

BILL NO. 2002-109

ORDINANCE NO. 5529

AN ORDINANCE TO ADOPT THE CONSERVATION ELEMENT OF THE LAS VEGAS 2020 MASTER PLAN, AND TO PROVIDE FOR OTHER RELATED MATTERS.

Proposed by: Robert S. Genzer, Director of
Planning and Development

Summary: Adopts the Conservation Element of
the Las Vegas 2020 Master Plan.

THE CITY COUNCIL OF THE CITY OF LAS VEGAS DOES HEREBY ORDAIN
AS FOLLOWS:

SECTION 1: The document that is attached to this Ordinance is hereby adopted as
a part of the Las Vegas 2020 Master Plan and is incorporated therein by this reference. The attached
document shall function as the Conservation Element of the Las Vegas 2020 Master Plan and shall
replace and supersede any corresponding element or inconsistent provision of the City's General Plan
adopted in 1992 by Ordinance No. 3636 and amended thereafter.

SECTION 2: If any section, subsection, subdivision, paragraph, sentence, clause or
phrase in this ordinance or any part thereof, is for any reason held to be unconstitutional, or invalid
or ineffective by any court of competent jurisdiction, such decision shall not affect the validity or
effectiveness of the remaining portions of this ordinance or any part thereof. The City Council of the
City of Las Vegas hereby declares that it would have passed each section, subsection, subdivision,
paragraph, sentence, clause or phrase thereof irrespective of the fact that any one or more sections,
subsections, subdivisions, paragraphs, sentences, clauses or phrases be declared unconstitutional,
invalid or ineffective.

SECTION 3: All ordinances or parts of ordinances or sections, subsections, phrases,

...

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1 sentences, clauses or paragraphs contained in the Municipal Code of the City of Las Vegas, Nevada,
2 1983 Edition, in conflict herewith are hereby repealed.

3 PASSED, ADOPTED and APPROVED this 6th day of November, 2002.

4 APPROVED:

5
6 By 
7 OSCAR B. GOODMAN, Mayor

8 ATTEST:

9 
10 BARBARA JO RONEMUS, City Clerk

11 APPROVED AS TO FORM:

12 *Valsted* 9-19-02
13 Date

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1 The above and foregoing ordinance was first proposed and read by title to the City Council on the
2 2nd day of October, 2002, and referred to a committee for recommendation; thereafter the
3 committee reported favorably on said ordinance on the 6th day of November, 2002, which was a
4 regular meeting of said Council; that at said regular meeting, the proposed ordinance was read by
5 title to the City Council as first read and adopted by the following vote:

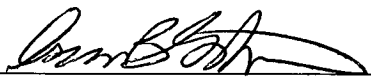
6 VOTING "AYE": Mayor Goodman, Councilmembers Reese, M. McDonald, Brown, Weekly
and Mack

7 VOTING "NAY": None

8 EXCUSED: L. B. McDonald

9 ABSTAINED: None

10 APPROVED:

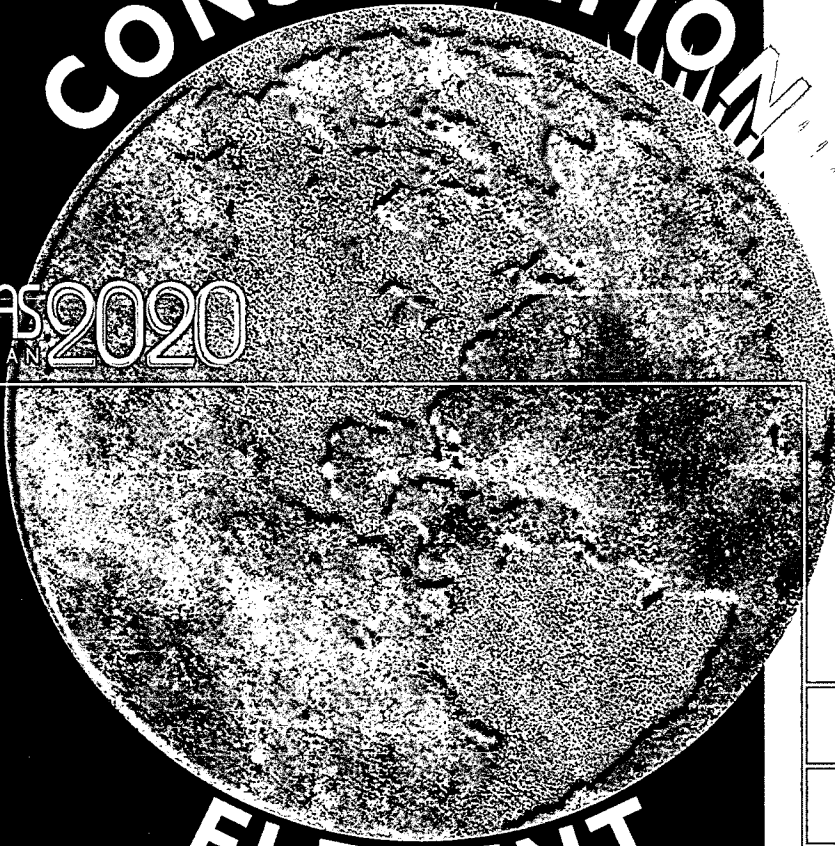
11 
12 _____
OSCAR B. GOODMAN, Mayor

13 ATTEST:

14 
15 _____
BARBARA JO RONEMUS, City Clerk

CONSERVATION

LAS VEGAS 2020
MASTER PLAN



ELEMENT

air quality

water supply and quality

habitat and wildlife

soils

waste

energy conservation



DRAFT
Adopted by
Planning Commission 8-22-02

CITY OF LAS VEGAS CONSERVATION ELEMENT

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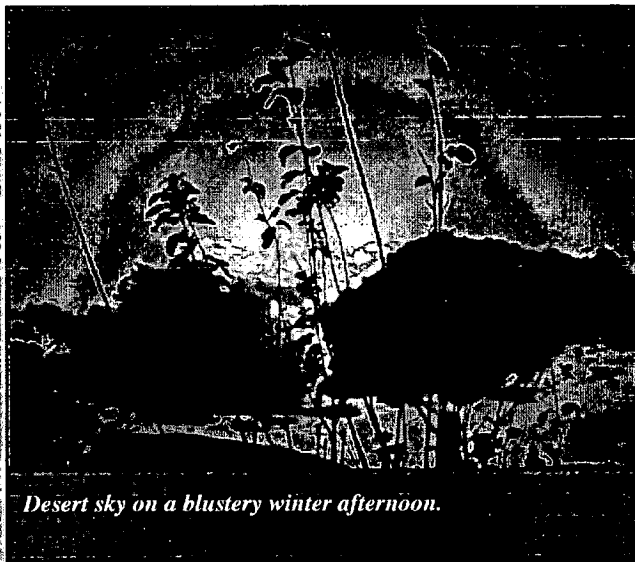


EXECUTIVE SUMMARY

The *City of Las Vegas 2020 Master Plan* consists of a capstone document and a series of specific plans, or elements. The capstone document, which was adopted by City Council in September 2000, contains a broad policy structure intended to direct the actions of the City regarding land use and development over the period from 2000 to 2020. The individual elements are intended to provide more specific direction, through detailed analysis and recommended actions, as to how the City should react to certain land use issues.

The list of these elements follows the direction contained in state legislation, the *Nevada Revised Statutes*. State law provides that in counties of 400,000 or more in population, the governing entity must adopt a master plan to address a list of subjects. One of these subjects is a conservation plan. In preparing this Conservation Element, the City of Las Vegas has considered how policies stipulated in the 2020 Master Plan direct future decisions affecting the environmental aspects of land use and other pertinent legislation directed to conservation issues in the Las Vegas Valley. Where appropriate, this Conservation Element reflects the concurrence of City policy with these other policy sets.

While some Master Plan elements are organized on a somewhat geographic basis, reflecting the Master Plan themes of Reurbanization (Downtown), Neighborhood Revitalization (central city areas), and Newly Developing Areas (new suburban development), the Conservation Element is thematically organized around conservation topics. The Master Plan themes are reflected within each of these conservation-related headings. The headings therefore used in this Element are Air Quality, Water Supply and Quality, Habitat and Wildlife, Soils, Waste and Energy Conservation.



Desert sky on a blustery winter afternoon.

The Air Quality segment focuses on the indirect actions and the land use decisions which may be necessary to positively influence air quality. These include the continued focus on the Downtown as the core of urban activities within the Valley, actions that support enhanced use of mass transit options, proper redevelopment of vacant and underutilized sites, and other steps to help correct the present Valley-wide jobs-housing imbalance that creates commuter congestion. It will also be important to work with Clark County, which is the entity vested with the responsibility to resolve air quality problems in the Las Vegas Valley. This segment also references the need to limit the use of plant species that produce high levels of pollens and allergens, to limit these impacts on Valley air quality.

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Under the Water Supply and Quality heading, five topics are explored: the use and management of potable water resources; erosion control and wetland management; flood control; the use of reclaimed water; and the use of appropriate landscaping materials. Cooperation among involved agencies to ensure that the supply of potable water remains plentiful and available at a reasonable cost is discussed. The portion of the Element dealing with erosion control focuses on the integration of City efforts with those of other agencies to ensure that erosion caused by improper control of runoff is eliminated. Flood control is discussed in the context of the effect of flooding on water quality and methods used to minimize flooding. Next, the Element contains a discussion of the efforts to increase the appropriate use of reclaimed water as a means of reducing the demand on potable water supplies. Finally, under the sub-heading of Appropriate Landscape Materials, the Element references the need to promote landscaping that uses small amounts of water.

