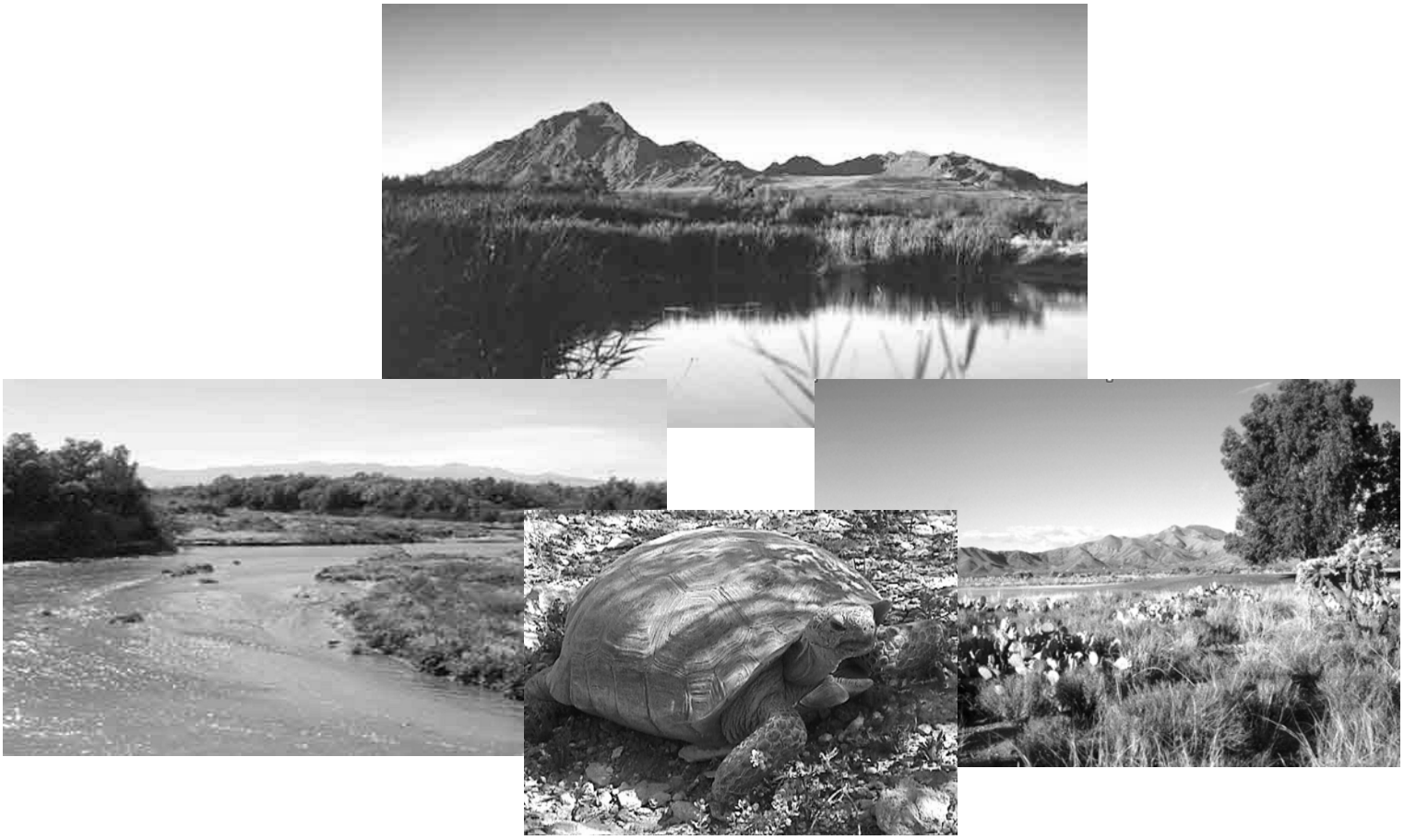

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# Conservation Element

## OF THE CLARK COUNTY COMPREHENSIVE PLAN

**Prepared by the**
**Department of Comprehensive Planning**

**Adopted by the Board of County Commissioners**
**December 19, 2000**

## USE OF THIS ELEMENT

The Clark County Conservation Element will provide general guidance to residents, property owners, developers, Clark County staff, the Planning Commission, and the Board of County Commissioners. Specific land use, service, and facility decisions will be based on this element coupled with the Land Use Plan and consideration to health; safety; general welfare; morals; character of the area; suitability for a particular use; availability of water and other resources; recognition of the value of particular buildings; property and natural resources; encouraging the most appropriate land use; and buffering different land uses.

**RESOLUTION OF THE CLARK COUNTY BOARD OF COUNTY COMMISSIONERS ADOPTING THE CONSERVATION ELEMENT**

**RESOLUTION**
**OF THE CLARK COUNTY BOARD OF COUNTY COMMISSIONERS**
**ADOPTING THE CONSERVATION ELEMENT OF THE COMPREHENSIVE PLAN**

WHEREAS, pursuant to NRS 278, the Clark County Board of County Commissioners (hereinafter referred to as the "Board") adopted the Clark County Comprehensive Plan in December 1983, which established a policy for separate town plans; and

WHEREAS, a certified copy of a report entitled Conservation Element as adopted by the Clark County Planning Commission has been received by the Board as specified in the Nevada Revised Statute 278.220; and

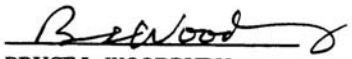
WHEREAS, on December 19, 2000, a public hearing was held by the Board of County Commissioners in accordance with Nevada Revised Statute 278.220 on the proposed element.

NOW, THEREFORE, BE IT RESOLVED by the Clark County Board of County Commissioners:

1. That the Board does adopt and accept the certified copy of the Conservation Element of the Clark County Comprehensive Plan.

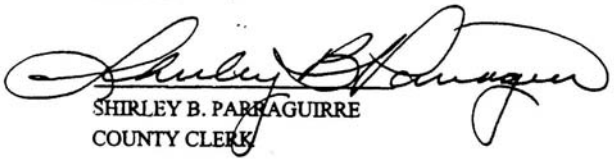
PASSED, ADOPTED, AND APPROVED this 19th day of December, 2000.

CLARK COUNTY, NEVADA

By: 

BRUCE L. WOODBURY
CHAIRMAN

ATTEST:



SHIRLEY B. PARRAGUIRRE
COUNTY CLERK

**RESOLUTION OF THE CLARK COUNTY PLANNING COMMISSION**

**ADOPTING THE CONSERVATION ELEMENT**

**RESOLUTION**
**OF THE CLARK COUNTY PLANNING COMMISSION**
**ADOPTING THE CONSERVATION ELEMENT OF THE CLARK COUNTY**
**COMPREHENSIVE PLAN**

WHEREAS, pursuant to NRS 278, the Clark County Board of County Commissioners (hereinafter referred to as the "Board") adopted the Clark County Comprehensive Plan in December 1983, which established a policy for separate town plans; and

WHEREAS, the Clark County Planning Commission (hereafter referred to as the "Planning Commission") is charged with the preparation and adoption of long-term general plans for the physical development of all unincorporated portions of Clark County, Nevada (hereafter referred to as the "County"), as specified by the Nevada Revised Statutes, Chapter 278.150 to 278.220 inclusive; and

WHEREAS, on November 9, 2000, a public hearing was held by the Planning Commission in accordance with Nevada Revised Statute 278.220 on the proposed element.

NOW, THEREFORE, BE IT RESOLVED by the Clark County Planning Commissioners:

1. That the Clark County Planning Commission does adopt and accept the Conservation Element as an amendment to the Clark County Comprehensive Plan.

PASSED, ADOPTED, AND APPROVED this 9th day of November, 2000.

CLARK COUNTY PLANNING COMMISSION

By: _____
CHAIR

ATTEST:
_____
EXECUTIVE SECRETARY

JW

# ACKNOWLEDGMENTS


**Board of County Commissioners:**
Bruce L. Woodbury, Chairman
Erin Kenny, Vice-Chair
Yvonne Atkinson Gates
Dario Herrera
Mary Kincaid
Lance Malone
Myrna Williams

**Planning Commission:**
Kirby Trumbo, Chairman
Richard Bonar, Vice-Chair
Charley Johnson
Bernard Malamud
Pam Mortensen
Reuben Neumann
Will Watson

**Comprehensive Plan Steering Committee:**
Michael Dias, Chair
Ron Newell, Vice-Chair
Curtis Alexander
Richard Bonar
Don Dickson
Leo Dupre
Robert Eliason
Ralph Hamilton
Dan Holt
Fred Hutt
Jennifer Lewis
Thomas Lisiewski
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# INTRODUCTION

## STATE LAW

The Nevada Revised Statutes (NRS) 278.160 defines the elements of the Comprehensive Plan. The Conservation Element is one of the four required elements of the Comprehensive Plan. Details describing the Element content are listed under NRS 278.160 (b).

## PURPOSE OF THE ELEMENT

The purpose of this element is twofold. First, it is a state mandate. Nevada Revised Statute 278.150 requires any jurisdiction with a Comprehensive Plan to have a component focusing on conservation. Secondly, Clark County has a history of planning for conservation and natural resource management and protection. These efforts have for the most part been singularly topic specific or part of a larger, broader plan covering many topics. The scope of this effort is to acknowledge and describe existing efforts and identify new areas for consideration. The proper stewardship of natural resources is vital to a community's quality of life and economic prosperity.

The policies suggested within the Element are purposefully broad and general. These policies are to provide direction for the development of more specific strategic efforts. It should be noted that many of the listed policies are restatements from Comprehensive Plan Task 6. Many of these policies are in various stages of implementation but, due to their applicability to the topics listed within the Conservation Element, were included in this document.

The Element's issues, opportunities and policies are divided by topic categories that list broad generalized statements first, followed by more detailed topic categories of Land, Water, Plants & Animals, and Air. They are in no particular order of priority or importance. For ease of use, the issues, opportunities and policies are included within the existing condition's chapter. A complete compilation of the issues, opportunities and policies of the Conservation Element are listed within Chapters 2 & 3.

## EXISTING PLANS

The following is a list of existing County documents that guide the County's conservation and natural resource management efforts.

- Carbon Monoxide Air Quality Implementation Plan
- Alternative Fuels Strategy
- Multiple Species Habitat Conservation Plan
- Comprehensive Plan Tasks 1-6
- Desert Conservation Plan
- Federal Lands Element
- 208 Water Quality Management Plans and Amendments
- Particulate Matter (PM 10) Attainment Demonstration Plan
- Water Resource Strategy

## ELEMENT DEVELOPMENT PROCESS

The development of the Conservation Element began with Department of Comprehensive Planning staff developing a general concept outline for the Element. Once the outline was in place an Advisory Team was assembled. (See acknowledgments page for Advisory Team members.) The Advisory Team guided the project lead in development of the draft Element. During this time, over forty-five agencies, committees and other groups were contacted for input. Presentations were made to the Clark County Comprehensive Plan Steering Committee keeping them abreast of the draft Element's direction. Additional public input was obtained through an "open house" meeting, via the County's web page, and through input from the Town Advisory Boards and Citizen's Advisory Councils.

# CHAPTER ONE- EXISTING CONDITIONS

Clark County, Nevada and in particular the Las Vegas Valley, has seen robust growth since 1930. For the last 20 years, the Las Vegas Valley's growth rate has averaged about five percent annually. This extended period of growth has posed many challenges for our area's natural resources including air quality, water resources, solid waste, wastewaters, wildlife habitat and open space. Additionally the Las Vegas Valley's tourist based industry brings millions of visitors to the area every year. This industry presents unique challenges to the area environment by placing additional needs upon our resources to provide needed services. Implementation of sound environmental policy is paramount for continued prosperity.

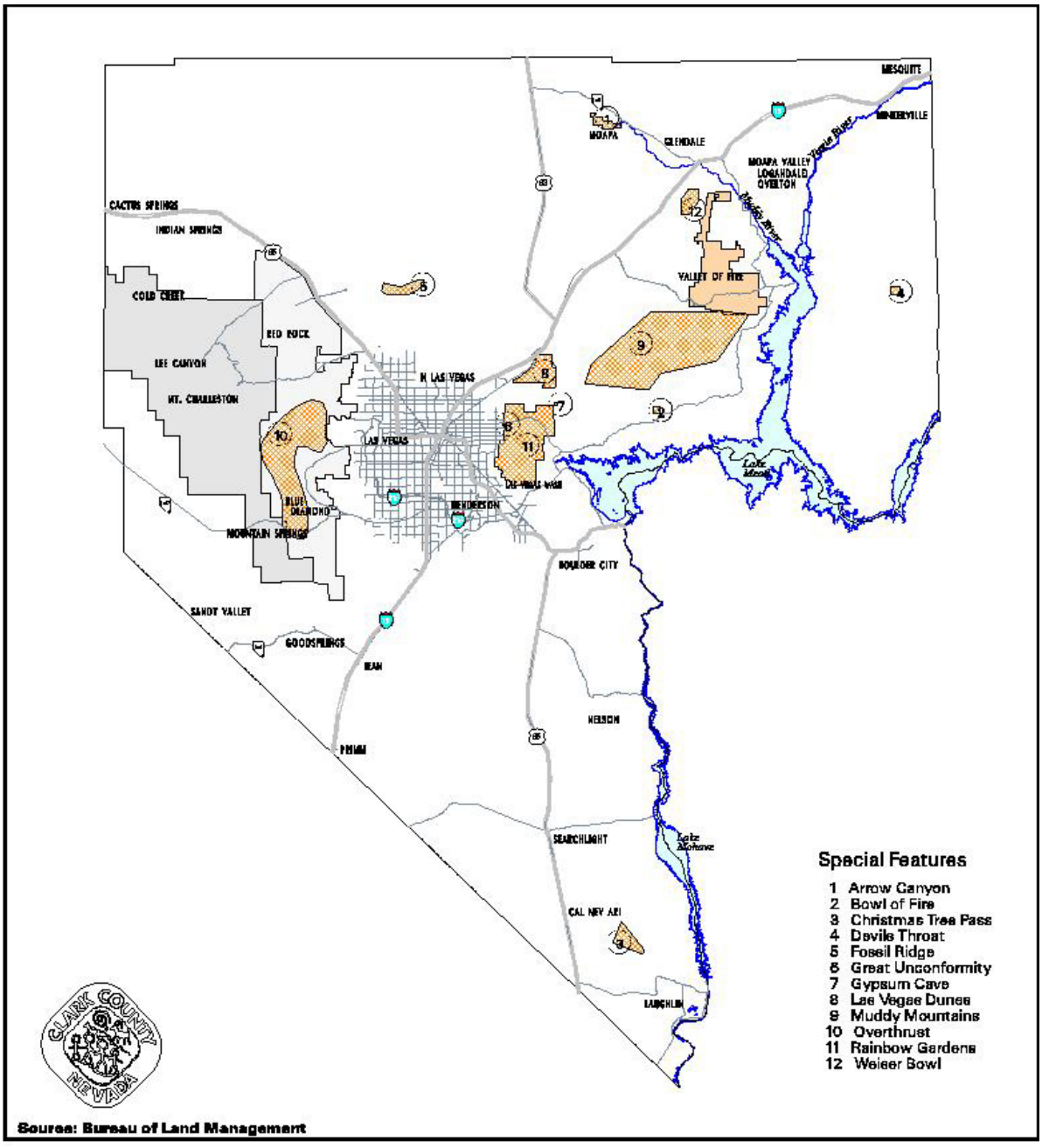
## LAND RESOURCES

### Geology

Clark County lies within the Basin and Range Province near its juncture on the east with the Colorado Plateau. "Basin and Range Topography" is the characteristic landscape, exhibiting rugged, parallel ranges and valleys which generally drain internally. Broad alluvial aprons span the expanse between the level lowlands of the valley floors and the surrounding mountains. The geology of the area is extremely complex, exhibiting the cumulative effects of volcanic activity, periods of sedimentation, tectonic activity (deformation of the earth's crust), and erosion. Examples of these occurrences are visible throughout Clark County.

#### UNIQUE GEOLOGIC FORMATIONS- See Map 1

Clark County is considered one of the most unique geological areas in the world. The formations are important educational, recreational and aesthetic value to the area. Areas such as Red Rock Canyon National Conservation Area, Valley of Fire State Park, Spring Mountains, Arrow Canyon, Rainbow Gardens, the Great Unconformity, and the Weiser Bowl represent special resources in the region. Other formations found within Clark County include numerous limestone caves popular with area spelunkers. Many caves are not well publicized or mapped to protect them from over-use and vandalism and for citizen safety considerations.




