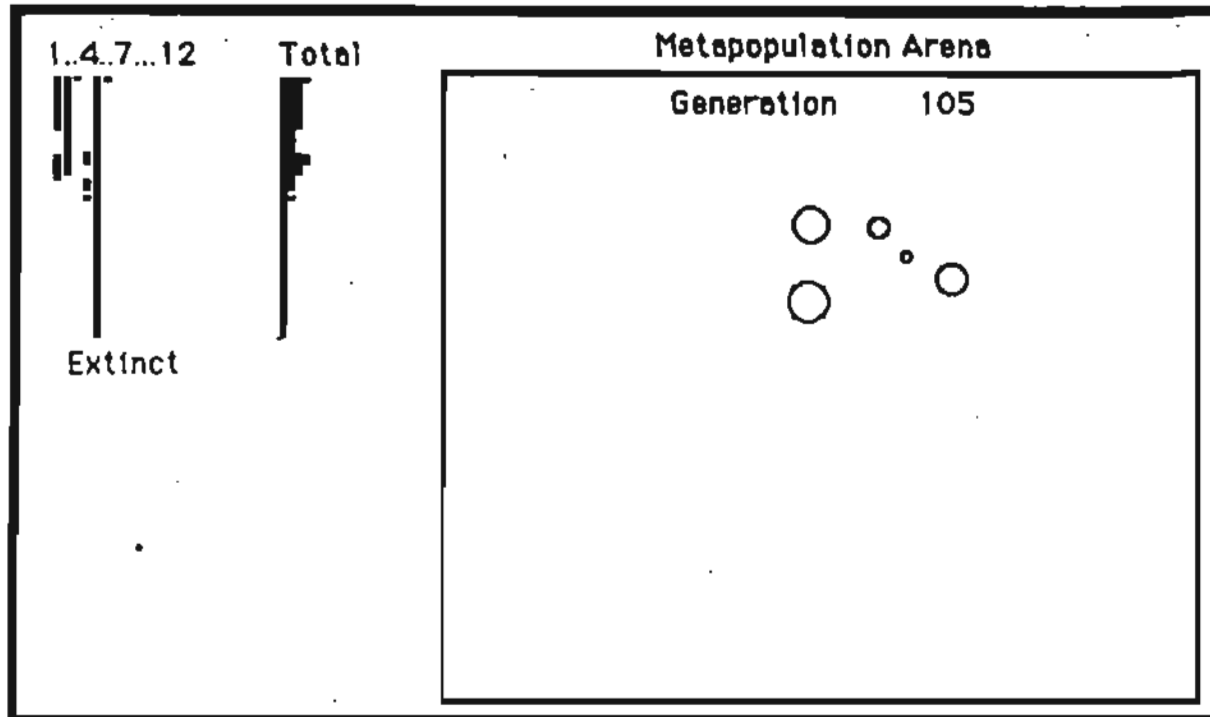


Fig. 5.2. A simulation result. A summary for patch occupancy runs down the left side of this figure for a maximum of 250 generations.

All of the five patches are assumed to be occupied initially. During the run, the time units are counted off and the circles in the Metapopulation Arena change from disks (an extant local population) to open circles (an extinct local population) and back again. Time runs for 250 generations (time steps). Down the left side of the figure the actual history of each patch is recorded, together with the total number of patches occupied. In this simulation, the metapopulation goes extinct at generation 105. Observe, however, that for the last 50 odd generations, only a single local population was extant.

This model can be modified to investigate many of the possibilities for habitat conservation in Clark County, Nevada.

#### 6. Comparison of Alternative Locations for Tortoise Management Areas

There are various alternatives in providing mitigation habitat for the Short-Term Habitat Conservation Plan. One region to the north of Las Vegas focuses on habitat in North Mormon Mesa and Coyote Springs Valley, which covers roughly one-half million acres. To be considered in possible conjunction with these two areas is the habitat in Sand Hollow, South Mormon Mesa, Bunkerville and Gold Butte. A different alternative utilizes habitat in El Dorado, Cottonwood and Piute Valley, which lie to the south of the Las Vegas Valley.

We can analyze these alternatives biologically and can compare them through the use of the PVA considerations outlined above.

6.1. Genetics. The northern Clark County habitats cover populations currently classified as part of the eastern Mojave subpopulation, southern Clark County habitat covers the Piute Valley, which is connected to the western Mojave subpopulation in California. On this basis, northern habitats are preferable. It must be understood, however, that this distinction of subpopulations is based on scant evidence and could be overturned by more thorough genetic surveys. It is nonetheless the case that northern habitats are purely in Nevada and largely in Clark County, while the southern habitats can be viewed as an extension of habitat in California.

6.2 Habitat. The three plans all contain mixtures of Category 1, Category 2 and Category 3 desert habitat as classified by the BLM. There is little to distinguish one from any other on this basis.

6.3 Population Density. The Piute Valley habitat contains the largest amount of "medium/high" density habitat. This may or may not be meaningful. First, there are obvious statistical problems in asserting this, and these have not been adequately addressed. Second, these differences in density may be due to recent historical events and may not reflect underlying deterministic tendencies. As discussed above under the heading *Deterministic vs. Stochastic Dynamics*, a higher initial population size does very little to protect a population suffering average population growth that is negative. Third, as Section 4 on variable population growth suggested, a higher carrying capacity does less to protect a population from stochastic extinction than a lower variance in growth rate. The character of the variance in growth rates in northern and southern Clark County habitats is unknown.

In sum, total area and variation in underlying habitat variables is probably more important to reserve choice and reserve location than current estimates of population density, although both are important.

6.4. Demography. One assumes that there is no difference in the underlying demographic rates of these three populations. There could, however, be important differences in current age/size structure. This needs closer study.

6.5. Catastrophes. The full set of northern habitats, which covers 1.5 million acres and which includes numerous partially isolated local populations is the best protected from catastrophes. The more linear southern habitat, which is the smaller and which is in a single valley, has less protection from catastrophes. Also the southern habitat is connected to a large population in California, which could be significant danger from the standpoint of the spread of URDS. On the other hand, if the Piute Valley subpopulation were extirpated due to, say, weather factors, the connection to the California population could facilitate recolonization, which could be quite important.

6.6. Size and Fragmentation. Some alternatives can be compared through the use of the METAPOP model discussed in Section 5, above. Since there is more habitat to the north of the Las Vegas Valley, a more secure reserve could be established there. However, since funds for habitat acquisition are limited, the actual choice is less obvious.

Some illuminating comparisons of alternatives in northern Clark County can be made with the METAPOP model. Three Plans are compared. Plan A covers about 400,000 acres entirely in North Mormon Mesa and Coyote Springs Valley and Plans B and C represent the additions of habitat further to the east and immediately south of I-15 covering the region of Sand Hollow, South Mormon Mesa, Bunkerville and Gold Butte. In Plan C, it is assumed that migration across I-15 is facilitated by some as yet to be determined mechanism or structure.

In the following, Plan A, Plan B and Plan C are compared. These alternatives are illustrated graphically in Figure 6.1.

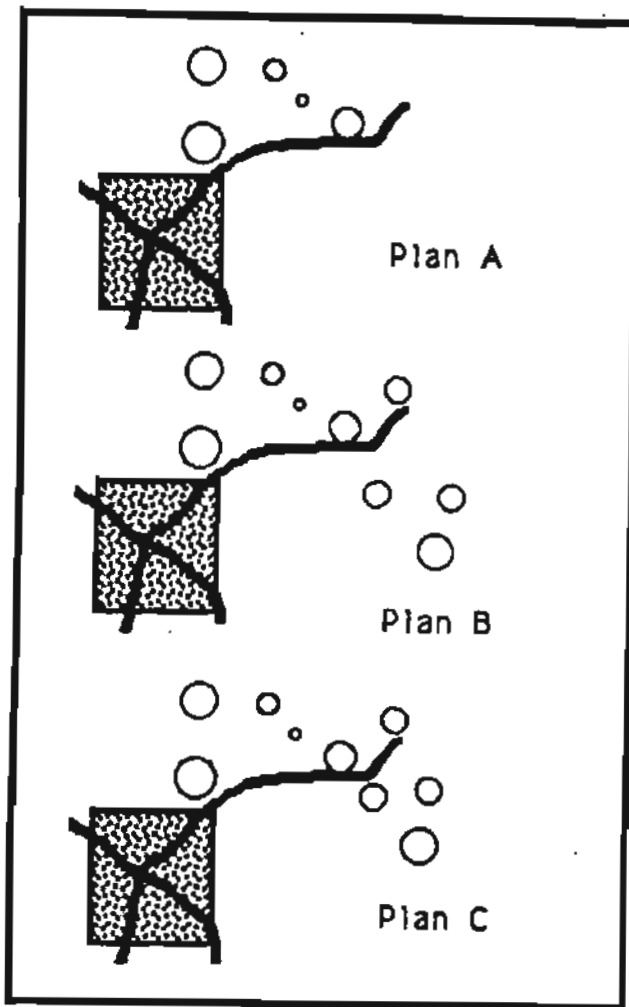


Figure 6.1. Three alternatives compared under the METAPOPOP model. The major highways and Las Vegas Valley subunit are superimposed on the patch structure of the METAPOPOP model for illustrative purposes only. The three patches south of high I-15 are moved closer to the other populations in the Plan C configuration to account for greater migration across the I-15 barrier.

In the Plan A analysis under the METAPOPOP model, the size and spacing of the patches was adjusted by trial and error to mimic reasonable behavior. In particular, a "reasonable" time to metapopulation extinction was sought. One hundred time units ("generations" in the parlance of the METAPOPOP model) was considered reasonable for use as a baseline. The qualitative results of the analysis to follow is not changed if a different baseline is used. Typical runs are illustrated in Figure 6.2. The total number of patches occupied is plotted against the arbitrary time units.



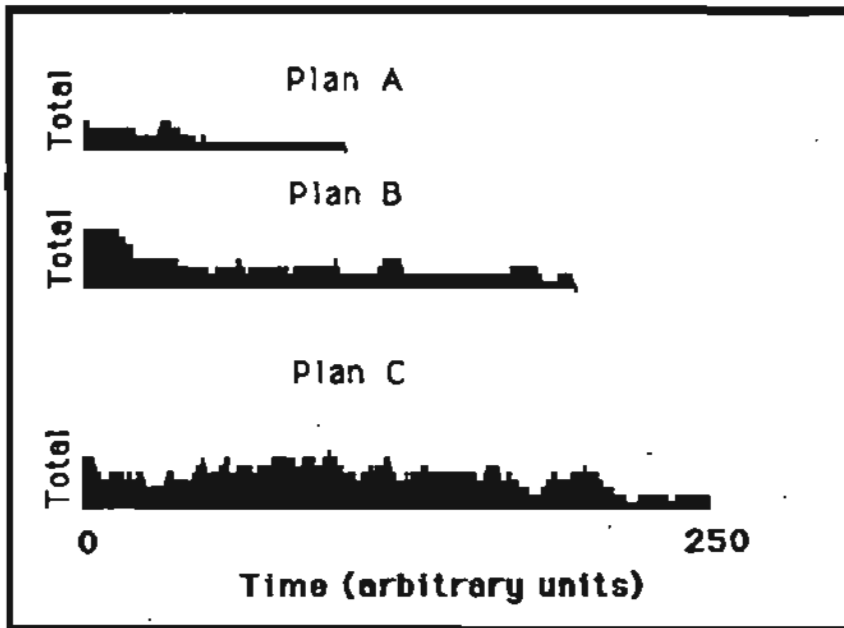


Figure 6.2. Total extant subpopulations versus time.

Fifty trials were run for each of the three alternatives. From these, the mean time to extinction was calculated. In general, the Plan A configuration was reduced to low patch occupancy after about 50 generations. In the other two configurations, there was higher patch occupancy and more turnover, i.e., colonization of a local population following its extinction.

The mean time to metapopulation extinction for these three configurations are:

Configuration	Metapopulation Text
Plan A	107 generations
Plan B	140 generations
Plan C	204 generations

The difference between Plan A, which covers 0.5 million acres and Plan B, which covers 1.5 million acres, is surprisingly small. The reason for this becomes obvious after one views the operation of the METAPOPOP model. The three patches in Plan B south of I-15 are relatively isolated and go extinct for the most part independently of the other six patches, adding very little extra duration of life to the system. Fundamentally, the increased time to extinction from Plan A to Plan B is caused by the inclusion of the Sand Hollow habitat to the system of North Mormon Mesa and Coyote Springs Valley.

The modification explored in configuration Plan C is interesting. Compared to Plan B, no area is added to the system. The only change is that the three patches south of highway I-15 (South Mormon Mesa, Bunkerville and Gold Butte) are made more interactive with the other units of the system. This is done in the context of the METAPOPOP model by moving the patches closer. In the actual system increased migration could be accomplished in various ways. One could build tortoise transit corridors under I-15. Or one could institute a regular program of exchange of tortoises across I-15. In any case, this larger, more interactive system lasts twice as long as the Plan A alternative. And, since it has a higher patch occupancy, it does better at preserving genetic variation.

It must be understood, however, that the foregoing analysis explores the relative difference in performance between three management alternatives. Once data are available on extinction and recolonization, it might be found that the Plan A alternative has a quite long mean time to extinction (metapopulation  $T_{ext}$ ), and the inclusion of additional habitat into the Clark County HCP might better be based on genetical considerations and considerations of potential catastrophes, such as the range-wide spread of URDS. This is, it might be better to add habitat to the south in Piute Valley.

The areas north and south of Los Vegas are likely to be naturally decoupled by the intervening urbanization surrounding Las Vegas. Thus, they would not form an interactive unit to be studied under the METAPOPOP model. With no context, the METAPOPOP model would conclude that all of the conserved habitat would be best be in one or the other of the two areas, since this would provide for the longest population survival in Clark County. However, one might want a system in which one required desert tortoise survival both to the north and to the south. Under this requirement, and acknowledging supporting populations in California to the south Piute Valley, the optimal strategy for allocating 4 blocks of tortoise habitat is 3 to the north and one to the south. A deeper analysis of this and other such questions awaits better research on the population dynamics of desert tortoises in Clark County.

#### 7. Mitigation under the Short-Term Habitat Conservation Plan

The question is simple: is the desert tortoise better off with the Short-Term Habitat Conservation Plan? The answer is a somewhat qualified "yes."

The loss of the entire Los Vegas Valley to desert tortoises is clearly bad for the desert tortoise species. The entire valley, i.e., the permit area, is roughly 300,000 acres, one-third of which is already urbanized. Twenty thousand acres may be developed during the period of the the Short-Term HCP. But, ultimately, the entire valley will probably be lost as viable desert tortoise habitat. This loss is a direct blow to the species population, entailing the loss of as many as 50,000 individuals (assuming 150 tortoises per square mile). Also, a major link connecting other desert tortoise populations will be lost, thereby limiting gene flow and the possible recolonization of locally extinct patches.

This loss must, however, be discounted by the great probability that it would occur anyway, even with strict enforcement of the take provisions of the Endangered Species Act, since Los Vegas Valley is probably the most deterministically bad habitat that currently exists for the desert tortoise. On top of roads, cars, dogs, cats and collectors, it has recently become apparent that the incidence of URDS in Los Vegas Valley is extensive.

The mitigation proposed under the Short-Term HCP involves improving a minimum of 400,000 acres of habitat, in four contiguous blocks. In Section 4, it was shown, based on current population trend data, that 100,000 acre blocks have a mean time to extinction of about 500 years. It was also shown that a very slight shift in the population growth rate, a 1.5% increase in the discrete growth rate, would greatly extend the population lifetimes of such local populations. It is not hard to imagine that the efforts to improve habitat quality in the Tortoise Management Areas could effect such a 1.5% increase in growth. For example, based on the standard resource-based model for interspecies competition, the effect of sheep grazing could lower tortoise growth rates by 1.5%. Thus, removal of sheep from these habitats could alone provide the needed mitigation. Another mitigation could involve edge effects through the construction of adult-proof fences. This could lower adult mortality rates due to road kill. So, it is quite likely that the viability of Clark County desert tortoise populations will be increased by the measures proposed by the Short-Term Habitat Conservation Plan.

8. References

Berry, K. 1989. Technical Report, Bureau of Land Management.

Brussard, P. F. and M. E. Gilpin. 1990. Demography and Genetics of Small Population. In U. Seal et al. Conservation Biology of the Blackfooted Ferret, Yale University Press.

Franklin, I. 1980. Evolutionary Change in Small Populations. In M. E. Soule and B. Wilcox (eds) Conservation Biology, Sinauer Associates.

Gilpin, M. E. and M. E. Soule. 1986. Minimum Viable Populations: The Process of Species Extinction. In: M. E. Soule (ed) Conservation Biology. Sinauer Associates.

Gilpin, M. E. 1987. Spatial Structure and Population Vulnerability In. M. E. Soule (ed) Viable Populations for Conservation, Cambridge Univ. Press.

Goodman, D. 1987. Demography of Chance Extinction. In. M. E. Soule (ed) Viable Populations for Conservation. Cambridge University Press.

Shaffer, M. 1981. Minimum Viable Populations. Bioscience 32: 42-46.

Turner, F. B. and K. Berry. 1986. Population ecology of the Desert Tortoise. Report to Southern California Edison.

APPENDIX C

ASSESSMENT OF TORTOISE HABITAT QUALITY  
ALONG THE PERIPHERIES OF  
THE CLARK COUNTY HABITAT CONSERVATION PLAN  
PERMIT AREA AND EXCLUSIONARY ZONES

Submitted to:

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12 November 1990

ASSESSMENT OF TORTOISE HABITAT QUALITY  
ALONG THE PERIPHERIES OF  
THE CLARK COUNTY HABITAT CONSERVATION PLAN  
PERMIT AREA AND EXCLUSIONARY ZONES

Background

A Desert Tortoise Short-term Habitat Conservation Plan (HCP) is being developed for Clark County, Nevada (RECON 1990). Elements include a Section 10(a) permit area comprising non-federal lands in most of Las Vegas Valley and three exclusionary zones within that permit area - Las Vegas, Henderson, and Boulder City - each enclosing highly developed areas. Development within the permit area requires a flat fee of \$300 per acre (in addition to currently-assessed fees) to fund conservation and research programs. (No distinction is made in fees between high quality and poor quality tortoise habitat.) Furthermore, all development within the permit area must include surveys for and removal of tortoises from all sites prior to grading; these requirements are conducted at the expense of the developer. (Exclusionary zones, and other areas within the permit area meeting exclusionary criteria, are exempt from tortoise survey and removal requirements.) To maximize the conservation effort for tortoises in Las Vegas Valley, it is crucial to accurately identify tortoise habitat within the valley, in association with the permit area and exclusionary zone boundaries. It is also important to correctly identify the permit area and exclusionary zone boundaries for economic legitimacy to developers. To assist in refining the perimeters of the permit area and exclusionary zones, a survey of tortoise habitat quality along these borders was completed, the results of which are reported herein.

Methods

The survey was conducted from 22 to 25 October 1990. It included driving and walking the permit area and exclusionary zone boundaries to assess habitat for tortoises. Habitat quality was determined from extensive previous experience of the researcher in sampling tortoise habitat in Nevada, California, and Utah and included qualitative analyses of vegetation (e.g., species, cover, diversity), soil and substrate (e.g., consistence, coarse particles), topography and drainage, and adjacent habitat potential. Habitat quality was divided into five categories:

- 1) None - no tortoises possible
- 2) Poor - tortoises may be present, but it is unlikely. If they are present, densities are very low
- 3) Fair - tortoises probably present in low densities
- 4) Moderate - tortoises probably present in moderate densities (below approximately 75-100 tortoises/mi<sup>2</sup>)
- 5) Good - tortoises probably present in densities in excess of approximately 100 tortoises/mi<sup>2</sup>. (No distinction is made between good and excellent habitat, since both support large numbers of animals requiring essentially the same treatment during mitigation.)

Where the habitat was a mosaic between two categories, both categories were noted.

### Survey Results

#### I. Permit Area Perimeter (Figure 1)

<u>Segment</u>	<u>Habitat Condition and Comments</u>
I-15 to Valley View	Inherently moderate habitat (fair to to proximity to freeway); scattered houses and adjacent to freeway
Valley View to Buffalo	Moderate to good habitat; mostly undeveloped with widely scattered houses, inside and outside permit perimeter.
Buffalo to hills just north of Blue Diamond Rd.	Good habitat; development as above
Hills just north of Blue Diamond Rd	Poor to fair; the flats to the east are good, with the exception of Sections 6 (T22S R60E) and the area around the western extension of Warm Springs Rd., which is moderate; development as above
Area of Sunset Rd.	Good; development as above
Hills of Section 36 (T21S R 59E)	Moderate; note that much of habitat to east and northeast is poor or fair, so unless there is goo habitat to the west of perimeter (unlikely), densities may be lower than the inherent quality of the habitat or there may only be patches of higher density
Section 36 to mid Section 14	Moderate to good habitat; scattered houses to east

Mid Section 14 to Section 11	Fair habitat; scattered houses to east
Hill in Section 10	Poor to non-habitat; occasional dwelling
Section 10 to mid Section 6 (north of Blue Diamond Rd.)	Poor to fair habitat; occasional dwelling
Mid Section 6 to western extension of Smoke Ranch Rd.	Mountains are non-habitat. Immediately adjacent flats are poor, becoming fair further downslope. Mountains to west and north are non-habitat. No homes.
Smoke Ranch Rd. to Cheyenne Rd.	Mountains are non-habitat near summits and on talus; lower slopes are poor, with fair habitat on immediately adjacent flats; occasional homes to east
Cheyenne Rd. to mid Section 36 (T19S, R59E)	Mostly moderate, some patches good. Scattered homes.
Section 36 to eastern edge of Section 12 (1 mile west of Highway 95)	Fair habitat; scattered houses
Section 12 to Section 6 (T19S, R60E)	Moderate habitat
Section 6 to Section 5	Fair to moderate habitat, houses
Sections 5 and 4, adjacent northern corners	Non-habitat
Remainder of Section 4	Poor habitat
Section 3 to Section 6 (T19S R 61E)	Primarily non-habitat, although there is a very slight chance of tortoises in sections 3 and 10 because of adjacent fair to moderate habitat in the southwest.
Mid Section 6 to Section 1	Fair habitat
Section 1 to Section 18 (T19S R62E)	Low-end fair habitat
Section 19 to I-15	Fair, borderline moderate, habitat
I-15 to southern end of Section 12 (T20S R62E)	Fair habitat (inherently low-end moderate near I-15)
Section 12 to Lake Mead Blvd.	Poor habitat; some development and disturbance along perimeter with housing tract approximately 0.5 mi west and beyond
Lake Mead Blvd to lower end Section 36	Poor on slopes west of perimeter, non-habitat on hills; housing tract 0.5 miles east of perimeter



Section 36 to Section 24	Fair along perimeter, becoming low-end moderate near southern end of segment; non-habitat in northwestern corner of Section 2. Buildings and/or <i>Tamarix/Prosopis</i> bosque along entire perimeter segment, with exception of the northern portion
Section 24 to Section 25	Poor habitat; bordered to west by bosque
Section 25 to Section 34	Non-habitat, either the bosque or cleared. Hills to the east are poor
Section 34 to Highway 95	Fair on east side of perimeter, mostly poor on west side; housing tract 0.5-1 mile west. Moderate habitat in Section 22; developed south of Section 22.
Railroad Pass	Poor to fair in hills on north side of Highway 95, fair north of hills
Section 36 (T22S, R63E) to Black Mountain	Fair habitat; no development
Black Mountain	A mosaic of non-habitat to fair habitat, depending on talus condition and percent slope; fair to moderate habitat on the alluvial fan east of Black Mountain
Highway 93 to Section 11 (T23S R64E)	Fair habitat; no development with exception of transmission lines
Section 11 to Section 13	Fair to moderate habitat, becoming moderate in Section 13
Section 13 to approximately 0.5 mi west of substation	Good habitat; low-end good habitat just east of substation; no housing
0.5 mi west of substation to edge of Township 63 1/2E	Low-end fair habitat; artificial ponds and runoff, heavy sheep grazing
Township 63 1/2E to approximately 0.5 mi north of highway crossing	High-end moderate habitat, no housing
0.5 mi north of highway crossing to 0.5 mi south of Highway 93	Moderate habitat; no housing
0.5 mi south of Highway 93 to the highway	Fair habitat; only buildings are a casino
North of McCullough Mts., west of Highway 95, to Section 25	Fair to moderate habitat; housing near edge of perimeter for most of segment
Northern edge of McCullough Range to Bermuda Rd.	Fair habitat; occasional dwelling

Bermuda Rd. to I-15

Moderate (inherently low-end good near I-15); several houses.