The Habitat and Wildlife component of the Element contains three sub-headings: the protection of endangered species; entity boundaries and urban expansion issues; and the establishment and protection of urban forestry. The first of these sub-headings, Protection of Endangered Species, focuses on the City's role in the implementation of the Clark County *Multiple Species Habitat Conservation Plan*, and identifies the resultant potential impacts on the city. In the Boundaries and Urban Expansion section, the Element discusses the city's current boundaries and the issues surrounding any future attempts to enlarge these boundaries to accommodate urban expansion. The final heading, Establishment and Protection of Urban Forestry, concentrates on the need to develop a focused discussion of the value of tree cover in specific urban settings, most particularly the Downtown.

In the next component, the Conservation Element addresses the topic of Soils. Soils management issues and conservation of steep slopes are flagged as important topics in which the City can play a positive role through its own actions as well as in its role as a regulator.

Under the heading of Waste, the Element examines the importance of recycling and source reduction, and the role the City should play in achieving state-mandated targets for waste recycling. The Element then outlines local solid waste management practices, and makes recommendations for City action in this regard.

The final heading is Energy Conservation. Three sub-headings discuss the City's role in energy conservation: Transportation and Land Use Issues; Alternative Sources of Energy; and Building Practices. In each area, the focus is on actions that the City can promote that, directly or indirectly, lead to a reduced level of consumption of fossil fuels within the Valley, and within the City of Las Vegas in particular.



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PURPOSE

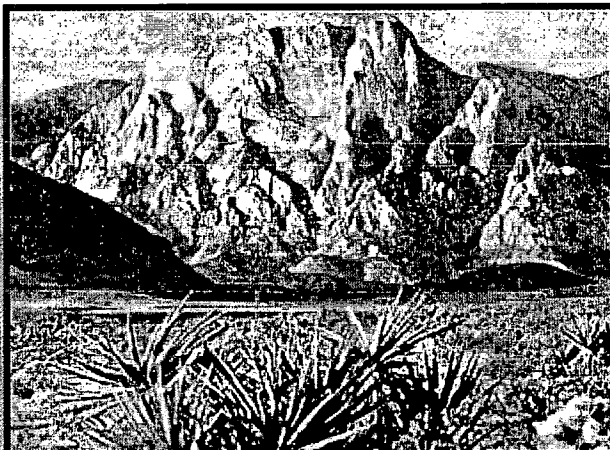
There is a dual purpose to the Las Vegas 2020 Master Plan Conservation Element. The first purpose is to address the requirements of state law, as provided in the Nevada Revised Statutes (NRS) 278.150(4). This section of the NRS requires that governing bodies in Nevada counties with a population of 400,000 or more ensure that their master plans address a stipulated list of subjects, including a conservation plan.

In particular, Nevada state law requirements [NRS 278.160.1.b] dictate that a conservation plan, or element, needs to address the following aspects of conservation:

For the conservation, development and utilization of natural resources, including, without limitation, water and its hydraulic force, underground water, water supply, forests, soils, rivers and other waters, harbors, fisheries, wildlife, minerals and other natural resources. The plan must also cover the reclamation of land and waters, flood control, prevention and control of the pollution of streams and other waters, regulation of the use of land in stream channels and other areas required for the accomplishment of the conservation plan, prevention, control and correction of the erosion of soils through proper clearing, grading and landscaping, beaches and shores, and protection of watersheds. The plan must also indicate the maximum tolerable level of air pollution.

The second purpose of this Element is to incorporate the broad level conservation policies of the 2020 Master Plan capstone document and other policy initiatives, such as the Southern Nevada Regional Policy Plan, into a more detailed examination of conservation issues, creating suggestions for implementation actions at the local level.

This Conservation Element forms part of Phase II of the City's Master Plan project, providing coordinated direction on a range of land use and policy issues.



Dedicated to preserving the beauty of the open desert in southern Nevada.

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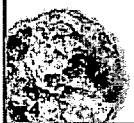
CONSERVATION PLANNING IN SOUTHERN NEVADA

PREFACE

The topic of conservation, particularly as it relates to air and water supply and quality, soils and wildlife, has been given a great deal of attention as the effects of rapid urbanization within the Valley on these factors has become increasingly apparent. A range of conservation issues affecting areas within the Las Vegas Valley have been explored through a number of policy documents and studies in recent years (Table 1). These plans and studies are discussed briefly below and the implications for this Conservation Element are examined.

Table 1
Conservation-related Plans Affecting the Las Vegas Area

State/Regional Legislation	County Legislation	City Legislation
Nevada Natural Resources Plan	Comprehensive Plan - Conservation Element	Las Vegas 2020 Master Plan
Southern Nevada Regional Policy Plan	Multiple Species Habitat Conservation Plan	Conservation Element
Southern Nevada Water Authority 1999 Water Conservation Plan	Carbon Monoxide State Implementation Plan PM ₁₀ State Implementation Plan	
Southern Nevada Water Authority 2002 Water Resource Plan		
Las Vegas Wash Comprehensive Adaptive Management Plan		
Nevada Statewide Energy Conservation Plan		



NEVADA NATURAL RESOURCES PLAN

The Nevada Department of Conservation and Natural Resources (DCNR) is in the process of developing the *Nevada Natural Resources Plan* (NRP). This is an interagency initiative launched in 1999 that emphasizes coordination among state and federal agencies, local government and interest groups, distributes information about resources and important regional and statewide issues, and promotes a cooperative approach to prioritizing and addressing issues. To date, the key points that have been identified within the work conducted on this Plan include:

- Conservation of open space, public land access and agricultural lands in urban and fast growing areas, while meeting development needs;
- Coordination and encouragement of proactive efforts to avert threats to vulnerable wildlife species and habitats;
- Watershed planning and management;
- Restoration and sustenance of rangelands for watershed, wildlife habitat, recreation and commodity uses;
- Conservation and management of forests and woodland ecosystems for watershed, wildlife habitat, recreation and commodity uses; and
- Planning for the growing and diversified demand for outdoor recreation and public access while minimizing resource impacts.

Through the cooperative approach utilized in the input, policy development and prioritization processes of preparing this Plan (which is slated for completion by 2003) it is hoped that the guiding principles and recommendations of the NRP, particularly with respect to land use trends, urban and community forests, and air and water quality, will have a positive impact on future urban development within the Valley.

SOUTHERN NEVADA REGIONAL POLICY PLAN

The *Southern Nevada Regional Policy Plan* (SNRPP) was approved in February 2001. This Plan implemented a state requirement for communities in the Las Vegas Valley to cooperate in the production of a regional policy plan. This Plan contains a series of regional planning policy guidelines that are to be followed by the Valley communities, including the City of Las Vegas.

In the SNRPP, regional policies are grouped under seven topical headings. Two of these headings, "*Conservation, Open Space and Natural Resource Element*" and "*Air Quality*", contain certain regional policies of direct significance to the City's conservation management approach. The SNRPP Conservation, *Open Space*

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and Natural Resource Element policies include the following, with the relevant section of the City's Conservation Element policy/action response shown in brackets:

- Encourage the preservation of open space in accordance with local and regional open space plans [Air Quality and Habitat and Wildlife];
- Encourage new subdivisions to maintain historic access to adjacent public lands that will remain public, or provide new access [Air Quality];
- Adopt uniform regional sensitive lands protection standards throughout the Valley [Habitat and Wildlife, and Soils];
- Plan and construct flood control systems to provide trails and recreational facilities as well as serving flood control functions [Water Supply and Quality];
- Implement Clark County's *Multiple Species Habitat Conservation Plan* to protect critical habitat and avoid federal control of local land development decisions [Habitat and Wildlife]; and
- Implement the *Southern Nevada Water Authority Cooperative Adaptive Management Plan*, which establishes a strategy for preservation and restoration of the Las Vegas Wash [Water Supply and Quality].

The SNRPP "Air Quality" policies include the following, with the relevant section of the Conservation Element policy/action response shown in brackets:

- Identify and implement institutional methods of improving air quality planning, monitoring and regulations [Air Quality];
- Implement and enforce effective dust control rules and best management practices to attain PM-10 standards [Air Quality];
- Monitor progress to attain and maintain carbon monoxide standards, and implement control measures as needed [Air Quality];
- Develop plans and actions to meet anticipated ozone standards [Air Quality]; and
- Adequately fund air quality planning and improvement programs [Air Quality].

The SNRPP also promotes the importance of infill development as a responsible planning initiative to address air quality concerns. Regional initiatives to encourage infill development are discussed more fully under the Air Quality section of this Element.

SOUTHERN NEVADA WATER AUTHORITY 1999 WATER CONSERVATION PLAN

The *Southern Nevada Water Authority 1999 Water Conservation Plan* (WCP) outlines a regional approach to water supply management and conservation. This Plan describes existing and proposed water conservation measures to be implemented by the



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Authority and its member agencies. The Plan also contains an implementation schedule and budget, as well as water shortage and allocation policies. As the water supply for the City of Las Vegas is regulated pursuant to the measures and conditions of this Plan, the Water Supply and Quality section of the Conservation Element contains policies that support the conservation and efficient use of potable water in support of the WCP.

SOUTHERN NEVADA WATER AUTHORITY 2002 WATER RESOURCE PLAN

The Southern Nevada Water Authority 2002 Water Resource Plan describes the history of water development in the Las Vegas Valley. It also describes current and future water resources for the Authority and its member agencies, with a planning horizon through year 2050. A discussion of conservation measures and goals is included and how they are incorporated into the water demands forecasted for the Authority and its member agencies. Environmental issues affecting water resources are also covered, including the Las Vegas Wash.