# Clark County Unique Geological Features

Special Features

Red Rock Canyon National Conservation Area

Spring Mountains

15 mi 30 mi 45 mi

0

Plot created on: September 13, 2001

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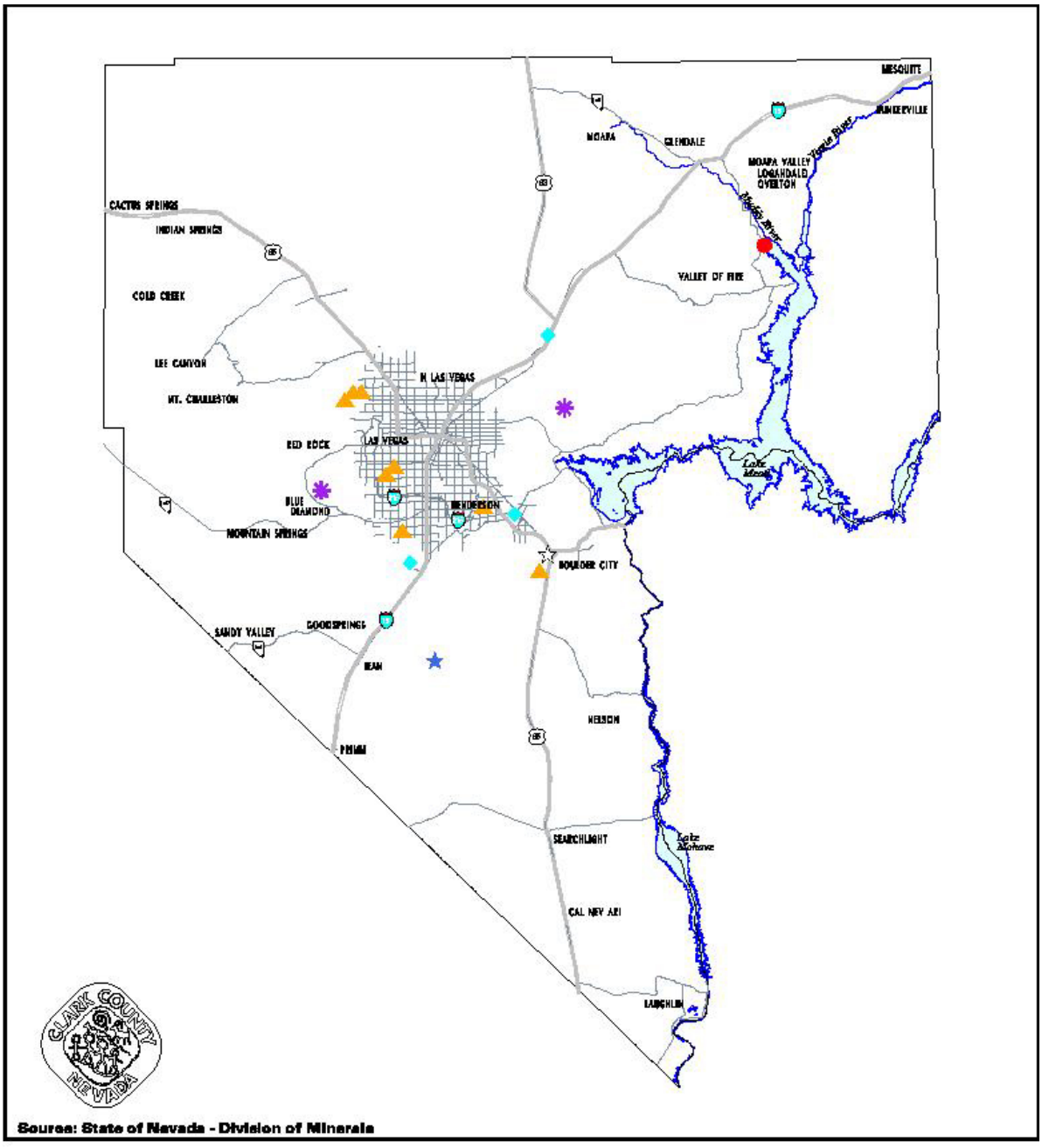
Map 1




Source: State of Nevada - Division of Minerals

# Clark County Mining Operations

- Gypsum
- Limestone Dolomitic
- Sand & Gravel
- Crushed Stone
- Light Weight Aggregate
- Silica Sand

Plot created on:
September 13, 2001

15 mi 30 mi 45 mi
0

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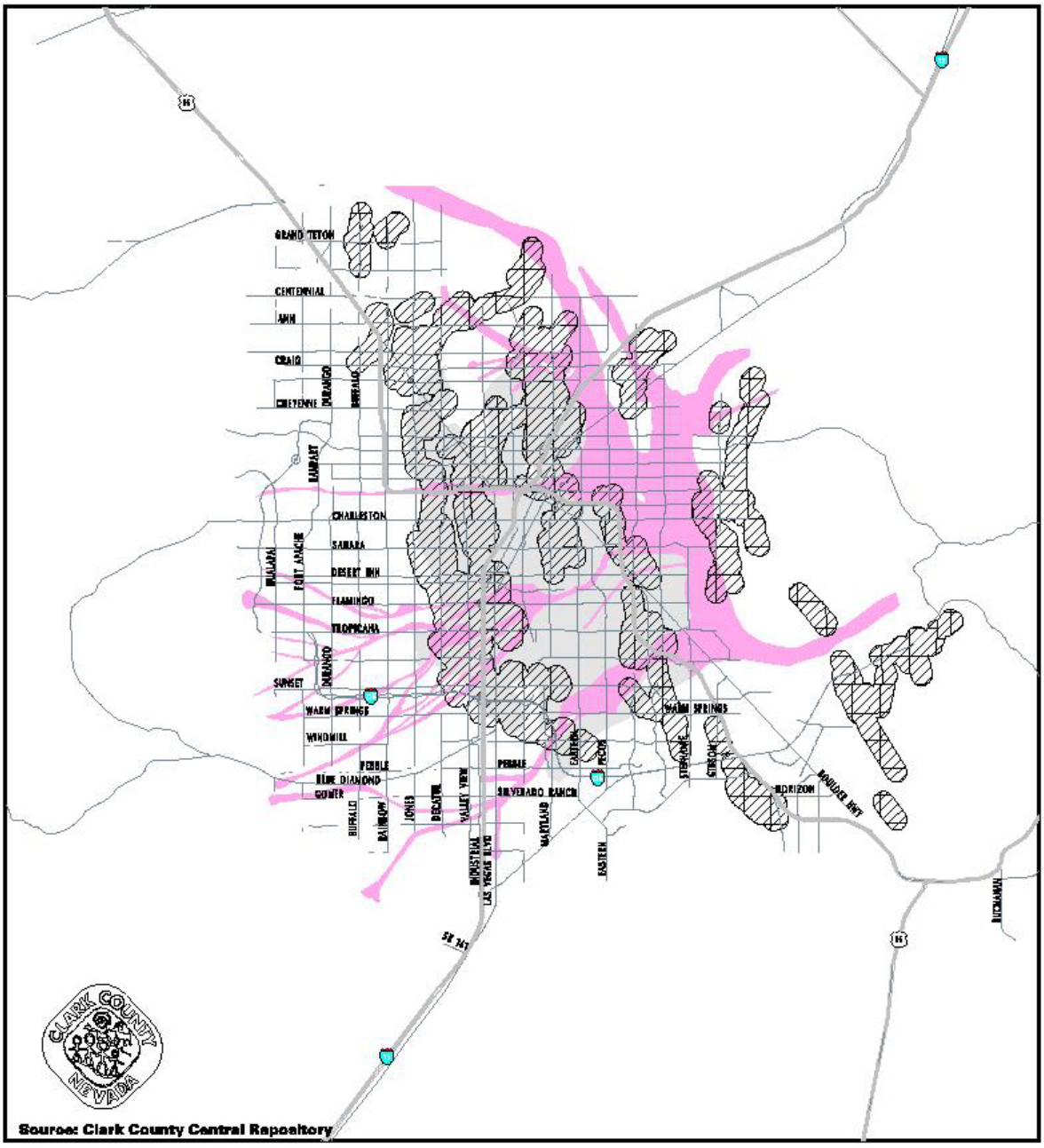
Map 2




# Las Vegas Valley Soil Guideline

Special geotechnical consideration area. Solubility, clay swell, corrosion, gypsum salt, expansive or hydro-collapsible potential

Special geotechnical consideration area. Potential drainage areas or recent sediment deposits. May also have solubility, clay swell, corrosion, gypsum salt, expansive or hydro-collapsible potential

Special geotechnical consideration area. Subsidence and 2000 foot compaction or seismic fault buffer zone (includes 90% of mapped fissures.)

0 5 mi 10 mi 15 mi

Plot created on: September 13, 2001

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**Map 3**

### MINERAL RESOURCES- See Map 2

Mineral resources in Clark County have been extracted since the discovery of lead ore at the Potosi mine in 1855. Since that time, a variety of metallic and nonmetallic minerals have been discovered in the County. Although the area is more widely known for gold and silver mines, the extraction of nonmetallic minerals used for building materials, such as gypsum, limestone, silica sand and gravel dominates today. Over 17 million tons of aggregate (sand, gravel and crushed stone) was produced in Clark County in 1997, generating over $23 million dollars in revenue. Gypsum comprises the second most profitable mineral resource in Clark County, generating revenues in excess of $6.5 million dollars.

The most important source of Las Vegas area aggregate is the Lone Mountain area, northwest of Las Vegas. Once located a considerable distance from heavily urbanized areas, the impact of Lone Mountain aggregate operations, particularly on residential traffic, is now coming under scrutiny due to encroaching urbanization. Significant production continues to come from sites located in more heavily urbanized parts of the Las Vegas metropolitan area, but it is likely that future production will come from more distant sources. Since 1997, common aggregate has been hauled into Las Vegas from sites as far as 50 miles away in Lincoln County.

**Opportunities**

4 Clark County's unique geologic and mineral formations can be protected to preserve their scientific, recreational and aesthetic value.

**Policies**

CON 2.2 Encourage preservation of unique geologic and mineral formations for educational, scientific and other public purposes.

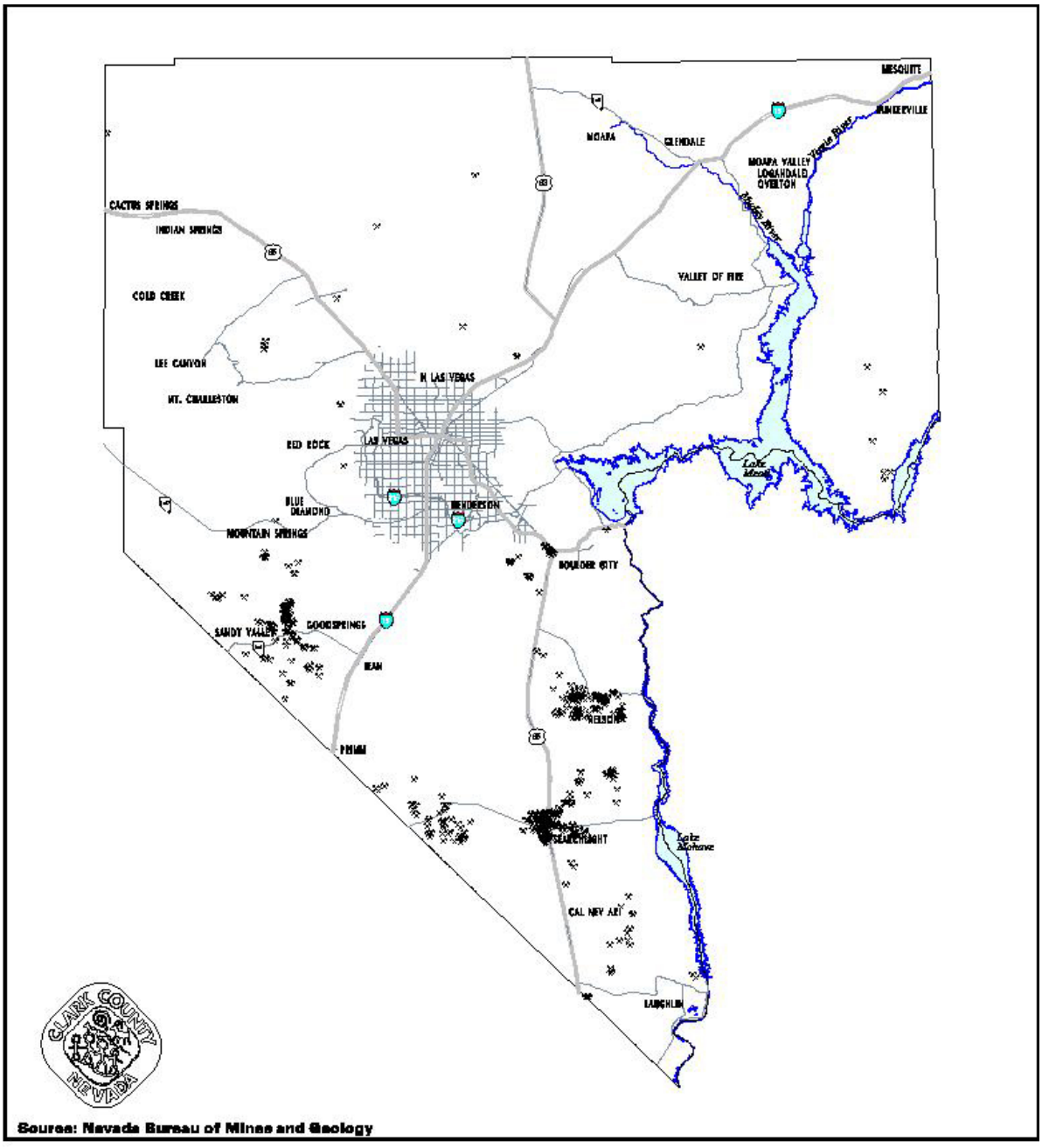
CON 2.2 Identify areas of valuable mineral resources and protect for future resource development.

## Land Related Hazards

### SOILS- See Map 3

*Shrink-Swell Potential* indicates the volume change to be expected with a change in moisture content. Increases in moisture content combining with plastic fines (clay laden deposits), organic matter or sodium sulfate (salts) in the soil cause swelling. Conversely, decreases in moisture content cause soil shrinkage. Fluctuations of this nature can severely alter structural integrity. With the exception of a few areas, high shrink-swell potential exists throughout the Las Vegas Valley.

*Permeability* is a measure of the capacity of a soil to transmit water. It is mainly a function of soil texture but is also related to soil water content, vegetation, and interparticle chemical deposits. Generally, the larger the soil particles, the larger and more interconnected the interparticle spaces through which water can percolate. It follows that high permeability is characteristic of sand, whereas low permeability is characteristic of clay, especially compacted clay. Permeable conditions can cause a variety of structural problems. Clark




Source: Nevada Bureau of Mines and Geology

# Clark County
# Abandoned Mines

⚒ Abandoned Mine Shafts

Plot created on:
September 13, 2001

15 mi 30 mi 45 mi
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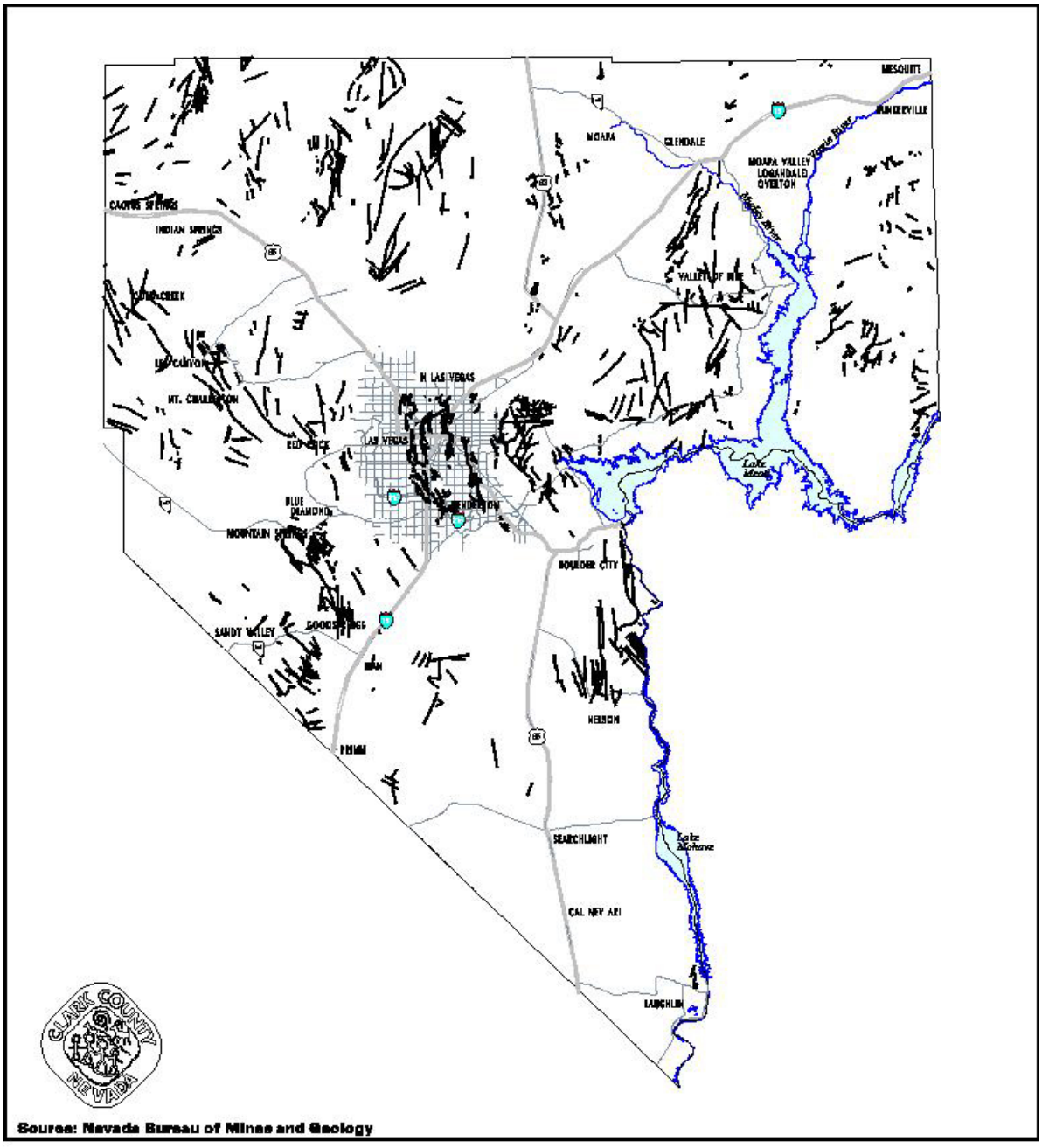
**Map 4**




Source: Nevada Bureau of Mines and Geology

**Clark County**

**Known Geologic**

**Faults**

Known Fault Lines

Plot created on:
September 13, 2001

15 mi 30 mi 45 mi
0

*This information for display purposes only.*
*No liability is assumed as to the accuracy*
*of the data delineated hereon*

**Map 5**

County and in particular, the Las Vegas Valley experiences soil conditions that contain a high degree of caliche, which exhibits non-permeable characteristics not suited for septic tanks or other leach dependent underground tank apparatus.