## II. Exclusionary Zones:

### Exclusionary Zone 1 (Figure 2):

I-15 to Rainbow

Continuous buildings inside perimeter; outside perimeter is scattered buildings, but highly disturbed (poor habitat).

Tropicana to Hwy. 95 freeway

Continuous structures inside and outside perimeter.

Freeway to Rancho

Nearly continuous structures inside perimeter, with major exceptions at (1) Smoke Ranch Road, where there are several areas of inherently fair (now poor) habitat, continuous to west, but divided by freeway and adjacent to housing tracts; and (2) small patch of inherently poor to fair, highly disturbed habitat inside perimeter where Rainbow becomes freeway - no tortoises. Outside perimeter are large tracts of houses with intermittent patches of habitat. This habitat is mostly poor to fair (poor north of Alexander) and connects to habitat in west

Rancho junction

Housing tract to west, outside exclusionary zone, but to northeast are patches of poor to fair habitat and scattered houses

Junction to Lone Mountain Rd.

Outside zone is scattered houses and inherently poor (some non-) habitat; surrounded by houses. Inside perimeter is structures.

Rancho and Craig Rd.

*Prosopis/Atriplex* scrub north and south of perimeter, highly disturbed - no tortoises. Various housing tracts to north, but also continuous habitat.

Craig Rd. to Cheyenne Ave

Buildings or cleared with large patches of inherently poor and mostly highly disturbed habitat

Rancho at Cheyenne

Highly disturbed habitat northeast and southeast of perimeter junction.

Cheyenne Ave. to Commerce St.

Discontinuous poor habitat north of perimeter, with intermittent buildings. Developed south of perimeter to Clayton; poor habitat (inherently low-end fair) east of Clayton.

Commerce to I-15

Developed north and south of perimeter.

Cheyenne to Craig Rd.

Developed on west side of freeway. Developed on east side north to Gowan. North of Gowan to Craig are several areas

	of inherently poor habitat, now completely surrounded and tortoises highly unlikely.
I-15 to Nellis Blvd.	North and south of perimeter is inherently poor habitat, now completely surrounded (tortoises unlikely), with occasional buildings. Shortly east of Lamb to Nellis is continuous structures.
Craig Rd. to Carey Ave.	With exception of small patch of non-habitat at corner of Las Vegas Blvd. and Nellis and patch of non-habitat east of perimeter at Gowan, is continuous development both sides of perimeter
Nellis to Hollywood	Nearly continuous buildings north and south of perimeter. Exceptions: patch of very poor habitat (inherently fair) north of Carey at Betty Lane; patch of non-habitat (inherently poor) east of Mt. Hood St. At Carey and Hollywood is fair habitat to north and east of perimeter and buildings to east.
Carey to Charleston Blvd.	Inside perimeter area is a large tract of fair habitat south of Owens St. to Bonanza Rd. Continuous housing east of perimeter, south to Stewart Ave. Fair habitat south to Charleston, although highly disturbed on southwest and southeast corner of Charleston, so is non-habitat here.
Charleston to Sahara Ave	Inherently fair habitat inside perimeter, but highly disturbed near Charleston, so is non-habitat there. Toward Sahara there is a large <i>Tamarix/Prosopis</i> bosque abutting tortoise habitat to the west, so the habitat here probably hosts few, if any, tortoises, because of adjacent habitat quality Outside perimeter is highly disturbed, non-habitat (inherently fair).
Sahara to Vegas Valley Dr.	Development inside and outside perimeter.
Vegas Valley Dr. to Fremont St.	Bosque along west side of perimeter to 0.5 mi south of Vegas Valley Dr., where bosque encompasses road nearly to Fremont. At Fremont is non-habitat (inherently poor, but surrounded by non-habitat). Inside perimeter are buildings at Ely Ave. Gravel pit outside perimeter area in southwestern corner of Section 14.
Fremont to Mountain Vista St.	Developed inside and outside perimeter.
Russell Rd. to Sunset Rd.	Whitney Mesa area is non-habitat (inherently poor but surrounded by non-habitat); remainder is developed on both sides of perimeter.
Mountain Vista to Green Valley Parkway	Developed inside perimeter, non-habitat outside with development outside perimeter at Green Valley.
Green Valley to Pecos Rd.	Inside perimeter is mostly non-habitat; outside perimeter is developed.

Pecos Rd. to I-15

Inside perimeter is mostly developed, with some non-habitat just east of Pecos and a large patch of fair habitat (continuous to south) at railroad crossing. Outside perimeter is mostly developed with several small patches of non- to poor habitat (inherently poor to fair).

Exclusionary Zone 2 (Figure 3):

Northern portion

Inside perimeter

Continuous structures

Outside perimeter

Structures along Highway 95 and north of Sunset Rd. Poor habitat north of Sunset near Pabco Rd. *Tamarix/Prosopis* bosque surrounds most of northern and eastern edges. Along Highway 95 at southern end of zone is patch of inherently fair habitat but completely surrounded by development so probably no tortoises.

Southern portion

Inside perimeter

Continuous structures, except (1) on the southwestern corner (intersection of Pacific and Heather), (2) on the southeastern corner, where habitat is mostly fair to moderate, but highly disturbed (poor) near railroad, and (3) in the west where the habitat is inherently fair from Viewmont Dr. north to Coolidge Ave, between Frankfort Way and Tigertail Way; between Bismark and Tigertail the habitat is highly disturbed, so poor.

Outside perimeter

Structures along Lake Mead Blvd. from Albany nearly to Warm Springs Rd. Habitat is inherently poor to fair north to northern end of Exclusionary Zone, but surrounded by development, so probably few, if any, tortoises. East of Pueblo to Highway 95 habitat is a mosaic of houses and poor to fair habitat. Habitat is moderate outside of southeastern corner of zone, becoming fair west of Greenway. From Horizon north, habitat is poor to fair.

Exclusionary Zone 3 (Figure 4):

Inside perimeter

Continuous houses or other buildings, with the exception of: (1) the area between Kiva Dr. and Mendota Dr., which is fair habitat, but completely surrounded by recent housing; and (2) a small portion of poor habitat at the northern end of Alaska Ave.

Outside perimeter

Moderate to good habitat along Buchanan, south of El Camino Way. Continuous structures from El Camino Way north along Buchanan Blvd., and along Nevada Highway to Bicentennial Park. Habitat is fair to moderate from the park to Adams Blvd. Houses are continuous from Adams Blvd.

southeast to Vaquero, at which point the habitat is moderate. Houses again occur in a broad block from Bermuda Dunes

### Summary

Habitat quality along the permit area perimeter is largely only fair or poorer (i.e., it supports low densities of tortoises at best); the poorest habitat is along the eastern and northern borders. Moderate or better habitat (i.e., supporting densities in excess of approximately 35 tortoises/mi<sup>2</sup>) is found along the southern and western borders, with the best habitat south and southwest of Las Vegas and northwest. With a few exceptions, the exclusionary zone border zones of continuous housing or other structures. Suggestions for slight changes in the permit area and exclusionary zone boundaries area offered below to support the intent of the short-term HCP:

- Permit Area Perimeter: From Valley View to Buffalo: Extend permit area south because of good tortoise habitat there.
- Section 3 to Section 6 (T19S R 61E): This habitat is not worth as much to tortoises as that along western or southern permit area border; consider a decreased price for development here.
- Bermuda Rd. to I-15: Extend permit area to south because of moderate tortoise habitat there.
- Exclusionary Zone 1: From Fremont to I-15, consider expanding the exclusionary zone south because of the high degree of development. (Exclude that area from the railroad crossing near Bermuda to Las Vegas Blvd.; that area is poorly developed.)
- At Lone Mountain Rd. and Rancho, extend exclusionary zone northeast - non-habitat surrounded by houses.
- Between Craig and Cheyenne along Rancho, extend exclusionary zone to east - poor to non-habitat with much development.
- Along Hollywood Blvd. between Charleston and Fremont, push exclusionary zone boundary east to include large patches of tortoise habitat and protect the large bosque.
- Exclusionary Zone 2: Move perimeter of exclusionary zone north to Kimberly, since there are no buildings between Kimberly and the exclusionary zone border.

Between Bismark and Albany and south of the railroad, exclude from exclusionary zone because habitat is fair and relatively undisturbed.

**Exclusionary Zone 3:**

Between Kiva and Mendota move the exclusionary zone east to Georgia Ave. since there is a broad open area of fair habitat there.

Literature Cited

RECON. 1990. Short-term habitat conservation plan for the desert tortoise in Clark County, Nevada. Report to Clark County, Las Vegas, Nevada. 148+ pp.

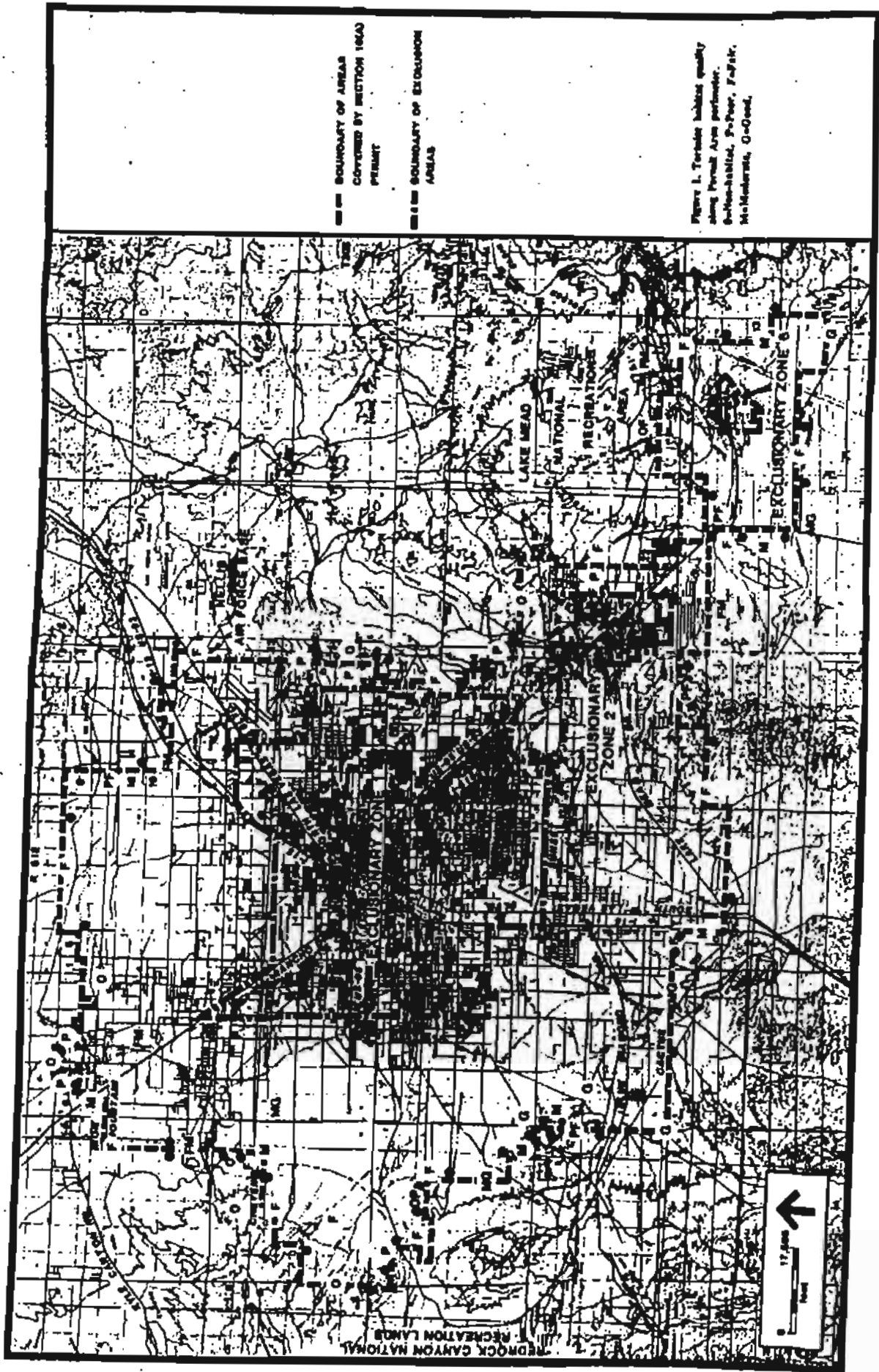


Figure 1. Terrestrial habitat quality along Permit Area perimeters. S=Shoshone, P=Peav, F=Fair, M=Maharist, G=Good.

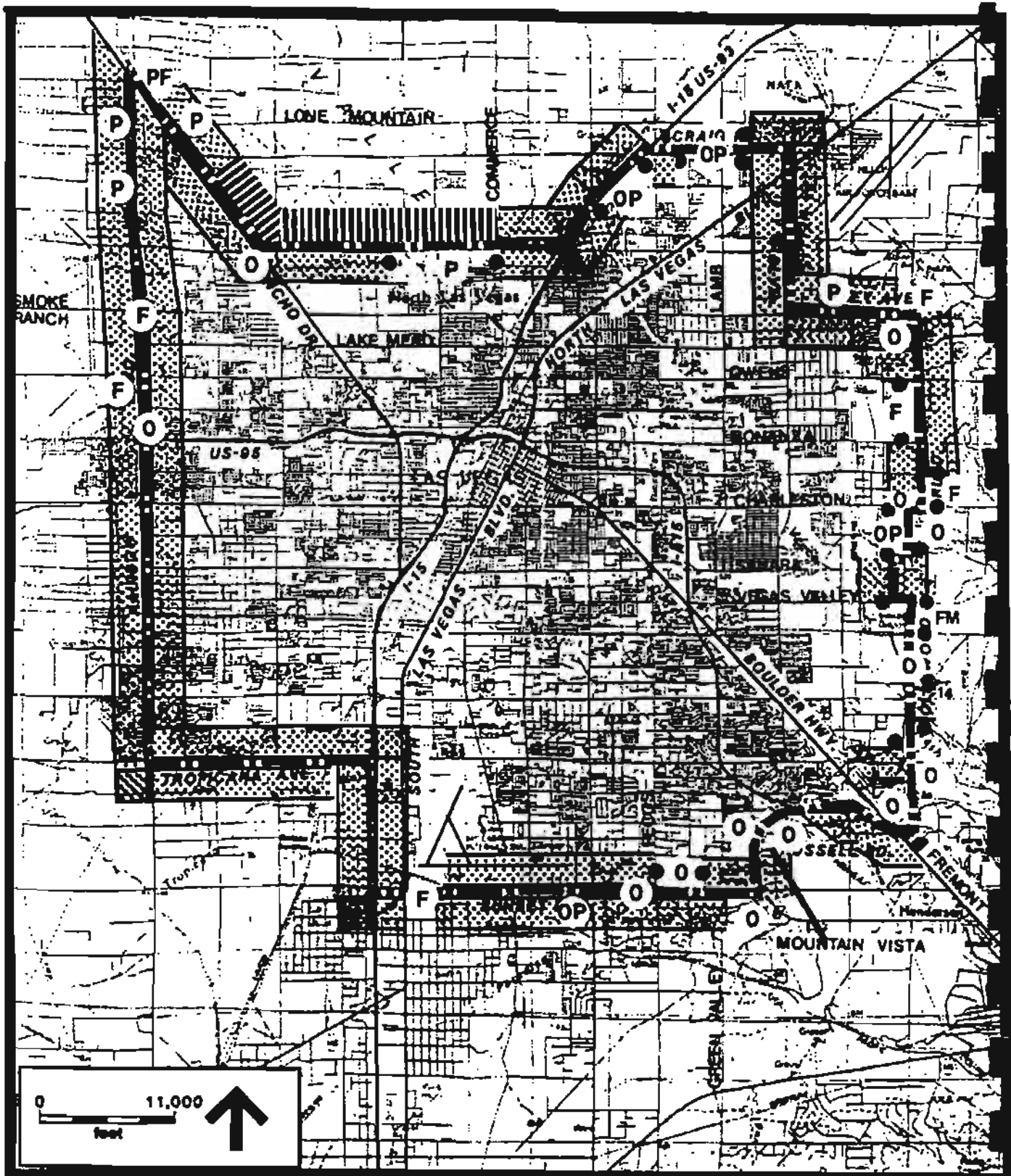


Figure 2. Tortoise habitat along perimeter of Exclusionary Zone 1:  
 O=Non-habitat, P=Poor, F=Fair, M=Moderate, G=Good,  
 [Stippled pattern] = Structures, [Vertical line pattern] = Poor habitat interspersed with buildings.



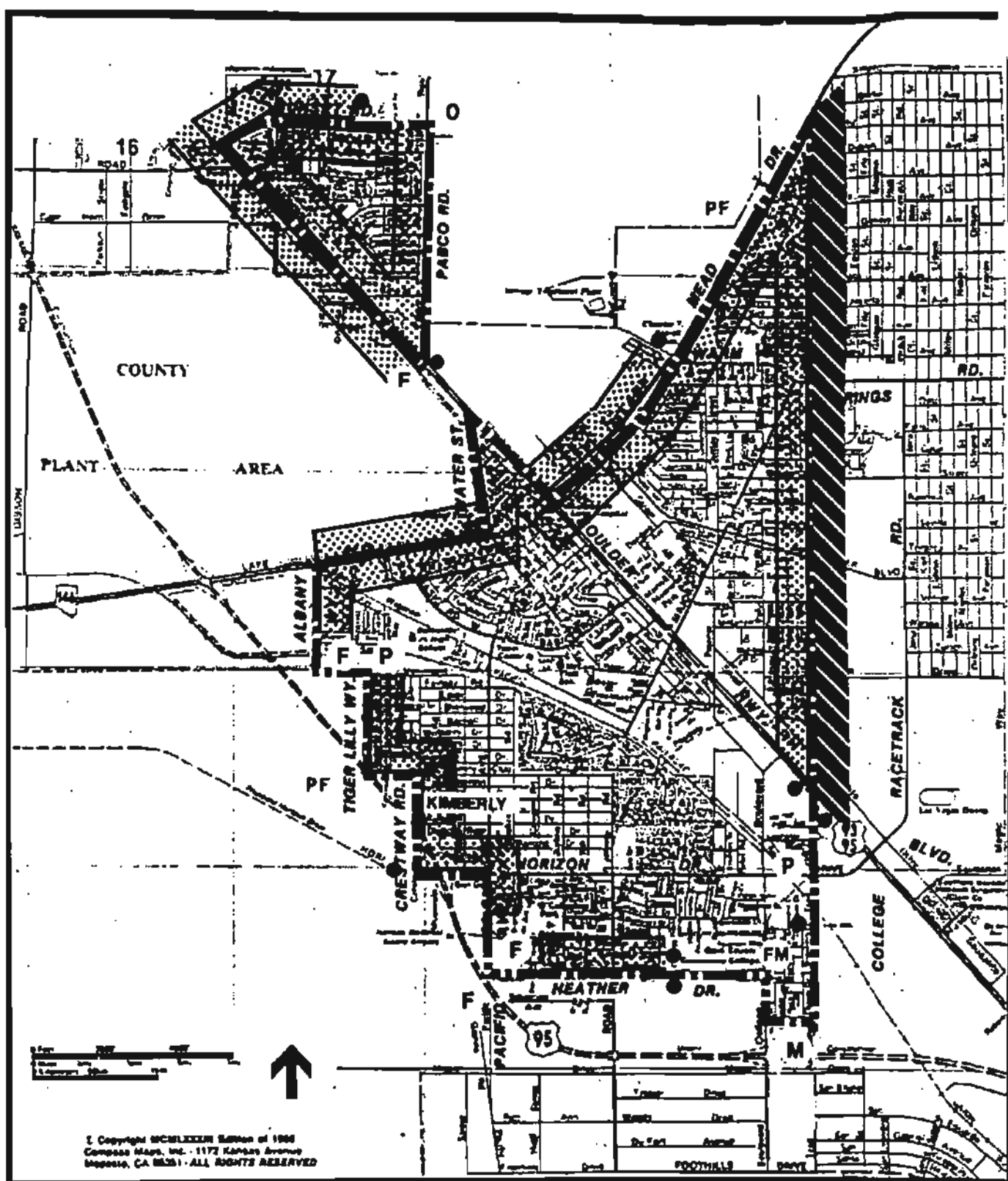




Figure 3. Tortoise habitat along perimeter of Exclusionary Zone 2:

0=Non-habitat, P=Poor, F=Fair, M=Moderate, G=Good,

 = Structures, 
  = Poor to fair habitat interspersed with buildings.

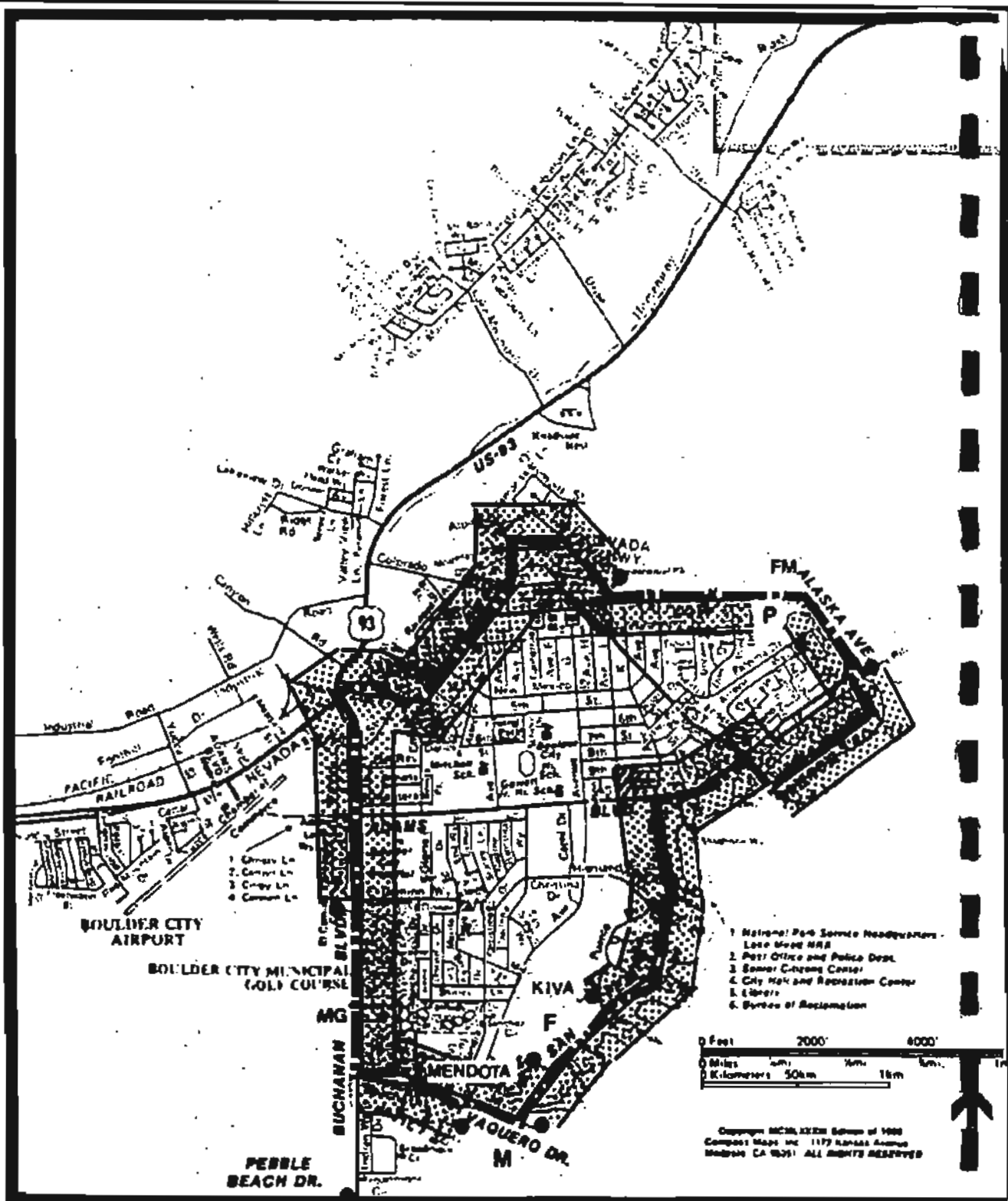


Figure 4. Tortoise habitat along perimeter of Exclusionary Zone 3:  
 O=Non-habitat, P=Poor, F=Fair, M=Moderate, G=Good,  
 [Stippled Box] = Structures.

**APPENDIX D**

## HCP COMPLIANCE FORMS AND PROTOCOLS

The following forms and protocols are draft versions of those to be used for projects within the 10(a) permit area. The forms will be available at City and County offices and include an identification number coded to the local jurisdiction.