LAS VEGAS WASH COMPREHENSIVE ADAPTIVE MANAGEMENT PLAN

The Las Vegas Wash Coordination Committee produced the *Las Vegas Wash Comprehensive Adaptive Management Plan* in January 2000. The Southern Nevada Water Authority formed this Committee as a result of the creation of the Lake Mead Water Quality Forum by the Nevada Division of Environmental Protection in February 1997, and the creation of the Water Quality Citizens' Advisory Committee in July 1997. These two groups met during 1997 and 1998 to discuss mutual concerns affecting Lake Mead and the Las Vegas Wash. One of the recommendations that resulted from these meetings was to prepare a comprehensive plan for the long-term management of the Las Vegas Wash. The Las Vegas Wash Coordination Committee was formed in 1998 to address the structuring of the Plan and to establish the work program that would be required to coordinate input to the Plan process.

The Plan focuses on the implementation of engineering solutions and is not intended to fill the role of a capital improvement plan. Preparation of this Plan did involve extensive stakeholder and public participation. Public outreach included five workshops and significant web site input. The Plan contains a series of 44 actions intended to guide the development of a long-term management plan using a full range of stakeholder involvement. The Water



Las Vegas Wash.

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Supply and Quality segment of the Conservation Element contains actions in support of the sensitive management of the city portion of the Las Vegas Wash.

CONSERVATION ELEMENT OF THE CLARK COUNTY COMPREHENSIVE PLAN

As is the case for the City of Las Vegas, Clark County is required to complete a Conservation Plan or Element as one of the required components of a master plan pursuant to state legislation. The County Board of Commissioners adopted a Conservation Element as a component of the *Clark County Comprehensive Plan* in December 2000. This Plan examines issues dealing with land, air and water resources, and plants and animals as these relate to land use and development within Clark County. Under each of these broader headings, the Plan examines a range of specific aspects of conservation.

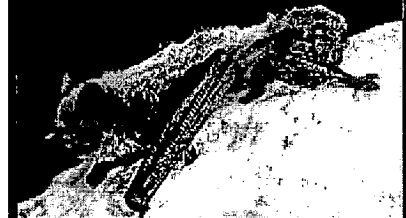
This Plan is important to the structure of the City's conservation planning efforts, as the city represents a subset of the county's overall land area, and therefore a subset of its policy direction. While the County Plan by definition must represent a blend of rural-oriented and urban-oriented policy, the City's focus is directed primarily towards urban-oriented policy. This means that City conservation policy is less directed to preservation of natural areas, than directed towards environmentally responsible actions that can take place in conjunction with, and be compatible with, a strong pace of urban development.

CLARK COUNTY MULTIPLE SPECIES HABITAT CONSERVATION PLAN (MSHCP) AND ENVIRONMENTAL IMPACT STATEMENT

The *Multiple Species Habitat Conservation Plan* was intended to achieve a balance between the conflicting objectives of the long-term conservation and recovery of a broad range of plants and animals occurring in Clark County, and the orderly and beneficial use of land for a growing urban population - balancing economic prosperity with environmental integrity. The Plan was adopted by the Board of County Commissioners in June 1999, and took effect when the U. S. Fish and Wildlife Department issued an Incidental Take Permit in February 2001. In this Plan, the regulatory framework governing the identification and protection of endangered species is analyzed to ensure that the "take" of currently or potentially threatened or endangered species of plants and animals within the Clark County area meets the restrictions of existing federal and state legislation.



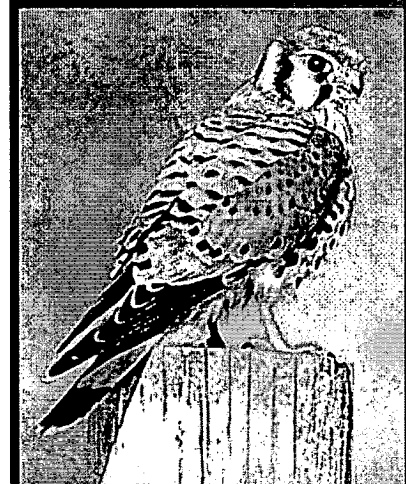
Tortoise hiding in native grasses and Bearpaw poppy.



Western Pipistelle bat.



Salt Bush.



Kestrel.

Photos courtesy of LVVWD.

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This Plan identifies some 78 species of plants and animals as "covered species". Another 103 species are identified as "evaluation species", with a further 51 species shown as "watch list species". The Plan sets out a development fee of \$550 per acre. This fee is to be used to fund conservation efforts for Covered Species, and to fund development of information and mitigation measures to facilitate the addition of Evaluation Species to the Covered Species list. The Plan also stipulates that only 145,000 acres of the County beyond the current BLM disposal boundary will be urbanized in some way and therefore subject to incidental take of protected species, with 111,000 acres of that occurring between 1994 and 2023. Of the 145,000 acres available for urbanization, the Plan estimates that about 130,000 acres will be subject to fee collection.

The long-term effect of the MSHCP is to ensure that the developers of future urban land uses within the region pay the ongoing costs associated with the conservation of at-risk species of plants and animals in the County.

LAS VEGAS VALLEY 208 WATER QUALITY MANAGEMENT PLAN

In 1972 and 1977, the Federal government enacted Federal Water Pollution Control Act amendments that required control of all sources of water pollution to meet the goals of the Act. Section 208 of the Act required the development of an integrated regional water quality management program to deal with water pollution sources. Since 1978, Clark County has prepared a sequence of water quality management plans to respond to these Federal requirements. In the latest of these Plans, prepared in 1997, according to Montgomery Watson, the consultants tasked with preparing the Amendment, the purpose was to revise the 1990 208 Plan Amendment, include the effects of sustained regional growth and development, revise storm water permitting to a more inclusive non-point section and provide water quality planning to a horizon year of 2020. As a wastewater discharger within the Valley, the City will need to continue to work as a member of the Southern Nevada Water Authority to ensure a proactive approach to water quality planning.

AIR QUALITY ISSUES IN CLARK COUNTY

There are a number of policy initiatives that have been prepared at the County level to address air quality concerns. As a result of recent legislative changes at the state level, Clark County government, through the new Air Quality Management Board, is now directly charged with the regional responsibility for air quality management, a responsibility that formerly rested with the Clark County Health District. The County has recently formed an Air Quality Management Department to address these issues.

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Even prior to this shift in responsibilities, the County had prepared a number of policy documents designed to rectify the increasingly unsatisfactory levels of air pollution in the Valley. This problem had become so significant in recent years that the County was in serious jeopardy of losing federal highway monies through non-attainment of minimum federal emissions standards. Carbon monoxide emissions and PM₁₀ levels (particulate matter of 10 microns or less in diameter that can be inhaled into the lungs) are issues for which regional solutions are mandated by the federal *1990 Clean Air Act Amendments*.

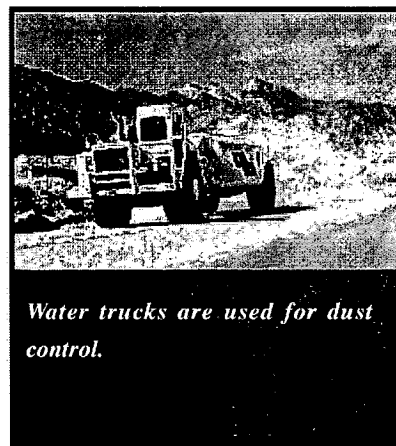
It should also be noted that, while not currently mandated, the monitoring of ozone levels is currently being evaluated to determine whether ozone levels may have an air quality impact in the Las Vegas Valley.

AUGUST 2000 CARBON MONOXIDE STATE IMPLEMENTATION PLAN

In order to address federal requirements for acceptable levels of ambient carbon monoxide concentrations, the State of Nevada designated the Clark County government as the lead agency in air quality planning for the Las Vegas Valley. To achieve this objective, a *Carbon Monoxide State Implementation Plan* (COSIP) was prepared and adopted by the County Board of Commissioners in August 2000. The intent of this effort was to comply with federal regulations requiring the County to attain and maintain National Ambient Air Quality Standards (NAAQS) by December 31, 2000. Clark County has complied with the NAAQS for carbon monoxide since 1999. The U.S. Environmental Protection Agency (EPA) is currently reviewing the August 2000 COSIP for approval.

The Plan itself explains the monitoring network, provides an emissions inventory, identifies control measures, explains air quality modeling, demonstrates how attainment can be achieved and suggests an implementation and monitoring program. The Plan is supported by volumes of analysis and background documentation that illustrates the areas of the Valley most likely to suffer high carbon monoxide levels. The Plan projected that the implementation of a range of control methods, including use of clean burning gasoline, voluntary transportation control measures and transportation demand management, technician training and certification, and the use of alternative fuels programs by government fleets was intended to reduce emissions by 12.2% by the end of 2000.

The Plan also contains a discussion of the contingency measures that will have to be implemented under a sustained condition of non-attainment, factoring in the projected annual



Water trucks are used for dust control.



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increase in vehicle miles traveled (VMT). These measures include On Board Diagnostics II (OBDII) Testing, reduction of the cutpoints for the State's Vehicle Inspection/Maintenance Program (i.e. tougher smog check standards), and the development of On-Road Remote Sensing to detect high emission vehicles. Other suggested control measures included a Voluntary Vehicle Repair Program and a Smoking Vehicle Telephone Hotline. These measures still require additional technical development in order to be implemented and the responsibility for implementation lies with the Department of Motor Vehicles and Public Safety. The federal EPA is expected to approve the COSIP by the spring of 2002.