*Bearing Capacity* or degree of limitation for foundations or structures depends largely on the strength and consolidation characteristics of the soil material. Areas designated as having severe to moderate foundation stability limitations are located in, but are not limited to, the following three general areas: east of the urban area extending southwest from the alluvial apron of Frenchman Mountain to Las Vegas Wash, north from North Las Vegas between the Union Pacific roadbed (extending northeast) and Tonopah Highway (northwest), and southwest of Boulder Highway along Duck Creek Wash and Whitney Mesa.

*Chemical Composition* is a variant factor in soil formation and is directly attributable to the parent material. Saline and gypsiferous soils occur throughout Clark County. The hazard of damage to concrete by sulfate depends on the amount of gypsum and sulfate minerals in the soil. Las Vegas Valley concentrations generally exceed 1,500 to 2,000 parts per million and not only cause concrete to deteriorate but also contribute to the shrink-swell hazard in some portions of the Las Vegas Valley. Map 3 contains locations of soil types that present significant engineering considerations prior to development.

## SUBSIDENCE

Subsidence in the Las Vegas Valley is a gradual sinking of the surface due to subsurface water reduction, compaction, and actual elastic movement of the soil. Influence by man or natural forces can cause subsidence. Because groundwater is one of the weight supporting components of soil, its reduction results in a volumetric decrease of soil. Overdrafting of groundwater in some areas has resulted in subsidence in the Las Vegas Valley. The Southern Nevada Water Authority (SNWA) has introduced a program of artificial recharge as a water resource strategy that has helped maintain water levels and reduce subsidence. Subsidence also occurs along natural geologic faults and fissures.

## ABANDONED MINES-See Map 4

Today, mining companies are required to reclaim the land and secure any hazardous conditions that may exist around their mines. However, several thousand historic abandoned mine sites still exist throughout Clark County. The Nevada Division of Minerals, along with the Bureau of Land Management (BLM), Clark County and local mining companies have been actively locating abandoned mine entrances to prevent physical safety hazards, particularly near urban population centers. However, many of the mines discovered have become important habitat for area bat populations. The majority of these mines are clustered in and around the Goodsprings, Searchlight and Nelson communities and south of Railroad Pass and the Black Mountains in the Henderson area.

## FAULTS/SEISMICITY-See Map 5

Faulting can be described as the movement of one piece of the earth's crust in relation to another piece along an identifiable plane: the fault. The Las Vegas Valley and the surrounding mountains contain examples of the two major fault types, tectonic and compactive. Tectonic faults are related to the crustal deformation which characterized the

formations of the Great Basin. These faults are and generally have been tectonically inactive for many years. Although no major earthquake has occurred in Clark County, strong earthquakes originating in west central Nevada and in Southern California have been felt in Clark County and the Las Vegas Valley. All but two of the earthquakes recorded in southern Nevada have been of magnitudes less than 4.0 on the Richter Scale. The other two, recorded in the Las Vegas/Henderson area, were 5.0 and 5.9 on the Richter Scale.

## FLOODING/FLOODPLAINS- See Map 6

Flooding in the form of flash floods has been a recurrent problem in Clark County. In addition to generally impermeable soils, expanded urbanization and increases in impervious surfaces have intensified runoff and led to extensive erosion. This erosion occurs as lateral stream bed channel cutting, undercutting of culverts, roads, and structures, and gully erosion. The eroded materials are deposited not only on private and public properties, but also at the confluence at Las Vegas Bay. Flash flooding hazards also exist for the smaller washes throughout Clark County. Flash floods may exhibit highly localized characteristics, caused by highly intense rainfalls in particularly small areas for short periods. The greatest potential flood hazard exists in the Las Vegas Valley where a large population and intensive urbanization aggravate the potential hazard to lives and property.

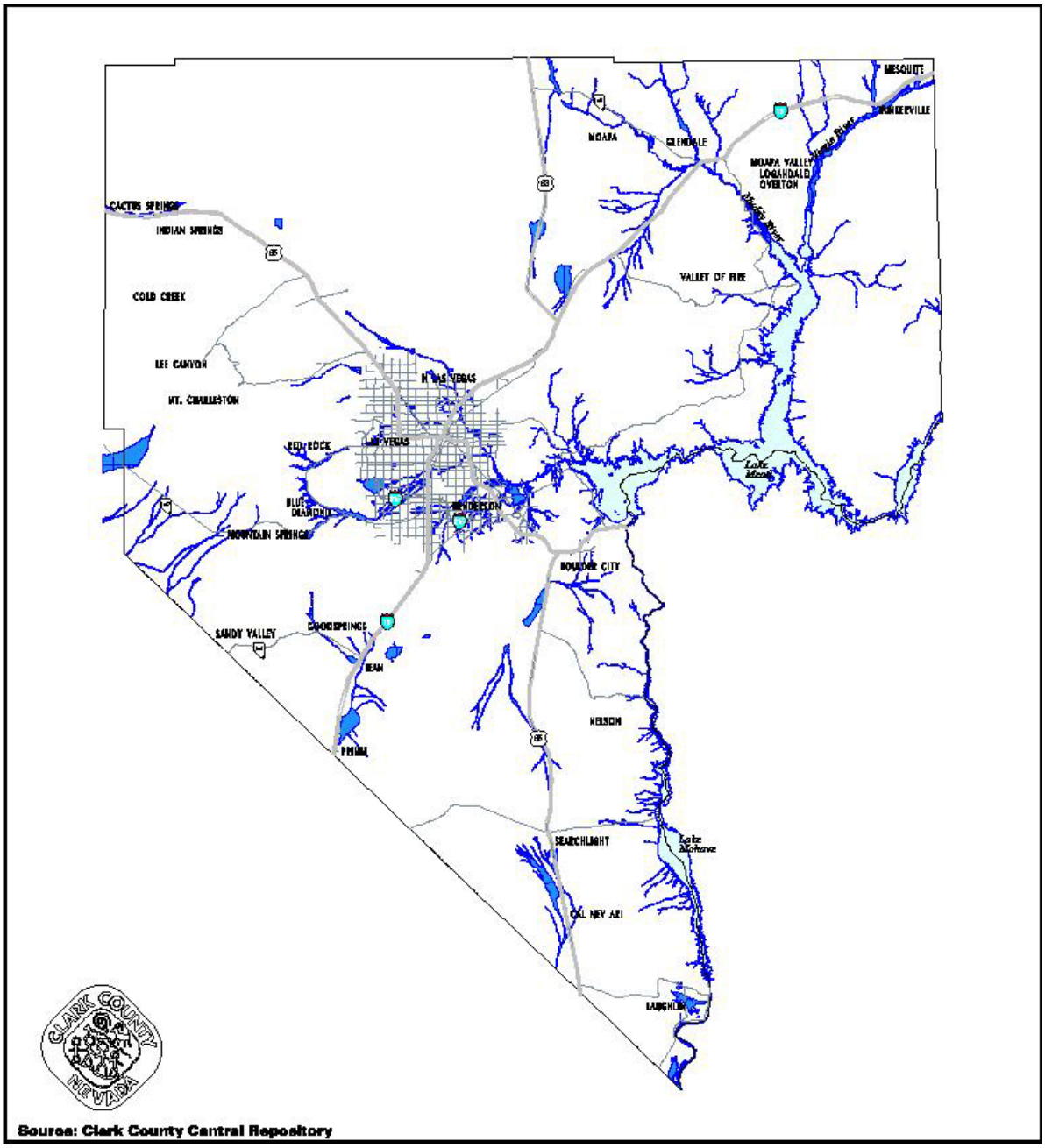
The Clark County Regional Flood Control District (District) was created by the Nevada Legislature in 1985 in response to severe flooding problems in the County. The District is responsible for developing and implementing a comprehensive flood control master plan to alleviate flooding problems. The Clark County Regional Flood Control District's Flood Control Master Plan was developed to handle issues associated with flood control within Clark County.

## SHALLOW GROUNDWATER

Hazards associated with shallow groundwater are caused by the natural artesian conditions that existed in the Las Vegas Valley prior to significant groundwater pumping and infiltration from landscape irrigation. There are approximately 37 permanent permits issued through the Nevada Division of Environmental Protection (NDEP) to dewater properties in the Las Vegas metropolitan area. Although not well defined, shallow groundwater has risen to the point of surfacing in areas throughout the southeastern portion of the Las Vegas Valley within Clark County and the City of Henderson and has caused structural damage to property.

## CONTAMINATION

Over the years, several major commercial and industrial companies established their operations within the boundaries of Clark County. With environmental regulation being a relatively recent evolution within federal law, companies disposed of hazardous and non-hazardous waste materials by dumping either to the land or water. As a result of historic improper waste disposal, leaking underground storage tanks and chemical spill accidents, remediation activities are ongoing within Clark County. Other contaminated sites are discovered as development increases disturbance to the surrounding environment. Chemical materials that are found include petroleum-based products, metals, solvents, polychlorinated biphenyl and dioxin.




# Clark County
# 100 Year
# Flood Plain

FEMA Flood Plain

Plot created on:
September 13, 2001

15 mi 30 mi 45 mi
0

*This information for display purposes only.*
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Map 6

Illegal dumping of solid waste continues to occur throughout Clark County. Trash and construction debris are found particularly in areas surrounding new development and in outlying areas that are not serviced by Republic Silver State Disposal Services. Republic Silver State's convenience centers operate on a charge per cubic yard further encouraging desert dumping. Clark County does not mandate curbside trash pick up for every residential home. Desert dumping is a large contributor to land and water contamination and contributes to flooding by clogging stormwater culverts and drains.

**Issues**

- Various soil conditions exist in portions of Clark County that are not favorable for development without engineering mitigation.
- Over pumping the principal and intermediate aquifers contribute to subsidence in the Las Vegas Valley.
- Abandoned mines continue to be a significant safety hazard in many areas of Clark County.
- Some abandoned mines provide habitat to area bat populations.
- Many seismic fault lines are present within Clark County that may pose design and engineering considerations prior to development.
- Flash flooding is a significant safety hazard in many areas of Clark County.
- Increasing amounts of impervious surfaces throughout Clark County may increase surface runoff quantities and velocities.
- Some land within Clark County is not favorable for development due to groundwater issues.
- Shallow groundwater levels are rising to land surface in certain areas of the Las Vegas Valley causing damage to area structures.
- Illegal dumping of trash and construction-related debris continues in Clark County.

**Opportunities**

5 Appropriate land use considerations can be given to areas prone to geologic and hydrologic hazard.

6 Use of subsurface drainage systems and similar engineering techniques may enable surfacing groundwater hazards to be mitigated in areas already developed.

7 Development can be limited in areas adversely affected by shallow groundwater.

**Policies**

CON 2.3 Identify and encourage appropriate development in geologic or hydrologic hazard areas.

CON 2.4 Establish development design standards that recognize constraints of extreme soil characteristics.

CON 2.5 Promote identification and appropriate mitigation of abandoned mines considering public safety and wildlife habitat needs.

CON 2.6 Development approval should be conditioned upon mitigation of risks to life and property from geologic faults.

CON 2.7 Encourage practices that minimize hazards to life, property and natural resources caused by stormwater runoff.

CON 2.8 Prepare controls and standards in regions with rising shallow groundwater.

CON 2.9 Increase enforcement to eliminate illegal dumping.

# AGRICULTURE

## FARMLAND

Clark County experiences high winds and temperatures, is very arid, and has very erodable and alkaline soils. For these reasons Clark County has no federally designated areas of prime farmland. Prime farmland has more developmental controls as established by the United States Department of Agriculture (USDA). Areas of the County used as farmland primarily for livestock grazing purposes are generally located in Northeast Clark County along the Muddy and Virgin River Valleys.

## SOIL MANAGEMENT

Management of agriculture areas produces a variety of issues that can affect the environment. Runoff from irrigation increases sediment and contaminant transport. Contaminants routinely found include herbicides, pesticides, fecal coliforms and nitrates. The USDA publishes material outlining best management practices that area agricultural and livestock communities can employ to deter such contaminant migration. Management practices include use of landscape buffering and vegetative swales.

## RANGELAND

The Bureau of Land Management (BLM) regulates livestock grazing on public properties through issuance of grazing allotments. Currently five grazing allotments exist that are not heavily used due to desert tortoise concerns. The Moapa Tribal Indian Reservation currently utilizes the largest allotment of seventy thousand acres with a small herd of approximately fifteen cattle. The majority of rangeland used within Clark County is for wildlife purposes. Animals such as feral horses, burros, mule deer and desert big horn sheep are managed by BLM within designated Herd Management Areas as specified in BLM's Las Vegas Resource Management Plan. The Spring Mountains National Recreation Area, Lake Mead National Recreation Area and the Desert Bighorn Sheep Range are closed to livestock grazing for environmental reasons.

## TIMBER & FUELWOOD

Historically the wood resources within the Spring Mountains National Recreation Area and the Desert Bighorn Sheep Range were harvested for charcoal production, construction material and firewood. Today the only permitted use of timber is non-commercial firewood for family/household use from dead trees. Green fuelwood areas are established throughout the Spring Mountains to provide residential firewood and improved habitat for wildlife.

**Issues**

- There are no federally designated prime farmlands in Clark County.
- Pollutants such as phosphates and nitrates carried in agricultural and landscaping runoff contributes to groundwater and surface water pollution.

**Opportunities**

8 Use of vegetative or constructive buffering surrounding area landscapes and farmland will limit the amount of wind erosion and irrigation runoff.

**Policies**

CON 2.10 Promote agricultural/farmland practices that reduce soil runoff and wind erosion.

## Solid Waste

### LANDFILLS, TRANSFER STATIONS AND CONVENIENCE CENTERS- See Map 7

Clark County has two active waste management facilities servicing solid waste disposal needs in the Las Vegas Valley: the APEX Regional Waste Management Center and Silver State Recycles Nevada. The Laughlin Landfill services Laughlin. Virgin Valley Disposal provides waste pickup service for Mesquite and Bunkerville. Virgin Valley Disposal uses landfill facilities located within Lincoln County.