The drafts presented here for review include:

1. A project identification and signature page that must be completed by all projects in the permit area;
2. The protocol to be used for tortoise surveys and the form to be used to report survey results; and
3. The protocol to be used for tortoise removals and the form to be used to report removal results.

Please note that the final forms will be typeset.

HCP ID #

AB-1234

HCP COMPLIANCE FORM  
PART 1 -- PROJECT IDENTIFICATION AND SIGNATURE SHEET

NOTE:

1. IF AN AUDIT INDICATES THAT A SURVEY OR REMOVAL FORM HAS BEEN INTENTIONALLY FALSIFIED, THE PROJECT WILL BE EXCLUDED FROM COVERAGE BY THE SECTION 10(A)(1)(B) PERMIT FOR THE DURATION OF THE PERMIT PERIOD. MOREOVER, IF TAKE OCCURRED ON SUCH PROPERTY, IT WAS NOT INCIDENTAL TO AN OTHERWISE LAWFUL ACTIVITY AND WILL BE REFERRED DIRECTLY TO THE U.S. FISH AND WILDLIFE SERVICE FOR PROSECUTION UNDER THE TERMS OF THE FEDERAL ENDANGERED SPECIES ACT (ESA). VIOLATIONS OF SECTION 9 OF THE ESA ARE PUNISHABLE BY FINES OF UP TO \$25,000 FOR EACH INSTANCE OF TAKE AND BY UP TO SIX MONTHS IN JAIL.
2. SURVEY RESULTS MUST BE REPORTED ON THE HCP COMPLIANCE FORM 2B AND WILL BE CONSIDERED VALID FOR A MAXIMUM OF 90 DAYS.
3. THE RESULTS OF A TORTOISE REMOVAL MUST BE REPORTED ON THE HCP COMPLIANCE FORM 3B AND WILL BE CONSIDERED VALID FOR A MAXIMUM OF 60 DAYS.

All projects in the permit area are required to complete this form and submit it to the appropriate local agency. Authorization to grade property will not be given by the local agency until this form has been submitted and is accepted as complete.

The project proponent is responsible for securing all signatures required below and for providing all required information.

1. Cite location and size of subject site:

Parcel number(s) \_\_\_\_\_

Acres \_\_\_\_\_

City or township \_\_\_\_\_

2. Check the box below that applies to subject site:

- a. Site is within an exclusionary zone.  
Tortoise survey is not required.
- b. Site is covered by exclusionary criteria.  
Tortoise survey is not required.

- c. Site has been surveyed for tortoises.  
No evidence of tortoises found on-site.  
Survey report attached.  
Signature of surveyor provided below.
- d. Site has been surveyed for and cleared of tortoises.  
Removal report attached.  
Signature of tortoise remover provided below.  
Signature of person at transfer facility, where tortoises were delivered, provided below.

3. Provide proof of payment of mitigation fee.

Date of payment \_\_\_\_\_

- Receipt attached.  
(check box)

4. If 2.c or 2.d are checked above, provide the appropriate signature below.

(2.c) \_\_\_\_\_  
Signature of Surveyor Date

(2.d) \_\_\_\_\_  
Signature of Tortoise Remover Date

\_\_\_\_\_  
Signature of Receiver at Tortoise Transfer Facility Date

\_\_\_\_\_  
Signature of Property Owner Date

5. Sign below as proof of compliance with HCP requirements.

\_\_\_\_\_  
Signature of Project Proponent Date

<b>FOR OFFICIAL USE ONLY</b>	
Date of submittal _____	
Signature of person accepting form _____	Name and Title _____

HCP COMPLIANCE FORM  
PART 2A -- TORTOISE SURVEY PROTOCOL

In order to comply with HCP requirements, tortoise surveys must be conducted according to the following protocol and reported on the attached form (2B).

Qualification of Surveyor

The following guidelines for the selection of a tortoise surveyor are based on those used by the U.S. Fish and Wildlife Service and are recommended for use by project proponents in the permit area.

1. As a general rule, a qualified desert tortoise surveyor is a biologist with a bachelors or graduate degree in biology, ecology, wildlife biology, herpetology, or related fields. He/she should be familiar with the survey techniques used by resource agencies and should have prior field experience. Field experience may mean a minimum of 60 days of in-field searches for tortoises and tortoise sign.
2. For the results of the survey to be acceptable, the surveyor must be able to: (a) recognize and accurately identify all types of desert tortoise sign, and (b) record all sign in a careful, legible, and complete way. Tortoise sign includes cover sites, shells, and estimated size of live tortoises.

Site Description

The surveyor will provide a legal description of the site and a site map that clearly shows the location of the property with respect to the boundaries of the 10(a) permit and existing roads.

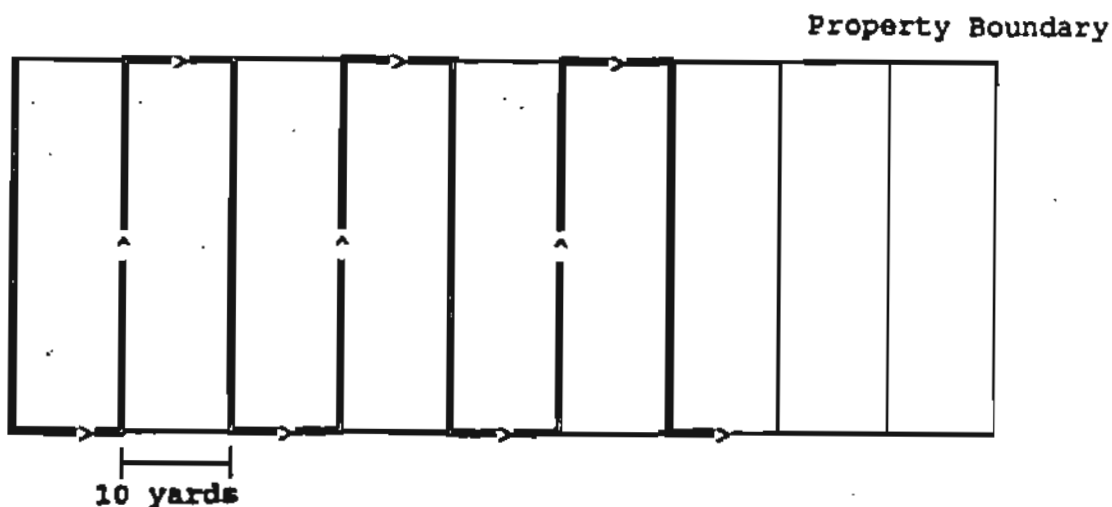
The surveyor also will describe the site's:

1. Soil types, texture, and properties relative to drainage and suitability for tortoise burrows (for example: "well-drained sandy loam with patches of gravel and cobbles under a poorly developed desert pavement; highly suitable for tortoise burrows");
2. Landform or topography (for example: "gently sloping alluvial plain dissected by shallow drainage channels");
3. Plant community, with particular attention to dominant perennials and the presence and identity of typical tortoise forage species (for example: "typical creosote scrub community with widely scattered creosote bushes");

4. Human impacts on the site or off-site features that may have an impact on any tortoises on the property (such as: grading, ORV activity, adjacent road, dumping); and
5. A brief description of adjacent land, including the presence and estimated extent of suitable tortoise habitat.

#### Survey Procedure and Record of Findings

1. To conduct the survey, the surveyor will walk a single series of parallel line-intercept transects until the entire site has been covered. These transects will be spaced at 10-yard intervals (see below). In situations where it is impossible or unsafe to follow this procedure (such as on precipitous slopes or where unsafe conditions obtain), the procedure actually used must be described in detail.



2. All tortoise signs found will be recorded on the survey report form, and the location of the signs will be marked on the site map. If codes other than the numbers from the survey form are used to mark sign on the map, a key to codes must be included on the map.
3. Tortoise surveyors will look for tortoises on the surface, under bushes, under ledges, under overhangs, and any other place a tortoise might seek shelter. Tortoise burrows will be examined. If the back end of the burrow is not visible, the searcher will use a fiber optic device or other remote sensing system to inspect the unseen portions of the burrow.
4. Surveyors are not required to search for tortoise eggs. If eggs are discovered in the process of searching for tortoise sign, the surveyor should mark the location in the field and call the hotline at the tortoise transfer facility. Removal of tortoise eggs will be provided at no charge through the hotline service.



### Conclusions

When the survey is completed, the surveyor must reach a conclusion about the site and check the appropriate box on the survey report form. He/she must decide whether or not the site is tortoise habitat. He/she also must report whether or not there is evidence that tortoises are currently on the site.

### Form Completion and Submittal

To be accepted as complete, the survey form must be:

1. Legible;
2. Accompanied by a site map, marked with the location of sign (if any);
3. Signed by the surveyor; and
4. Signed by the property owner.

The surveyor and property owner also must sign the "Project Identification and Signature Sheet" of the HCP Compliance Form.

HCP COMPLIANCE FORM  
PART 2B -- TORTOISE SURVEY REPORT

## NOTE:

1. IF AN AUDIT INDICATES THAT A SURVEY OR REMOVAL FORM HAS BEEN INTENTIONALLY FALSIFIED, THE PROJECT WILL BE EXCLUDED FROM COVERAGE BY THE SECTION 10(A) (1) (B) PERMIT FOR THE DURATION OF THE PERMIT PERIOD. MOREOVER, IF TAKE OCCURRED ON SUCH PROPERTY, IT WAS NOT INCIDENTAL TO AN OTHERWISE LAWFUL ACTIVITY AND WILL BE REFERRED DIRECTLY TO THE U.S. FISH AND WILDLIFE SERVICE FOR PROSECUTION UNDER THE TERMS OF THE FEDERAL ENDANGERED SPECIES ACT (ESA). VIOLATIONS OF SECTION 9 OF THE ESA ARE PUNISHABLE BY FINES OF UP TO \$25,000 FOR EACH INSTANCE OF TAKE AND BY UP TO SIX MONTHS IN JAIL.
2. SURVEY RESULTS MUST BE REPORTED ON THE HCP COMPLIANCE FORM 2B AND WILL BE CONSIDERED VALID FOR A MAXIMUM OF 90 DAYS.

This form must be completed for all projects required to survey for tortoises. It will not be deemed complete unless it is legible, accompanied by a site map that indicates the location of property in the permit area and the location of any tortoise sign found during the survey, and signed by the surveyor.

Results of a survey that conclude tortoises are not present on the site will be subject to audit over a one-week period after the HCP Compliance Form has been submitted to the appropriate local agency. Such audits will be conducted by NDOW on a random basis.

If a survey concludes that tortoises are present on the site, the HCP Compliance Form cannot be submitted until a tortoise removal report has been completed.

Completion of this form is the responsibility of the surveyor and project proponent.

1. Cite location and size of subject site:

Parcel number(s) \_\_\_\_\_

Acres \_\_\_\_\_

City or township \_\_\_\_\_

2. Prepare and attach a site location map that shows the subject property in relation to the permit area. The map also will be used to show the location of tortoise signs found during the survey and must be large enough to allow for the easy identification of such locations.

Map attached.  
(check box)

3. Provide a brief description of soil types, texture, and properties.

---

---

4. Provide a brief description of the site's topography.

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---

5. Describe the plant community on the site.

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6. Describe human impacts on the site.

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---

---

7. Briefly describe the adjacent property.

---

---

8. If different from HCP protocol, describe methods used.

---

---

9. Summarize findings below (individual findings will be described in item 10 and recorded on the site map).

Number of live tortoises found \_\_\_\_\_

Number of tortoise remains found \_\_\_\_\_

Number of cover sites found \_\_\_\_\_

Number of sites with droppings \_\_\_\_\_

Total number of other sign \_\_\_\_\_

10. List all findings below (add additional sheets if required).

Sign No.	Scat	Live Tortoise	Tortoise Shell	Cover Site	Tracks	Eggs or Egg Fragments	Drinking Sites	Courtship Signs
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								

LIST ANY CODES USED ABOVE HERE:

11. State conclusions by checking the appropriate box below.

- a. Site is not tortoise habitat or is no longer suitable tortoise habitat. No evidence of tortoise presence was found. Tortoise removal not required.
- b. Site is tortoise habitat but no evidence of tortoise presence was found. Tortoise removal not required.
- c. Site has tortoise sign but no tortoises found. Search for tortoises as per HCP removal protocol required.
- d. Site has tortoises. Tortoise removal required.

12. Sign below as proof of compliance with HCP requirements for tortoise surveys.

\_\_\_\_\_  
Signature of Surveyor

\_\_\_\_\_  
Date

\_\_\_\_\_  
Print Name

\_\_\_\_\_  
Street Address

\_\_\_\_\_  
City, State, Zip Code

\_\_\_\_\_  
(Area Code) Phone Number

\_\_\_\_\_  
Signature of Property Owner

\_\_\_\_\_  
Date

\_\_\_\_\_  
Print Name

\_\_\_\_\_  
Street Address

\_\_\_\_\_  
City, State, Zip Code

\_\_\_\_\_  
(Area Code) Phone Number

HCP COMPLIANCE FORM  
PART 3A -- TORTOISE REMOVAL PROTOCOL

In order to comply with HCP requirements, tortoise removals must be conducted according to the following protocol and reported on the attached form (3B).

Qualifications of Tortoise Remover

The recommended qualifications of a person who removes tortoises are the same as those for a tortoise surveyor.

1. As a general rule, a qualified desert tortoise surveyor is a biologist with a bachelors or graduate degree in biology, ecology, wild-life biology, herpetology, or related fields. He/she should be familiar with the survey techniques used by resource agencies and should have prior field experience. Field experience may mean a minimum of 60 days of in-field searches for tortoises and tortoise sign.
2. For the results of the survey to be acceptable, the surveyor must be able to: (a) recognize and accurately identify all types of desert tortoise sign, and (b) record all sign in a careful, legible, and complete way.

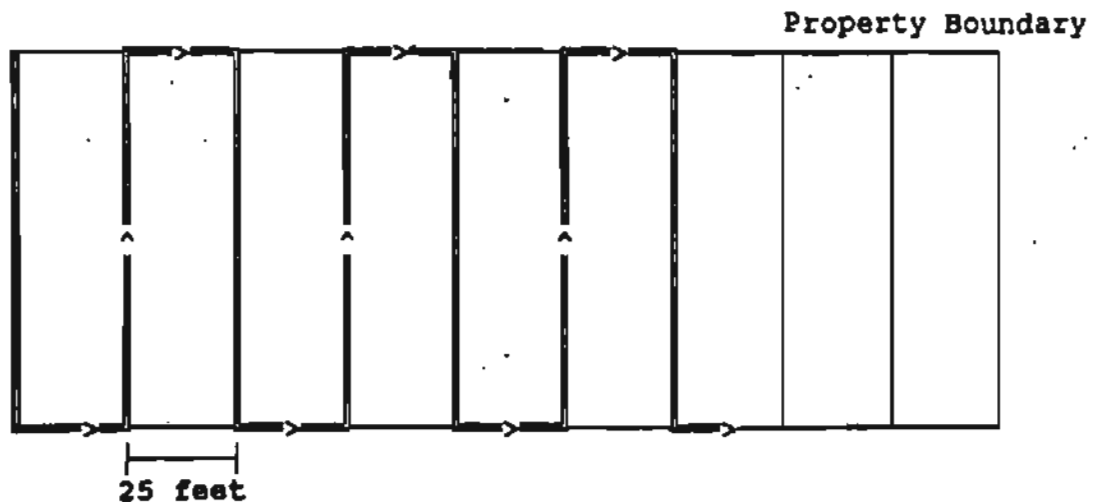
Scheduling and Timing of Tortoise Removals

1. The project proponent with property to be cleared of tortoises must notify the tortoise transfer facility in writing at least 10 days in advance of the collection. During the 10-day period, the project may be selected at random for in-field inspection during collection.
2. All collections shall be conducted during daylight hours.
3. Collected tortoises must be delivered to the transfer facility within four hours of collection (beginning with the first tortoise collected).
4. Collected tortoises must be delivered to the transfer facility by 5:00 p.m. or by special arrangement with the facility.

Collection Methods

1. Tortoise removal shall be accomplished by searchers walking parallel transects at 25 feet intervals until the entire site is covered (see below). Complete coverage of the site in this manner shall be considered one pass.





2. All tortoises encountered on a pass will be collected and removed from the field at that time (see "tortoise handling and record keeping" below). The number of tortoises collected on a pass will be recorded on the Tortoise Removal Form (3B).
3. A site will be considered cleared when two passes without finding tortoises have been made or when a total of four passes have been made.
4. Tortoise removers will search for tortoises on the surface, under bushes, under ledges, under overhangs, and any other place a tortoise might seek shelter. Tortoise burrows will be examined. If the back end of the burrow is not visible, the searcher will use a fiber optic device or other remote sensing system to inspect the unseen portions of the burrow.
5. Tortoise removers are not required to search for tortoise eggs. If eggs are discovered in the process of collecting tortoises, the tortoise remover should mark the location in the field and call the tortoise hotline at the tortoise transfer facility. Removal of tortoise eggs will be provided at no charge through the hotline service.

#### Tortoise Handling and Record Keeping

1. Tortoises may not be restrained, confined, or molested in the field before collection.
2. Tortoises shall not be injured during removal from burrows, crevices, or other shelters/features.
3. Removal of tortoises may not involve the use of explosives, heavy equipment (backhoes, bulldozers, motor-powered earth moving equipment), or any other method, material, or implement that may injure the animal.

4. Tortoises must be handled in a careful manner. This requires that the animal be lifted slowly and fully supported in an upright position (as it normally stands on the ground) at all times. If a tortoise is found on its back, it should be righted immediately with a slow and gentle motion.
5. Each tortoise encountered on a pass will be placed in a newly-purchased, clean cardboard box of an appropriate size (8"x8"x6" for small tortoises and 10"x13"x12" for adult tortoises). Placement of a tortoise in a box will occur in the field where the animal was encountered.
6. Each box will contain only one tortoise and will be sealed with unreinforced cellophane packaging tape. Each box shall be marked on the top surface in black felt permanent marker with the following information in the following order:
  - a. Collector's name
  - b. Location/name of site or project
  - c. Time and date of collection
  - d. The site's HCP identification number

(The HCP identification number is in the upper right hand corner of the HCP Compliance Form.)
7. A summary of the information on the boxes must be included on the Removal Report Form (3B).
8. Between collection and delivery to the transfer facility, the boxed tortoises shall be maintained in the shade on a pallet or in a vehicle in the shade with the air conditioner running.
9. Vehicles used for tortoise transport shall be adequate to secure the boxes during transport. Boxes should not be allowed to fall, slide, or tilt. The area in vehicle in which the boxes are placed should be closed, air-conditioned, and protect the boxes from direct sunlight. Trucks, open pick-up beds, and non-air-conditioned camper shells are not acceptable. Truck beds and floorboards also must be insulated by additional carpets, plywood, pallets, or other insulating materials.
10. All tortoises will be delivered to the transfer facility on the day of collection. As noted above, delivery must occur within four hours of collection. Delivery must be by 5:00 p.m. or by special arrangement with the transfer facility.

#### Form Completion and Submittal

Upon delivery of the tortoises, an authorized representative of the transfer facility will check to see that the Removal Report Form is complete and then will counter sign it and the HCP "Identification and Signature Sheet." The signature of the tortoise remover and property owner also must be on both forms.

HCP ID #

AB-1234

HCP COMPLIANCE FORM  
PART 3B -- TORTOISE REMOVAL REPORT

NOTE:

1. IF AN AUDIT INDICATES THAT A SURVEY OR REMOVAL FORM HAS BEEN INTENTIONALLY FALSIFIED, THE PROJECT WILL BE EXCLUDED FROM COVERAGE BY THE SECTION 10(A) (1) (B) PERMIT FOR THE DURATION OF THE PERMIT PERIOD. MOREOVER, IF TAKE OCCURRED ON SUCH PROPERTY, IT WAS NOT INCIDENTAL TO AN OTHERWISE LAWFUL ACTIVITY AND WILL BE REFERRED DIRECTLY TO THE U.S. FISH AND WILDLIFE SERVICE FOR PROSECUTION UNDER THE TERMS OF THE FEDERAL ESA. VIOLATIONS OF SECTION 9 OF THE ESA ARE PUNISHABLE BY FINES OF UP TO \$25,000 FOR EACH INSTANCE OF TAKE AND BY UP TO SIX MONTHS IN JAIL.
2. THE RESULTS OF A TORTOISE REMOVAL MUST BE REPORTED ON THE HCP COMPLIANCE FORM 3B AND WILL BE CONSIDERED VALID FOR A MAXIMUM OF 60 DAYS.

This form must be completed for all projects required to remove tortoises. It will not be deemed complete unless it is legible and signed by both the tortoise remover and a representative of the tortoise transfer facility.

Completion of this form is the responsibility of the tortoise remover and the project proponent.

1. Cite location and size of subject site:

Parcel number(s) \_\_\_\_\_

Acres \_\_\_\_\_

City or township \_\_\_\_\_

2. Indicate the date and time of the collection and the number of searchers used on each pass.

Date of collection \_\_\_\_\_

Time started \_\_\_\_\_ Time finished \_\_\_\_\_

Number of searchers for each pass:

Pass 1 \_\_\_\_\_ Pass 2 \_\_\_\_\_ Pass 3 \_\_\_\_\_ Pass 4 \_\_\_\_\_

3. Summarize the results of each pass and mark the general location of collected tortoises on a copy of the site location map prepared during the tortoise survey. (If the project proponent has opted to combine the survey and removal steps, a site location map must be prepared as per instructions on the survey form. In such cases, tortoise sign also should be noted and mapped during the first collection pass.)

Map attached.  
(check box)

4. Sign below to confirm compliance with HCP requirements for tortoise removal.

\_\_\_\_\_  
Signature of Remover

\_\_\_\_\_  
Date

\_\_\_\_\_  
Print Name

\_\_\_\_\_  
Street Address

\_\_\_\_\_  
City, State, Zip Code

\_\_\_\_\_  
(Area Code) Phone Number

\_\_\_\_\_  
Signature of Property Owner

\_\_\_\_\_  
Date

\_\_\_\_\_  
Print Name

\_\_\_\_\_  
Street Address

\_\_\_\_\_  
City, State, Zip Code

\_\_\_\_\_  
(Area Code) Phone Number

5. Have an authorized representative of the transfer facility sign below to confirm delivery of tortoises.

Time tortoises were delivered \_\_\_\_\_

\_\_\_\_\_  
Signature of Transfer Facility Representative

\_\_\_\_\_  
Date

**APPENDIX E**

APPENDIX B  
PUBLIC COMMENTS

On October 24, 1990, The Clark County Desert Tortoise Steering Committee hosted an informal public meeting on the draft Short-term Habitat Conservation Plan for the Desert Tortoise (HCP). The meeting was held in the Clark County Board of Commissioners chambers, from 7:00 to 11:00 p.m. The purpose of the meeting was to provide a forum outside of the regular steering committee meetings, to discuss the HCP and to gather additional public comments. Mr. Paul Selzer, Project Coordinator, and Mr. Paul Fromer, Project Director, acted as meeting mediators and provided responses to appropriate questions. Over 110 people attended the public meeting, and 32 people offered verbal comments. The majority of those attending and speaking at the meeting represented off-highway vehicle (OHV) interests. Representatives from the ranching and mining communities also attended and spoke. Other speakers represented concerns from the Southern Nevada Homebuilders Association, the Environmental Defense Fund, the City of Las Vegas, and other concerned individuals. Attendees of the public meeting are listed below. Those individuals that gave verbal comments are indicated with an asterisk.

The vast majority of the concerns vocalized at the meeting came from the "multiple users" and centered around the land use constraints that would be imposed by the HCP. Nearly all comments protested taking public lands out of multiple-use for the purposes of providing protection for the desert tortoise. All multiple users who spoke strongly stated that they have a right to the use of public lands, for OHV recreation, grazing, mining, hunting, and other activities. Many felt that too much land already had been withdrawn from public use. There were many questions regarding the authority under which this "right" to use public lands could be taken away. Additionally, many of the comments also indicated that it was "unfair" that the HCP "benefit" the developers in the Las Vegas Valley, to the detriment of both residents and users of the desert outside of the Valley. Many indicated concern over the rapid growth that has already occurred in the Las Vegas Valley, without the necessary public works infrastructure.

There was a show of support of the HCP process from the Southern Nevada Homebuilders Association, the Environmental Defense Fund, and the City of Las Vegas. These groups indicated that the HCP represented a consensus of participants and that all HCP participants compromised to a certain extent.

Other comments raised at the meeting are summarized below, according to the representative interest group.