JUNE 2001 PM_{10} STATE IMPLEMENTATION PLAN

Requirements to meet National Ambient Air Quality Standards (NAAQS), as established by the federal Clean Air Amendments, enforced by the EPA, include an annual standard of a maximum of 50 micrograms per cubic meter for particulate matter with a diameter of ten microns or less (PM_{10}), and a 24-hour standard of 150 micrograms per cubic meter. These particulate emissions result primarily from disturbed vacant land, construction activities, unpaved roads and paved roads. As with carbon monoxide emissions, Clark County government, through its Air Quality Management Department, has been designated as the lead agency to address PM_{10} non-attainment, with a mandate to meet federal NAAQS standards at the earliest practicable date.

To achieve this objective, a *PM_{10} State Implementation Plan* (PM_{10} SIP) was prepared and adopted by the County Board of Commissioners in June 2001. The Las Vegas Valley met the annual NAAQS for PM_{10} at the end of 2001. The Valley is projected to attain the 24-hour PM_{10} NAAQS by the end of 2006. The EPA has deemed the County's PM_{10} SIP complete. The EPA will take approximately one year to either approve the Plan or require further changes.

The Plan contains a formal request for extension of the 24-hour standard from 2001 to 2006. The Plan includes a Most Stringent Measure (MSM) analysis to support this request. The Plan and its associated appendices include predictive modeling used to prepare attainment demonstrations. The Plan preparation process involved extensive stakeholder participation, including local agencies and the general public. PM_{10} levels must be reduced to acceptable levels over the next few years; otherwise, the risk of losing federal highway subsidies, until those levels are attained, becomes imminent.

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LAS VEGAS 2020 MASTER PLAN

The *Las Vegas 2020 Master Plan* was approved by City Council in September 2000. The preparation of this Conservation Element is part of phase II of the Master Plan project, in which actions are developed in response to specific land use and environmental issues and the resulting policy sets.

The policies of the *Las Vegas 2020 Master Plan* related to the Conservation Element, with the relevant sections of the Element shown in brackets, are as follows:

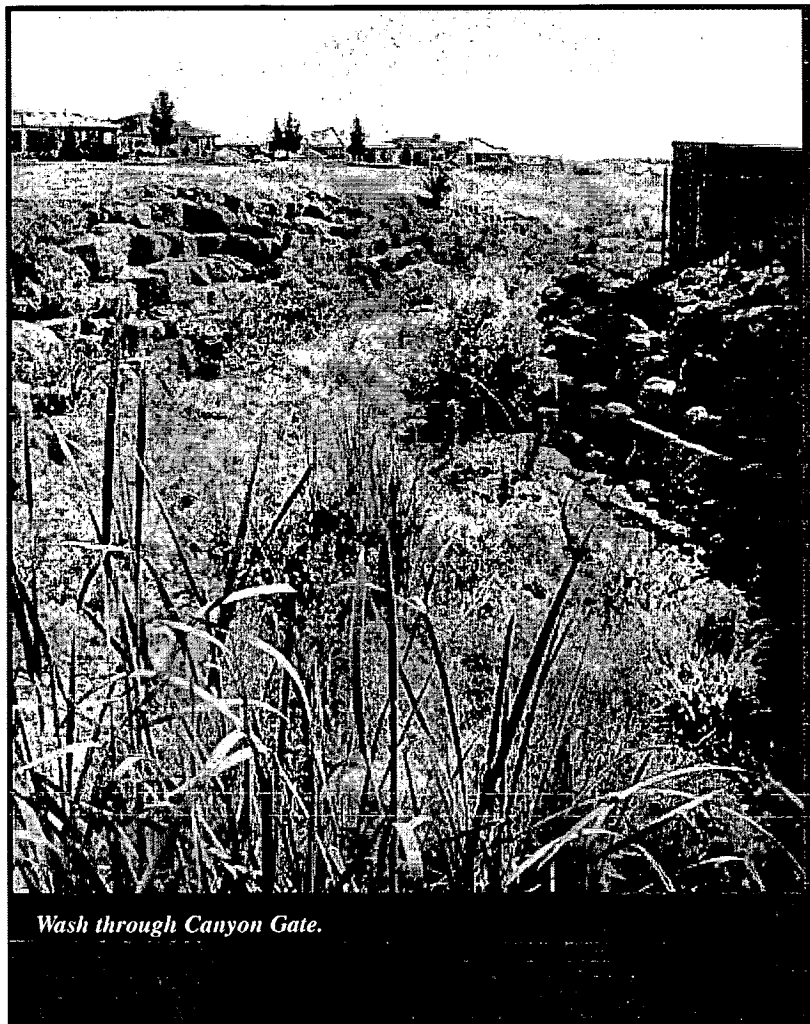
- Reduce carbon monoxide and airborne particulate matter [Air Quality];
- Maintain high drinking water quality at reasonable cost [Water Supply and Quality];
- Maximize use, recycling and quality of gray water and encourage water conservation [Water Supply and Quality];
- Monitor and evaluate quality of storm water discharge and other actions as may be required pursuant to U.S. Environmental Protection Agency (EPA) regulations [Water Supply and Quality];
- Work with those responsible for flood control to ensure that storm water discharge is handled safely and efficiently, yet with a minimum level of aesthetic impact [Water Supply and Quality];
- Support multi-modal transit opportunities [Energy Conservation]; and
- Take action regarding land resources, water resources, plants and animals and air resources within the County environs [all sections of the Conservation Element].

In particular, the Air Quality segment of the Conservation Element focuses on the importance of the City's future direction regarding its land use policy decisions, modifications to the Zoning Code and partnering with other Valley entities to achieve a pattern of development that achieves a better jobs/housing balance in order to reduce vehicular emissions. The Water Supply and Quality segment indicates how the City can be involved in regional actions to help conserve potable water, increase the use of reclaimed water and control erosion.



CLV/UNLV QUALITY OF LIFE SURVEY

A survey was conducted in February 1999 by the City of Las Vegas in conjunction with researchers from the University of Nevada, Las Vegas. The purpose of the survey was to provide information on a range of quality of life issues facing Valley residents. The results of this survey were published in October 1999, provided residents' opinions on a range of quality of life issues and identified those issues which people indicated they were willing to address through increased taxes. The results of this statistically accurate survey focused on air and water quality, traffic, and crime as major issues. The results of this survey as they relate to conservation matters have been factored into the recommendations of the Conservation Element.



Wash through Canyon Gate.

CONSERVATION ELEMENT OUTLINE

Conservation issues within the Las Vegas Valley, and in particular those that affect the City of Las Vegas or for which solutions may be, in full or in part the responsibility of the City, can be grouped into several categories:

- Air Quality
- Water Supply and Quality
- Habitat and Wildlife
- Soils
- Waste
- Energy Conservation

The first four categories cover the range of required topics as prescribed in the *Nevada Revised Statutes*. The last two categories are not specifically referenced in State law, but are important to a full consideration of conservation issues in the Las Vegas Valley and the City's role in achieving a sound conservation strategy.

The Conservation Element examines conservation and environmental issues in light of the role that the City of Las Vegas plays regarding these issues. The City's role may be defined through its existing policies and by responsibilities that are mandated to the City through federal or state of governments. Non-mandated actions, that may be appropriate for the City to take to resolve such concerns, may also help to define the City's role regarding conservation measures.

Under each of the six major headings listed above, the Conservation Element restates relevant goals, objectives and policies from the approved *Las Vegas 2020 Master Plan* and follows these with a discussion of each policy and action statements indicating the recommended response for the City to take in order to address each approved Master Plan policy. Goals from the approved Master Plan are referenced with the appropriate heading from the Master Plan (i.e. "Reurbanization Goal"). The three geographically-based themes of Reurbanization, Neighborhood Revitalization and Newly Developing Areas are illustrated on Map 1. In some cases, there are goals, objectives, policies, discussions and actions that were not derived from the Master Plan, but were developed through the process of preparing this Conservation Element. A list of all the recommended actions stemming from this Element is provided in tabular form at the end of the document.

Please note that references to the City of Las Vegas Administration are made using a capitalized "City", whereas geographical references to the City of Las Vegas are made using the word "city".

Also, please note that maps provided in this document are not to scale and are provided in order to depict a broad range of information in a concise format. The Planning and Development Department reserves the right to provide an interpretation of any information depicted on these maps.