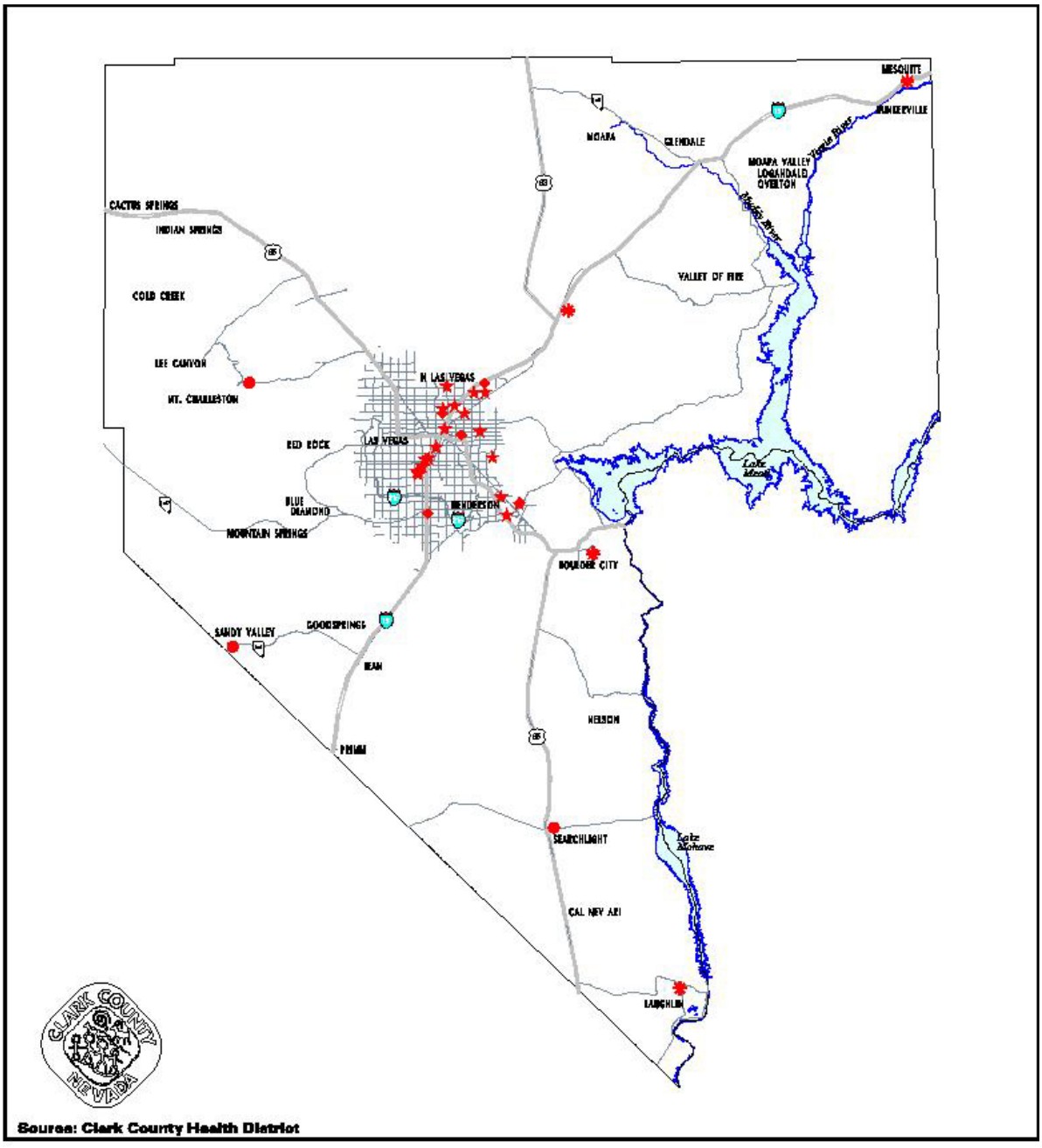
The APEX Regional landfill started accepting waste in October 1993 with the closure of the Sunrise Landfill. The 1,202-acre landfill was designed with a refuse capacity of approximately 784 million cubic yards and a service life of 85 years. The APEX Regional Landfill accepts municipal solid waste, treated sewage sludge, and treated medical waste. The Industrial Waste Landfill, which is part of the APEX facility, accepts household hazardous chemicals, asbestos, regulated non-hazardous wastes, and construction & demolition debris. The Soil Treatment Facility, also part of APEX, treats hydrocarbon-contaminated soils for re-use as daily cover at the Industrial Waste and Regional Landfills. The Laughlin Landfill started accepting waste in 1987. The currently utilized 40-acre landfill, including an additional 40-acre planned expansion, was designed with a refuse capacity of approximately 6 million cubic yards and a service life of 32 years.

There are currently five (5) transfer stations (Cheyenne, Shelborne, Black Mountain, Sloan and Henderson) and three (3) convenience centers (Searchlight, Mount Charleston, and Sandy Valley) in Clark County. Transfer stations act as temporary consolidation and holding areas for residential solid waste for the convenience of Republic Silver State Disposal Service. Convenience centers are located throughout rural Clark County and are smaller collection points for the convenience of residential customers. Solid waste collected at transfer stations and convenience centers is then transferred to the Apex Regional Waste Management Center for permanent disposal. See Map 7 for landfill, transfer station, convenience center and recycling facility locations within Clark County.

### RECYCLING & SOURCE REDUCTION

Recycling is the diversion or removal of materials from a solid waste stream in order to reuse it in the same way or for a different purpose. Source reduction is any action that reduces the amount of solid waste to be collected. Examples of source reduction include using materials designed with longer life spans or less packaging.

The Nevada Environmental Commission (NEC) establishes recycling rate goals for the State of Nevada. Current recycling rate goals for Nevada and Clark County are 25%. The actual recycling rate for Clark County is 8%. The NEC works with the Nevada Division of Environmental Protection (NDEP), the agency responsible for implementing and enforcing regulations adopted by the NEC. NDEP has designated the Clark County Health District as the local solid waste management authority. However, because the recycling rates are goals




Source: Clark County Health District

# Clark County Active Solid Waste Disposal Sites

Map 7

- Municipal Landfills
- Transfer Stations
- Convenience Centers
- Recycling Centers

0 15 mi 30 mi 45 mi

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and not mandates, enforcement is not plausible. Republic Silver State Disposal Services offers curbside recycling services to its residential customers and some businesses including the casino industry.

## RECLAMATION

The Board of County Commissioners has directed staff to expedite the acquisition of the Sunrise Landfill site from the BLM. Staff is analyzing which land acquisition option that it will use. An environmental assessment will identify the extent and perimeter of the lands that are occupied or impacted by waste at the Sunrise Landfill site. Once completed, the County will submit a formal request to purchase the property from BLM. Staff is initiating a process for developing a future alternative use for the Sunrise Landfill site. The first step in this process will be to determine developer, stakeholder, and community interest in regards to potential end use. The types of encouraged plans will include public and recreational purposes.

## HAZARDOUS WASTE

Hazardous waste is generated from many commercial, industrial, and even residential processes. Products such as batteries, paints, solvents, and even certain household cleaners exhibit characteristics such as flammability, corrosivity, ignitability, and toxicity that require special disposal restrictions. Hazardous wastes can not be disposed of in any landfill within Clark County. These types of wastes either require special treatment to lessen their hazardous characteristics prior to landfilling, or the wastes must be shipped to appropriate landfills outside of Clark County. NDEP has authority over hazardous waste within Clark County and has established various processes and programs to help our community to reduce the quantities of this waste stream. Republic Silver State Disposal Services offers a household hazardous waste program to its residential customers. The nuclear waste issue is not a component of this Element.

**Issues**

- Residential recycling currently produces more recycled material than businesses in Clark County can economically utilize.

**Opportunities**

9 Recycling and source reduction/product substitution programs can be effective in reducing quantities of landfilled waste, potentially extending the operational life of current landfill sites within Clark County.

10 Greater efforts can be made to attract businesses that can use recycled materials to reduce amounts of landfilled waste.

11 Closed public landfill facilities may provide a significant amount of open space and recreational opportunities with appropriate engineering controls.

**Policies**

CON 2.11 Promote compatibility of land use in areas surrounding landfills, transfer stations and convenience centers.

CON 2.12 Encourage programs that reduce the amount of landfill and hazardous waste generated.

CON 2.13 Encourage reclamation and recreational use of closed landfill facilities.

CON 2.14 Encourage businesses that recycle materials to locate in Clark County.

## Environmentally Sensitive Areas

### STEEP SLOPE- See Map 8

Slope severity is a determining factor in planning future land uses from both a geotechnical and a hydrological viewpoint. Development of lands with a slope of greater than 1:2 (1-foot vertical for every 2-foot horizontal) is constrained by the Uniform Building Code. Clark County regulations are similar, requiring specific engineering site improvements if the grade is 1:2 or greater. Problems related to slope usually are addressed by limiting urban density as the slope increases. The majority of developed land in the Las Vegas Valley is situated on nearly level to moderately sloping terraces. Areas of steep slope within the Las Vegas Valley are found along the sides of major washes, Whitney Mesa, and the mountainous areas on the fringes of the valley. Clark County code requires special engineering considerations prior to development on areas with a slope greater than or equal to 12%.

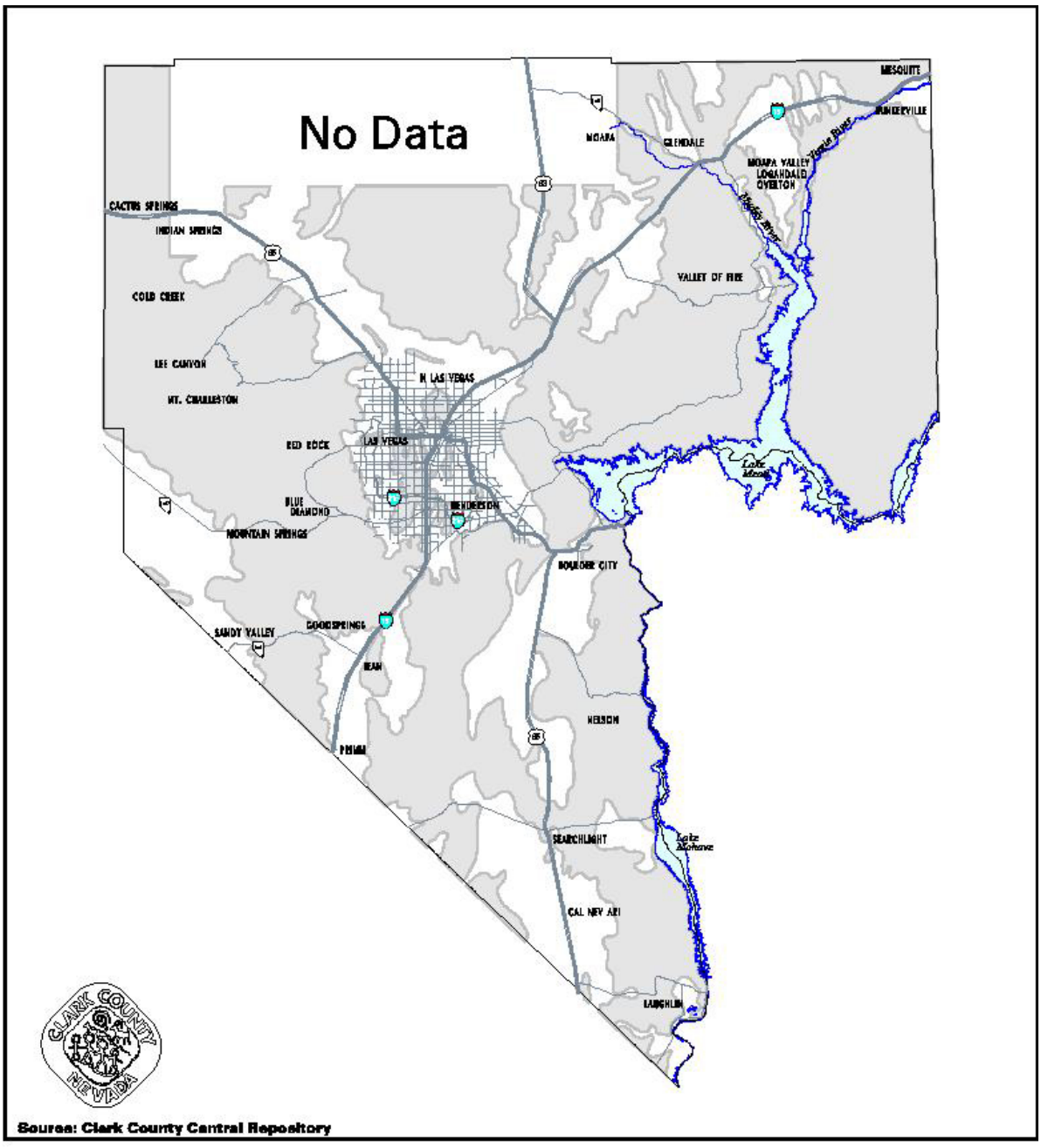
### DESIGNATED LAND MANAGEMENT AREAS- See Map 9

Of the 5.12 million acres of land in Clark County, about 4.6 million acres are administered by six Federal agencies, including the Bureau of Land Management (BLM), the National Park Service, Fish and Wildlife Service, Air Force, Forest Service, and the Bureau of Reclamation. Some of these areas are important recreational areas for the citizens of Clark County and habitat areas for a vast variety of species. Open space is integral to maintaining the quality of life that residents of Clark County enjoy and expect. The Clark County Federal Lands Element further describes these agencies and their cooperative relationship with Clark County. Other entities including the State of Nevada and the Las Vegas, Moapa and Fort Mohave Tribes, administer smaller land management areas as well. These include the Valley of Fire State Park and the respective reservations. Clark County, as well as the Cities of Las Vegas, North Las Vegas, Henderson, Boulder City and Mesquite, regulate the use of private lands in their respective jurisdictions.

Clark County is divided into Community Districts through the Community District Element of the Comprehensive Plan. Community District 6 (CD6) is defined as an open space and conservation district. This classification identifies areas of limited development potential. The purpose of the district is to preserve areas for open space or recreational purposes and to protect public health and safety. Areas designated CD6 may have some extremely low density residential uses but should not be considered for future commercial or industrial uses. Lands having steep slopes or that are federally reserved areas are considered extensions of CD6 unless otherwise noted within the area's respective land use plan.

**Issues**

- Development in areas with a slope of greater than or equal to 12% need careful design considerations to avoid safety, environmental and facility issues.
- Development is occurring near several environmentally sensitive areas, such as the Lake Mead National Recreation Area, Red Rock Canyon National Conservation Area, Las Vegas Wash, and Bureau of Land Management Critical Environmental Concern and Wilderness Study Areas.




**Clark County**

**Steep Slope**

Slope gradient greater than or equal to 12%

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15 mi 30 mi 45 mi
0

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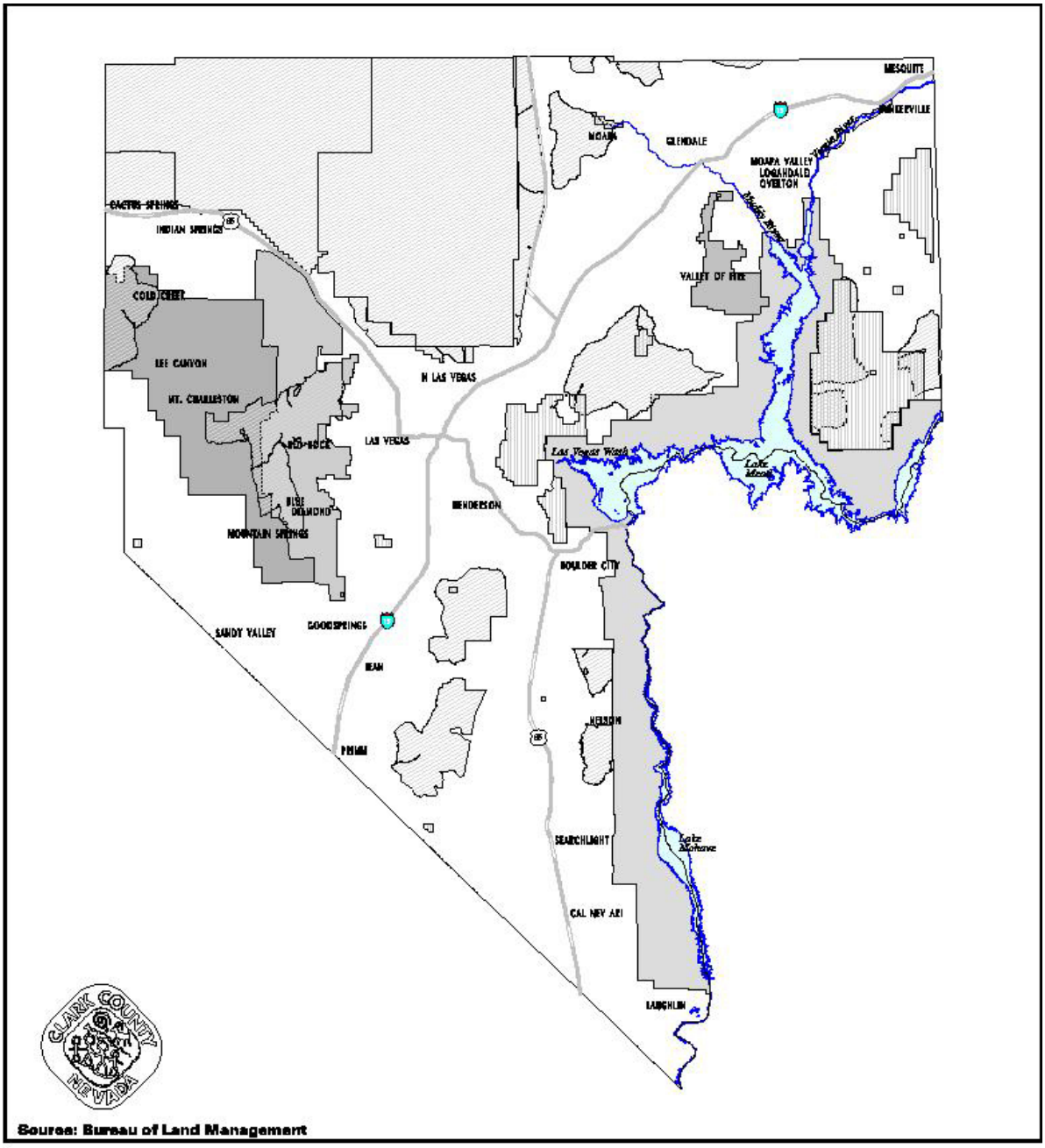
**Map 8**




# Environmentally Sensitive Areas within Clark County

Map 9

- Lake Mead Recreation Area
- Red Rock Canyon National Conservation Area
- Valley of Fire State Park
- Toiyabe National Forest
- Wilderness Study Area
- Areas of Critical Environmental Concern

0 15 mi 30 mi 45 mi

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**Opportunities**

12 Public access, education, land use buffers and transitional uses can be used to protect conservation and recreational areas where incompatible land uses might occur near one another.