OHV Interests

- By locating the potential TMAs along the major roadways, you are blocking access to OHV areas; you should put the TMAs far away from existing roadways.
- OHV recreation does not represent a conflict with the desert tortoise. OHVs race on existing roadways and approve courses. They are already required to mitigate potential impacts to the tortoise, through Section 7

consultation with the BLM. A member of the HCP team should go out into the field and see how carefully races are conducted.

- OHVs do not kill tortoises; we never see any tortoises when we ride.
- All of the TMAs represent prime OHV recreation areas.
- How can land in Lincoln County be included? And, if you include land in Lincoln County, why not include land in San Bernardino County in California?
- OHV use in the the El Dorado Hills area has already been determined by USFWS as having no significant impacts.
- The YKL Ranch and Nelson Hills lands should be designated as the first TMA since these lands have already been designated as tortoise reserves.

#### Grazing Interests

- There is no proof that livestock grazing is harmful to tortoises. In fact, livestock grazing is beneficial to tortoises, because tortoises eat cow dung.
- The first TMA should be in Coyote Spring Valley and in Piute Valley.
- This plan will result in the loss of my family heritage - ranching.

#### Mining

- Mormon Mesa should not be included as an TMA.

#### Environmental Concerns

- 400,000 acres may not be enough for the tortoise to survive.

#### Alternative Actions

- Put the tortoises in smaller, controlled environments, such as a zoo, and preserve them through captive breeding.

#### Funding

- Who paid for the HCP?
- You are taking our tax dollars and doing something we don't support.

#### General

- The ratio of acreage of development allowed, to acreage preserved is substantial.
- More advertising of public meetings is required.



- Request extra time for submittal of comments on the HCP.
- Desert tortoises are not being preserved, Las Vegas Valley developers are being preserved.
- How can BLM enforce any of these land use constraints? They don't have adequate staff to do their existing job.

Public Comments

All letters of comment on the HCP are included in this appendix.

**ATTENDEES AT PUBLIC MEETING  
OCTOBER 24, 1990**

Name	Affiliation
*Rebecca Morjesty	---
Mike Franta	Vegas Valley 4X
Gary Brewer	SNORE/Vegas Valley 4 Wheelers
Ron Carter	SNORE/Vegas Valley 4 Wheelers
Max Carter	SNORE/HDRA
*Mike Halverson	SNORE/HDRA
Pat Dean	SNORE/HDRA
Bekki Freeman	SNORE
Dean Miller	SNORE
*Jeff & Sue Phillips	MRAN/BTID
John & Cindy Clarich	---
Craig Baker	SNDR/MRAN
Paul Ziegler	Gamblers/MRAN
Barry Webb	HDRA
*Michael J. Conway	OHV Interests
John F. Luongo	HDRA
Wayne Pruinly, Jr.	---
Russell Fruit	---
Todd Starr	---
Grey Starr	---
Lindsay Stadtlander	---
Scott Shan	MRAN
Richard Shaw	MRAN
*Bob Stewart	Rancher
Mike Morris	MRAN
Jimmie D. Glimp	MRAN
Shane D. Richardson	AMA/MRAN
Krista Matheny	MRAN/AMA
Joseph Meyer	MRAN/AMA
Fred Harrell	Motorcycle Dealer's Assoc. of NV
Ken Wilson	MRAN
Bob Wilson	MRAN
Harry Papas	Pistol Assoc., Clark Cnty Wildlife Board
Stephanie Ferra	Tortoise Technician
Tim Pocock	---
John C. Derrick	---
Rebecca Kahre	---
Darrell Kahre	---
Gina L. Wilson	MRAN/Wild Bunch/NOHVC
Ian Beaman	MRAN/Wild Bunch
Greg Price	SNARE
Linda Price	SNARE
Mike Powada	SNARE
Scott Powada	SNARE
Frank Bunn	MRAN/Honda of LV/MDAN

**ATTENDEES AT PUBLIC MEETING  
OCTOBER 24, 1990  
(continued)**

Name	Affiliation
Dennis Dowell	---
Robert Cotts	MRAN
David Hufford	MRAN/Jackrabbit
Alan Beaman	Wild Bunch
*Susan Ponsiter	Rancher
Chris Trolson	MRAN, Wild Bunch
David Cutting	---
*Terry Murphy	So, NV Homebuilders Assoc.
*Darrel Kris-Kelley	---
*Larry /barton	City of Las Vegas
*Scott Morney	---
*Miles Hinson	---
*Jerry Oxborrow	MRAN, NV Sportsman Assoc., Nyc County Interests
Tim Jegeris	MRAN, Wild Bunch
*Daryl Folks	MRAN, Gamblers
*Casey Folks	MRAN, Gamblers
Paul Skeary	MRAN, Wild Bunch, M.C.
Tom Skeary	MRAN, Wild Bunch
Brent Hanning	MRAN, Wild Bunch, M.C.
Chad Tichenon	MRAN, Groundshakers
Mark Delahoussaye	---
Mike Palmer	MRAN, Jackrabbits
Amy Reeve	MRAN, Jackrabbits
Jake Prince	MRAN, Jackrabbits
Michelle Azevedo	MRAN, Jackrabbits
Tim Boyce	Moapa Valley
Eileen Boyce	Moapa Valley
*Michael Looney	OHV Interests
Troy Herbst	HDRA-SNORE
Ed Herbst	HDRA-SNORE
Tim Herbst	HDRA-SNORE
Brian Collins	HDRA-SNORE
Pat Dean	HDRA-SNORE
John Z. Robinson	Moapa Valley Progress
Lola Warner	LVJC
Winnifred Jackson	City of Las Vegas
Larry Barton	City of Las Vegas
James Bucknell	MRAN
*Keith Nay	Rancher
Calvin L. Nay	HCR Ranch
Marilyn Nay	---
*Wen Walker	OHV Interests
Rebecca Villegas	MRAN-Gamblers
Frankie Villegas	MRAN-Gamblers

**ATTENDEES AT PUBLIC MEETING  
OCTOBER 24, 1990  
(continued)**

Name	Affiliation
Roger J. Nato	Rancher
Rocky Hatcher	Delamar Cattle Ranch
Bill Bee	Walking Box Ranch
*Jean Mischel	EDF
Ronald Mike Nelson	OHV Interests
Jeremy Nelson	OHV Interests
*Don Alkins	SNARE
*Ron & Ann Schreiber	Mining
Paul D'Aura	Mining
Shelly & Ted Revees	
*Don Dayton	SNORE
Michele Richardson	---
Danny Richardson	---
Jill & David Stouard	Wild Bunch
*Jeff Vane	Las Vegas community interests
*Robert Michael	OHV Interests
*Mark Trinko	OHV Interests
*Mike Gomez	Resident, North Las Vegas
*Stephen Abbot	OHV Interests
*Mark Fieruza	OHV Interests
*Juainne Hayward	Clark County Livestock Assoc.
*Lindsay Dally	Moapa Valley
*Rick Powers	Las Vegas Jeep Club
Yvonne Fox	Ranching Interests
Lavert Lucas	City of Henderson

--- = not given  
\* = speakers

Prepared by: Dehonda Mining  
Ronald Ann Schreiber

Received by RECON 12/14/90

### MINING

There are 13,070 mining claims covering 529,780 acres in the proposed 14 Potential Tortoise Management Areas. These claims are usually well researched before being claimed. The lists of mining claims for each PTMA on the following pages were taken from the BLM Microfiche dated April of 1990. There may have been more claims filed since that time, but the lists made express the Assessment and any claims filed to that date.

To claim a mining claim, it costs \$1.00 per acre and \$5.00 per claim to the county (The claim may be anywhere from a 20 acre claim with one claimant to a 160 acre claim with 8 claimants.) After the claims are filed with the county, they are then sent to BLM where an additional \$10.00 fee is paid for each claim. Three years ago, the fee was only \$5.00 to BLM, and the information on each PTMA, gives the total for either fee.

After all of this is done, there must be an expenditure in the form of improvements to the claim of \$100.00 per claim, plus an annual assessment recording fee of \$1.75 to the county, and \$5.00 to BLM for each claim.

On the following 14 pages is a synopsis of the mining claims found in each of the 14 PTMA's.

PTMA # 1

796 CLAIMS

508 IN 160'S

224 IN 40'S

64 IN 20'S

TOTAL ACREAGE 91,520

PRIMARY EXPENSES ON CLAIMS(not counting paperwork, posts,  
or surveying)

CLARK COUNTY \$ 95,500

BLM (between) \$ 3,980 & \$ 7,960

TOTAL PRIMARY EXPENSE (between) \$ 99,480.00 & \$ 103,460.00

YEARLY GOVERNMENT EXPENSES ON CLAIMS

\$ 1,393.00 to Clark County to file Assessment

\$ 3,980.00 to BLM to file Assessment

\$ 79,600.00 Assessment (into the economy of Clark County)

TOTAL YEARLY EXPENSES \$84,973.

## PTMA # 2

3,893 CLAIMS

443 IN 160'S

16 IN 80'S

16 IN 40'S

3,418 IN 20'S

TOTAL ACREAGE 141,160

PRIMARY EXPENSES ON CLAIMS (not counting paperwork, posts,  
or surveying)

CLARK COUNTY \$ 160,625.00

BLM (between \$ 19,465.00 &amp; \$ 38,930.00

TOTAL PRIMARY EXPENSE (between) \$180,890.00 &amp; \$199,555.00

YEARLY GOVERNMENT EXPENSES ON CLAIMS

\$ 6,812.75 to Clark County to file Assessment

\$ 19,465.00 to BLM to file Assessment

\$389,300.00 Assessment (into the economy of Clark County)

TOTAL YEARLY EXPENSE \$415,577.75

TOTAL YEARLY EXPENSE \$415,775.50

PTMA # 3

2,115 CLAIMS

83 IN 160'S

2,032 IN 20'S

TOTAL ACREAGE 55,920

PRIMARY EXPENSES ON CLAIMS (not counting paperwork, posts  
or surveying)

CLARK COUNTY \$ 66,495.00

BLM (between) \$ 10,575.00 & \$ 21,150.00

TOTAL PRIMARY EXPENSES (between) \$77,070.00 & 87,645.00

YEARLY GOVERNMENT EXPENSES ON CLAIMS

\$ 3,701.25 to Clark County to file Assessment

\$ 10,575.00 to BLM to file Assessment

\$211,500.00 Assessment (into the economy of Clark County)

TOTAL YEARLY EXPENSE \$225,776.25



PTMA # 4

259 CLAIMS

68 IN 160'S

74 IN 80'S

117 IN 20'S

TOTAL ACREAGE 19,140

PRIMARY EXPENSES ON CLAIMS (not counting paperwork, posts  
or surveying)

CLARK COUNTY \$ 20,435.00

BLM (between) \$ 1,295.00 & \$ 2,590.00

TOTAL PRIMARY EXPENSE (between) \$ 21,730.00 & \$ 23,025.00

YEARLY GOVERNMENT EXPENSES ON CLAIMS

\$ 453.25 to Clark County to file Assessment

\$ 1,295.00 to BLM to file Assessment

\$ 25,900.00 Assessment (into the economy of Clark County)

TOTAL YEARLY EXPENSES \$ 27,648.25

PTMA # 5

354 CLAIMS

16 IN 160'S

22 IN 40'S

264 IN 20'S

TOTAL ACREAGE 8,720

PRIMARY EXPENSES ON CLAIMS (not counting paperwork, posts  
or surveying)

CLARK COUNTY \$ 10,490.00

BLM (between) \$ 1,770.00 & \$ 3,540.00

TOTAL PRIMARY EXPENSE (between) \$ 12,260.00 & \$ 14,030.00

YEARLY GOVERNMENT EXPENSE ON CLAIMS

\$ 619.50 to Clark County to file Assessment

\$ 1,770.00 to BLM to file Assessment

\$ 35,400.00 Assessment (into the economy of Clark County

TOTAL YEARLY EXPENSE \$ 37,789.50

PTMA # 6

129 CLAIMS

47 IN 160'S

82 IN 20'S

TOTAL ACREAGE 9,160

PRIMARY EXPENSES ON CLAIMS (not counting paperwork, posts  
or surveying)

CLARK COUNTY \$ 9,805.00

BLM (between) \$ 645.00 & \$ 1,290.00

TOTAL PRIMARY EXPENSE (between) \$ 10,450.00 & \$ 11,095.00

YEARLY GOVERNMENT EXPENSE ON CLAIMS

\$ 225.75 to Clark County to file Assessment

\$ 645.00 to BLM to file Assessment

\$ 12,900.00 Assessment (into the economy of Clark County)

TOTAL YEARLY EXPENSE \$ 13,770.75

PTMA # 7

251 CLAIMS

23 IN 160'S

228 IN 20'S

TOTAL ACREAGE 8,240

PRIMARY EXPENSES ON CLAIMS (not counting paperwork, posts  
or surveying)

CLARK COUNTY \$ 9,495.00

BLM (between) \$ 1,255.00 & \$ 4,290.00

TOTAL PRIMARY EXPENSE (between) \$ 10,750.00 & \$ 12,005.00

YEARLY GOVERNMENT EXPENSES ON CLAIMS

\$ 439.25 to Clark County to file Assessment

\$ 1,255.00 to BLM to file Assessment

\$ 25,100.00 Assessment (into the economy of Clark County)

TOTAL YEARLY EXPENSE \$ 26,794.25

PTMA # 8

429 CLAIMS

71 IN 160'S

358 IN 20'S

TOTAL ACREAGE 18,520

PRIMARY EXPENSES ON CLAIMS (not counting paperwork, posts  
or surveying)

CLARK COUNTY \$ 20,665.00

BLM (between) \$ 2,145.00 & \$ 4,290.00

TOTAL PRIMARY EXPENSE (between) \$ 22,810.00 & \$ 24,955.00

YEARLY GOVERNMENT EXPENSES ON CLAIMS

\$ 750.75 to Clark County to file Assessment

\$ 2,145.00 to BLM to file Assessment

\$ 42,900.00 Assessment (into the economy of Clark County)

TOTAL YEARLY EXPENSE \$ 47,795.75

PTMA # 9

441 CLAIMS

40 IN 160'S

6 IN 80'S

395 IN 20'S

TOTAL ACREAGE 14,780

PRIMARY EXPENSE ON CLAIMS (not counting paperwork, posts  
or surveying)

CLARK COUNTY \$ 16,985

BLM (between) \$ 2,205 & \$ 4,410

TOTAL PRIMARY EXPENSE (between) \$ 19,190 & \$ 21,395

YEARLY GOVERNMENT EXPENSES ON CLAIMS

\$ 771.75 to Clark County to file Assessment

\$ 2,205.00 to BLM to file Assessment

\$ 44,100.00 Assessment (into the economy of Clark County)

TOTAL YEARLY EXPENSE \$ 47,076.75

PTMA # 10

193 CLAIMS

193 IN 20'S

TOTAL ACREAGE 3,860

PRIMARY EXPENSES ON CLAIMS (not counting paperwork, posts  
or surveying)

CLARK COUNTY \$ 4,825

BLM (between) \$ 965 & \$ 1,990

TOTAL PRIMARY EXPENSE (between) \$ 5,790 & \$ 6,755

YEARLY GOVERNMENT EXPENSES ON CLAIMS

\$ 337.75 to Clark County to file Assessment

\$ 965.00 to BLM to file Assessment

\$ 19,300.00 Assessment (into the economy of Clark County)

TOTAL YEARLY EXPENSE \$ 20,602.75

PTMA # 11

296 CLAIMS

44 IN 160'S

252 IN 20'S

TOTAL ACREAGE 12,080

PRIMARY EXPENSES ON CLAIMS (not counting paperwork, posts  
or surveying)

CLARK COUNTY \$ 13,560

BLM (between) \$ 1,480 & \$ 2,960

TOTAL PRIMARY EXPENSE (between) \$15,540 & \$ 16,520

YEARLY GOVERNMENT EXPENSES ON CLAIMS

\$ 518.00 to Clark County to file Assessment

\$ 1,480.00 to BLM to file Assessment

\$ 29,600.00 Assessment (into the economy of Clark County)

TOTAL YEARLY EXPENSE \$ 31,598



PTMA # 12

1,250 CLAIMS

256 IN 160'S

8 IN 60'S

12 IN 40'S

974 IN 20'S

TOTAL ACREAGE 70,360

PRIMARY EXPENSES ON CLAIMS (not counting paperwork, posts  
or surveying)

CLARK COUNTY \$ 76,610.00

BLM (between) \$ 6,250.00 & \$ 12,500.00

TOTAL PRIMARY EXPENSE (between) \$ 82,860 & \$ 89,110

YEARLY GOVERNMENT EXPENSES ON CLAIMS

\$ 2,383.50 to Clark County to file Assessment

\$ 6,810.00 to BLM to file Assessment

\$136,200.00 Assessment (into the economy of Clark County)

TOTAL YEARLY EXPENSE \$ 245,296.20

PTMA # 13

862 CLAIMS

14 IN 160'S

848 IN 20'S

TOTAL ACREAGE 19,200

PRIMARY EXPENSES ON CLAIMS (not counting paperwork, posts  
or surveying)

CLARK COUNTY \$ 24,372.00

BLM (between) \$ 4,310.00 & \$ 8,620.00

TOTAL PRIMARY EXPENSE (between) \$ 28,682.00 & \$ 32,992.00

YEARLY GOVERNMENT EXPENSES ON CLAIMS

\$ 1,491.00 to Clark County to file Assessment

\$ 2,260.00 to BLM to file Assessment

\$ 85,200.00 Assessment (into the economy of Clark County)

TOTAL YEARLY EXPENSE \$ 88,951.00

PTMA # 14

1,802 CLAIMS  
84 IN 160'S  
114 IN 80'S  
62 IN 60'S  
1,542 IN 20'S  
TOTAL ACREAGE 57,120

PRIMARY EXPENSES ON CLAIMS (not counting paperwork, posts  
or surveying)

CLARK COUNTY \$ 66,130.00

BLM (between) \$ 9,010.00 & \$ 18,020.00

TOTAL PRIMARY EXPENSE (between \$ 75,140.00 & \$ 84,150.00)

YEARLY GOVERNMENT EXPENSES ON CLAIMS

\$ 3,153.50 to Clark County to file Assessment

\$ 9,010.00 to BLM to file Assessment

\$180,200.00 Assessment (into the economy of Clark County)

YEARLY EXPENSES \$192,363.50



# CITY OF HENDERSON

CITY HALL                      240 WATER STREET                      702/565-2323  
 HENDERSON, NEVADA 89015-7200

*Gateway to Lake Mead Resorts*

December 13, 1990

Ms. Tara Wood  
 RECON  
 1276 Morena Blvd.  
 San Diego, Ca. 92110-3815

RE: Short-Term HCP Dated 12-5-90

Dear Ms. Wood

We have reviewed the latest version of the Short-Term HCP and we are in support of the language in the Plan. We believe that the Plan meets the intent of the Endangered Species Act, as well as provides reasonable assurances that the local economy will not be irrevocably damaged.

Although in support of the language of the Plan, we are somewhat concerned as to how the outlined administrative procedures will be integrated into the individual entity's ongoing enforcement programs. Many of the entities enforcement powers are derived from other authorities and are not readily changeable. We all have ongoing regulations and procedures, some of which are held in common and others are tailored to the individual entity. The additional workload proposed by the HCP is significant. Some retraining will be required, and there are definitely some hidden costs.

It is quite apparent that insufficient consideration was given to the above when the proposed administrative and monitoring structure was formulated. This doesn't mean that the outlined administrative structure isn't workable. It does mean that we have a large task ahead to define the specific administrative process and procedures. We are willing and anxious to undertake the process of functionally integrating the outlined structure into our working procedures.

Sincerely

Lavert Lucas, Principal Planner  
 Community Planning & Development Dept.

**RICHARD V. WYMAN, PH.D.**

REGISTERED PROFESSIONAL ENGINEER AND GEOLOGIST

NEVADA #2181  
ARIZONA #2448  
CALIFORNIA #444

610 BRYANT CT.  
BOULDER CITY, NEVADA 89008  
(702) 298-1088

December 12, 1990

Tera Wood  
RECON  
1276 Morans Blvd.  
San Diego, CA 92110-3815  
FAXED TO: (619) 542-1690

Re: HTP Conservation Plan  
Clark County, Nevada

Boundary Clarification

I am calling your attention to a particular PTMA border which appears differently on different figures (Figure 11 and 19) and is critical to the legitimate mining interests of the State of Nevada.

I refer to the boundaries of PTMA 12 in the vicinity of Nelson, Nevada. This may include part of the highly mineralized Eldorado Mining District, the oldest mining district in the state (1857). Although most known orebodies lie on patented mining claims, there is a mix of patents with unpatented claims in various stages of exploration and development. The area is highly disturbed, rough terrain and, in my view, poor habitat for tortoise. I believe you meant to exclude the main district.

The principal mining area is entirely within T. 26 S., R. 64 E. The area in which there is a PTMA border question is in Sections 4-9 which contains the principal mineral prospects, former producers and known orebodies (Figures 1 and 3). The mineralized district is more extensively shown on a copy of the Nelson 15 min. quadrangle (Figure 2). Figure 3 shows the mines of the district in more detail, showing recommended exclusion line on the Nelson 7 1/2 min. quadrangle. I have drawn the boundaries that I recommend.

Objection to HTP Plan

In the Draft HTP, 9/25/90, Appendix B, Mining Public Lands, the plan calls for "as areas of critical environmental concern for the preservation and conservation of the desert tortoise, BLM would apply for withdrawal of these lands from mineral entry. This process focuses on a validity exam, which would show whether or not the claim contains valuable minerals that can be mined at a profit."

On behalf of the Nevada Mining Association and on my own testimony I strongly object to this inclusion in the management plan.

Tera Wood  
RECON

December 12, 1990  
Page Two

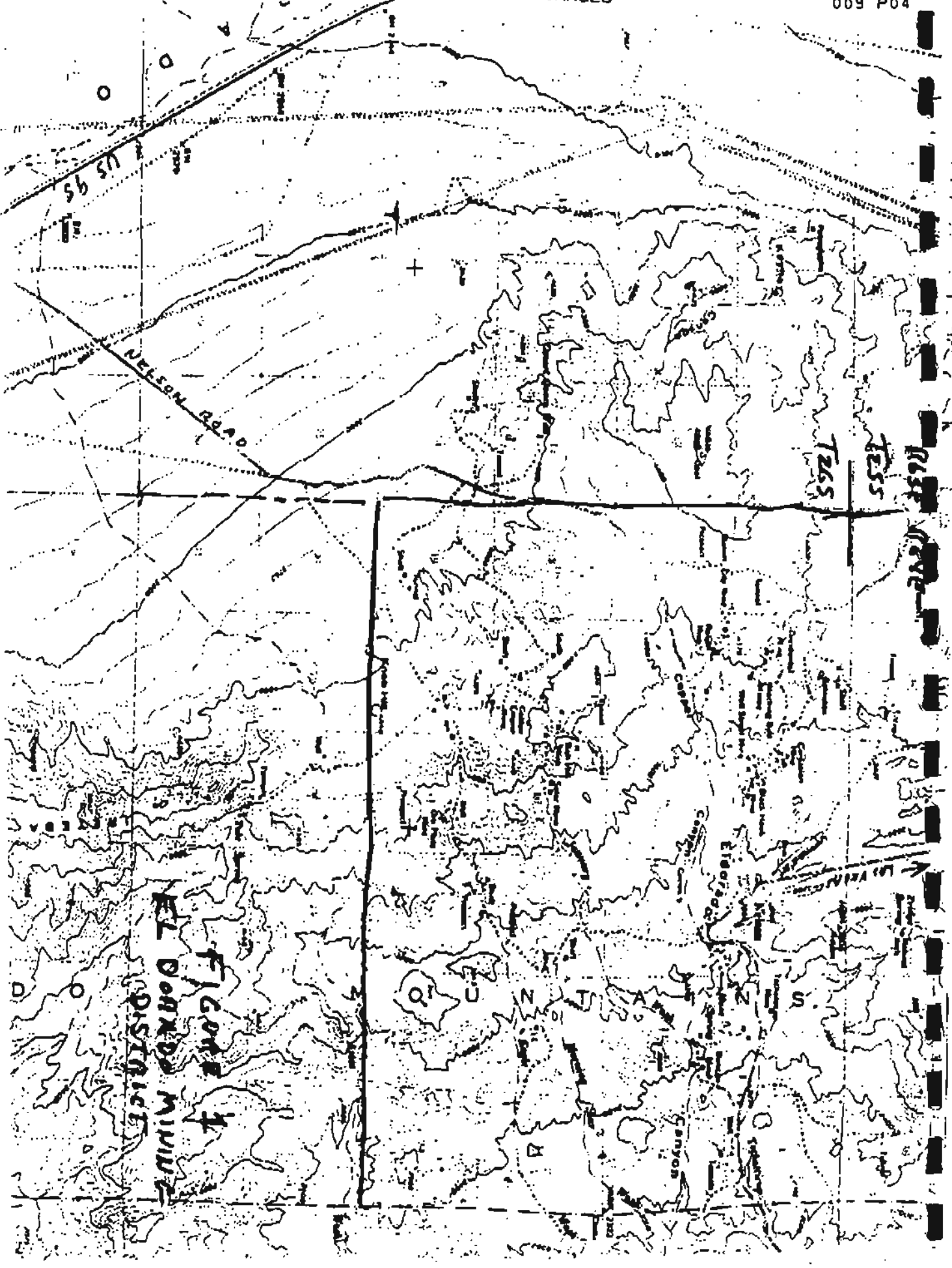
Withdrawal of mineral entry is not necessary at all. There has been no adverse impact to the tortoise connected with mining. In fact, in California the Viceroy mine has been permitted and the Mesquite mine is a gold producer in tortoise habitat.