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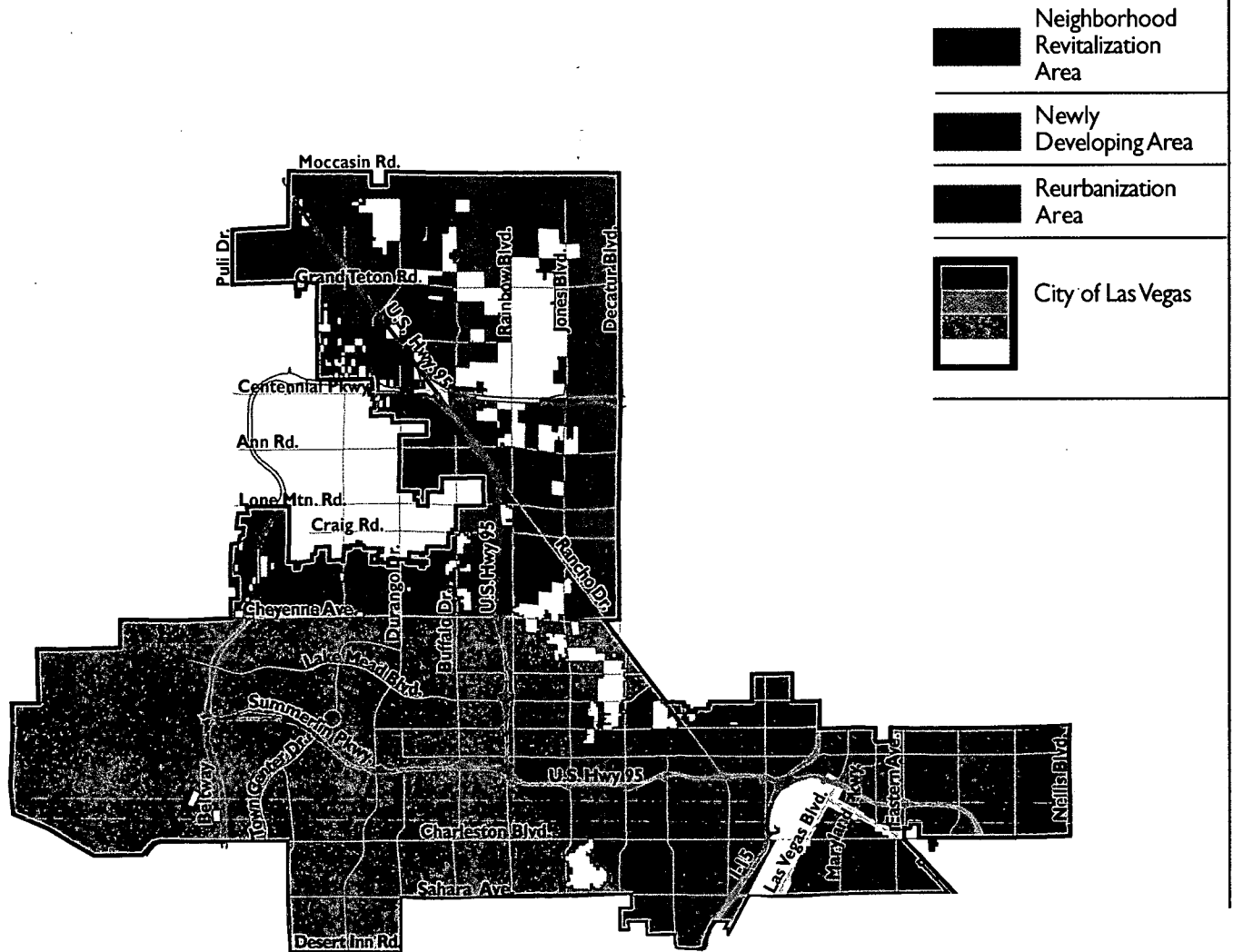


MASTER PLAN 2020



THEME AREAS

Map I



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Source: CLV Planning & Development Dept.

clv strategy areas.Conserv Ele.fn/6-26-02

AIR QUALITY

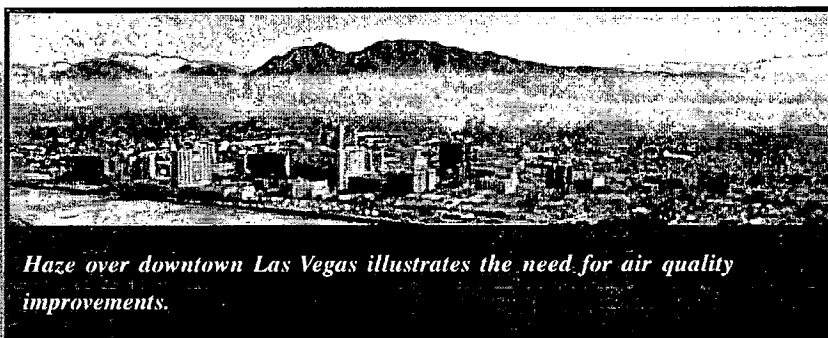
PREFACE

In general terms, the responsibility for the maintenance of a healthy level of air quality in the Las Vegas Valley rests with the Clark County government. The County has identified a methodology for the monitoring and control of carbon monoxide and PM_{10} pollutants through its state implementation plans. These plans identify actions and recommendations for the County to undertake in order to improve the measured levels of these pollutants in the atmosphere of the Valley.

Most of these controls involve the restriction of uncontrolled clearing of land and the development and use of dirt roads, and the

monitoring and control of vehicles creating unacceptably high levels of emissions. The City of Las Vegas, however, has a somewhat different, yet still important role, through its participation in SNRPC initiatives designed to address air quality concerns, through its own land use policies designed to encourage infill development, and

through a series of other specific City actions aimed at improving air quality. This role is discussed in greater detail later in this section of the Plan.



BACKGROUND

The Federal Environmental Protection Agency (EPA) has established standards for various types of air pollutants. For carbon monoxide (CO) pollution, the EPA in 1971 set two standards: the first was a maximum concentration over a given one-hour period of 35 parts per million (ppm), while the second was a maximum concentration of 9 ppm over a continuous 8-hour period. Map 2 shows the Las Vegas Valley in the context of the EPA's Region IX non-attainment areas for carbon monoxide emissions.

To monitor CO emissions, a total of 15 monitoring sites have been established around the Valley; of these, four are within the City of Las Vegas. These sites are operated by Clark County and are

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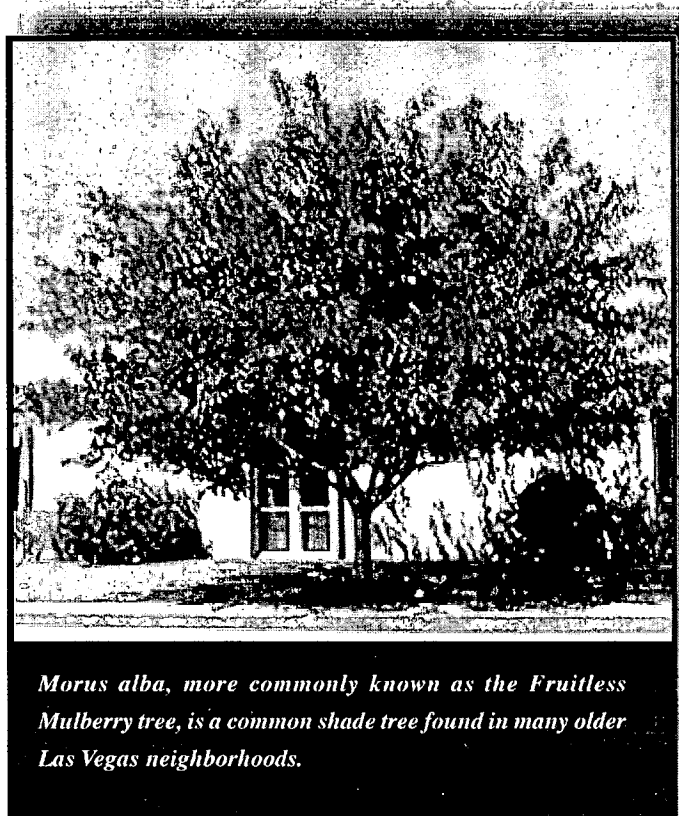
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subject to periodic performance audits by the EPA. The County was also responsible for the preparation of a base year (which for CO emissions was 1996) inventory of information against which annual and peak season measurements are compared. The County inventories CO emissions from stationary point sources, mobile sources, both on-road and non-road, and area sources.

For particulate pollution (PM_{10}), the EPA has set a National Ambient Air Quality Standard (NAAQS) again using two indexes: the first is an annual standard of 50 micrograms per cubic meter ($\mu g/m^3$), while the second is a 24-hour standard of 150 ($\mu g/m^3$). Map 3 shows the Las Vegas Valley in the context of the EPA's Region IX non-attainment areas for PM_{10} emissions. PM_{10} levels are monitored by Clark County at five sites around the Valley. As with CO emissions, a base year inventory was established (which for PM_{10} levels was 1998). The targeted dust sources include areas under construction, paved and unpaved roads, and vacant land. The County's modeling projections indicate that despite reduction measures that have been undertaken, attainment of the 24-hour standard is unlikely until 2006. As a result, a formal request for a five-year extension of the federally mandated attainment date of 2001 to 2006, was submitted by the County to the EPA as part of its PM_{10} State Implementation Plan in June of 2001.

Another contributing source to negative air quality impact is the significant presence of pollen and plant-generated allergens in the Las Vegas Valley. In order to reduce the pollen and allergen levels within the Valley, the District Board of Health for Clark County currently regulates certain types of plants that contribute to these levels. New planting of European Olive trees and the Fruitless Mulberry is prohibited within Clark County.