13 Funds generated from the Southern Nevada Public Lands Management Act will aid in the development of the Multiple Species Habitat Conservation Plan, protection of environmentally sensitive areas and in the development of trails, parks and natural areas within Clark County.

**Policies**

CON 2.15 Ensure proper design considerations for development in areas of slopes 12% or greater.

CON 2.16 Encourage transitional development to buffer environmentally sensitive areas from more intense uses.

CON 2.17 Continue to use Community District 6 as a mechanism to preserve open space and conservation areas within Clark County.

CON 2.18 Continue to implement the Clark County Wetlands Park Master Plan as a mechanism to preserve open space and conservation areas within Clark County.

## Wetlands/Washes/Springs- See Map 10 & Map 11

A network of washes exist within Clark County that divert storm flows and urban runoff from the surrounding watershed to wash/stream channels such as the Virgin and Muddy Rivers and to the Las Vegas Wash that enters Lake Mead. Protecting water quality in the washes may enhance the water quality of Lake Mead, which is the County's primary source of drinking water. Methods to prevent contaminants from migrating into the washes include land use considerations and wetland enhancements. Land use considerations include the use of a tiered approach to identify, consider and mitigate impacts to sensitive areas. Wetlands provide a natural filter for contaminants and provide habitat for various species of wildlife. The Las Vegas Wash Coordination Committee was established to protect the Las Vegas Wash and determine a long-term solution to wetlands and wash preservation. The Committee produced the Las Vegas Wash Comprehensive Adaptive Management Plan that details these efforts. Clark County was founded based on the multitudes of naturally flowing springs. The springs generally form important riparian areas for a variety of County species as well as provide water resources.

**Issues**

- Loss of habitat and wetlands continue to be significant issues in the Las Vegas Wash due to erosion and sediment transport.

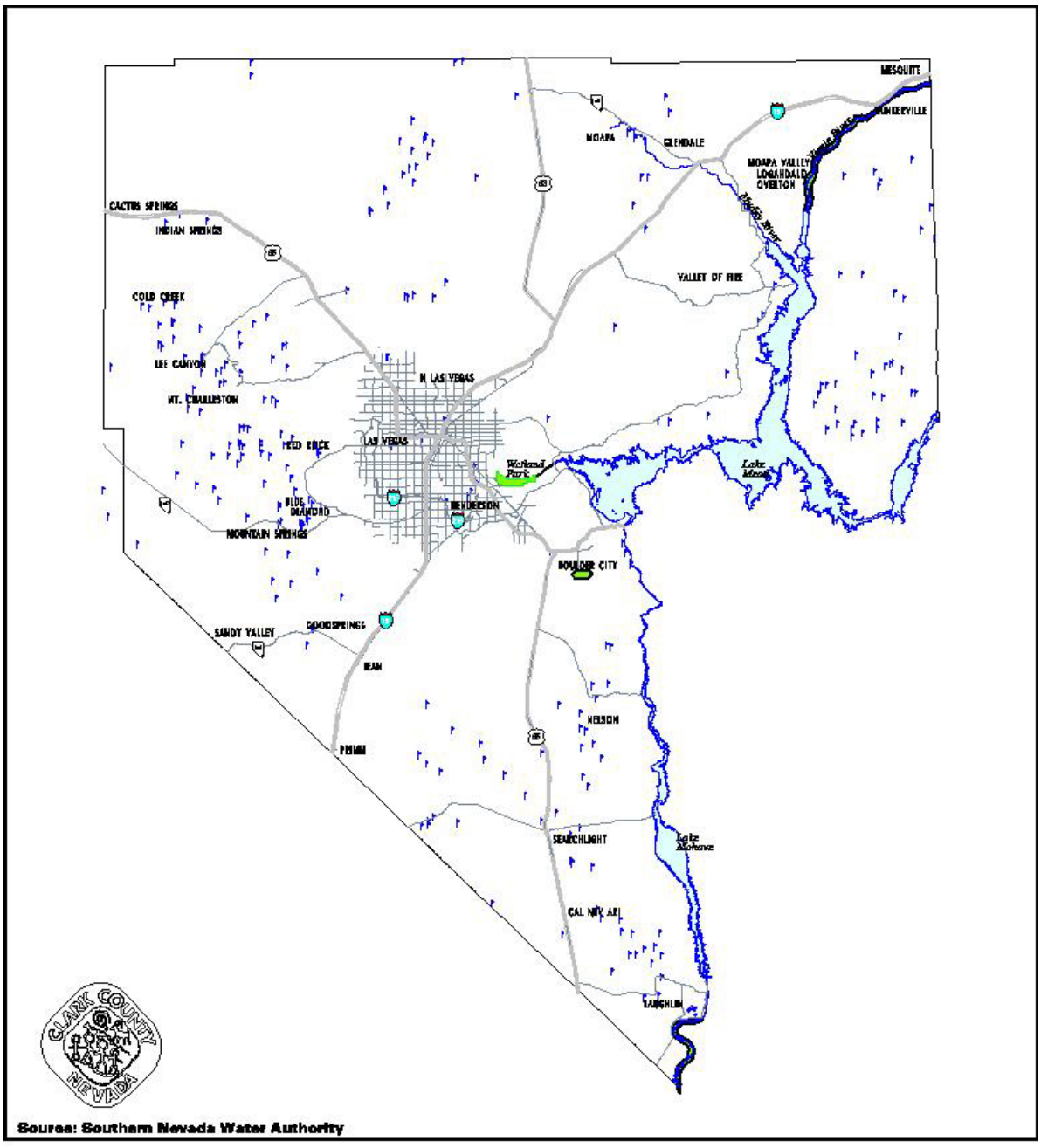
**Opportunities**

14 Construction of erosion control structures in the area washes will help promote wetland growth and limit further erosion within wash channels.

**Policies**

CON 2.19 Utilize the Las Vegas Wash Comprehensive Adaptive Management Plan to ensure land use compatibility with the Clark County Wetlands Park and associated Wash improvements.

CON 2.20 Encourage preservation and protection of washes and waterways.




# Clark County Wetlands and Springs

Springs  Wetlands

Plot created on:
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0  15 mi  30 mi  45 mi

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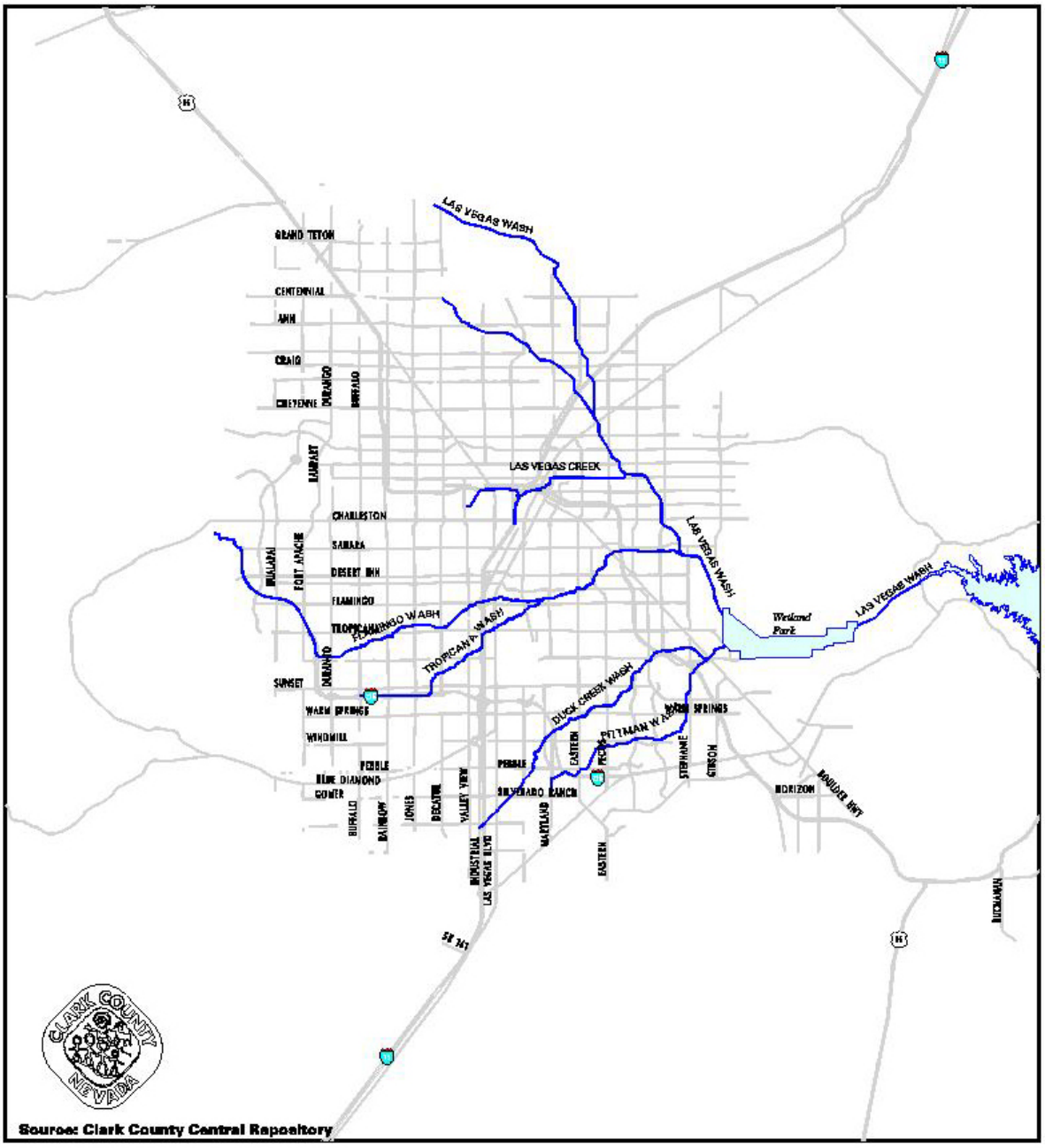
**Map 10**




# Las Vegas Valley
# Major Washes

Major Washes

Plot created on:
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5 mi 10 mi 15 mi
0

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**Map 11**

# WATER RESOURCES
## Water Supply & Conservation

Clark County is located within the Mojave Desert that experiences an average annual precipitation of four inches resulting in an extremely arid environment. Consequently, it is essential to protect both the quantity and quality of the water supply. Water demands can be met from now through approximately 2007. Through continuing conservation efforts and by utilizing water resource supplies that are immediately available, our water demand is expected to be met through 2050. In 1991, the Southern Nevada Water Authority (SNWA) was established to address water on a regional basis rather than an individual purveyor basis. The SNWA is committed to manage the region's water resources and develop solutions that will ensure adequate future water supplies for Southern Nevada. The management agencies include the cities of Boulder City, Henderson, Las Vegas and North Las Vegas; the Big Bend Water District; Clark County Sanitation District and the Las Vegas Valley Water District. Several smaller agencies such as the Moapa Valley and Virgin Valley Water Districts handle resource needs for the outlying areas such as Moapa and Bunkerville. Areas of Clark County not serviced by these or other agencies normally are serviced by residential groundwater wells.

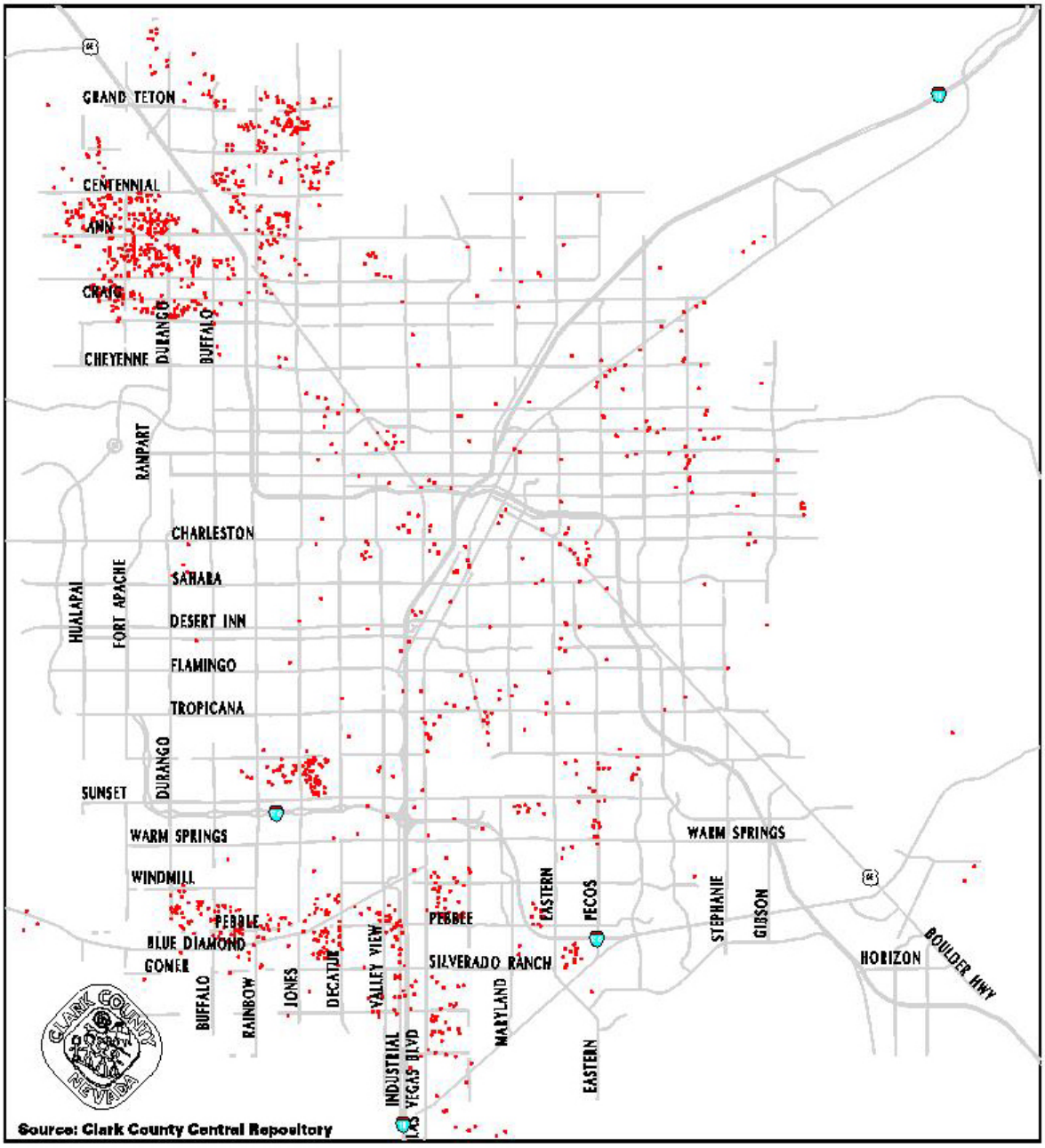
### COLORADO RIVER WATER

Colorado River water is the source for 85% of Clark County's drinking water. Water is diverted from the Colorado River at Lake Mead. Under the Boulder Canyon Project Act of 1928 and confirmed by the 1964 Arizona versus California Supreme Court Decree, Nevada has a "consumptive use" apportionment of 300,000-acre feet per year (AFY) of Colorado River water. Consumptive use is defined as diversions minus return flows. Return flows in Nevada consist mainly of treated wastewater that is returned to the Colorado River at Lake Mead via the Las Vegas Wash and at Laughlin, Nevada.

### GROUNDWATER- See Map 12

The Las Vegas Valley Water District and the City of North Las Vegas have 40,118 AFY and 5,711 AFY respectively of groundwater rights issued by the Nevada State Engineer. Groundwater currently serves as 15% of Clark County's drinking water. The groundwater system underlying the Las Vegas Valley is a complex layering of saturated and unsaturated sediments of widely varying hydrologic properties. Previous investigators have grouped these interbedded sediments into aquifers based in part on permeability, thickness, depth below land surface, and water quality. The principal aquifer is the source of virtually all of the groundwater supplying local municipal water systems. The principal aquifer is also tapped by thousands of domestic well users, as well as by approximately 1,000 public supply wells that serve anywhere from two households to moderately large subdivisions. About 300 of these public supply wells are in the northwest part of the Las Vegas Valley. Records from the Nevada Division of Water Resources indicate that approximately 9,700 wells of all types have been drilled in the Las Vegas Valley Groundwater Basin.