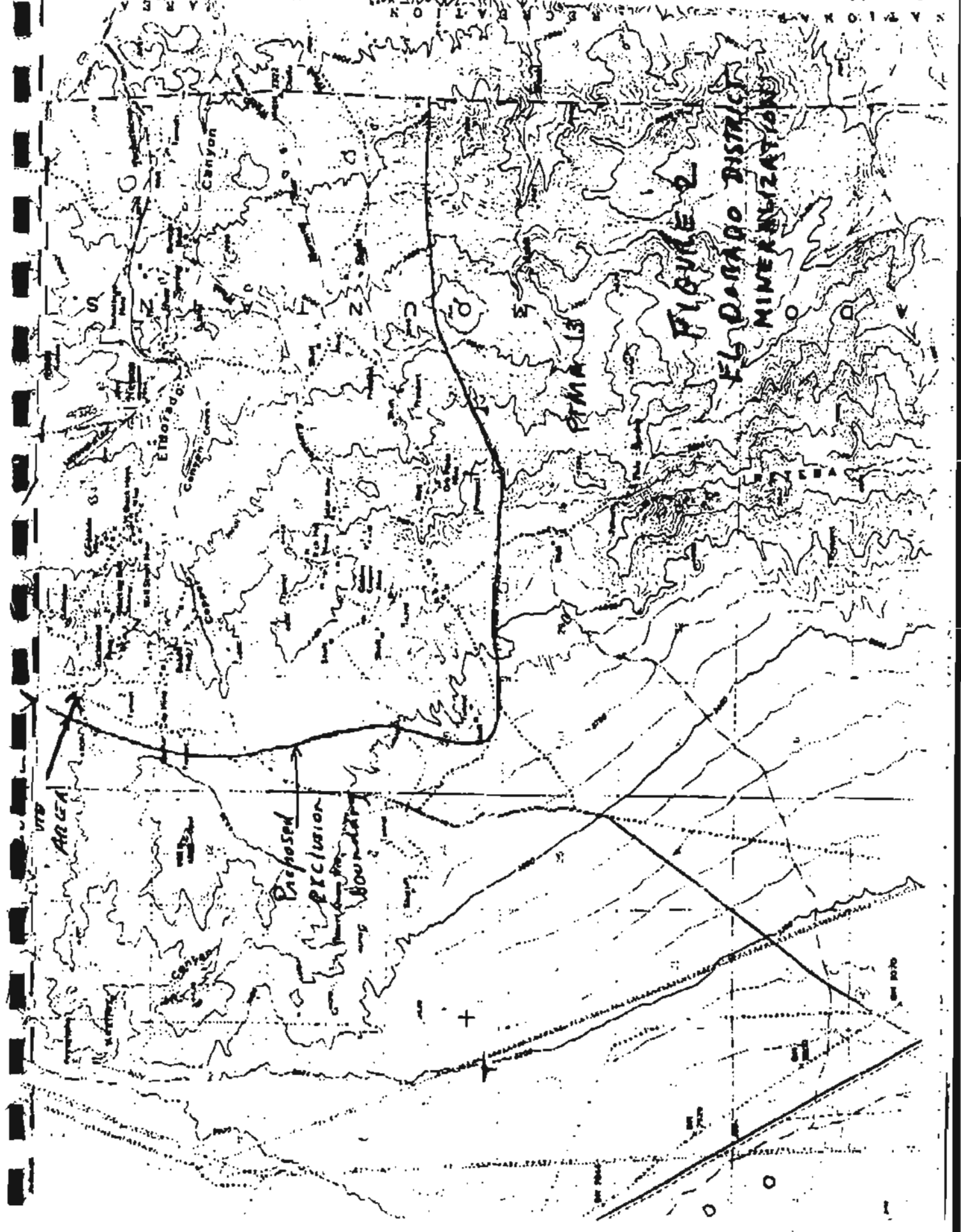
The withdrawal process stops exploration on unpatented claims making their assessment work very difficult to accomplish. The "validity" examination has been distorted to the extent that it has become an examination of present operational profitability.

This is a very serious objection. We are willing to accept the Section 7 consultation, and all of the many state and federal laws that protect the environment and wildlife. This does nothing to protect the tortoise. Ores are where nature put them. They cannot be zoned away or relocated to non-sensitive areas.

  
Richard V. Wyman

FAXED COPY TO:  
Paul Seltzer  
Mike Doyle/Nevada Mining Association





EL PASO DISTRICT  
MINERALIZATION

PIMA CO

Proposed  
Exclusion  
Boundary

ARIZONA

CANYON

EL PASO

EL PASO

+

II

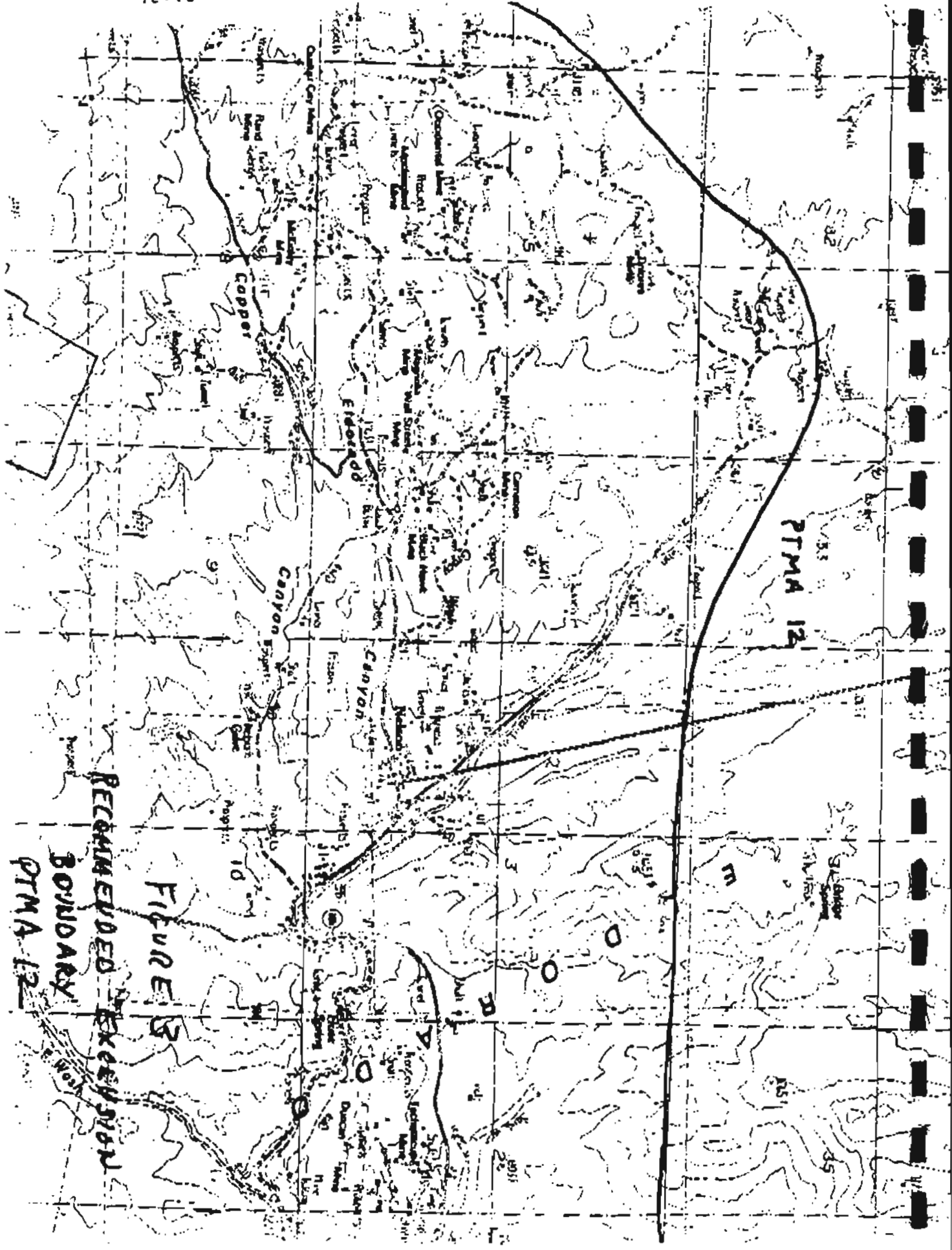
III

IV

V







RECOMMENDED  
BOUNDARY  
PTMA 12

FIGURE 3

PTMA 12

RICHARD H. BRYAN  
Governor

THOMAS W. BALLOW  
Executive Director



STATE OF NEVADA  
DEPARTMENT OF AGRICULTURE

SOUTHERN DISTRICT OFFICE  
2300 McLeod  
Las Vegas, Nevada  
Telephone (702) 686-4690

MAILING ADDRESS  
Mail Room Complex  
Las Vegas, Nevada 89158

December 7, 1990

Ms. Jean Carr  
RECON  
1276 Morena Boulevard  
San Diego, California 92110-3815

RECEIVED  
DEC 11 1990  
RECON

Dear Jean,

I attended the Steering Committee Meeting November 28, 1990 regarding the Final Short-term Habitat Conservation Plan for the Desert Tortoise (RECON Number 2111E). There was some discussion in reference to page 52 2.c. I think a better way to phrase this paragraph would be:

"c. Environmental factors, such as the severe several-year drought in the Mojave Desert, global warming and possible long term effects from livestock grazing, also may have weakened tortoises. Other effects, such as the toxic effects of mercury, pesticide residues, air pollution and calcium/phosphorus deficiencies may influence the effects of URDS."

Global warming and calcium deficiencies are current scientific topics which appear in scientific literature, and may need to be considered when the research studies are planned and evaluated.

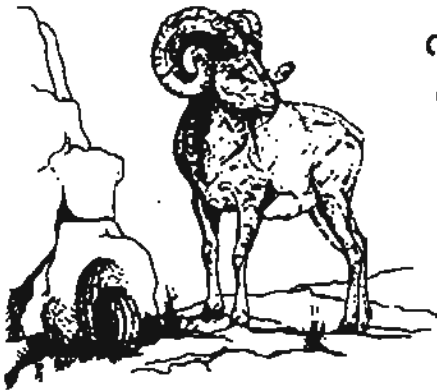
Todd Esque and Eric Peters of Colorado State University published an article in Discover Magazine November 1990 which suggests the need to investigate long term rangeland forb changes and their possible result in calcium deficient grazing for the Desert Tortoise.

Until the grazing study is complete, I don't think the document should anticipate its outcome by using the word "probable" in regard to livestock grazing impacts on Desert Tortoise.

Sincerely,

*Thomas E. Smigel*  
Thomas E. Smigel, Deputy Director

TES:dlb  
cc: T. Ballow  
T. Hafen



# Fraternity Of The Desert Bighorn

Box 27494 Las Vegas, Nevada 89126-1494

December 3, 1990

RECEIVED  
DEC 07 1990

RECON, Regional Environmental Consultants  
1276 Morena Blvd.  
San Diego, California 92110-3815  
Attention: Tara V. Wood, Environmental Analyst

Dear Ms. Wood,

Attached is a copy of a letter I recently sent to Mr. Paul Selzer expressing our concern that the legitimate interests of the Sportsmen (men and women) in this state be adequately represented on the Steering and Implementation and Monitoring Committees of the Southern Nevada Tortoise Habitat Conservation Plan Steering Committee.

I am sending you this correspondence for informational purposes and I hope that you will please be supportive of its message.

Sincerely,

*Roy E. Lee*

Roy E. Lee  
President

REL/tlh  
Encl.

" A MEMBERSHIP UNSELFISHLY DEDICATED TO THE UTILIZATION,  
CONSERVATION AND WELFARE OF THE DESERT BIGHORN SHEEP"

# Fraternity Of The Desert Bighorn

Box 27494 Las Vegas, Nevada 89126-1494

December 2, 1990



Paul Selzer  
1276 Morena Boulevard  
San Diego, California 92110-3815

Dear Paul,

Please allow me to introduce myself. I am Roy Lee, President of the Fraternity of the Desert Bighorn. We are an organization unselfishly dedicated to the utilization, conservation and welfare of the Desert Bighorn sheep. We believe in the wise utilization and conservation of all forms of flora and fauna.


I am writing to you because we share a mutual interest, specifically future opportunities to be allowed or discontinued on thousands of acres public lands in southern Nevada as a result of the establishment of Tortoise Management Areas.

On October 23, 1990 Robert B. Snider, Chairman of the Clark County Advisory Board prepared a letter which was sent to RECON, Regional Environmental Consultants. In this letter he requested that a representative of the Clark County Wildlife Advisory Board be included in the membership of the Steering Committee and the Implementation and Monitoring Committee. I have recently been informed that his request was apparently not acted upon or that you disallowed his request.

The Fraternity of the Desert Bighorn is very concerned that the Sportsmen of Southern Nevada will not be adequately represented in future proposals made by these committees. We feel that the representative of the Clark County Wildlife Advisory Board must be a formal member of these committees if our interests are to be understood.

Please let me know if his request was overlooked or what your rationale is if you intend to deny his request. I will share this information with my membership so that misunderstandings can be minimized.

Thank you for your time and attention. I can be reached by telephone during the day at work at (702) 647-5034 or at home at (702) 647-6807.

  
ROY E. LEE  
PRESIDENT

" A MEMBERSHIP UNSELFISHLY DEDICATED TO THE UTILIZATION,



City of Boulder City  
P.O. BOX 367  
900 ARIZONA STREET  
BOULDER CITY, NEVADA 89006-0367

November 28, 1990

Ms. Tara V. Wood  
RECON  
1276 Morena Blvd.  
San Diego, CA 92110-3815

RE: SHORT TERM DESERT TORTOISE HCP

Dear Ms. Wood:

The following are in response to your November 14, 1990, letter regarding the City of Boulder City Exclusionary Zone. Attached is a copy of your map showing additional areas of the City that are developed (land that is occupied by buildings or buildings under construction). These areas should be included in the Exclusionary Zone.

The City disagrees with the exclusion of the area of the Hemenway Valley south of US 93 from the Exclusionary Zone. This area contains a total of 58 lots, 31 (53%) are occupied by dwellings and the remainder of the lots are fronted by developed, public streets and many have been rough graded. We are of the opinion that this area should be included in the Zone.

The City had met with Paul Selzer and representatives of the ORV users in regards to Potential TMA 12 (Eldorado Valley). The most recent maps of the PTMA's do not reflect any of the discussions or recommendations made as a result of these meetings. If the TAC has decided not to include the comments of these discussions, it would be appropriate to include (or at least document) this fact.

Sincerely,

Jeffrey L. Patlovich, AICP  
Director, Community Development

JLP:mcc  
JP1060



# SIERRA CLUB LEGAL DEFENSE FUND, INC.

*The Law Firm for the Environmental Movement*

San Francisco Office

Annual Address

2044 Fillmore St. San Francisco, California 94115 (415) 567-6100 FAX (415) 567-7740

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**HAWAII OFFICE**

212 Merchant Street  
Suite 202  
Honolulu, HI 06813

November 27, 1990

Ms. Jean Carr  
RECON  
1276 Morena Boulevard  
San Diego, CA 92110-3815

Dear Ms. Carr:

Thank you for sending us the newest version (November 20, 1990) of the Short-Term Habitat Conservation Plan (HCP) for the Desert Tortoise. Basically, we support the new language prescribing land use controls for grazing. In particular, we are convinced that authorization of non-use will, in fact, benefit tortoises in ungrazed allotments within TMA's, and we welcome the prohibition on grazing in those allotments "until a definitive study . . . scientifically demonstrate[s] that livestock grazing can be conducted under conditions that will improve desert tortoise habitat and not jeopardize recovery of the species." However, the new language does not completely assuage all of our concerns.

Specifically, we find the second sentence in the new version to be somewhat obscure. Altering that sentence to state that "grazing will not be allowed on those allotments until . . ." will express what we believe to be the sentence's intent. In addition, we have several specific questions relating to grazing allotments where the permittees do not apply for non-use.

What effect will the failure or refusal of some permittees to apply for non-use have on the goals and

<sup>1</sup> "The Bureau of Land Management will authorize non-use for conservation and protection purposes for [all] base property owners who have grazing privileges in the identified desert tortoise management areas. The approved non-use will not be activated on those allotments until a definitive study of livestock/desert tortoise interrelationships has been completed that would scientifically demonstrate that livestock grazing can be conducted under conditions that will improve desert tortoise habitat and not jeopardize recovery of the species."

Jean Carr  
November 27, 1990  
Page 2

objectives of the HCP? What effect will such failures have on the goal of setting aside sufficient acreage of quality tortoise habitat? Pursuant to what procedures and under what conditions, will grazing be permitted where non-use is not taken?

We also remain concerned, as indicated in our letter to you dated October 9, 1990, as to BLM's willingness and legal authority, upon the expiration of a grazing permit, to deny any applications for new grazing permits, in the absence of a MFP or RMP amendment prohibiting grazing as a permitted use. Pursuant to the text as presently drafted, the authorization of non-use occurs annually throughout the three-year permit period, but what happens when (if) the permit expires?

Second, we wish to take this opportunity to reiterate our concern about the impacts of ORV use in TMAs. Given the known effects of such use on tortoises and the California BLM's recognition that conducting competitive ORV events such as the Barstow-Vegas race in desert tortoise habitat is not appropriate, we strongly advocate retention of the ban on "competitive and commercial ORV events" and the restriction of ORV use to designated trails and roads.

With respect to ORV use it is critical that ORV use only be allowed on roads or trails that are signed for ORV use. No ORV use shall be allowed unless there are positive indications from signs that such ORV use will be allowed. It is also critical that there be a satisfactory definition of a "useable" trail that is consistent with preservation and enhancement of desert tortoise habitat.

Third, we continue to believe that it is not sufficient to restrict intensive recreation uses to existing areas and to prohibit their expansion. As previously stated, the HCP should expressly contemplate contraction of such areas, as may be necessary to protect the tortoise.

Fourth, the current draft short-term HMP, like previous drafts, fails to contain a commitment to withdraw TMA lands from the operation of the mining laws. We strenuously object to the failure to include such a requirement for the reasons set forth in our previous letter.

Fifth, we believe that the language regarding environmental documentation in the event of new or modified land use needs clarification. Frankly, we are of the opinion that new or modified land uses in "conserved areas" will always require preparation of a full environmental impact statement

Jean Carr  
November 27, 1990  
Page 3

and we are dismayed by the failure of the HCP to so provide. In addition, we believe that, instead of providing for analysis of "the cumulative impacts of the proposed use," the HCP should contain the following specific language which is taken directly from the regulations implementing the National Environmental Policy Act that have been promulgated by the Council on Environmental Quality: "The requirements of the Council on Environmental Quality shall be fully complied with, prior to permitting a new or modified land use. In particular, all environmental documents, as well as biological assessments required for Section 7 consultations, shall, in addition to analyzing the direct and indirect effects of a proposed action, analyze the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions." 40 C.F.R. §§ 1508.7 and 1508.8 (1987).

Finally, we urge expansion of the proposed conservation area beyond the 400,000 acre minimum and, specifically, the establishment of additional TMAs in northern Nevada. We understand that the tortoises in northern Nevada belong to a different gene pool than those in the south and that extremely valuable tortoise habitat is located there. Those tortoises and their habitat deserve to be protected, rather than essentially ignored.

Thank you in advance for considering these comments. We are sorry that despite improvements from the last draft, we find the plan as presently drafted ecologically and legally unacceptable. It fails to contain adequate commitments from the BLM to manage TMA's in a manner that will acceptably mitigate the taking of tortoises within the Las Vegas metropolitan area that will be urbanized. Without these commitments, the plan remains a tortoise removal device without adequate mitigation.

Sincerely,

*Laurens Silver*

Laurens H. Silver  
Johanna Wald  
On behalf of Sierra Club and  
Natural Resources  
Defense Council

cc: Robert Smith  
U.S. Fish and Wildlife Service  
Portland



**MICRON**  
• MINING COMPANY •

November 19, 1990

RECEIVED  
NOV 20 1990  
RECORD

PAUL T. SELZER, Esq.  
Best, Best & Krieger  
600 East Tahquitz Way, Suite C  
Palm Springs, California 92262

Re: MOAPA VALLEY DEVELOPMENT

DEAR PAUL:

This letter is pursuant to our conversation in Las Vegas on November 7, 1990, wherein I mentioned a real potential expansion of the Valley and made reference to some Press Releases which I would forward to your office.

Enclosed herewith are copies of those Press Releases for your perusal and information.

Sincerely,



DONALD J. SHAW  
Corporate Counsel

DJS:do  
Encs.

cc: Jean Carr

**MICRON METALS CANADA CORP.**  
#390 - 885 Dunsmuir Street, Vancouver, B.C. V6C 1N5  
telephone: (604) 685-1017 fax (604) 685-4492

NEWS RELEASE

October 1, 1990

ALBERTA STOCK EXCHANGE  
TRADING SYMBOL: MMZ

Mr. Gordon Lee, the President and Director of Micron Metals Canada Corp. ("Micron"), is pleased to announce that Micron (in conjunction with the entire MOAPA I joint venture) has signed a letter of intent to enter into an option agreement with Blue Falcon Mines Ltd. ("Blue Falcon"), a private Canadian mining company, to further develop the groups' extensive Moapa Valley precious metals properties. Blue Falcon will earn a 60 percent interest subject to completion of the following:

- 1) The upgrading of a local mill to a 10 ton per day ("T.P.D.") capacity, and processing material as selected from the various optioned land positions for a period of 90 days using BLUE FALCON'S newly developed process. Costs are estimated to be between 1.5 and 2.0 million US dollars. Some of these costs will be offset by the value of the metals recovered.
- 2) Commissioning the preparation of a feasibility study by Kilborn Ltd., an internationally recognized engineering company, which will detail the results of a 90 day 10 T.P.D. milling and metallurgical testing procedure. These testing procedures have been requested by a financial group arranged by Canadian International Milling in conjunction with Ingersoll Rand (Canada) Inc. The report will include the design of a plant of optimum size capable of economically recovering precious metals from the complex "ores" of the area.
3. Under the terms of the agreement, Blue Falcon will be granted an option to purchase 2.5 million private placement shares of the company, providing Micron with working capital of \$6 million as follows:

1,000,000 shares at \$0.50 by November 30, 1990	- \$500,000
500,000 shares at \$1.00 by January 31, 1991	- \$500,000
1,000,000 shares at \$5.00 by September 30, 1991	- <u>\$5,000,000</u>
<b>TOTAL:</b>	<b><u>\$6,000,000</u></b>

October 1, 1990

Page 2

The above transaction is subject to the finalization of the option agreement as well as shareholder and regulatory approval.

The vast placer-like deposits, often known as the Moapa sediments, have been subject to extensive exploration and development by Micron and a variety of other operators since the early 1980's. The clays are known to contain many precious metals including gold, silver, platinum, palladium, and rhodium. Despite the many millions spent so far no scaled-up technological process has been developed which extracts these metals economically. Blue Falcon's newly developed metal-lurgical process is superior and proprietary and has produced excellent results in laboratory scale tests, yielding highly commercial P.M. values as confirmed by Assayers Ontario of Toronto, Canada. The soon to be commissioned pilot plant tests will reveal if they have finally discovered the key that unlocks Moapa's unlimited potential.

...  
The Company also wishes to announce the granting of management incentive stock options entitling the holders thereof to acquire up to a total of 535,000 common shares in the capital of the Company at the price of \$0.35 per share, which options are for a term of two (2) years terminating October 1, 1992, subject to Alberta Stock Exchange approval.