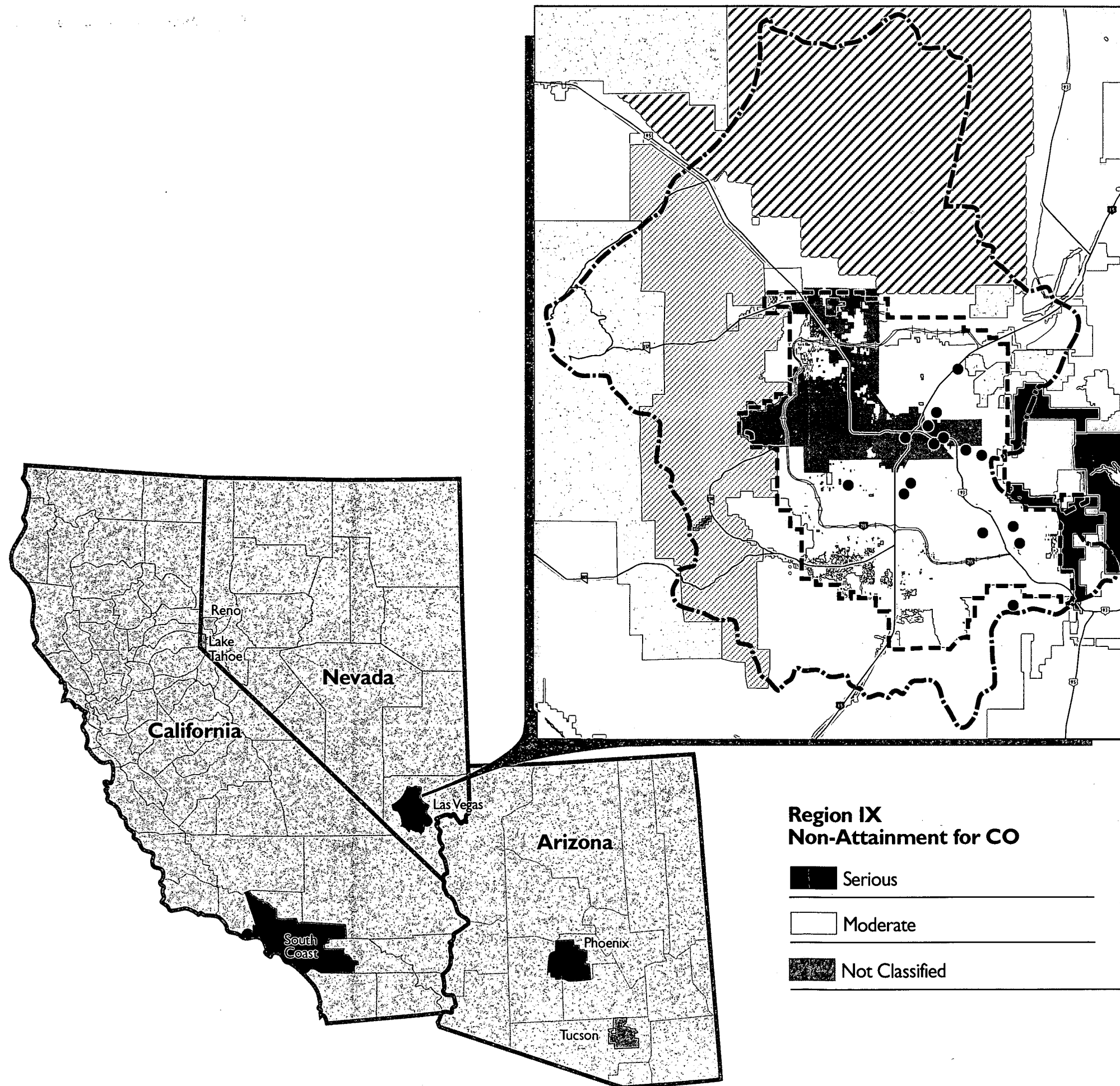
Morus alba, more commonly known as the Fruitless Mulberry tree, is a common shade tree found in many older Las Vegas neighborhoods.

ROLE OF THE CITY OF LAS VEGAS

The City of Las Vegas is positioned to help control some of the key sources of air pollution in the Valley. Much of the land within the boundary of the city is either already developed or is intended for some form of urban development. Through well-planned infill, redevelopment and new development, the City can promote efficiencies in the way in which people commute to and from work, shopping and other necessary destinations.

CO NON-ATTAINMENT AREAS - REGION IX

Map 2



Las Vegas Valley CO Non-attainment Area Land Use

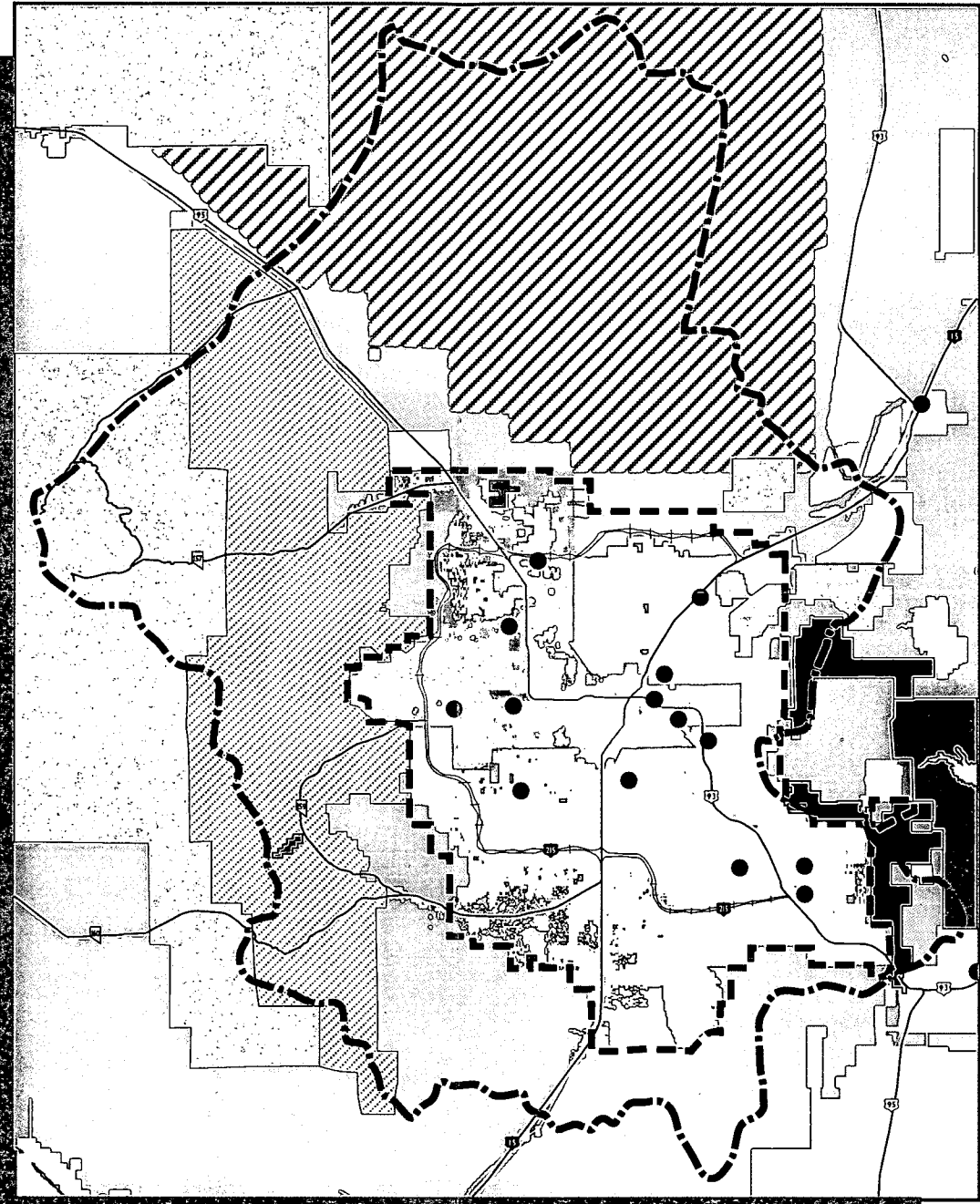
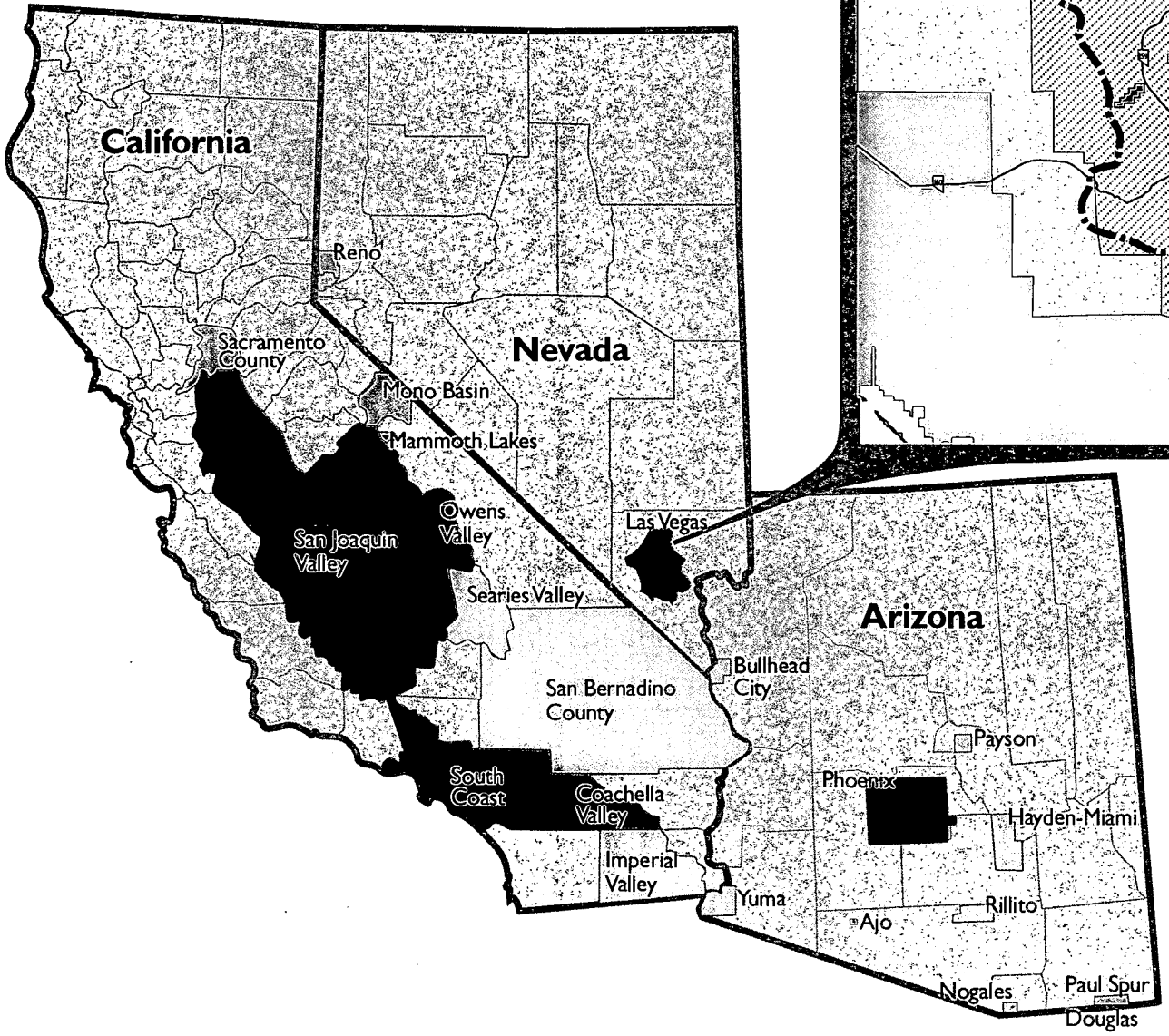
- Non-attainment Area and Hydrographic Basin 212 Boundary
- BLM Disposal Boundary
- Public Land
- Private Land
- Lake Mead National Recreation Area
- Red Rock Canyon National Conservation Area
- Desert National Wildlife Refuge
- Las Vegas Dunes Recreation Area
- Rainbow Gardens ACEC
- State Parks
- Bureau of Reclamation Lands
- Toiyabe National Forest
- Indian Reservations
- Nellis Air Force Base/Range
- City of Las Vegas Area
- Monitoring Stations