Groundwater has been a principal source of water for Clark County since the 1940s. Overpumping of this resource caused water levels to decline creating space within the aquifer. Since 1992, SNWA has been reintroducing unused apportionment of the Colorado River Water into the aquifer in a program of artificial recharge. In 1997, the state legislature




# Las Vegas Valley Municipal and Community Water Wells

Municipal and Community Water Wells

Map 12

3 mi 6 mi 9 mi
0

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passed legislation that required the SNWA to design and implement a comprehensive groundwater management program for the Las Vegas Valley. The Groundwater Management Program is designed to help coordinate and manage basin activities with an eye toward conservation, aquifer protection and artificial recharge.

Outlying areas of Clark County rely almost entirely upon groundwater resources to meet their needs. Development in the outlying areas of the County will have impacts on the water resources of those and surrounding areas. Future projects such as Coyote Springs, Apex Industrial Park and the Ivanpah Airport will change the current state of groundwater levels and may have impacts to production wells already in place. As final development plans are still in process, future effects are uncertain at this time. The Nevada Division of Water Resources Office of the State Engineer is responsible for the practical management of groundwater resources throughout the State of Nevada.

## RECLAIMED WATER

Wastewater collected from homes and businesses within the Las Vegas Valley is transported through thousands of miles of pipeline where it is received by one of the areas three treatment facilities: the City of Henderson, the City of Las Vegas, and the Clark County Sanitation District. At the treatment plant, the wastewater undergoes physical, biological, and chemical treatment processes to remove solids, particles, chemicals, bacteria, and viruses. The treated effluent is either reclaimed or is released to the Las Vegas Wash. Reclaimed wastewater is pumped to outlying area distribution facilities where it is used for area greenspace irrigation (i.e. parks, golf courses). Effluent released to the Las Vegas Wash counts towards return flow credits for increased Colorado River water allocation. Water reclamation policy has been outlined in the Las Vegas Valley 208 Water Quality Management Plan, which includes increasing the amounts of reclaimed water used for area irrigation purposes.

Outside the Las Vegas Valley, water reclamation policy exists in the Rural and Northeast County 208 Water Quality Management Plans. The latter document recommends that the local agencies should evaluate existing and future public facilities to promote the use of reclaimed water when and if it is available in the future. Water reclamation areas include the City of Mesquite and Laughlin, Clark County Sanitation District's Overton Wastewater Treatment Facility and the APEX Industrial site.

## OTHER SUPPLIES

In addition to the resources listed above, a number of other water resources options will be utilized to meet future water demands. Such sources include surplus Colorado River water, unused Colorado River apportionment of other lower division states as available, Las Vegas Valley shallow aquifer, groundwater rights from outlying areas such as Coyote Springs, the Southern Nevada Groundwater Bank, and the Arizona Banking Demonstration Project. Possibilities include use of the Arizona Groundwater Bank, managed surpluses of Colorado River water, Colorado River water transfers/marketing, and the Muddy and Virgin Rivers, as well as other sources. Details regarding SNWA plans for resource viability are defined within the SNWA Water Resource Plan.

## CONSERVATION METHODS

If the region continues to grow, it will need to continue acquiring new water supplies and facilities, as indicated in the SNWA Water Resource Plan. Furthermore, increasing pressure is being placed on water users to become more efficient in all aspects of water use. In 1990, the local water and wastewater agencies completed an extensive supply and demand projection process that resulted in the public realization that the region would run out of its then-available permanent water supplies in 15 years, even with conservation. Creation of artificial lakes was banned, water waste ordinances were adopted and lawn watering was restricted during the hotter times of the day. All area jurisdictions in Clark County are moving towards turf restrictive policies.

In 1995, the SNWA completed its Integrated Water Resource Plan (IRP) which not only indicated which water resource and facilities to pursue, but also reiterated how critical conservation was in stretching limited water resources. As part of the IRP process, a goal of 10 to 15 percent conservation by the year 2000 was adopted by the SNWA. At the same time, SNWA member agencies adopted a Conservation Memorandum of Understanding, agreeing to follow the Bureau of Reclamation's conservation measures called "Best Management Practices." Currently the year 2000 conservation goal has been reached and the next goal of 25 percent (cumulative) by the year 2010 is in the process of being achieved. Since about 60% of all water use in Southern Nevada is for outdoor purposes, a primary focus of the conservation program became the use of xeriscape type landscaping. Xeriscape (pronounced zeer-uh-skape) is the use of water efficient plants and landscape materials and techniques to save water naturally.

Water conservation continues to be an important strategy to ensure future water supplies. Outlying areas of Clark County not currently serviced by the Southern Nevada Water Authority do not have an integrated program to conserve water resources.

**Issues**

- Protection of the quality of Lake Mead water is important to Southern Nevada for its environmental, recreational and drinking water purposes.
- Clark County's Muddy and Virgin Rivers are listed on the State of Nevada's List of Impaired Waters due to elevated levels of total phosphorus, boron, arsenic and iron.
- Residential landscape irrigation constitutes the largest water use in the Las Vegas Valley amounting to about 60% of all water used.
- The Southern Nevada region has limited water resources.
- Outlying area water resource needs may be challenged by future regional development.

**Opportunities**

15 Continuing and enhancing Southern Nevada Water Authority's water conservation efforts will help extend Clark County's water resources.

16 Encouraging regional water resource conservation planning efforts can help preserve outlying area groundwater resources.

17 Implementation of an effective water conservation program for outlying areas of Clark County can be achieved through educational programming and a water conservation ordinance.

**Policies**

CON 3.1 Actively pursue efforts to ensure the quality of waters entering the Colorado River from Clark County.

CON 3.1.1 Improve the water quality of the Muddy and Virgin Rivers to remove them from the State of Nevada's List of Impaired Rivers.

CON 3.2 Encourage measures to bring groundwater pumping into balance with natural recharge.

CON 3.3 Promote the reuse of treated effluent for area green space including, but not limited to, parks and golf courses.

CON 3.4 Encourage use of drought tolerant and low water-requiring plants in area residential landscaping.

CON 3.5 Continue to increase the use of water conservation projects and programs throughout Clark County.

CON 3.6 Establish an enforcement mechanism to ensure proper installation of landscaping and irrigation systems in new construction.

## Water Quality

The Federal Water Pollution Control Act (Clean Water Act) Amendments of 1972 and 1977 required the control of all sources of water pollution in meeting the goals of the Act. Section 208 of the Act requires that all activities associated with water pollution problems be planned and managed through an integrated area-wide water quality management program. After passage of Senate Bill 468 by the Nevada State Legislature in May 1975, area wide water quality management planning duties and powers were vested to certain counties. The Clark County Board of County Commissioners (BCC) was designated the Area-Wide Water Quality Management Planning Organization within Clark County.

### RECLAIMED WATER

As discussed within the Water Supply & Conservation section of this document, reclaimed water is highly treated wastewater that is reused rather than released into the Las Vegas Wash. Standards for reclaimed water use are defined in Nevada Administrative Code Section 445A.275. Requirements include measures to prevent the infiltration or runoff of the reclaimed water and define allowable levels of human contact. Water quality standards and beneficial uses for effluent released to the Las Vegas Wash have been placed on each of the three wastewater treatment agencies that discharge to Lake Mead in order to maintain the beneficial use of the Wash. These requirements include a wasteload allocation for phosphorus and un-ionized ammonia. The Nevada Division of Environmental Protection administers the standards.

### STORMWATER/URBAN RUNOFF

Stormwater and urban runoff is considered a non-point source pollutant, carrying sediment, chemicals, garbage and biological matter from urban land into drainage and waterways and eventually into Lake Mead, our area's primary source of drinking water. Although stormwater and urban runoff as well as treated wastewater constitutes less than 2% of Lake Mead water, efforts to control the amounts of contaminants introduced into this source are important and required by the United States Environmental Protection Agency (EPA). A Municipal Stormwater Quality Management Committee has been established through interlocal agreement to monitor the amounts and types of pollutants introduced into the area

stormwater, as required by the area stormwater runoff permit. The Committee also is responsible for an active outreach program to area businesses and residents.

## GROUNDWATER AND WELLHEAD PROTECTION- See Map 12

Groundwater quality generally degrades with longer contact time with sediments. Because of the complex geology and variety of sediments found in the County, groundwater quality in the area is highly variable. The potential for contaminants to enter the principal aquifer poses a threat to the quality of our groundwater. A groundwater supply may be polluted by underground gasoline storage tanks, industrial facilities, septic systems, improperly abandoned wells, and downward leakage from the shallow aquifer. Contaminants may be quickly introduced into the aquifer via groundwater wells. In 1986, the Wellhead Protection Program was established by amendments to the Safe Drinking Water Act. The amendments require each state to develop a Comprehensive State Groundwater Protection Program. In 1997, the Nevada Legislature passed Assembly Bill 436 requiring the Southern Nevada Water Authority (SNWA) to develop a program to manage groundwater within the Las Vegas Valley. Elements within the program include establishment of a wellhead protection area surrounding groundwater wells. Complete details regarding the program are included within SNWA's Las Vegas Valley Groundwater Management Program.

**Issues**

- Wastewater treatment agencies discharge highly treated effluent in the Las Vegas Wash increasing amounts of contaminants in Lake Mead.
- Stormwater and urban runoff contribute to the amounts of pollutants such as trash, bacteria, pesticides, herbicides and hydrocarbons that enter the Las Vegas Wash.
- Groundwater recharge for the Las Vegas Valley generally occurs in areas of higher elevation such as the Sheep Range and the Spring Mountains.
- Leaking underground fuel tanks from service stations and industrial operations contribute to soil and groundwater contamination.
- Septic systems contribute to shallow groundwater contamination when they malfunction, are used improperly or are located in non-permeable soil conditions such as caliche.

**Opportunities**

18 Continuing implementation of established stormwater quality best management practices will help reduce the amounts of pollutants entering the stormwater system.

19 Outlying area well head protection can be achieved in outlying areas of Clark County by expanding educational programming.

20 Encouraging a balance between natural recharge and water production rates will help ensure responsible development of water resources.

21 Appropriate land use considerations can be given to areas of high groundwater recharge in an effort to maintain groundwater quality.

22 Limiting the use of underground storage tanks near groundwater wells or in areas not suited for tank installation will help curb amounts of contaminants entering the groundwater system.

**Policies**

CON 3.7 Encourage use of onsite water retention and vegetative buffering to reduce surface water runoff and erosion.

CON 3.8 Identify and discourage use of septic tanks within the Las Vegas Valley.

CON 3.9 Do not approve residential conversions that utilize existing septic systems in sewer serviced areas.

CON 3.10 Ensure adequate distances between underground storage tanks and municipal and community water wells.

CON 3.11 Encourage the use of off channel wetlands in the Las Vegas Wash to improve the quality of the water that enters Lake Mead consistent with Clark County's Wetlands Park Master Plan.

## PLANTS AND ANIMALS

Clark County encompasses an ecologically diverse region with a variety of natural vegetation types. This variability creates habitat for numerous wildlife species. Some of these species, such as the Palmer's chipmunk, are endemic to specific locations within Clark County while others, such as the coyote, are more widely dispersed. At the same time there are other animal species that are identified on state and federal lists as threatened, endangered or sensitive.

### Multiple Species Habitat Conservation Plan (MSHCP) Covered Species

The MSHCP (Phase I) was developed by the Public Implementation and Monitoring Committee in conjunction with Clark County to bring proactive habitat conservation planning to Southern Nevada. This program creates the opportunity to expend funds to enhance protection of seventy-eight (78) species of plants and animals, including the federally listed desert tortoise. The MSHCP promises to balance environmental integrity and economic prosperity in Clark County by reducing the likelihood of future Federal listings by ensuring the well-being of these species and the ecosystems in which they reside. Phase II of the MSHCP will bring coverage for riparian and aquatic species residing in and around the Muddy and Virgin Rivers.

One of the principal conservation benefits of the MSHCP, in addition to substantial funding for conservation actions, is the Adaptive Management Process (AMP). This Process provides a means for coordination of conservation actions among the land managers and resource agencies in Clark County at the ecosystem and community level. The AMP will assess the effectiveness of the Plan's conservation actions over the course of the 30-year program and provide guidance for conservation efforts.

### Landscaping Plantlife

All developments in non-residential and in multi-family residential zoning districts are required to install plant materials listed within the County's Landscaping and Buffering plant list. Plantlife offers a variety of benefits including reduction in urban temperatures and air quality problems as well as provides active soil stabilization and control of irrigation runoff. The plants listed are drought tolerant and water efficient and do not pose health issues related to aeroallergens. Clark County experiences pollen production in abundant amounts during the spring months particularly from Fruitless Mulberry and European Olive trees. These two species of trees contribute to unhealthy respiratory conditions as a result of aeroallergens. The Clark County Health District banned the Fruitless Mulberry and the European Olive trees from being planted or sold in Clark County in 1991. Other plantlife

such as the Oleander and the Tamarisk are also highly discouraged for planting within Clark County.

## Africanized Honey Bees

The Africanized Honey Bee (AHB) has migrated into Nevada. Originally from Africa, these bees were accidentally released in South America in 1957. The first AHB swarms arrived at the southern border of Nevada in 1998. AHB may continue to move northward into other areas of Nevada that domestic European Honey Bees now inhabit. It is expected that the AHB will eventually replace the European variety.

AHB look the same and in most ways behave like the European variety. However, AHB display ultra defensive behavior while protecting their colony causing them to be dubbed "killer bees." All bees fly about 12 to 15 miles an hour, but the AHB will travel much farther from the colony than a domestic bee. European varieties may chase a victim for 50 yards while an AHB may chase a victim for 400 yards. AHB will also remain agitated up to 8 hours before their defensive behavior subsides.

The Nevada Department of Agriculture (NDA) is the agency that regulates the bee keeper industry within the State. The NDA also monitors the migration of the AHB into and throughout Nevada. Removal of the AHB is currently the responsibility of the property owner. Both the NDA and Clark County provide public outreach and educational programs to inform the public about the AHB, methods of removal and applicable safety precautions.

**Issues**

- Implementation of the Multiple Species Habitat Conservation Plan gives Clark County an effective framework to pursue protection of the area's threatened and protected species.
- Riparian species are not yet covered under Phase I of the Multiple Species Habitat Conservation Plan.
- Pollen production from certain trees and shrubbery in the Las Vegas Valley has become a serious concern for public health due to allergenic effects.
- Aggressive Africanized Honey Bees are being found within Clark County.

**Opportunities**

23 Continuing efforts to pursue U.S. Fish and Wildlife Service Incidental Take Permit coverage for riparian species in Phase II of the Multiple Species Habitat Conservation Plan will help protect these species.

24 Increased public education efforts about the County's approved plant list can help alleviate increasing pollen producing plants and other environmental concerns.

25 Unified, coordinated response measures can be expanded to handle issues associated with Africanized Honey Bees.

**Policies**

CON 4.1 Promote a balanced approach to habitat and species conservation through the efforts described within the Multiple Species Habitat Conservation Plan.

CON 4.2 Encourage the use of plant life and landscaping principles appropriate to the local climate.

CON 4.3 Encourage the use of incentives that will result in the removal of allergen producing plants.

CON 4.4 Encourage enforcement of Title 30 Appendix B of the Clark County Code to reduce the amount of airborne allergens and promote public health.