For further information, please contact Don Golbeck, V.P., Canadian Operations 1-800-628-6826 or Ed Molina, V.P., of Finance (213) 390-6730.

ON BEHALF OF THE BOARD

  
Gordon F. Lee  
President and director of the Company

The Alberta Stock Exchange has neither approved nor disapproved the information contained herein.

# FORCE RESOURCES LTD.

Suite #390, 885 Dunsmuir Street, VANCOUVER, British Columbia Canada V6C 1N5  
Tel: (604) 685-1017 Fax: (604) 685-4492

October 1, 1990

COATES TRADING SYMBOL: FORC

## NEWS RELEASE

Mr. Gordon Lee, the President and Director of Force Resources Ltd. ("Force"), is pleased to announce that Force (in conjunction with the entire MOAPA I joint venture) has signed a letter of intent to enter into an option agreement with Blue Falcon Mines Ltd. ("Blue Falcon"), a private Canadian mining company, to further develop the groups' extensive Moapa Valley precious metals properties. Blue Falcon will earn a 60 percent interest subject to completion of the following:

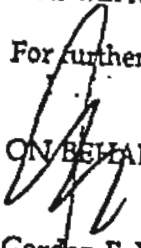
- 1) The upgrading of a local mill to a 10 ton per day ("T.P.D.") capacity, and processing material as selected from the various optioned land positions for a period of 90 days using BLUE FALCON'S newly developed process. Costs are estimated to be between 1.5 and 2.0 million US dollars. Some of these costs will be offset by the value of the metals recovered.
- 2) Commissioning the preparation of a feasibility study by Kilborn Ltd., an internationally recognized engineering company, which will detail the results of a 90 day 10 T.P.D. milling and metallurgical testing procedure. These testing procedures have been requested by a financial group arranged by Canadian International Milling in conjunction with Ingersoll Rand (Canada) Inc. The report will include the design of a plant of optimum size capable of economically recovering precious metals from the complex "ores" of the area.

The above transaction is subject to the finalization of the option agreement as well as shareholder and regulatory approval where necessary.

The vast placer-like deposits, often known as the Moapa sediments, have been subject to extensive exploration and development by the Moapa I joint venture and a variety of other operators since the early 1980's. The clays are known to contain many precious metals including gold, silver, platinum, palladium, and rhodium. Despite the many millions spent so far no scaled-up technological process has been developed which extracts these metals economically. Blue Falcon's newly developed metallurgical process is superior and proprietary and has produced excellent results in laboratory scale tests, yielding highly commercial P.M. values as confirmed by Assayers Ontario of Toronto, Canada. The soon to be commissioned pilot plant tests will reveal if they have finally discovered the key that unlocks Moapa's unlimited potential.

For further information, please contact Don Golbeck, V.P., Canadian Operations 1-800-628-6826.

ON BEHALF OF THE BOARD

  
Gordon F. Lee  
President and Director

NO REGULATORY AUTHORITY OR STOCK EXCHANGE HAS  
APPROVED OR DISAPPROVED THE CONTENTS OF THIS RELEASE.

**FORCE RESOURCES LTD.**

Suite #390, 885 Dunsmuir Street, VANCOUVER, British Columbia Canada V6C 1N5  
Tel: (604) 685-1017 Fax: (604) 685-4492

October 15, 1990

COATES TRADING SYMBOL: FORC


NEWS RELEASE

Mr. Gordon Lee, the President and Director of Force Resources Ltd. ("Force"), is pleased to announce the following:

The joint venturers involved in developing a recovery process for the disseminated precious metal deposits comprised in the joint venture claims which are located in the Moapa Valley, Nevada, have achieved a refinement to the process which is tantamount to a technological breakthrough. As a result of the refinement, Assayers Ontario Ltd. of Toronto, Ontario, have completed and then subsequently repeated 12 independent assays from custody samples totalling several hundred pounds collected from various locations on the claims. After completion of the recovery employing the proprietary process as refined, the assay results yielded an average 1.2 oz Au per ton as actual metal in hand which was confirmed by standard fire assay finish. The metal beads were subsequently re-digested to re-confirm the aforementioned results. The Company's management is very optimistic that the refined recovery method indicates that the Moapa project is becoming a commercially feasible significant precious metals deposit. Force Resources Ltd. holds a 10% working interest in the project.

For further information, please contact Don Golbeck, V.P., Canadian Operations 1-800-528-6876.

ON BEHALF OF THE BOARD

  
Gordon F. Lee  
President and Director

NO REGULATORY AUTHORITY OR STOCK EXCHANGE HAS  
APPROVED OR DISAPPROVED THE CONTENTS OF THIS RELEASE.



# BLUE FALCON MINES LTD.

20 Advance Blvd, Brampton, Ontario, Canada L6T 4R7 Tel: (416) 792-2735 Fax: (416) 792-7677

## PRESS RELEASE

SEPTEMBER 28, 1990

Mr. Gordon Leliever, President of BLUE FALCON MINES LTD ("BLUE FALCON"), a private Canadian Mining Company is pleased to announce that BLUE FALCON has acquired a controlling interest in an inventive metallurgical process which represents the culmination of many years of dedicated metallurgical research and development. This breakthrough is a modification of an acid-leach process which is currently yielding significant precious metal recoveries in laboratory scale tests. The new process is especially applicable to the complex sands and clays that are located in the well known and much explored Moapa-Mesquite areas of the state of Nevada.

As a result of the initial success of BLUE FALCON'S process the company has been able to consolidate a very large land position by way of option agreements with various mining concerns presently active in the area. BLUE FALCON will earn its controlling interest in these land positions by:

1. The upgrading of a local mill to a 10 ton per day ("T.P.D.") capacity, and processing material as selected from the various optioned land positions for a period of 90 days using BLUE FALCON'S newly developed process. Costs are estimated to be between 1.5 and 2.0 million US dollars. Some of these costs will be offset by the value of the metals recovered.
2. Commissioning the preparation of a feasibility study by Kilborn Ltd., an internationally recognized engineering company, which will detail the results of a 90 day 10 T.P.D. milling and metallurgical testing procedure. These testing procedures have been requested by a financial group arranged by Canadian International Milling in conjunction with Ingersoll Rand (Canada) Inc. The report will include the design of a plant of optimum size capable of economically recovering precious metals from the complex "ores" of the area.

Historically the vast placer-like deposits, known as the Moapa sediments have been subject to extensive exploration, research and development by various operators, including Micron Metals Canada Corp. since the early 1980's. These sediments are known to contain many precious metals including gold and silver with undetermined values of other platinum group metals. Despite the many millions spent so far no one technological process has been developed which liberates these metals economically. The new BLUE FALCON process is proprietary and as such effects the economic viability of any mining project in the surrounding area. Laboratory scale tests performed by two independent laboratories on material selected from the area have yielded results indicating the presence of precious metals, some of which are quite significant.

The soon to be commissioned 10 T.P.D. pilot plant will be closely monitored and controlled by Kilborn Ltd. This independent analysis of the test results may finally provide the key that unlocks the long known potential of the vast Moapa - Mesquite mineral areas.

BLUE FALCON MINES LTD.

GORDON LELIEVER  
PRESIDENT



3685 SO. PECOS McLEOD • LAS VEGAS, NEVADA 89121  
(702) 794-0117 • FAX (702) 794-2439

November 15, 1990

RECEIVED

NOV 23 1990

RECON

Ms. Tara Wood  
RECON  
1276 Morena Boulevard  
San Diego, California

Dear Tara,

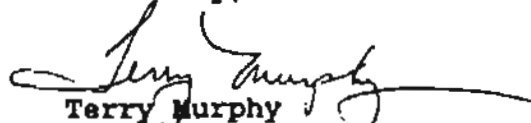
As was discussed at the last HCP Steering Committee meeting, the Southern Nevada Home Builders Association will support a mitigation fee of \$550.00 per acre. We feel very strongly however that the fees collected within the permit area not be maintained separately for the long and short term habitat conservation plans.

We would like to see a change of language throughout the document wherever the fee is referenced, such that the fees collected within the permit area will be used to finance the short-term habitat conservation plan, with all monies accumulated but not committed at the termination of the short-term permit will be forwarded for financing the long-term plan.

Since Clark County and the cities represented at the meeting did not disagree with this concept, I would hope that this funding mechanism is reflected in the next and final draft. Additionally, please refer to all previous comments submitted by the Southern Nevada Home Builders Association when preparing the final draft.

If you have any questions, please don't hesitate to contact me.

Sincerely,

  
Terry Murphy  
Development Specialist

cc: Paul Selzer  
Jim Ley  
Pat Howard  
Jan Tait  
Lavert Lucas  
Jeff Patlovich  
Michael C. Niarchos

"Those who belong... Care!"





# United States Department of the Interior



BUREAU OF LAND MANAGEMENT  
LAS VEGAS DISTRICT OFFICE  
4765 VEGAS DRIVE  
P.O. BOX 26569  
LAS VEGAS, NEVADA 89126

IN REPLY REFER TO

6842  
(NV-053)

November 14, 1990

Ms. Jean Carr  
Regional Environmental Consultants  
1276 Morena Boulevard  
San Diego, CA 92110-3815

Re: Comments on Short-term HCP

Dear Ms. Carr:

Thank you for the opportunity to comment on the draft Short-Term Habitat Conservation Plan for Clark County. My comments are listed below in addition to comments on Paul Selzer's draft briefing paper. I believe that the plan has come a long way and is close to being acceptable to the Bureau of Land Management.

## HCP Comments

- Page 39 (6): The U.S. Forest Service manages approximately 272,585 acres in the Spring Mountain. 216,584.98 acres of BLM lands were transferred to the Forest Service on April 26, 1989 as a result of the National Forest and Public Lands of Nevada Enhancement Act of 1988 (Public Law 100-550). This should also be reflected in Table 2, page 43.
- Page 44 (2): "mineral production" is listed twice.
- Page 45, 1st paragraph: Change "district" in 1st sentence to "resource area".
- Page 61 (1): Delete "State Park" in Red Rock Canyon Recreation Area State Park.
- Page 82 (c): There are actually about 3.5 million acres of desert tortoise habitat on BLM lands and another 1.5 million acres of tortoise habitat under other jurisdictions. The 1.8 million acres referenced in the document only include Category I, II, and III areas. The BLM did not classify the remaining tortoise habitat as Category III because of very low densities or marginal habitat. However, in actuality, these areas could have been included in Category III.



- Page 93 (1.c.) Change BLM's Caliente District to Caliente Resource Area.
- Page 93 (2.c.) The last sentence is untrue. There are very few roads in Category III habitat within this PTMA. The highest density of roads is actually in the Category I habitat.
- Page 94 (5.c.) The statement "The area is heavily grazed and also has the largest herds of feral burros in Nevada." is untrue. Though heavy use by burros occur along the south and west perimeters of the Gold Butte area, there is no burro use within the PTMA as delineated in Figure B, page 9.
- Page 97 (12.c.) A lot of mining activity also occurs within this PTMA (outside the Eldorado Land Act area) as witnessed by the intensive activity under mining notices that has occurred over the last five years.
- Page 121 a. (1) I am opposed to the inclusion of PTMA 12 (Eldorado Valley) as a priority area and in fact am opposed to inclusion of this area as a PTMA.
- Page 121 b. (1) Delete last sentence "If necessary, BLM also will be asked to impose interim restrictions on or eliminate grazing privileges in the area." The BLM will allow livestock use consistent with tortoise management objectives and Section 7 consultation requirements now under way.
- Page 121 b. (2) Change "existing trails and roads" to "designated roads and trails". Rewrite sentence as follows: Through emergency closure, ORV designations within the conserved habitat will be changed to allow noncompetitive and noncommercial activity on designated roads and trails only. The delineation of designated roads and trails may be modified as necessary to meet desert tortoise objectives and management needs.
- Page 121 b. (3) Add "currently" before the word "existing". Add "if it is determined that recovery of the desert tortoise is negatively impacted" after the phrase "shall not be expanded".
- Page 123 b. (4) Add the following: Section 7 consultation will be required for all mining plans of operations.

Page 123 b. (5) Add the following: Section 7 consultation will also be required including a cumulative impact analysis.

Page 127 b. (3) Rewrite this paragraph as follows:

*Biological monitoring of the area will be under the jurisdiction of the responsible land management agencies with close cooperation and coordination with the U.S. Fish and Wildlife Service and Nevada Department of Wildlife. A review committee will be established to provide technical recommendations to the agencies.*

Page 127 c. Add "and BLM" at end of last sentence.

Page 128 (2) Rewrite this paragraph as follows:

*The biological monitoring component will be written by the land management agency in cooperation and coordination with the U.S. Fish and Wildlife Service and Nevada Department of Wildlife. A review committee as identified above will provide technical recommendations to the agencies. Required personnel and equipment will be specified. Tasks to be addressed in this component include but are not limited to:*

- o TMA mapping and inventory*
- o Tortoise monitoring and census*
- o Habitat monitoring and evaluation*
- o Tracking public land use activities that could affect tortoise habitat*
- o Monitoring of other species of concern; and*
- o Predator monitoring*

Page 129 b. (2) Any livestock grazing study identified and implemented as part of the HCP should be closely coordinated with and complimentary to the BLM's proposed livestock grazing study.

Briefing Paper

- Page 3 1st Paragraph: It is untrue that virtually 100% of tortoise habitat (excluding Park Service) is on BLM lands. We manage roughly 3 to 3.5 million acres of the almost 5 million acres of desert tortoise habitat in Nevada. Suggest you state that BLM manages approximately 3/4 of the desert tortoise in Nevada and virtually all the habitats supporting significant populations.
- Page 5, Item 2, Paragraph 1: It is more agreeable if the statement "is not detrimental to the desert tortoise" is replaced with "under specified conditions (to be adhered to in permitting) can be allowed without adversely affecting the recovery of the desert tortoise".
- Page 5, Item 2, Paragraph 2: Mitigation resulting from Sec. 7 consultation regarding livestock grazing will be dealt with on its own. The Service should not suggest that the elimination of grazing in potential TMAs is or will be mitigation for livestock grazing outside the TMAs.
- Page 6, B: Add the following after the first sentence:  
"Designation of roads and trails may change overtime to provide adequate management flexibility to meet management objectives."
- Page 7, C, Other Recreational Uses: May want to change "shall not be expanded" to "shall not be expanded if it is determined that recovery of the desert tortoise is negatively impacted."

Page 7, D, Landfills:

Land disposal actions (including landfills) can only take place on lands identified for disposal in the MFP. No new lands can be made available unless we amend the plan. We are confident that the RMP will address landfills appropriately as we do not intend to identify land disposal areas within our Category I and II areas. However, the RMP will be the document in which this decision will be made. Therefore, there is no need to even discuss landfills in the HCP.

Page 8, Item 2, 2nd Paragraph:

The Secretary or Congress would have to do the emergency mineral withdraw. BLM as an agency cannot withdraw land.

As we have previously discussed, my final approval of this plan will be subject to concurrence by the Nevada State Director and the Director.

There are several general comments that I would like to reiterate. The HCP appears to relegate BLM's land management responsibilities to other agencies and a review committee. This is unacceptable to the BLM. Once the BLM agrees to the conditions outlined in the HCP, it will be the BLM's responsibility to implement those obligations and as such BLM will be accountable. I recommend that: 1) an MOU between the BLM and FWS spelling out how the BLM will consult with FWS in implementing the management actions; 2) BLM appoint an advisory committee that reports to the BLM; and 3) Clark County appoint an appropriate committee to make recommendations for the allocation of funds. To ensure that BLM's responsibilities are met, the BLM will expect appropriate funding through the HCP to implement those obligations. Considering the actions identified under "Management of Conserved Habitat" on pages 124 through 128, I doubt that \$250,000 per year for implementation will be sufficient. It would probably be wise to identify specific implementation actions and funding necessary to implement them prior to approval of the HCP so that a realistic budget can be developed. The BLM will provide support through regular appropriations where possible.

I would also like to reiterate my opposition to the inclusion of Eldorado Valley as a PTMA. The Eldorado Valley Land Act (P.L. 85-339 of March 5, 1958) encumbers 107,432 acres. The State applied to purchase the land March 1, 1968. However, the Colorado River Commission has not exercised this option to request patent to any of the land nor has the State appropriated any money. Before the lands are included as a TMA, I feel the State and CRC will have to give their approval. In my opinion they are "de-facto" private lands. There are also too many conflicts with existing public land uses and tortoise habitat is too patchy to justify this area as a PTMA.

Thank you for your consideration and cooperation. If you have any questions, you may contact myself or Sid Slone, my staff biologist, at (702) 647-5000.

Sincerely,

  
Ben Collins  
District Manager

November 13, 1990

Ms. Tara V. Wood  
Project Manager  
Regional Environmental Consultants  
1276 Morena Boulevard  
San Diego, Calif. 92110-3815

Reference: Desert Tortoise Exclusionary Zones


Dear Ms. Wood

We received your correspondence dated November 5, 1990 and the corresponding map which depicted the revised Desert Tortoise Exclusionary Zone for the City of Henderson. We are please that you concurred with us and agreed that changes were in order.

We believe that the proposed changes didn't go far enough. It appears to us that you based all the proposed revisions on the January 1990 aerial photographs we forwarded to your office. Although these photos represented the most recent available they didn't accurately depict all lands being developed, land developed since the photo nor lands scarred by mining and desert dumping. Such problems only become apparent through a visual inspection.

We are formally requesting that your office send someone to Henderson to look at some the areas you haven't included in the exclusionary zone. Someone from our office will be available to point out the areas of concern. You should contact myself to arrange the tour. We are expecting to hear from you soon. We are anxious to resolve the differences.

Sincerely,



Lavert Lucas, Principal Planner  
Community Planning and Development Dept.

RECEIVED

NOV 16 1990

F. L. LUN

Nov. 12, 1990

Dear Tara Wood of Recon

I am sending my comments and protest on the H.C.P. - Desert tortoise. I have studied and followed up on many B.L.M. Drafts and plans concerning the threat to my grazing rights. I find the B.L.M. has done a poor job of the studies and cannot prove the impacts of grazing to the desert tortoises on Range grazing lands. But they are able to manage tortoises on new development sites. The H.C.P. by Recon along with the B.L.M. uses the Fish & Wildlife Services for an excuse because, the only person the F.W.S. answers to is the President of the United States. The Fish & Wildlife Services have little or no concern about threatening the desert tortoise, so what's the alert. They hardly ever attend a public meeting that threatens multiple users of millions of acres that will close down or (lock-up) forever.

pg 2 of 4

They don't even have the decency to attend a meeting. I AM OUTRAGED! It's only been 6 months since Mr. Cy Jamison from Washington D.C. Dedicated the National Back Country By-way in Gold Butte. To bring people into our back country so they can see Multiple Uses in action. If you remember right, County Commissioners you supported that program. This By-way in particular goes through some of the best tortoise sites or habitat! You did not care about them then! Where do you really stand on these issues... There are many acres to make a tortoise reserve from and free las Vegas and not hurt the multiple users. When animal Right Activists take up a Religion that's one thing, but the whole County? I will not support this ~~EVIL~~ ACT of the HCP. Short term or the long term plan that nobody has even seen yet!



Mr. Paul Seltzer was paid and promised to do his job, and that is to take our LAND! Just a little advise from a Paiute Indian: When you are out of meat, flour, potatoes, Beans, and family milk cows. YOU ARE OUT OF FOOD! Millions of small children will be starving just like all of our neighboring countries. WHO WILL FEED these POOR STARVING CHILDREN? Russia, China, or maybe Africa? Come on people wake up groceries just don't come from the Grocery Store. People raise this food you are eating on this great free land. But it is being locked up and taken away from the people. We see on TV all of the hungry and starving people wanting your donations to support a child. What about it America who's going to feed your starving children?? Not these people who are locking up everything?  
O Great Spirit Bless our leadership of this

pg 4 of 4

promised Land and Bring us  
back together as one Nation!

Sincerely,  
Norm Tom

Received by RECON at 11/7/90 Steering Committee Meeting

PETITION  
TO STOP THE USE OF THE MORMON MESA AS TORTOISE HABITAT

I (we) as individuals, by petition, formally protest the Habitat Conservation Plan done by Recon for Clark County for the following reasons:

1. There was not enough care taken in the choice of lands. The multiple users were asked for their input, and then ignored, and there was no input from the average citizen.
2. There are or will soon be over 3,000,000 acres of land under much the same restrictions as they will use on a Tortoise Management Area. There is good tortoise habitat on much of this area, but little of it is being considered in the conservation plan. There is no good reason to give up any more of the land than we already have.
3. The Bureau of Land Management is doing an RMP/EIS which will do much the same as the Clark County Habitat Conservation Plan. This will be done in 2 years, and it doesn't hurt any of us to wait that long. There is too much growth in Las Vegas, and some of the vacant buildings should be utilized before anymore are built. Slowing of growth will help the water problem, the school problems, and the crime problem.

The Habitat Conservation Plan is a document made by the minority for the majority without consent of the majority. The land they want to use is being managed for multiple use, but they have not wanted to consider the multiple user. A member of the steering committee was fond of saying to the multiple users, Bulls and Bears make money, Hogs get at!! It's really a shame they didn't realize who the real hog is.

This petition will be sent to Recon, The Director of Fish and Wildlife, The Director of The Bureau of Land Management and Clark County Commissioners.

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Randall [unclear]

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Jon [unclear]

" " " "

John [unclear]

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Gene L. Heath

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Erin [unclear]

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~~Logansdale NV~~

~~Overton Nev~~

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Nov 6 - 90

Clark County Steering Com  
Recon  
Tara B. Woods

IN Ref To Recon Number 211  
Draft Sep 25, 1990 & Revision  
To Draft 6-176, 1990 H. 11

We are against the Draft in the form that it is written.

It protects Las Vegas - Boulder City & Henderson but does nothing for the rest of the towns in the county & the county.

It is against livestock grazing - mining - ORU & all other forms of recreation on BLM land.

It stops growth in all areas except Las Vegas - Boulder City & Henderson.

It does little to protect the turtle.

We have not considered ourselves a part of this steering committee in the past & have not participated.

Keith May  
Marilyn May  
Box 1239  
Bunkerville - Nev  
89007

Law Offices of  
**DONALD J. SHAW**



NOV 5 1990 5:13PM #214 P.01

9744 Wilshire Blvd.  
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Beverly Hills, CA 90212  
(213) 205-8759, 205-8763

November 5, 1990

**THE LAS VEGAS SUN**  
121 South Martin Luther King Boulevard  
Las Vegas, Nevada 89106

Attn: **MARY MANNING**

Re: **THE MORMON MESA TORTOISE**

**DEAR MS. MANNING:**

On October 24, 1990, at 7:00 p.m., a public meeting was held in Las Vegas, Nevada, concerning the proposed plan for the **HABITAT CONSERVATION PLAN ("HCP")**. It was "standing room only" attendance with a host of passionate dissenters who vehemently protested the "tentative" selection of the **MORMON MESA**. I was surprised to see only **MR. PAUL SELZER, Esq.**, Chairman, and **PAUL FROMER** from **BECON** taking the full brunt of the taxpayer attacks without any recorder or media present save one **MOAPA** newspaper.

I am a duly licensed attorney in the State of California and I represent the **MICRON MINING COMPANY** with approximately a **Fifteen Million Dollar (\$15,000,000.00)** investment at its **MOAPA, NEVADA**, mine site. I have been approached by the "**MORMON MESA DEFENSE ALLIANCE ("MMDA")**" to support their litigation attorney to properly research and file a lawsuit seeking injunctive relief in the Courts on several grounds which may raise resounding political ramifications. Of course, I will support this group as the **MICRON** interest is at risk.

First, it has been alleged that the "steering committee" for the **Clark County HABITAT CONSERVATION PLAN** for several reasons has breached its fiduciary duty representing the citizens of **Clark County**. A "balancing of interests" is mandated by the letter and spirit of the **National Environmental Act ("NEPA")**, which requires that equitable approach to rights of all persons as well as the addressing of adverse effects which cannot be avoided. More succinctly put, it requires a balancing of rights between the "short-term" use of human environment versus the alleged "long-term" (tortoise) production which means the rights of and impact to all citizens must be weighed. The committee seemingly ignores over one hundred (100) years of grazing and mining together with a huge investment of time, sweat and money and the

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THE LAS VEGAS SUN  
Attn: MARY MANNING  
page two

"now" generations who only seek enjoyment of their environment. The Committee seeks to establish a TORTOISE MANAGEMENT AREA ("TMA") to protect a "threatened species." Because an alleged respiratory virus has been discovered in some Mojave Desert Tortoises, the Desert Tortoise has been placed on the endangered species list by the United States Department of the Interior. Biologists had said that the deaths of half of the Southern California tortoise population could be caused by this mysterious virus or, perhaps, a combination of drought, development and ranching? However, after they somehow determined it was the virus that killed, then another determination was made that the California tortoise was healthy but under attack by the Nevada tortoise. It is a fact that species are born and die with great regularity and while reasonable steps should be taken to preserve higher life forms, it is impossible to solidify every existing species. Although the Desert Tortoise was listed as "endangered" and then "threatened" in July, 1989, because of the diseased tortoises in Nevada who allegedly decided to travel to California spreading this virus, only four (4) had been discovered in Nevada with the virus as late as November, 1989.