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Source: Clark County
Environmental Protection Agency
CO Non-Attain.Conserv Ele.fv/6-26-02



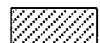
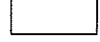
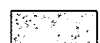
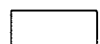
PM₁₀ NON-ATTAINMENT AREAS - REGION IX **Map 3**



**Region IX
Non-Attainment for PM₁₀**

 **Serious**

 **Moderate**

- Las Vegas Valley PM₁₀
Non-attainment Area Land Use**
-  Non-attainment Area and Hydrographic Basin 212 Boundary
 -  BLM Disposal Boundary
 -  Public Land
 -  Private Land
 -  Lake Mead National Recreation Area
 -  Red Rock Canyon National Conservation Area
 -  Desert National Wildlife Refuge
 -  Las Vegas Dunes Recreation Area
 -  Rainbow Gardens ACEC
 -  State Parks
 -  Bureau of Reclamation Lands
 -  Toiyabe National Forest
 -  Indian Reservations
 -  Nellis Air Force Base/Range
 -  City of Las Vegas Area
 -  Monitoring Stations

The *Las Vegas 2020 Master Plan* contains goals, objectives and policies that promote this type of approach to future urban development within the city boundaries.

The 2020 Master Plan document contains policy directives that support the intensification of urban development, both for housing and for commercial uses within the Downtown area. These policy directives are important from a conservation standpoint because the concentration of housing with employment in the Downtown will reduce the length of home-to-work trips, thereby reducing vehicle emissions. The concentration of housing, commercial and entertainment activity within the Downtown area will also make the area more efficient to service by various transit modes, including bus and possibly monorail. Similarly, the Newly Developing Areas portion of the 2020 Master Plan supports the creation of a dense urban environment in the northwest portion of the City, at the intersection of U.S. 95 and the Beltway.

The City of Las Vegas has been taking other actions to improve overall air quality in the Valley. These steps include:

- Paving of all unpaved roads with traffic counts exceeding 75 vehicles per day by July 2001;
- Providing assistance on several air quality studies, by providing locations for monitoring equipment and assisting with project funding;
- Equipping its water pollution control facility with controls designed to achieve the lowest possible emission rates. This work will increase plant capacity by 33% while decreasing emissions by 50%;
- Improving vehicular access and circulation in the Downtown area by using computer simulation modeling to evaluate traffic signal timing and cycle length, and to evaluate the effect of several traffic diversion alternatives;
- Using computer modeling in its transportation planning program, as well as using modeling to evaluate the impact of proposed development;
- Developing a hydrogen-enriched compressed natural gas (CNG) fueling station demonstration project to provide fuel to a test fleet of six specially equipped buses. The intent is to expand use of such alternate fuels in the future;
- Requiring new street sweepers to meet stringent California standards to reduce airborne dust particles;
- Applying for vanpool lease grants from the Regional Transportation Commission; and
- Expanding its use of Internet technologies for public research, payment services and obtaining forms.

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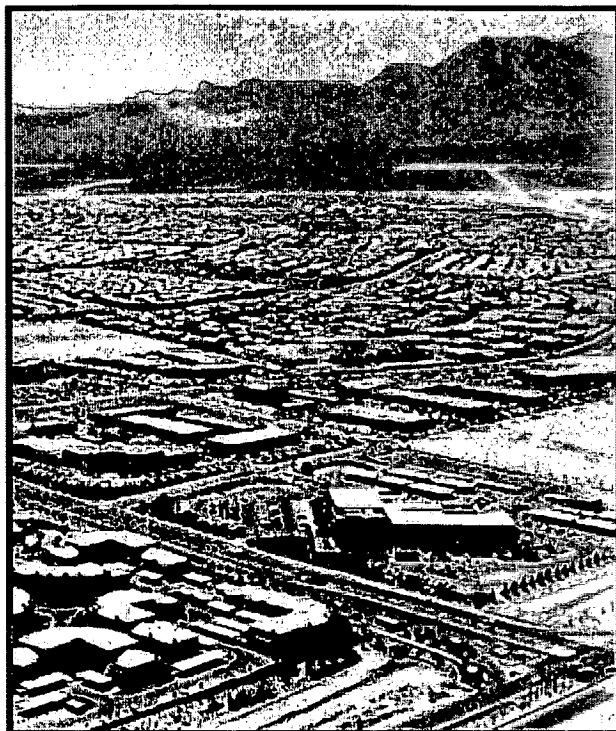


A key step to reducing emissions that have a negative effect on air quality is to promote a denser land use pattern within the core urban area. The *Las Vegas 2020 Master Plan* contains policies directed at a denser pattern of infill development in the future. Relevant goals, objectives and policies from the *Las Vegas 2020 Master Plan* that are related directly or indirectly to improved conservation measures are listed under the Implementation Strategy below, together with a series of newly created actions that the City may take to achieve these policy outcomes.

The importance of infill development as a responsible planning initiative to address air quality concerns is underlined by the actions of the Southern Nevada Regional Planning Coalition (SNRPC). Since adoption of the *Southern Nevada Regional Policy Plan* (SNRPP) in February 2001, the SNRPC has taken the following steps to implement the policies on infill development:

- The SNRPC received a Sustainable Development Grant from the Environmental Protection Agency. One of the components of the grant is to develop regional infill development strategies and policies in accordance with the Regional Policy Plan;
- In September 2001, the SNRPC entered into contract with Design Workshop, Inc. of Aspen, Colorado to undertake the work of developing an Infill Development Plan; and
- On January 30, 2002, these consultants conducted a daylong workshop. The primary goals of the workshop were to develop a consensus definition of infill, to develop an infill classification matrix, and to begin to develop goals and principles. Attendees included representatives from each municipality within the Valley as well as the development and design community.

The final report is scheduled for completion by June 2002. Following adoption of the plan by the SNRPC, each southern Nevada municipality will be responsible for developing and implementing a local infill plan that conforms to the regional infill plan.



Providing job opportunities with housing in close proximity, Summerlin business corridor is located in the west portion of the Las Vegas Valley.



IMPLEMENTATION STRATEGY

REURBANIZATION GOAL: The Downtown area will emerge as the preeminent hub of business, residential, government, tourism and gaming activities in the City of Las Vegas and as a major hub of such activities in the Las Vegas Valley.

OBJECTIVE 1.1: To develop a significant housing component within the Downtown area, which will act as a catalyst for the establishment of a range of retail and service commercial uses to serve Downtown residents.

POLICY 1.1.3: That new market rate, multi-unit, mixed-use residential development be encouraged on vacant or underutilized sites. Such projects should include a ground floor commercial component, where appropriate.

DISCUSSION: Downtown mixed-use housing has been promoted not only through 2020 Master Plan policies, but also through the City's Live-Work Ordinance, which applies to commercially zoned land within the City's Redevelopment Plan Area and requires ground-floor commercial with upper-story residential.

The densification of Downtown through a mixed-use, multi-story development approach has obvious benefits from an economic side, creating a more vibrant, three-dimensional Downtown area where people live, work, shop and seek entertainment. Additionally, however, there are sound environmental benefits that accrue from such an approach as well. The development of housing mixed with office and commercial uses will help to reduce the number and length of home-to-work trips for those wishing to live and work Downtown, thereby helping to improve air quality as it is affected by vehicular emissions.

The inclusion of Downtown residential development in the local housing market may also mean that the rate of consumption of raw land for suburban housing may be slightly lower than it would otherwise be, giving the city a greater time span to full build-out.

Action AQ.1: The City shall prepare an inventory of vacant and under-utilized parcels within each Downtown District that could be determined to be appropriate for building new urban housing of transit-appropriate density, preferably with ground-floor commercial components where appropriate.

OBJECTIVE 1.3: To recognize the role of gaming, tourism and entertainment as a principal focus of Downtown Las Vegas, while at the same time to expand the role of other commercial, government and cultural activities in the Downtown core.

POLICY 1.3.4: That the Las Vegas Redevelopment Plan continue to be used as a means of promoting the development of the Downtown as the regional center for finance, business, and governmental services, entertainment and recreation, while retaining gaming and tourism.