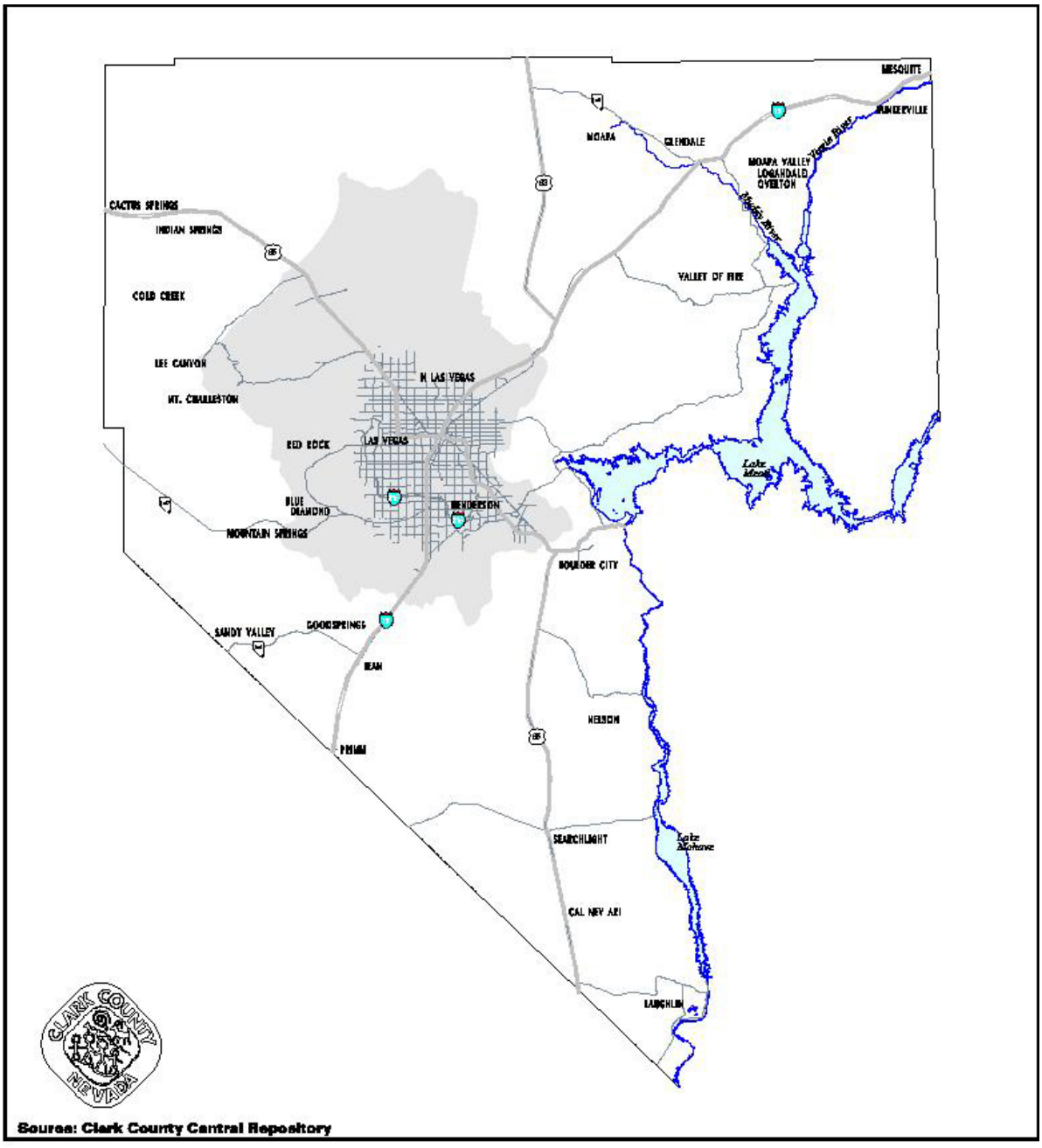
## AIR RESOURCES

Cities surrounded or partially surrounded by mountains often have greater air quality problems than cities without mountains. The surrounding mountains reduce the speed of winds that carry pollutants away, increasing pollutant concentrations over time. Local topographic conditions can sometimes determine which part of the Las Vegas Valley has the worst air quality. Airflow through the Las Vegas Valley typically blows from the west and north sides of the valley toward the east and southeast. Generally during cold weather, the eastern part of the valley has higher pollutant levels.

### Carbon Monoxide- See Map 13

Carbon monoxide (CO) is a colorless, odorless gas that results primarily from the incomplete combustion of hydrocarbon based fuels. It is toxic because it tends to reduce the oxygen carrying capacity of blood. In the Las Vegas Valley, carbon monoxide air pollution is most common during the winter months because of low wind conditions. Stagnant air masses can trap pollutants increasing concentration levels. The EPA has established two National Ambient Air Quality Standards for CO: 1) thirty-five parts per million for a one hour average, and 2) nine parts per million for an eight hour average. The EPA determined that when CO concentrations rise above these levels there is a hazard to the public health. Areas that violate one or both standards, more than three times in a three-year period, are designated as a non-attainment area. The Las Vegas Air Quality Basin is designated a serious non-attainment area for CO by the EPA.

In Las Vegas, as in other urban areas, motor vehicles are the major source of CO, comprising approximately 86 percent of total daily emissions and even more in the late afternoon and evening hours when exceedances of the standard are usually recorded. Current efforts to reduce the levels of CO are outlined within the Carbon Monoxide Air Quality Implementation Plan. Map 13 displays the Clark County carbon monoxide non-attainment area that is within the Clark County Air Quality Basin.




# Clark County
# Air Quality Basin

Air Quality Basin

Plot created on:
September 17, 2001

*This information for display purposes only.*
*No liability is assumed as to the accuracy*
*of the data delineated hereon.*

0 15 mi 30 mi 45 mi

**Map 13**

During the past several years, the Las Vegas Valley Air Quality Basin has experienced a substantial improvement in CO air quality. On an annual basis, there has been a trend towards a reduction in the number of exceedance events and a reduction in the intensity of CO concentrations. During 1997 and 1998, the Las Vegas Valley Air Quality Basin experienced four unhealthful days (100-200 PSI). Three of these days were in exceedance of that allowed by the Environmental Protection Agency based upon the monitoring process used in the Las Vegas Valley. In 1999, there were no unhealthful or exceedance days recorded. The reductions in exceedance events and CO concentrations are attributed to the following:

1. Improved motor vehicle emission control technology and the continued displacement of older and poorly maintained vehicles;
2. The wintertime oxygenated gasoline program;
3. Reduced Reid Vapor Pressure (RVP) in gasoline;
4. Requirements for annual vehicle smog tests for motor vehicles;
5. Computerized traffic signal management programs; and
6. Roadway and traffic-flow improvements.

## Particulate Matter of Ten Microns or Less (PM10)

Clark County is an arid desert environment where wind-blown dust is a natural phenomenon. The major sources of man-caused PM10 within the Las Vegas Valley are dust from construction activities, unpaved roads, disturbed vacant land, and unpaved parking/staging areas. Background sources (undisturbed natural desert) and particles formed from motor vehicle combustion also contribute to PM10 emissions. Efforts to bring the Las Vegas Valley into attainment are outlined within the PM10 State Implementation Plan.

Attainment of the 24-hour health standard, where PM10 air quality problems are largely associated with fugitive dust, present difficult problems that remain to be solved. The EPA has established two National Ambient Air Quality Standards for PM10: 1) 150 micrograms per cubic meter for a 24 hour average, and 2) 50 micrograms per cubic meter for an annual average. The EPA determined that there is a hazard to the public health when concentrations rise above these levels as particles are inhaled into the lungs causing respiratory distress.

**Issues**

- The Las Vegas Valley is presently in serious non-attainment status for carbon monoxide (CO) and particulate matter of ten microns or less (PM10).
- Motor vehicle traffic is the single largest contributing factor to the amount of CO air pollution in the urbanized areas of Clark County at approximately 86% of the total emissions inventory.
- Construction activities, disturbed vacant land, and unpaved roads significantly contribute to Clark County's fine dust pollution.
- Diesel fuel combustion contributes to particulate matter of ten microns or less and to regional haze pollution.

**Opportunities**

26 Increasing the use of alternately fueled vehicles can reduce amounts of CO emitted into the air.

27 Stabilizing areas of disturbed vacant land and unpaved roads, by landscaping, paving or use of chemical dust suppressants can reduce amounts of airborne dust.

28 As part of the development review process, inclusion of air quality analyses can help ensure that negative impacts on air quality are minimized by future development.

**Policies**

CON 5.1 Improve air quality to levels necessary to protect public health and improve visual clarity.

CON 5.2 Enhance public educational efforts concerning air quality issues, sources and solutions.

CON 5.3 Include air quality considerations in the development review process.

CON 5.4 Air quality conditions should be continuously monitored and identified health impacts mitigated.

## Future Air Quality Issues

### OZONE

Ozone is primarily a byproduct of internal combustion engine emissions and is the primary constituent of smog. Although many stationary sources such as electric power generating plants contribute ozone, the automobile is the primary source. Ozone is not released directly by these sources but is produced through a series of chemical reactions between primary pollutants and sunlight. The current National Ambient Air Quality Standard for ozone is 120 parts per billion averaged over one hour. Current trends in air quality degradation indicate that this standard will likely be exceeded within the Las Vegas Valley in the near future.

### PARTICULATE MATTER OF 2.5 MICRONS OR LESS (PM 2.5) AND REGIONAL OR VISIBLE URBAN HAZE

Visible urban haze refers to the darkish cloud that hovers over valleys reducing visibility particularly during low wind conditions. Visibility impairment occurs as a result of the scattering and absorption of light due to PM 2.5 and gases in the atmosphere. Fine particles result from fuel combustion motor vehicles, power generation, industrial facility emissions and residential fireplaces. Atmospheric nitrogen dioxide also reduces visibility because it absorbs light. The EPA is currently considering regulation to control amounts of PM 2.5. Particulate matter of 2.5 microns or less pose significantly more serious health ramifications as the particles not only are inhaled into the lungs but enter the person's blood stream. This causes the individual to be chemically affected by any other contaminants such as metals that may be part of the particle.

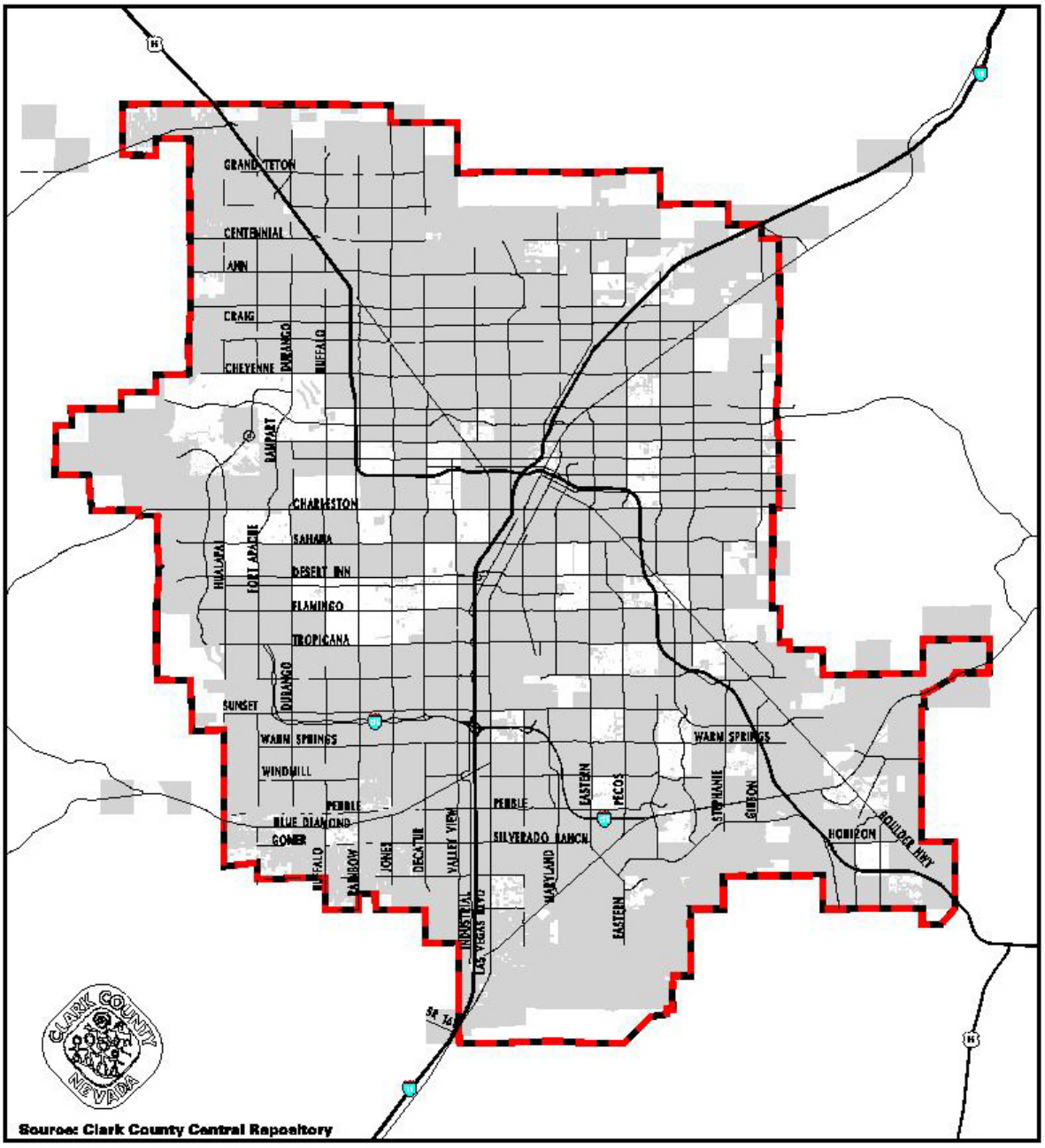
## Transportation and Land Use- See Map 14

Transportation, land use and air quality are inextricably linked. One of the key ways to improve our air quality problems in Las Vegas is to reduce vehicle traffic and the number of miles people travel. Clark County faces potential transportation system expansion constraints resulting from lack of compliance with the federal air quality regulations. Implementing programs and processes that will improve air quality within the Las Vegas Valley is imperative.

Currently, development is rapidly occurring on the perimeters of the urban Las Vegas Valley, while over 103,000 undeveloped acres exist within the Bureau of Land Management (BLM) Disposal Boundary. Continued development outside of the established urban boundaries not only creates challenges for air quality but for infrastructure and water resources and decreases amounts of desert open space. Many neighborhoods have not been developed in ways that support walking or biking. Current efforts establishing a regional trails system and mass transit along the resort corridor are progressing. Regional efforts are underway to promote mixed land uses enabling citizens to live in the same neighborhood where they work, shop and recreate, fostering the essence of the infill development "Smart Growth" principle. Infill creates the density required of cities attempting to establish viable alternative transportation systems. Efforts such as these will decrease citizen dependence on the automobile.

The Clark County Regional Transportation Commission launched several programs to manage transportation demands and thus reduce transportation related air pollution. CAT MATCH Commuter Services is a program that encourages car and vanpooling. Rideshare Incentive Programming provides cash incentives for those who commute or use alternative forms of transportation to travel to work. Transit Tax Incentive Program (Flexi-Fare) offers employees tax-free transportation benefits for commuting to work by transit. Conservative estimates report annual decreases of over 105 tons of carbon monoxide from participation in the CAT MATCH program alone.

The Southern Nevada Public Lands Management Act directs the BLM to competitively sell lands in the Las Vegas Valley. Funds generated through land sales are to be used for a variety of purposes in the State of Nevada, with the majority of expenditures targeting Clark County and Southern Nevada. Clark County has been working with the BLM to nominate lands in the urban growth area which are appropriate for privatization through semi-annual land sales. Monies generated from the sale of these lands will be used to purchase environmentally sensitive areas for conservation purposes as well as other tracts of land desirable for public preservation or use.




# Las Vegas Valley
# Vacant Land

BLM Disposal Area Boundary

Vacant Land

Plot created on:
September 27, 2001

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of the data delineated hereon*

4 mi 8 mi 12 mi
0

**Map 14**

**Issues**

- Area levels of ozone are increasing due to increases in mobile source emissions and may create an additional health issue.
- Vacant land in the urban core remains undeveloped while the fringes of the urban areas are slated for development. This results in greater environmental impacts to air, water and species habitat.
- The Las Vegas Valley growth pattern is contributing to the number of miles people travel for work and personal pursuits.

**Opportunities**

29 Urban areas of Clark County have many vacant and underused sites that can absorb a considerable amount of future development.

30 Efforts to promote alternative transportation modes that could include mass transit, bicycling and walking, can help alleviate traffic and air pollution.

31 Promoting walkable communities can alleviate traffic and can aid in the reduction of vehicle emissions and air pollution.

32 Increasing participation in carpooling efforts will help ease transportation and related air issues.

33 Improving the balance between the locations of jobs and housing can minimize traffic flows improving the operational efficiency of transportation systems.

**Policies**

CON 5.5 Encourage the principles of the Smart Growth including mixed land uses and infill development.

- CON 5.5.1 Encourage pedestrian and transit friendly development.
- CON 5.5.2 Encourage jobs/housing balance in land use plans.
- CON 5.5.3 A coordinated road network, mass transit, bicycle and pedestrian plan should be encouraged in regional transportation planning.
- CON 5.5.4 Development of vacant parcels within serviced areas should be encouraged.
- CON 5.5.5 Land use siting techniques that consider solar heat absorption and alternative energy resources should be encouraged.

# CHAPTER TWO- ISSUES & OPPORTUNITIES

Within Clark County, there are a number of issues and challenges that impact communities and the natural environment. Interagency cooperation can establish solutions to minimize impacts in the environment while promoting growth, prosperity, and livability throughout the County. The following environmental issues have been identified as areas that may affect Clark County. The subject areas in this chapter are listed by subject type and are not based on priority or importance.

## ISSUES

### General

- Existing and potential environmental conditions are not consistently reviewed, analyzed or addressed at a regional and local level.
- Actions of Clark County residents may adversely affect the environment in areas such as water, air, and habitat resources.
- Increasingly efficient energy use is associated with decreasing levels of environmental pollution.