Second, it is strongly felt that the constitutional rights of Clark County citizens on and near the MORMON MESA are severely infringed upon. The MORMON MESA DEFENSE ALLIANCE alleges that on the MORMON MESA there exists a more complicated issue than a typical developer seeking profits or a mere licensee crossing the land. Here we have ranchers with vested and continuing grazing rights, and miners with unpatented claims who pay, and have paid, yearly assessments on those claims working toward "discovery" and patented claims guaranteed under the General Mining Law of 1872 and protected by the 5th and 14th amendments. Indeed, here is a real and effective arbitrary "taking" of vested rights and a tortious interference with contract which is too broad, too discriminatory, and too arbitrary. Counsel has suggested that injunctive relief in the Federal District Court is highly probable under the circumstances.

Although these taxpayers of the MMDA point their fingers and claim "Special Interests" have been, and are being, served, all interested officials claim such allegations are at best unfounded. Further, the MMDA allege the Steering Committee's best choice for the HABITAT CONSERVATION PLAN and the resulting TORTOISE MANAGEMENT AREA creeps across the County reacting to a number of special interests looking for a "weakest link" finally resting at the MORMON MESA and the only remaining step is to justify this choice. To paraphrase the excited taxpayers, "They took our rights and gave them to other groups." The MOAPA area, especially the MORMON MESA, is on the threshold of major mining development which means jobs and revenues.

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THE LAS VEGAS SUN  
Attn: MARY MANNING  
page three

This certainly will be in the best interests of everyone, including the federal government, the State and the County, and will illuminate the fact that the MORMON MESA is a bad choice.

This Desert Tortoise is indigenous to really five (5) states, Nevada, California, Utah, Arizona, and New Mexico. The questions are why are Arizona and New Mexico exempt and why is Nevada the target state? The biggest question is why has the HABITAT CONSERVATION PLAN now moved to the MORMON MESA? The answer I get is -- Political

Further, those taxpayers supporting the MORMON MESA DEFENSE ALLIANCE make strong allegations concerning SPECIAL INTERESTS. At first, the thrust of the UNITED STATES FISH AND WILDLIFE SERVICE ("USFWS") was aimed at McCarran International Airport, the City of Las Vegas, and private developers. The embarrassing point was that it was first asserted that the Nevada Fish and Wildlife Service officials "had found no evidence of the disease," then a later memo drafted July 21, 1989, by a Fish and Wildlife Supervisor in Reno, Nevada, stated the State Wildlife Department kept sick and healthy tortoises together in a holding pen in 1987-1988 and released some of those reptiles with the virus into the wild where such infected tortoises had never been known! The next embarrassment will be the exposed plan to herd the tortoises found in Nevada into groups that someone will direct to be sent to this "tortoise sanctuary," or be sent out for "research," or to be designated for more speedy extinction by "euthanasia." However, the "targets" have changed, the lawsuits were settled and on November 11, 1989, it was reported that Las Vegas came within One Million Dollars (\$1,000,000.00) of its all time yearly record for building permit valuation. This did not take into account the months of November and December. It seems the Developers definitely are not concerned with the "threatened tortoise"! The MMDA asked, "Where are our elected officials?..."

Lastly, the taxpayers of Clark County are alleged to be caught in a power struggle between USFWS and BUREAU OF LAND MANAGEMENT ("BLM"). The BLM has been managing government land generally fair and successfully for some years. By federal statute (the Endangered Species Act) the BLM is now mandated to enter a consultation period on each project with USFWS prior to approval. Although final determinations have not been made by the BLM on a national policy basis the power struggle probably will end with the Secretary of the Interior as final arbiter of disputes between the BLM and the USFWS to decide on a programmatic basis to require a full environmental impact statement for each project before approval by the BLM for a plan of operations.

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THE LAS VEGAS SUN  
Attn: MARY MANNING  
page four

On November 7, 1990, at 10:00 a.m., on the third floor, perhaps the last meeting of that "Steering Committee" will be held at McCarran International Airport. I would suggest that your paper might wish to attend that meeting as it may well be the seedling of major political confrontations in the near future. Your paper was most involved in the saga of the tortoise. I hope it has not lost interest.

Sincerely,



DONALD J. SHAW  
Attorney at Law

DJS:do

cc: BRIAN GREENSPUN  
Desert Sun Editor  
R. SCHRIEBER  
MMDA  
Micron Mining Company





# United States Department of the Interior

## FISH AND WILDLIFE SERVICE

FISH AND WILDLIFE ENHANCEMENT  
RENO FIELD STATION  
4600 Kietzke Lane, Building C-125  
Reno, Nevada 89502-5093

RECEIVED  
NOV 15 1990  
RECUIN

November 1, 1990  
File No.: I-5-91-TA-6

Tara Wood  
Regional Environmental Consultants  
1276 Morena Boulevard  
San Diego, California 92110-3815

Dear Ms. Wood:

The Fish and Wildlife Service (Service) has reviewed the final draft Short-term Habitat Conservation Plan (HCP) for the desert tortoise in Clark County, Nevada. The Service is very pleased with the progress that the participants have made thus far in the development of a HCP for Clark County. This effort is reflected in this final draft Short-term HCP.

The Service has four major concerns with the proposed Short-term HCP; the proposed short-term HCP budget, documentation that the proposed mitigation will take place, timing of the grading of properties in which tortoise removal was required, and justification for the elimination of a possible habitat corridor on west side of Las Vegas Valley.

### Proposed Short-term HCP Budget

The general line items shown in the budget table on page 133 do not provide detailed supplemental information in the narrative section of the document or additional tables for each general line item. It is important to show justification for each figure in the table. The Service recommends a budget detail similar to that provided in the Environmental Assessment and Biological Assessment for the proposed scientific collection permit to take desert tortoises in Clark County, Nevada.

The general line item entitled Trust Fund for Tortoise Management Area Management concerns the Service. The entire HCP is centered around the management of these areas. With the absence of an itemized budget, the Service is uncertain whether funding will adequately cover implementation of this portion of the HCP budget. For example, we anticipate that at least 6 categories could be included under the Trust Fund for Tortoise Management Areas: enforcement, monitoring, physical improvements, public information, inventory, and research. Enforcement costs alone could equal \$250,000, when you consider ranger salary, law enforcement training, vehicles, protective equipment and aerial patrol time. Conversely, the HCP must make it clear that these funds serve only to supplement the budgetary requirements of the land management agencies. The land management agencies must play a role in the

budget formulation and agree to what funds they need to comply with the terms of the HCP.

#### Documentation that the Proposed Mitigation Will Take Place

Section 10 (a)(2)(B) of the Endangered Species Act requires that the Fish and Wildlife Service make several findings prior to the approval of an incidental take permit. These include (1) the taking will be incidental, (2) the applicant will, to the maximum extent practicable, minimize and mitigate the impacts of such taking, (3) the applicant will ensure that adequate funding for the plan will be provided, (4) the taking will not appreciably reduce the likelihood of the survival and recovery of the species in the wild, and (5) that any measures deemed appropriate by the Service will be met. Thus, the Service will be unable to approve a Section 10 (a)(1)(B) permit to allow incidental take of tortoises if there are not adequate guarantees that the mitigation will take place, and that adequate funding is provided to implement the plan.

#### Timing of the Grading of Properties in which Tortoise Removal was Required

The Service is concerned that the proposed measures to minimize the take of tortoises on those properties located adjacent to undeveloped occupied desert tortoise habitat are not adequate to prevent the unnecessary take of tortoises that could reoccupy the parcel before grading. The Service understands that the HCP is attempting to provide a streamlined approach (pay a fee...survey for tortoises...remove tortoises...grade and construct) with a goal of making a reasonable effort not to kill tortoises. The HCP proposes to allow the developer up to 90 days to grade property after tortoise removal. The HCP technical advisory committee recommended up to 60 days. Additionally the HCP proposes no temporary tortoise fencing, and the "Tortoise Hotline" is only applicable to properties within designated exclusionary zones.

The Service presently requires, through Section 7 consultations with the U.S. Department of Housing and Urban Development, that property owners either fence those sides of the property that are adjacent to undisturbed tortoise habitat before tortoise removal, or begin grading their property within 24 hours of removal of the last tortoise from their property and provide a tortoise biologist for each piece of heavy equipment during grading. If the property is not graded shortly after tortoise removal, the efforts may be invalidated due to immigration from adjacent lands.

#### Justification for the Elimination of a Possible Habitat Corridor on West Side of Las Vegas Valley

The proposed permit boundary as shown in figure 12, page 105, would foreclose the option of habitat corridor on the west side of the Las Vegas Valley. On July 12, 1990, at the HCP Technical Advisory Committee (TAC) meeting, conservation biologists, Dr. Peter Brussard and Dr. Mike Gilpin, gave a presentation on conservation biology as it relates to the desert tortoise. One of the discussions at this meeting was whether it was appropriate to maintain a habitat corridor through the Las Vegas Valley. The TAC reached a group consensus to reject the necessity of a habitat corridor through the Las

Vegas Valley based on the following reasons: the north and west corridors around Las Vegas Valley are ineffective and more likely to be an avenue for the spread of disease; the urban impacts associated with Las Vegas growth likely have already rendered the corridor ineffective; genetic exchange can be accomplished mechanically; gene flow that occurs now through the area is likely negligible; the existing corridor probably functions as a sink; and other corridors may exist around the Las Vegas Valley. The Service recommends that a discussion of the habitat corridor be included under 2a on page 104.

Specific editorial comments by page, paragraph, and sentence are addressed as follows:

Page iii- Alternatives Considered should be a full section, not just a subsection.

Page 2, first paragraph, third sentence - The Service recommends that the document include the specific dates of the emergency listing of the desert tortoise August 4, 1989, and the formal listing of the desert tortoise as a threatened species on April 2, 1990 by the Service.

Page 2, second paragraph, fifth sentence- According to Endangered Species Act of 1973, as amended, the fines for a threatened species is up to \$25,000 and up to six months in jail.

Page 2, third paragraph, second sentence- The Service recommends that the document acknowledge that there is a difference between a Section 10 (a)(1)(A) take permit for scientific permits and a Section 10 (a)(1)(B) incidental take permit.

Page 3, third paragraph, last sentence- How many of the 299,700 acres within the permit area are non-federal acres?

Page 3, last paragraph, second sentence- Please expand on what is meant by conservative assumptions.

Page 4, fourth paragraph, second sentence- Remove ...according "the" replace with "to" protocols.

Page 7, last paragraph, last sentence- Add to the end of sentence "and its habitat".

Page 8, second paragraph, first sentence- A typographical error exists at the end of the sentence ...BCP planning procee... it should be process.

Page 8, third paragraph, item 4- What is the recourse if 400,000 acres of habitat is not conserved before the expiration of the permit? The Service recommends that a threshold be established to restrict both take of tortoises and habitat to ensure that the 400,000 acres of habitat is conserved before the expiration of the 3 year permit period.

Page 12, first paragraph, item No. 1- Before the Service can issue an incidental take permit in an accordance with Section 10(a)(1)(B) of the

Endangered Species Act, the Service must be certain that the mitigation measures proposed in the HCP will be implemented. Therefore, the Bureau and the National Park Service must document that grazing will be restricted in those grazing allotments where elimination of grazing occurs as the result of acquisition of grazing permits from willing sellers. Also, the Bureau and the National Park Service must document interim grazing restrictions within those allotments where grazing has not been eliminated. These restrictions may include seasonal, forage utilization thresholds, and animal units.

Page 12, first paragraph, item No. 2- The Off-road Vehicle use terminology has been changed to Off-highway Vehicle (OHV) use. This land use control should be changed to "Restrict OHV use to designated trails and roads, and prohibit competitive and commercial OHV events". In order for these TMAs to function as conservation areas for the desert tortoise, access into these areas must be limited to reduce habitat fragmentation. What is an existing trail?

Page 12, first paragraph, item No. 3- Intensive recreation uses should be prohibited from TMAs. The key words of the proposed land use control is "intensive recreation uses". The Service interprets intensive recreation uses to mean large numbers of people and associated vehicles. The only way intensive recreation uses could be allowed in TMAs would be if they were restricted to unvegetated areas like dry lake beds and controlled to not degrade desert tortoise habitat. The Service recommends that intensive recreation uses be prohibited in TMAs. Otherwise, the area is not likely appropriate for TMA designation.

Page 12, first paragraph, item No. 4- This proposed land use control does not impose any protective measures on the habitat. The HCP must discuss the results of such validity exams. A validity exam of an existing mining claim is an ineffective method of protecting desert tortoise habitat unless the area has first been withdrawn from mineral entry. Under the mining law of 1872 unless the area has been withdrawn from mineral entry there is no procedure to prevent the same claimant or a different claimant from filing claims on the same area in which the validity claims were initiated. The Service recommends that the 400,000 acres proposed to become conserved habitat by the end of the expiration of the 10 (a)(1)(B) permit for the Short-term HCP be immediately put under a 2 year emergency withdrawal until the 400,000 acres can be formerly withdrawn. This would protect the conserved habitat from being immediately staked with mining claims.

Are there any proposed restrictions on mining exploration? New roads and trails can be developed during exploration phases and can add to the fragmentation of tortoise habitat.

Page 12, third paragraph, first sentence- Add ... enforcement will be "the" responsibility.

Page 12, fourth paragraph, first sentence- The Service recommends that all proposed research be coordinated with the Bureau's Management Oversight Group; research proposed as part of the Section 10 (a)(1)(A) research permit issued to the Nevada Department of Wildlife, the Nature Conservancy, and the Bureau

of Land Management; and with the development of the Service's desert tortoise recovery plan.

Page 13, third paragraph, first sentence- Add ... over the period "of the" permit.

Page 15, last paragraph- Change fines to up to \$25,000 and up to 6 months in jail. These are the fines for threatened species violations.

Page 17, first paragraph- Other approved HCPs include the Lennane property in Sacramento County for the valley elderberry longhorn beetle and the Delano Prison in Kern County for Tipton kangaroo rat, San Joaquin kit fox, and blunt-nosed leopard lizard.

Page 18, item 1., first sentence- Add ...intention of being the "applicants" for.

Page 18, third paragraph, item a- Is the National Park Service now considered a member of the steering committee? If true the Service recommends that the National Park Service be included as one of the participants of the steering committee.

Page 19, second paragraph, item b- Is the National Park Service now considered a member of the technical advisory committee? If true the Service recommends that the National Park Service be included as one of the members of the technical advisory committee.

Page 25, second paragraph, item e- Add the following sentence after the first sentence of the paragraph. " The purpose of an EA is to determine whether or not to prepare and EIS."

Page 36, first paragraph, first sentence- Plantlife is two words, plant life.

Page 74, table 6- The Service recommends that the use of plant names be consistent. Use both scientific and common name for each species or only the common or scientific name. The Service preference would be the use of both the scientific and common name.

Page 75, second paragraph, first sentence- A typographical error exists ...Nagy and Medico 1986... should be Medica.

Page 84, second paragraph, second sentence- The Service believes the correct terminology for ...acres of land "allotted"... should be ...acres of land permitted or licensed.

Page 85, second paragraph, item (1),- first sentence, Replace ...ravens between 1968 and "1899" with "1990". second sentence, A typographical error exists...transmission lines that "creat"... should be create.

Page 91, second paragraph, item b, second sentence- A typographical error exists ...PTMAS 6 and 14 "conatin" should be contain.

Page 93, third paragraph, item c, third sentence- The Service recommends the modification of ... BLM's Caliente District,... to BLM's Caliente Resource Area, in Lincoln County, which.

Page 101, item c., first sentence- Add ... TMA is "to" attain.

Page 104, 2 Estimate Level of Take- Please expand on what is meant by conservative assumptions.

Page 107, item b., first sentence- Add ... estimated at 22,352 acres "of private land."

Page 107, item b. and c.- The document should revise estimates of habitat loss and take by quarter.

Page 108, item e., first sentence- Add ...region is not "known."

Page 109, third paragraph, item b, first sentence- This sentence indicates that the tortoise survey is only valid for 90 days. The Service recommends that the statement "Tortoise Survey is Only Valid for 90 Days" be conspicuously placed on the HCP compliance forms. The project proponent must also acknowledge in writing that he/she is responsible for initiating another survey if the property has not been graded within 90 days, and Clark County acknowledges that they are responsible for ensuring compliance with the 90 day limit.

Page 111, first paragraph, item c, first sentence- Refer to the Service's comments under Timing of the Grading of Properties in which Tortoise Removal was Required above. This sentence indicates that tortoise removal is only valid for 90 days. The Service recommends that the statement "Tortoise Removal Results are Only Valid for (number of days the HCP recommends) Days" be conspicuously placed on the HCP compliance forms. The project proponent must also acknowledge in writing that he/she is responsible for initiating another tortoise removal if the property has not been graded within the required number of days, and Clark County acknowledges that they are responsible for ensuring compliance with the required day limit.

Page 112, item 2.- The Service recommends that all tortoises removed from the permit area be marked to distinguish them from wild tortoises, and tortoises presently in captivity.

Page 112, item a.- Remove ... place tortoises, "an " and replace with "a".

Page 118, fifth paragraph, item (2), second sentence- It is our understanding that the Nevada Department of Wildlife has agreed to take the responsibility of ensuring compliance of the tortoise removal protocol through the audit process.

Page 119, first paragraph item (3)- Correct fines are up to \$25,000 and up to 6 months in jail for threatened species.

Page 120, first paragraph, item d. Remove "authorized by NDOW and USFWS" and replace with "for tortoises incidentally taken under the section 10 (a)(1)(B) permit". The Service does not authorize tortoise adoption programs except through the terms of this 10 (a)(1)(B) permit.

Page 120, third paragraph, item 1. Remove "conserved" and replace with "preserved and managed as conserved habitat".

Page 121, item a. (1) Remove "will be" and replace with "of" and add ... conserved "habitat will be established".

Page 121, item a. (2) Remove "will be" and replace with "of"; remove "fourth quarter" and replace with "first year of the permit"; and add ... conserved "habitat will be established".

Page 121, item a. (3) Remove "will be" and replace with "of" and add ... conserved "habitat will be established".

Page 121, item a. (4) Remove "will be" and replace with "of" and add ... conserved "habitat will be established".

Page 121, item a. last paragraph Remove ... amount of "tortoise" and replace with "conserved" and remove ... to be "conserved" and replace with "established for the tortoise".

Page 121, item b. (1), third sentence Remove ... BLM "also"; remove "be asked to" and replace with "also"; remove ... privileges in "the"; and add to end of sentence, "areas where grazing privileges have been acquired from willing sellers."

Page 121, item b. (2) Change restriction to designated roads and trails and define designated on BLM maps.

Page 123, item b. (5) Item should be modified to "All new or modified existing land uses proposed in TMAs will be required assess the impacts on the desert tortoise and tortoise habitat under NEPA regulations".

Page 123, item c. (3), second sentence Appropriation of funds for such transactions will be subject to the consent of who? Should not it be the consent of the applicants of the Section 10 (a)(1)(B) permit?

Page 127, item b. (2), first sentence Add ... responsibility of BLM "for conserved habitat". Second sentence Add ... If the conserved "habitat". Add statement that discusses BLM's agreement not to reinstate grazing privileges in allotments where the privileges have been purchased from willing sellers.

Page 127, item b. (3), first sentence Remove ... monitoring of "the" and replace with "conserved habitat areas".

Page 128, second paragraph, item (3), first sentence A typographical

error exists ...submitted with "THE" annual... it should be the. Replace  
...habitat management, "an" with "a".

Page 134, top of page Make ALTERNATIVES CONSIDERED a separate section.

Appendix 3, RCP Compliance Form Part 3b --Tortoise Removal Report The  
Service recommends that the large box at the bottom of the page should be  
reduced to only one row and the title of the row modified to No. of Tortoises  
Collected.

Thank you for the opportunity to review the final draft Short-term Habitat  
Conservation Plan for the desert tortoise in Clark County, Nevada. If you  
should have any questions about our comments please contact me or Mark Maley  
at (702) 784-5227.

Sincerely,



David L. Harlow  
Field Supervisor

cc: Assistant Regional Director, Fish and Wildlife Enhancement, Portland,  
Oregon (FWE-ES)  
Paul Selzer, Best, Best & Krieger, Palm Springs, California  
Director, Administrative Services, Clark County, Las Vegas, Nevada



RICHARD H. BRYAN  
Governor

THOMAS W. BALLOW  
Executive Director



STATE OF NEVADA  
DEPARTMENT OF AGRICULTURE

October 29, 1990

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OCT 31 1990

RECON

Jean Carr  
RECON  
1276 Morena Blvd.  
San Diego, California 92110-3815

Dear Jean,

According to the 9/25/90 Final Draft of the Short-Term Habitat Conservation Plan for the Desert Tortoise in Clark County, Nevada, on page 8, conservation thresholds within priority conservation areas have been established. I suggest that any conserved habitat established in National Park Service lands, ie., Cottonwood Cove area, be automatically credited toward these thresholds regardless of where they may be along the Nevada border. Other areas within the National Park Service not yet considered, should be investigated for inclusion, such as the area from Overton to Rodgers Spring and south along Lake Mead to the Echo Bay area.

Mitigation funds which become available through Section 7 consultations should be diverted to other Federal and State lands such as Nevada Test Site, State Parks, Nellis Bombing Range, National Wildlife Areas, National Monuments, etc. within the Desert Tortoise Conservation area for the implementation of a conservation plan for the protection of Desert Tortoise. This would decrease the demands to eliminate existing multiple use areas and satisfy the conservation thresholds needed to implement and continue the Section 10(a) permit.

Sincerely,

A handwritten signature in cursive script that reads "Thomas E. Smigel".

Thomas E. Smigel, Deputy Director

TES:mla

cc: T. Ballow  
T. Hafen  
Ron & Ann Schreiber

**CITY OF LAS VEGAS COMMENTS REGARDING  
PROPOSED HABITAT CONSERVATION PLAN  
FOR SUBMISSION FOR SECTION 10(a) PERMIT**

Submitted in Public Hearing  
October 24, 1990

The City of Las Vegas supports and applauds the efforts of the Desert Tortoise Steering Committee in developing the proposed Habitat Conservation Plan (HCP) for submission for a Section 10(a) permit which will allow continued development in the Las Vegas Valley while protecting the endangered Desert Tortoise. The City fully concurs that protection of the Desert Tortoise is critical to the long-term environmental and cultural health of our State and our nation, and will continue to encourage and participate in all logical strategies designed to assure that the Desert Tortoise remains a viable species.

The provisions and procedures set forth in the proposed HCP are, for the most part, completely acceptable to the City. Although some of the provisions will impose additional work on the part of City offices, those extra efforts are reasonable in light of the goal to be achieved.

The one area which the City continues to have significant difficulty supporting is the proposed fee to be paid by developers. The HCP calls for a total of \$550 per acre to be charged to persons wishing to develop land. This amount of money, which constitutes a serious financial burden for developers, is not justified.

It is not evident from the data presented thus far that the amount of money a fee of this size would generate is necessary to protect the tortoise. First, the level of intervention for a long-term HCP is not, at this juncture, known: whether or not the Tortoise Management Areas will need to be expanded, whether or not additional measures will be required beyond those planned for the short-term HCP remains to be seen. Second, the proposed budget figures in the draft reflect only those costs associated with the short-term HCP; no budget is offered for a long-term HCP. The short-term HCP costs would be adequately supported by a fee much closer to the current \$250 per acre. To require that developers set aside millions of dollars without clear-cut and compelling need is unreasonable. Further, should the millions of dollars that would be generated not be needed for additional conservation measures, no provision is offered for return of those monies: for what purpose and by whom would those millions be used?

Although the draft HCP identifies four possible sources for funding a long-term HCP -- and there may be others as well -- no recognition is given to these sources for funding the long-term plan. Instead, the developers are asked to fund the long-term plan single-handedly. The problem of protecting the Desert Tortoise is a community-wide problem: it would seem unreasonable that one group of persons be required to bear the entire cost, and to bear it to

October 10, 1990

STATEMENT BY M. KENT (TIM) HAFEN ON BEHALF OF  
AGRICULTURE AND LIVESTOCK TO CLARK COUNTY  
STEERING COMMITTEE

After a review of the "Final Draft, Short Term Habitat Conservation Plan" dated September 25, 1990, we are pleased with the report in general.

We are further pleased that the plan calls for the willing seller concept of acquiring grazing permits by purchase.

We agree with the concept of using 100,000 acre blocks as an area capable of sustaining a tortoise population for at least 500 years.

We in agriculture and livestock want to pledge continuing assistance and cooperation in bringing both the Short Term and the Long Term Habitat Conservation Plans to successful conclusions.

We have some proposals to this draft that we feel are necessary to help soften the impact to livestock permittees.

In identifying appropriate building blocks of 100,000 each for the short term HCP, PTMAs 2, 6, 12, 13 and 14 have been identified as areas where the first 400,00 acres will be conserved.

Areas 12, 13 and 14 contain 436,073 acres and Area 6 contains 191,113 acres. It would seem that Area 2 contains more conflicts from utility easements and grazing than the other four (4) areas. We therefore request that Area 2 be deleted and not be included in the Short Term HCP. This request is consistent with our prior position and has previously been made known to the Steering Committee.

We have repeatedly requested that continued grazing be allowed within the PTMAs. We have agreed that controlled grazing may be necessary in some areas. This draft calls for elimination of grazing either through buyouts or by asking BLM to impose restrictions or eliminate grazing. (pages 12 and 121)

The goal of the Short Term and Long Term HCPs as outlined on Page 99 are to designate the TMAs as "Areas of Critical Environmental Concern" (ACECs) in the RMP being prepared by BLM. This could effectively eliminate livestock grazing. We disagree that eliminating livestock grazing is necessary.

October 10, 1990

We believe this draft is seriously flawed in that nowhere does it address grazing by wild horses and burros.

Livestock grazing can be controlled and livestock can be allowed to graze after the tortoise is dormant. Summer grazing can be controlled so as to allow ample feed for the tortoise.

Wild horses and burros are not controlled as to season of grazing, place of grazing or amount of grazing and whether there was adequate rainfall or drought. BLM is finding it difficult to control the number of wild horses and burros.

We believe wild horses and burros, by their nature and feeding habits, are more destructive to the habitat of the desert tortoise than livestock grazing - if in fact livestock grazing is destructive.

If livestock is to be removed from any RMP designed by BLM wherein tortoise habitat is considered, along with grazing, then we believe the RMP must include removal of wild horses and burros.

We request the numerous references\* throughout this draft that address livestock grazing must also include grazing by wild horses and burros.

We further request that any grazing study consider the effects of grazing by the wild horse and burro as well as livestock.

It would seem to us that any RMP that does not address the issue of Wild Horses and Burros, is not fulfilling the objective of protecting the Desert Tortoise.

\* References to grazing occur on pages 12, 47, 84, 93, 94, 95, 96, 97, 98, 99, 102, 121, 123 and 129.



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October 8, 1990

Ms. Jean Carr  
RECON  
1276 Morena Boulevard  
San Diego, California 92110-3815

**COMMENTS ON FINAL DRAFT OF THE SHORT-TERM HABITAT CONSERVATION PLAN  
FOR THE DESERT TORTOISE IN CLARK COUNTY, NEVADA**

Dear Jean,

I believe that the final draft represents a much improved document, however there are still a number of issues which need to be addressed. I will address the broader issues and then provide you with my specific comments.

While there has been verbal discussion regarding the connection of the HCP with the Section 7 Consultation process, there is no mention of this in the HCP. My specific concern is that, if a project has undergone consultation under Section 7, and the project proponent has paid an additional \$324.00 per acre, will he or she then be required to pay the full mitigation fee under the HCP? Will there be provision in the local ordinances for credits for those who have previously paid mitigation through a means other than the HCP?

As I have stated earlier, the Southern Nevada Home Builders Association does not fully support maintaining the \$250.00 per acre fee already in place and imposing the short-term fee on top of that. Based on development trends and projections, it is likely that we will generate over five million dollars for which no budget or specific use has been identified, and for which alternative funding sources have been identified and may be available. For the Home Builders to support the overall program, we need a clear and compelling rationale for maintaining the additional fee, and for maintaining it at \$250.00. We could for instance, lower it to \$100.00 and still generate over two million dollars.

**SPECIFIC COMMENTS**

Page 3 - last paragraph, second sentence. What do you mean by "conservative assumptions?" Does this mean that 22,000 acres over three years is a "conservative" estimate, and that in reality it may be much higher, or does it mean the opposite?

*"Those who belong ... Care!"*



Page 4 - paragraph 3, third sentence. "NDOW" has not been previously defined.

Page 8 - Top of Page "Measure" should be "Measures."  
Conservation Threshold #3. In regard to habitat loss exceeding 15,000 acres, does this mean acres from which tortoises have been removed, or all acres for which grading permits have been issued?

Page 10 Table A. We may want to define how tortoise habitat is categorized prior to presenting information using the BLM categories to describe habitat.

Page 11, Table B. The "Goal" in Category 3 habitat is written as follows: "Limit habitat and population to the extent by mitigating impacts." There must be a few words missing here. How are density ranges related to Habitat Categories, if at all?

Page 12, #3. Delete the words "will be restricted" from the second line of the first sentence.

Page 13, second sentence. What is the purpose of maintaining the \$250.00 per acre fee?

Page 19, d. You may want to note that while the fee was expected to generate between \$650,000.00 and \$1,200,000.00 per year, it actually generated \$\_\_\_\_\_ in the first year.

\_\_\_\_\_ Timing Issues. You may want to briefly explain the nature of the "projects already pending," ie: flood control, roads, schools, other infrastructure necessary to support existing population.

Page 25, e. At the end of the first line, "accompany" should be "accompanies."

Page 29, subheading 2., line 6. delete the word "by."

Page 44, second bullet. Which other decisions are you referring to, and to which five communities do they pertain?

Page 64, d. (2). Other master planned communities expected to begin construction soon are Cosmo World, Lake Las Vegas, MacDonald Ranch, Rancho Del Norte and Peccole Ranch.

Page 83, 1. Habitat Loss and Degradation. The last sentence of this paragraph to indicates that further development of the Las Vegas valley will indeed isolate already low density populations and reduce their genetic viability, though there is no documentation or citation to support that conclusion. It should be noted that approximately 20% of the tortoises collected from the northwest portion of the valley have exhibited symptoms of URDS.

Page 84, 2.a. We have empirical evidence that URDS occurs in Clark County. We have been finding it in about 20% of the tortoises collected in the northwest portion of the valley. Please check with Brad Hardenbrook of NDOW to confirm the level.

Page 88, Table 7. Goal in Category 3 is unclear.

Page 101, a., last sentence. If we are assuming there are at least 20,000 adult tortoises in southern Nevada, what is the highest number we can assume? Additionally, how are we geographically defining "southern Nevada?"

Page 104, 2. You state that the expected level of take is based on "conservative" assumptions regarding development trends, tortoise habitat and populations. What is meant by "conservative" in this regard? Are you saying that development is likely to accelerate and take could be much higher, or are you implying just the opposite?

Page 104, 2. a. (2). You may want to also make mention of the level of disease found in the area.

Page 123. What are we asking of BLM in connection with the acquisition of grazing permits?

Page 131, 4. Again, the Home Builders would like a clear explanation regarding the need to keep the \$250.00 in place while adding the \$300.00 for the short-term.

I hope these comments prove useful to you. Again, I believe that this document is very much improved and I thank you for your efforts on behalf of the Clark County HCP.

Sincerely,



Terry Murphy  
Development Specialist



City of Boulder City  
P.O. BOX 367  
900 ARIZONA STREET  
BOULDER CITY, NEVADA 89005-0367

October 10, 1990

Ms. Jean Carr  
RECON  
1276 Morena Blvd.  
San Diego, CA 92110-3815

RE: REVISED DRAFT OF SHORT TERM HCP, OCTOBER 10, 1990

Dear Ms. Carr:

The following are the City comments on the revised draft HCP:

1. The City of Boulder City should be referenced properly, not as "Boulder".
2. Page 7, second paragraph, refers to issuance of a grading permit by the local agency. Jurisdictions issue "grading permits" in different manners and at different stages during development. If this is to be the recommended procedure, all jurisdictions (agencies) should be required to have similar "grading permit" procedures.
3. Note that Figure B and others now show the Eldorado Transfer Area as part of TMA 12.
4. Page 49, Figure 3, incorrectly references Lake Mead whereas it should reference Lake Mojave.
5. Page 55, Figure 5b, incorrectly references Lake Mead whereas it should reference Lake Mojave.
6. Page 109, Section 1(b)(2) states that the project proponent will arrange for the removal of the tortoises .... This language should be modified to be stronger and require (by using the word shall) that the project proponent ....
7. Page 113, Figure 14, and page 117, Figure 17, depict Exclusionary Zone 3 incorrectly as it does not cover all of the developed area of the City of Boulder City, specifically:
  - A. Industrial area of the City (Industrial Road, Foothill Drive and Yucca Street area).
  - B. Mobile home area south of US 93 (Gingerwood area).



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October 10, 1990

- C. Hemenway Valley area.
  - D. Golf Course area (Lewis Homes).
8. Pages 124 - 125, Section 1(d)(2) should state that the Eldorado Valley Transfer Area contains 105,000 acres not 115,000 acres.
  9. Pages 131 - 132 discuss the mitigation fees. The existing \$250.00 per acre are to fund the HCP. The proposed \$300.00 per acre fee is for the conservation and mitigation measures presented in the HCP. When will the \$250.00 HCP fee be eliminated? Or is it proposed that the fee be \$550.00 per acre? Section 3 on page 132 states that the \$250.00 per acre fee will remain through the permit period to provide funds for expansion. This needs further clarification.

Sincerely,



Jeffrey L. Patlovich, AICP  
Director, Community Development

JLP:mcc  
JP1055



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October 9, 1990

Jean Carr  
RECON  
1276 Morena Boulevard  
San Diego, CA 92110-3815

Dear Ms. Carr,

On behalf of the Sierra Club and the Natural Resources Defense Council (NRDC), I have reviewed the Final Draft of the Short Term Habitat Conservation Plan for the Desert Tortoise. Both Sierra Club and NRDC are in favor of the establishment of tortoise management areas on BLM lands; however, the present short term HCP is seriously flawed in that the land use controls in the TMA's will not be effective to protect the tortoise, and the mitigation proposed for the incidental taking of desert tortoises in Clark County is not adequate.

Both NRDC and Sierra Club strongly endorse the idea of eliminating grazing through the acquisition of grazing permits. It is uncertain, however, that the acquisition of grazing permits will eliminate grazing. Under BLM's interpretation of its grazing regulations, absent a provision in an applicable land use plan eliminating grazing as a permitted use, BLM deems itself obliged to approve new applications for grazing privileges. Even though grazing permits are acquired, there would be nothing to prevent others from applying for grazing permits and receiving them. The Tortoise Management Areas cannot be adequately protected unless BLM commits itself to immediate plan amendments that would close the tortoise management areas to grazing uses. Without such immediate actions not only would the tortoise not be adequately protected, but the moneys expended for the purchase of the grazing permits could be wasted. See C.F.R. § 4130.2.

It is widely recognized that ORV use is detrimental to the continued survival of the desert tortoise. It is not adequate to restrict ORV use to existing trails and roads,

Jean Carr  
October 9, 1990  
Page 2

for in some instances ORV use on existing trails or roads would be detrimental to the tortoise. BLM must commit itself, pursuant to existing law, to allow motorized vehicle use only on designated trails. BLM must commit itself to evaluating offroad vehicle use in each TMA and allowing that use (on positively signed designated trails and roads) only after a determination that such continued use is consistent with the survival of the tortoise.

BLM's promise to restrict intensive recreational use to existing areas designated for that purpose is not adequate. It is necessary to be assured not only that such areas will not expand, but that they can be contracted if necessary to preserve the tortoise.

Finally, unless there is a withdrawal of the lands in the TMA's from the operation of the Mining Law of 1872, pursuant to the withdrawal authority vested in the Secretary under the Federal Land Policy Management Act of 1973, the tortoise will not be sufficiently protected, for BLM does not deem itself to have the authority to prohibit mining activities from taking place on claims once there is a determination of a mining discovery. Clearly, BLM must commit itself to a widespread program of withdrawals in order to adequately implement the HCP to protect the tortoise.

The HCP does not contain adequate assurances that the tortoise will be adequately protected on public land in mitigation for the removal of the tortoise from, and its extirpation on, private lands in Clark County. The HCP neglects to mention that the Bureau is already under specific directions from Congress to take actions to protect the desert tortoise. P.L. 101-67, section 6, requires BLM to submit a report to Congress as to the funds and personnel required to fully implement BLM's Desert Tortoise Plan. BLM is also required to arrange for a soil survey of public lands in Clark County to assist in the implementation in such county of the Desert Tortoise Plan. The Secretary is additionally required to invite public proposals for the designation of areas of critical environmental concern whose designation would further the implementation of BLM's Desert Tortoise Plan. Finally, the Secretary is obligated to consider restricting or eliminating any uses of lands in the Paiute Valley which may conflict with the implementation of the Desert Tortoise Plan.

The HCP fails to mention these preexisting duties of BLM, fails to analyze the relation of these duties to the

Jean Carr  
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Page 3

HCP, and fails to determine whether BLM has satisfied the requirements of P.L. 101-67 with respect to the tortoise. To the extent that BLM has not undertaken adequate measures to implement its own Plan, promulgated prior to the tortoise's designation as threatened, it is doubtful whether BLM would adequately undertake and implement the land use controls set forth in the HCP. Sierra Club and NRDC are not aware that BLM has done anything to comply with the requirements of P.L. 101-67.

The CHP fails also to address the question of BLM's duties under the Endangered Species Act to protect the tortoise and its relation to the HCP. BLM has a duty, independent of the HCP, to conserve and enhance desert tortoise habitat by any combination of appropriate means, which can include designation of ACEC's, withdrawals, and regulatory controls over grazing, ORV's, and other uses of the public lands that might be detrimental to the tortoise. Thus, the land use controls necessary to protect the tortoise will be imposed in furtherance of BLM's duties under the ESA, not as part of the mitigation for a taking incidental to the section X permit for the HCP. It is critical to keep in mind this fundamental distinction in assessing the adequacy of the mitigation for the proposed incidental take. Creation of the tortoise management areas implements BLM preexisting duties under ESA.

The Endangered Species Act ("ESA") of 1973, 16 U.S.C. § 1531 et seq., is "the most comprehensive legislation for the preservation of endangered species ever enacted by any nation." Tennessee Valley Authority v. Hill, 437 U.S. 153, 180 (1978). A review by the Supreme Court of the "language, history, and structure of the [ESA]" convinced the Court "beyond doubt" that "Congress intended endangered species to be afforded the highest of priorities", and that "[t]he plain intent of Congress in enacting this statute was to

Jean Carr  
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halt and reverse the trend toward species extinction, whatever the cost." Id. at 174, 184.<sup>1</sup>

Passage of the ESA resulted from Congress' deep concern over the accelerating pace of species extinction. As noted by the Supreme Court, the legislative proceedings were "replete with expressions of concern over the risk that might lie in the loss of any endangered species." T.V.A. v. Hill, supra, 437 U.S. at 177 (emphasis in original).

Congress was aware that "the two major causes of extinction are hunting and destruction of natural habitat", and, moreover, that "[o]f these twin threats, . . . the greatest was destruction of natural habitats." T.V.A. v. Hill, supra, 437 U.S. at 179 (citations to legislative history omitted). See also Palila v. Hawaii Dept. of Land and Natural Resources, 639 F.2d 495 at 498 (9th Cir. 1981). The 9th Circuit has recognized the paramount importance that Congress attached to saving endangered species, and to habitat protection as a means to that end.

The goal of recovery of endangered species and protection of their habitat pervades the ESA. One of the purposes of the ESA, for example, is "to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved." 16 U.S.C. § 1531(b). "Conserve" means "the use of all methods" necessary to help endangered species recover, including

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1. T.V.A. v. Hill remains the only Supreme Court decision interpreting the ESA. In that case the Supreme Court affirmed a lower court injunction permanently halting a virtually completed dam for which Congress had already expended more than \$100,000,000, because filling of the reservoir would jeopardize the continued existence of the endangered snail darter, a small fish which had been discovered only after the dam was nearly complete. In reaction to this "snail darter case", Congress amended the ESA in 1978 by adding a complex procedure for exempting federally funded projects from the strictures of the ESA and by establishing a Cabinet level Endangered Species Committee empowered with the final decision on proposed exemptions. Pub. L. 95-632, § 3, codified at 16 U.S.C. § 1536(e)-(p). Congress did not, however, weaken any of the substantive requirements of the ESA or disapprove the Supreme Court's interpretation of the ESA in T.V.A. v. Hill. See, e.g., Roosevelt Campobello International Park v. U.S. EPA, 684 F.2d 1041, 1049 (1st Cir. 1982).

Jean Carr  
October 9, 1990  
Page 5

specifically "habitat acquisition and maintenance." 16 U.S.C. § 1532(3). In fact, "conservation", that is, recovery of endangered and threatened species,<sup>2</sup> is the primary goal of the ESA, and the conservation concept pervades the ESA.<sup>3</sup> The very first sentence of the ESA, for example, sets forth a Congressional finding that "various species of fish, wildlife, and plants in the United States have been rendered extinct as a consequence of economic growth and development untempered by adequate concern and conservation". 16 U.S.C. § 1531(a)(1) (emphasis added). The purposes of the ESA include "to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved", and "to provide a program for the conservation of such endangered and threatened species." 16 U.S.C. § 1531(b) (emphasis added). Moreover, Congress declared it to be its policy "that all Federal

---

2. The ESA defines "conserve", "conserving", and "conservation" to mean "to use and the use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to this chapter are no longer necessary" -- that is, to bring them to the point where they are no longer endangered or threatened. 16 U.S.C. § 1532(3).

3. In introducing the Conference Report for the 1973 ESA to the House, the House manager of the Bill, Congressman Dingell, stated:

Another example . . . [has] to do with the continental population of grizzly bears which may or may not be endangered, but which is surely threatened . . . . Once this bill is enacted, the appropriate Secretary, whether of Interior, Agriculture or whatever, will have to take action to see that this situation is not permitted to worsen, and that these bears are not driven to extinction. The purposes of the bill included the conservation of the species and of the ecosystems upon which they depend, and every agency of government is committed to see that those purposes are carried out . . . . [T]he agencies of Government can no longer plead that they can do nothing about it. They can, and they must. The law is clear." 119 Cong.Rec. 42913 (1973). (Emphasis added.)

437 U.S. at 183-184.

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October 9, 1990  
Page 6

departments and agencies shall seek to conserve endangered species . . ." 16 U.S.C. § 1531(c) (emphasis added).

As the Supreme Court has found, this goal of "halt[ing] and revers[ing] the trend towards species extinction, whatever the cost . . . is reflected not only in the stated policies of the act, but in literally every section of the statute." Tennessee Valley Authority v. Hill, *supra*, 437 U.S. at 184 (emphasis added). For example, Section 3(5)(A), 16 U.S.C. § 1532(5)(A), defines "critical habitat" as habitat that contains physical or biological features "essential to the conservation of the species" (emphasis added). Section 4(f), 16 U.S.C. § 1533(f), requires the Secretary of the Interior to "develop and implement" recovery plans "for the conservation and survival of endangered species and threatened species." Section 5, 16 U.S.C. § 1534, provides authority to the Secretaries of Interior and Agriculture to acquire property interests by purchase, exchange, or condemnation for the conservation of threatened and endangered wildlife. Section 6, 16 U.S.C. § 1535, requires the Secretary to cooperate "to the maximum extent practicable" with the States "for the purpose of conserving . . . endangered species or threatened species" (emphasis added). Section 7(a)(1), 16 U.S.C. § 1536(a)(1), requires federal agencies to "utilize their authorities in furtherance of the purposes of this chapter by carrying out programs for the conservation of endangered species and threatened species." See Carson-Truckee Water Conservancy District v. Clark, 741 F.2d. 257, 261-262 (9th Cir. 1984) (Secretary of Interior's decision not to sell water from Little Truckee River reservoir to cities in Nevada on grounds that this would jeopardize endangered fish upheld; ESA imposes an affirmative duty on the Secretary to take action to conserve endangered species.)

In summary: Section 2(c) of the Endangered Species Act, 16 U.S.C. § 1531(c); requires that "all Federal departments and agencies shall seek to conserve endangered species and threatened species and shall utilize their

4. As the district court in Carson-Truckee stated, in order to carry out their Section 7 mandate to conserve endangered species federal agencies "must do far more than merely avoid the elimination of protected species. [They] must bring these species back from the brink so that they may be removed from the protected class, and [they] must use all methods necessary to do so." 549 F.Supp. 704, 710 (D. Nev. 1982), *aff'd*, 741 F.2d at 261-262.

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authorities in furtherance of the purposes of this chapter."<sup>5</sup> Section 2(b) of the Act, 16 U.S.C. § 1531(b), states that "the purposes of this chapter are to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, [and] to provide a program for the conservation of such endangered species and threatened species, . . ." Section 7(a)(1) states in pertinent part that "the Secretary shall review other programs administered by him and utilize such programs in furtherance of the purposes of this chapter. All other Federal agencies shall, in consultation with and with the assistance of the Secretary, utilize their authorities in furtherance of the purposes of this chapter by carrying out programs for the conservation of endangered species and threatened species . . ." 16 U.S.C. § 1536(a)(1).

In Defenders of Wildlife v. Andrus, 428 F.Supp. 167 (1977), the Court held that the Secretary of Interior had an affirmative obligation, in administering programs for the hunting of waterfowl, to increase the populations of threatened and endangered species. The Court concluded:

It is clear from the face of the statute that the Fish and Wildlife Service, as part of Interior, must do far more than merely avoid the elimination of protected species. It must bring these species back from the brink so that they may be removed from the protected class, and it must use all methods necessary to do so. The Service cannot limit its focus to what it considers the most important management tool available to it, *i.e.*, habitat control, to accomplish this end . . . . Under the Endangered Species Act of 1973, the agency has an affirmative duty to increase the population of protected species.

428 F.Supp. at 170

In Carson-Truckee Water Conservancy Dist. v. Clark, *supra*, the Ninth Circuit rejected arguments made by the appellant that the Secretary's authority is defined solely by 7(a)(2), 16 U.S.C. § 1536(a)(2). The Appellant argued that 7(a)(2) authorized the Secretary only to take actions

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5. The term "conserve" is defined in Section 3(n) of the Act, 16 U.S.C. § 1532(3).



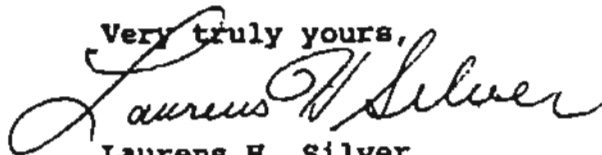
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that avoid "jeopardizing" the continued existence of a species. In rejecting that argument, the Court stated:

In addition to its § 7(a)(2) "jeopardy" provision, however, ESA also directs the Secretary to conserve threatened and endangered species to the extent that they are no longer threatened or endangered. Appellants, relying solely on § 7(a)(2), would have us ignore the other sections of ESA directly applicable here and relied on by the district court. Carson-Truckee II, 549 F.Supp. at 708-10. ESA § 2(b), (c), & § 3(3), 16 U.S.C. § 1531(b), (c), & § 1532(3). ESA § 7(a)(1), moreover, specifically directs that the Secretary "shall" use programs administered by him to further the conservation purposes of ESA. 16 U.S.C. § 1536(a)(1). Those sections, as the district court found, direct that the Secretary actively pursue a species conservation policy. See also Tennessee Valley Authority v. Hill, 437 U.S. 153, 184, 98 S.Ct. 2279, 2297, 57 L.Ed.2d 117 (1978) (ESA requires the Secretary to give highest priority to the preservation of endangered species; Congress intended to "halt and reverse the trend toward species extinction, whatever the cost." (emphasis added)).

When viewed in this light, the HCP becomes essentially a supplemental funding device whereby BLM obtains additional moneys not otherwise available through the appropriation process. These moneys, gathered from the collection of a development charge, become the principal mitigation component of the HCP, and the "price" developers have to "pay" for removal and taking of desert tortoises in Clark County.

Very truly yours,



Laurens H. Silver  
Sierra Club Legal Defense Fund

Johanna Wald  
Natural Resources Defense Council

LHS/kr

cc: Paul Selzer