### Land Resources

- Various soil conditions exist in portions of Clark County that are not favorable for development without engineering mitigation.
- Over pumping the principal and intermediate aquifers contribute to subsidence in the Las Vegas Valley.
- Abandoned mines continue to be a significant safety hazard in many areas of Clark County.
- Some abandoned mines provide habitat to area bat populations.
- Many seismic fault lines are present within Clark County that may pose design and engineering considerations prior to development.
- Flash flooding is a significant safety hazard in many areas of Clark County.
- Increasing amounts of impervious surfaces throughout Clark County may increase surface runoff quantities and velocities.
- Some land within Clark County is not favorable for development due to groundwater issues.
- Shallow groundwater levels are rising to land surface in certain areas of the Las Vegas Valley causing damage to area structures.
- Illegal dumping of trash and construction-related debris continues in Clark County.
- There are no federally designated prime farmlands in Clark County.
- Pollutants such as phosphates and nitrates carried in agricultural and landscaping runoff contribute to groundwater and surface water pollution.
- Residential recycling currently produces more recycled material than businesses in Clark County can economically utilize.
- Development in areas with a slope of greater than or equal to 12% need careful design considerations to avoid safety, environmental and facility issues.
- Development is occurring near several environmentally sensitive areas, such as the Lake Mead National Recreation Area, Red Rock Canyon National Conservation Area, Las Vegas Wash, and Bureau of Land Management Critical Environmental Concern and Wilderness Study Areas.
- Loss of habitat and wetlands continue to be significant issues in the Las Vegas Wash due to erosion and sediment transport.

## Water Resources

- Protection of the quality of Lake Mead water is important to Southern Nevada for its environmental, recreational and drinking water purposes.
- Clark County's Muddy and Virgin Rivers are listed on the State of Nevada's List of Impaired Waters due to elevated levels of total phosphorus, boron, arsenic and iron.
- Residential landscape irrigation constitutes the largest water use in the Las Vegas Valley, amounting to about 60% of all water used.
- The Southern Nevada region has limited water resources.
- Outlying area water resource needs may be challenged by future regional development.
- Wastewater treatment agencies discharge highly treated effluent in the Las Vegas Wash increasing amounts of contaminants in Lake Mead.
- Stormwater and urban runoff contribute to the amounts of pollutants such as trash, bacteria, pesticides, herbicides and hydrocarbons that enter the Las Vegas Wash.
- Groundwater recharge for the Las Vegas Valley generally occurs in areas of higher elevation such as the Sheep Range and the Spring Mountains.
- Leaking underground fuel tanks from service stations and industrial operations contribute to soil and groundwater contamination.
- Septic systems contribute to shallow groundwater contamination when they malfunction, are used improperly, or are located in non-permeable soil conditions such as caliche.

## Plants and Animals

- Implementation of the Multiple Species Habitat Conservation Plan gives Clark County an effective framework to pursue protection of the area's threatened and protected species.
- Riparian species are not yet covered under Phase I of the Multiple Species Habitat Conservation Plan.
- Pollen production from certain trees and shrubbery in the Las Vegas Valley has become a serious concern for public health due to allergenic effects.
- Aggressive Africanized Honey Bees are being found within Clark County.

## Air Resources

- The Las Vegas Valley is presently in serious non-attainment status for carbon monoxide (CO) and particulate matter of ten microns or less (PM10).
- Motor vehicle traffic is the single largest contributing factor to the amount of carbon monoxide air pollution in the urbanized areas of Clark County at approximately 86% of the total emissions inventory.
- Construction activities, disturbed vacant land, and unpaved roads significantly contribute to Clark County's fine dust pollution.
- Diesel fuel combustion contributes to particulate matter of ten microns or less and to regional haze pollution.
- Area levels of ozone are increasing due to increases in mobile source emissions and may create an additional health issue.
- Vacant land in the urban core remains undeveloped while the fringes of the urban areas are slated for development. This results in greater environmental impacts to air, water and species habitat.
- The Las Vegas Valley growth pattern is contributing to the number of miles people travel for work and personal pursuits.

# OPPORTUNITIES

## General

1 Improved information coordination between area environmental and regulatory agencies would aid the development review process.
2 Improved information dissemination from area agencies to the public would aid in reducing potential environmental issues such as illegal dumping.
3 Expansion of public outreach efforts can help increase the overall success of the environmental implementation programs.

## Land Resources

4 Clark County's unique geologic and mineral formations can be protected to preserve their scientific, recreational and aesthetic value.
5 Appropriate land use considerations can be given to areas prone to geologic and hydrologic hazard.
6 Use of subsurface drainage systems and similar engineering techniques may enable surfacing groundwater hazards to be mitigated in areas already developed.
7 Development can be limited in areas aversely affected by shallow groundwater.
8 Use of vegetative or constructive buffering surrounding area landscapes and farmland will limit the amount of wind erosion and irrigation runoff.
9 Recycling and source reduction/product substitution programs can be effective in reducing quantities of landfilled waste, potentially extending the operational life of current landfill sites within Clark County.
10 Greater efforts can be made to attract businesses that can use recycled materials to reduce amounts of landfilled waste.
11 Closed public landfill facilities may provide a significant amount of open space and recreational opportunities with appropriate engineering controls.
12 Public access, education, land use buffers and transitional uses can be used to protect conservation and recreational areas where incompatible land uses might occur near one another.
13 Funds generated from the Southern Nevada Public Lands Management Act will aid in the development of the Multiple Species Habitat Conservation Plan, protection of environmentally sensitive areas and in the development of trails, parks and natural areas within Clark County.
14 Construction of erosion control structures in the area washes will help promote wetland growth and limit further erosion within wash channels.

## Water Resources

15 Continuing and enhancing Southern Nevada Water Authority's water conservation efforts will help extend Clark County's water resources.
16 Encouraging regional water resource conservation planning efforts can help preserve outlying area groundwater resources.
17 Implementation of an effective water conservation program for the outlying areas of Clark County can be achieved through educational programming and a water conservation ordinance.
18 Continuing implementation of established stormwater quality best management practices will help reduce the amounts of pollutants entering the stormwater system.
19 Outlying area well head protection can be achieved in outlying areas of Clark County by expanding educational programming.
20 Encouraging a balance between natural recharge and water production rates will help ensure responsible development of water resources.

21 Appropriate land use considerations can be given to areas of high groundwater recharge in an effort to maintain groundwater quality.
22 Limiting the use of underground storage tanks near groundwater wells or in areas not suited for tank installation will help curb amounts of contaminants entering the groundwater system.

## Plants and Animals

23 Continuing efforts to pursue U.S. Fish and Wildlife Service Incidental Take Permit coverage for riparian species in Phase II of the Multiple Species Habitat Conservation Plan will help protect these species.
24 Increased public education efforts about the County's approved plant list can help alleviate increasing pollen producing plants and other environmental concerns.
25 Unified, coordinated response measures can be expanded to handle issues associated with Africanized Honey Bees.

## Air Resources

26 Increasing the use of alternately fueled vehicles can reduce amounts of carbon monoxide emitted into the air.
27 Stabilizing areas of disturbed vacant land and unpaved roads, by landscaping, paving or use of chemical dust suppressants can reduce amounts of airborne dust.
28 As part of the development review process, inclusion of air quality analyses can help ensure that negative impacts on air quality are minimized by future development.
29 Urban areas of Clark County have many vacant and underused sites that can absorb a considerable amount of future development.
30 Efforts to promote alternative transportation modes that could include mass transit, bicycling and walking, can help alleviate traffic and air pollution.
31 Promoting walkable communities can alleviate traffic and can aid in the reduction of vehicle emissions and air pollution.
32 Increasing participation in carpooling efforts will help ease transportation and related air issues.
33 Improving the balance between the locations of jobs and housing can minimize traffic flows improving the operational efficiency of transportation systems.

# CHAPTER THREE- POLICIES

## General

CON 1.1 Encourage better coordination of information and resources between departments and agencies.

CON 1.2 Utilize a comprehensive environmental review process to ensure coordinated, consistent development decisions, including relationships between air, land and water issues.

CON 1.3 Federal, state and local agencies are encouraged to adopt policies consistent with the Conservation Element.

## Land Resources

CON 2.1 Encourage preservation of unique geologic and mineral formations for educational, scientific and other public purposes.

CON 2.2 Identify areas of valuable mineral resources and protect for future resource development.

CON 2.3 Identify and encourage appropriate development in geologic or hydrologic hazard areas.

CON 2.4 Establish development design standards that recognize constraints of extreme soil characteristics.

CON 2.5 Promote identification and appropriate mitigation of abandoned mines considering public safety and wildlife habitat needs.

CON 2.6 Development approval should be conditioned upon mitigation of risks to life and property from geologic faults.

CON 2.7 Encourage practices that minimize hazards to life, property and natural resources caused by stormwater runoff.

CON 2.8 Prepare controls and standards in regions with rising shallow groundwater.

CON 2.9 Increase enforcement to eliminate illegal dumping.

CON 2.10 Promote agricultural/farmland practices that reduce soil runoff and wind erosion.

CON 2.11 Promote compatibility of land use in areas surrounding landfills, transfer stations and convenience centers.

CON 2.12 Encourage programs that reduce the amount of landfill and hazardous waste generated.

CON 2.13 Encourage reclamation and recreational use of closed landfill facilities.

CON 2.14 Encourage businesses that recycle materials to locate in Clark County.

CON 2.15 Ensure proper design considerations for development in areas of slopes 12% or greater.

CON 2.16 Encourage transitional development to buffer environmentally sensitive areas from more intense uses.

CON 2.17 Continue to use Community District 6 as a mechanism to preserve open space and conservation areas within Clark County.

CON 2.18 Continue to implement the Clark County Wetlands Park Master Plan as a mechanism to preserve open space and conservation areas within Clark County.

CON 2.19 Utilize the Las Vegas Wash Comprehensive Adaptive Management Plan to ensure land use compatibility with the Clark County Wetlands Park and associated Wash improvements.

CON 2.20 Encourage preservation and protection of washes and waterways.

## Water Resources

CON 3.1 Actively pursue efforts to ensure the quality of waters entering the Colorado River from Clark County.

CON 3.1.1 Improve the water quality of the Muddy and Virgin Rivers to remove them from the State of Nevada's List of Impaired Rivers.

CON 3.2 Encourage measures to bring groundwater pumping into balance with natural recharge.

CON 3.3 Promote the reuse of treated effluent for area green space including, but not limited to, parks and golf courses.

CON 3.4 Encourage use of drought tolerant and low water-requiring plants in area residential landscaping.

CON 3.5 Continue to increase the use of water conservation projects and programs throughout Clark County.

CON 3.6 Establish an enforcement mechanism to ensure proper installation of landscaping and irrigation systems in new construction.

CON 3.7 Encourage use of onsite water retention and vegetative buffering to reduce surface water runoff and erosion.

CON 3.8 Identify and discourage use of septic tanks within the Las Vegas Valley.

CON 3.9 Do not approve residential conversions that utilize existing septic systems in sewer serviced areas.

CON 3.10 Ensure adequate distances between underground storage tanks and municipal and community water wells.

CON 3.11 Encourage the use of off channel wetlands in the Las Vegas Wash to improve the quality of the water that enters Lake Mead consistent with Clark County's Wetlands Park Master Plan.

## Plants and Animals

CON 4.1 Promote a balanced approach to habitat and species conservation through the efforts described within the Multiple Species Habitat Conservation Plan.

CON 4.2 Encourage the use of plant life and landscaping principles appropriate to the local climate.

CON 4.3 Encourage the use of incentives that will result in the removal of allergen producing plants.

CON 4.4 Encourage enforcement of Title 30 Appendix B of the Clark County Code to reduce the amount of airborne allergens and promote public health.

## Air Resources

CON 5.1 Improve air quality to levels necessary to protect public health and improve visual clarity.

CON 5.2 Enhance public educational efforts concerning air quality issues, sources and solutions.

CON 5.3 Include air quality considerations in the development review process.

CON 5.4 Air quality conditions should be continuously monitored and identified health impacts mitigated.

CON 5.5 Encourage the principles of the Smart Growth including mixed land uses and infill development.

CON 5.5.1 Encourage pedestrian and transit friendly development.

CON 5.5.2 Encourage jobs/housing balance in land use plans.

| | |
|---|---|
| CON 5.5.3 | A coordinated road network, mass transit, bicycle and pedestrian plan, should be encouraged in regional transportation planning. |
| CON 5.5.4 | Development of vacant parcels within serviced areas should be encouraged. |
| CON 5.5.5 | Land use siting techniques that consider solar heat absorption and alternative energy resources should be encouraged. |

# CHAPTER FOUR- IMPLEMENTATION

Sensitive and important resources are outlined and referenced within this Conservation Element. This information will be considered and included in future planning efforts. In addition, Clark County will implement the policies of this element through various current and future programs, processes, and regulations. The following list indicates just some of the implementation methods that will be used in combination with the goals and policies defined in the Element. The following list includes plans that are adopted and address many of the issues defined within this Element.

- Administrative Procedures
- Capital Budgeting and Expenditures
- Conservation Easements & Rights of Way
- Departmental Work Plans
- Environmental Impact Assessment
- Land Acquisition
- Strategic Planning
- Zoning and Subdivision Processing

Implementation of Adopted Plans:

- Carbon Monoxide Air Quality Implementation Plan
- Alternative Fuels Strategy
- Multiple Species Habitat Conservation Plan
- Comprehensive Plan Tasks 1-6
- Desert Conservation Plan
- Federal Lands Element
- 208 Water Quality Plans and Amendments
- Particulate Matter (PM 10) Attainment Demonstration Plan
- Water Resource Strategy

# REFERENCES


1998-1999 Annual Report Las Vegas Valley NPDES Municipal Stormwater Discharge Permit, Las Vegas Valley Stormwater Quality Management Committee, *Aug. 1999*

Analysis of the Management Situation at the Spring Mountains National Recreation Area, US Forest Service, Toiyabe National Forest, *January 1995*

Carbon Monoxide Air Quality Implementation Plan, Clark County Comprehensive Planning, *Sept. 1999*

Clark County Alternative Fuels Strategy, Clark County Comprehensive Planning, *March 1993*

Clark County Multiple Species Habitat Conservation Plan, Clark County Comprehensive Planning, *Feb. 1999*

Clark County Parks & Recreation Master Plan, Clark County Parks & Recreation, *April 2000*

Comprehensive Plan- Task One, Clark County Comprehensive Planning, *Jan. 1981*

Comprehensive Plan- Task Two, Clark County Comprehensive Planning, *Sept. 1982*

Comprehensive Plan- Task Five, Clark County Comprehensive Planning, *July 1983*

Comprehensive Plan- Task Six, Clark County Comprehensive Planning, *Sept. 1987*

Desert Conservation Plan, Clark County Comprehensive Planning, *Aug. 1995*

Federal Lands Element, Clark County Comprehensive Planning, *July 1997*

Groundwater and Wells in the Las Vegas Valley, Clark County Conservation District, *Oct. 1998*

Help Keep Our Air Clean!, Clark County Conservation District, *July 1997*

Las Vegas Resource Management Plan, Bureau of Land Management, *Oct. 1998*

Las Vegas Valley 208 Water Quality Management Plan, Clark County Comprehensive Planning, *Aug. 1997*

Las Vegas Valley Groundwater Management Program, Southern Nevada Water Authority, *Dec. 1998*

Las Vegas Wash Comprehensive Adaptive Management Plan, Southern Nevada Water Authority, *Jan. 2000*

Livable Las Vegas: Managing Growth in the Las Vegas Valley, Urban Land Institute, *Oct. 1997*

Particulate Matter (PM 10) Attainment Demonstration Plan, Clark County Comprehensive Planning, *Aug. 1997*

Personal Communication, Alan Pinkerton, Clark County Comprehensive Planning, *Aug. 2000*

Personal Communication, Doug Driesner, Nevada Division of Minerals, *July 2000*

Personal Communication, Doug Merkler, United States Department of Agriculture, *April 2000*

Personal Communication, Roy Lee, Bureau of Land Management, *April 2000*

Planning for the Second Century: A twenty year initiative for responsible growth in Southern Nevada, Southern Nevada Strategic Planning Authority, *Dec. 1998*

Planning Implementation Tools and Techniques, A Resource Book for Local Governments, Forster Ndubisi, *1992*

Preserving Our Water Resources, Clark County Conservation District, *1995*

Regional Flood Control District Master Plan, Clark County Regional Flood Control District, *Dec. 1997*

Smart Growth…Las Vegas Style, Citizen Alert/Sierra Club, *1999*

Solid Waste Management Plan for Clark County, Nevada, Clark County Health District, *March 1995*

The Nevada Mineral Industry, Nevada Bureau of Mines, *1999*

Water Conservation Plan, Southern Nevada Water Authority, *1999*

Water Resource Plan, Southern Nevada Water Authority, *Jan. 1999*

Water Resource Strategy, Clark County Comprehensive Planning, *April 1990*