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DISCUSSION: The promotion of Downtown Las Vegas as the principal focus for urban activities within the Valley makes sense environmentally, particularly from an air quality standpoint. This approach will allow for the efficient networking of transit services through a dense central area of urban activity. The result is greater reliance on transit services, which reduces the level of emissions produced per mile of ridership, when compared to automobile trips.

Action AQ.2: The City shall actively promote the development of a range of residential, commercial and business activities on sites within the Downtown and other nearby areas designated within the Redevelopment Plan boundary, primarily through the City's Office of Business Development, by working closely with property owners and business interests to assemble appropriate redevelopment sites and assist with tax increment financing, where appropriate.

OBJECTIVE 1.6: To provide high quality transit service including integrated bus and rapid transit, which serves the Downtown and which connects the Downtown with other employment, entertainment and shopping nodes within the Valley.

POLICY 1.6.1: That the City cooperate with the Regional Transportation Commission, other Valley entities, other levels of government and private sector investors to develop fixed guideway transit systems.

DISCUSSION: The concept of a fixed guideway to provide a monorail service into the Downtown area, connected with the existing monorail which services a portion of the Strip, ultimately connecting with McCarran Airport, has been a key component of planning for the Downtown Las Vegas area. As with many of the other policy directives of the 2020 Master Plan, not only are these initiatives designed to stimulate and support economic growth, but they also make good environmental sense. A monorail system as suggested would be capable of moving large numbers of people quietly and energy-efficiently between the two largest concentrations of entertainment and commercial activity in the Valley.

Action AQ.3: The City shall continue to work with the Clark County Regional Transportation Commission and other involved agencies and private groups to facilitate the development of a fixed guideway system connecting an extension of the existing monorail system currently operating along the Strip within Clark County.

POLICY 1.6.2: That the phasing of any guideway route be prioritized to connect the Downtown and the Strip, and subsequently to connect Downtown to the McCarran Airport, Centennial Hills Town Center and Summerlin areas.

DISCUSSION: As discussed above, initial phasing of this system should complete a linkage between the Strip and the Fremont Street area. Development of this Downtown phase is important to establish user awareness of the system, and draw on existing tourist traffic using Las Vegas Boulevard. Future phasing should contemplate a connection southward to the airport, with the possibility of long-term phasing to connect to the Summerlin and Centennial Hills Town Center areas. This long-term approach is important from an environmental perspective in that such a

system would allow commuters easy monorail access to the major employment centers across the Valley. This is likely to produce a measurable modal shift away from commuter auto trips, thereby reducing vehicular emissions generated by such trips.

Action AQ.4: The City shall encourage, and to the extent practicable, participate with the Regional Transportation Commission, as part of its consideration and planning for a future monorail system connecting Downtown with the Clark County Strip, to incorporate long-term future phasing for extension of the system to Summerlin Town Center and the Centennial Hills Town Center areas.

NEIGHBORHOOD REVITALIZATION GOAL: Mature neighborhoods will be sustained and improved through appropriate and selective high quality redevelopment and preservation.

OBJECTIVE 2.1: To focus residential reinvestment on transitional sites within the central city area at densities that support mass transit usage.

POLICY 2.1.1: That mixed-use residential/commercial developments occur on sites currently occupied by declining commercial centers or vacant land.

DISCUSSION: Most declining commercial centers are developments that rely on auto access for customers and are at a competitive disadvantage with modern commercial developments or big box retailers for one or more reasons. These sites, as well as vacant sites, can be suitable for mixed-use redevelopment projects. Mixed-use development on such sites incorporates a residential market to provide ready support to commercial, office or entertainment uses.

The intensity of residential and commercial activity within most mixed-use developments supports transit service to these sites, which can result in significant improvement to air quality levels in central city areas where these levels traditionally have been higher than in outlying areas.

Action AQ.5: The City shall consider revisions to its Zoning Ordinance to create zoning mechanisms that facilitate mixed-use development on appropriate sites. Specifically, a new mixed-use zoning district that contains requirements for: higher density and intensity of development; the mixture of residential and commercial uses within the same building; design provisions which limit the impact of building mass on surrounding sites; and ease of access to and use of mass transit, shall be considered.

Action AQ.6: The City will work with property owners to identify potential mixed-use redevelopment sites in central city locations. The City will also consider the options for financial incentives that may be available, necessary and desirable in order to successfully promote mixed-use development projects.

Action AQ.7: The City will work with the Regional Transportation Commission to ensure that potential mixed-use redevelopment sites are adequately served with transit connections.

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POLICY 2.1.3: That urban hubs at the intersections of primary roads, containing a mix of residential, commercial and office uses, be supported.

DISCUSSION: Potential locations for urban hubs within the central portion of the city are identified in the 2020 Master Plan. The intent of the Master Plan is that these potential locations be studied in further detail, in order to recommend preferred mixes of land uses and site design for these areas. Urban hubs are environmentally beneficial designs in that residential and commercial land uses are clustered, which allows for lower reliance on auto-based trips and greater efficiency for transit services between such areas and to areas containing major employment generators throughout the Valley.

Action AQ.8: The City shall prepare a plan or study that addresses the central city locations, linkages, content and design of urban hubs as identified in the Las Vegas 2020 Master Plan.

Action AQ.9: The City shall work with the Regional Transportation Commission to ensure that adequate transit service is planned for and can be provided at central city urban hub locations as they are developed.

POLICY 2.1.7: That the demand for transportation services be reduced by improving the balance between jobs and housing and by creating options for people to live and work within walking or cycling distance of their place of work.

DISCUSSION: The 2020 Master Plan has addressed the jobs-housing imbalance through policies that foster the development of more jobs in outlying areas and across the city, and the development of more housing in Downtown and central city locations. Correction of this imbalance is critical to the long-term reduction of airborne pollutants caused by vehicular emissions. The intent is to at least partially redress the large proportion of home-to-work trips that are now generated in suburban locations, to other employment centers, such as the Centennial Hills Town Center, and to increase the proportion of housing that currently exists in the central portion of the Valley, particularly Downtown.

Action AQ.10: The City shall encourage the development of walking and bicycling routes and connections to areas of Downtown and central city housing and live/work projects. The intent is to integrate pedestrian and cycling routes into major redevelopment projects, and to have nodes of pedestrian-oriented activity within the Downtown and central city that are interconnected with walking and cycling routes.

OBJECTIVE 2.3: To prepare, adopt and implement special area plans and neighborhood plans where more detailed planning is needed. These special area plans shall conform to and implement the Master Plan and address land use and other issues specific to that area. Neighborhood plans shall be prepared in conformance with the neighborhood planning process.

POLICY 2.3.6: That a beautification upgrade of the Rancho Drive corridor be considered by the City to support its anticipated future role as the location of a major transit corridor, greenway and pedestrian/bikeway.

DISCUSSION: The use of special area plans is a technique that works well to address planning requirements within geographic areas or areas with common characteristics or unique planning needs. Special land use plans to examine issues of localized significance and propose solutions for specific areas should be used to address land use issues related to air quality improvement.

In the case of the Rancho Corridor, this area provides a crucial transportation link between the Downtown and central city areas with the Centennial Hills area north of Cheyenne Avenue, particularly Town Center. This linkage will be a critical route in addressing the jobs-housing imbalance, and will provide a major opportunity for counter-flow traffic and alternative mode transportation methods, particularly transit, and as a potential fixed-guideway alignment. The City needs to work with the Nevada Department of Transportation and the City of North Las Vegas to ensure that these improvements, which would be environmentally beneficial to air quality levels affected by vehicular traffic, can be achieved.

Action AQ.11: The City should, when preparing the Rancho Corridor Study, consider the beneficial impacts of beautification measures, as well as land use changes within the Corridor that support an improved jobs-housing balance for the city, in conjunction with the Nevada Department of Transportation and the City of North Las Vegas.

Action AQ.12: When preparing the Rancho Corridor Study, the City will consider identifying opportunities to establish alternative transit modes to serve the area and provide access to the Centennial Hills Town Center employment area.

OBJECTIVE 2.6: To improve the amount and quality of infill development on vacant and underutilized lands within established areas of the city.

POLICY 2.6.1 That the City investigate the development of an incentive program designed to encourage property owners to redevelop vacant or derelict sites within the Neighborhood Revitalization area.

DISCUSSION: Infill and redevelopment of these types of sites in established city neighborhoods are vital to creating the types of urban residential densities that can efficiently and practically support a significant percentage of home-to-work trips using transit. This type of development will help to improve the jobs-housing balance by bringing more residents into central city locations. The development of an incentive program to assist in revitalizing these sites with urban residential projects will move the city towards a more efficient land use pattern, and therefore a more environmentally responsible use of urban land.

Action AQ.13: The City will evaluate the potential for physical and infrastructure improvements that will make central city neighborhoods more desirable as locations for residential infill projects, and then based on available funding, prioritize and carry out these improvements.

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POLICY 2.6.2 That the City delineate steps to encourage the development of two-, three- and four-plex housing opportunities.

DISCUSSION: There are few of these types of multiple-family units being built in Las Vegas. Most of those currently existing are the result of conversions of formerly single-family houses in Downtown and central city locations. The City needs to make it easier for developers of central city infill sites to build two to four unit infill projects, which increase urban density and make the redevelopment of infill sites more financially attractive. By allowing and encouraging these housing forms in urban settings, the population within the central city increases, creating efficiencies for transit operations and reducing the length of home-to-work trips. This assists in the improvement of air quality objectives within the portion of the Valley most negatively affected by vehicular emissions.

Action AQ.14: The City shall ensure that its land use classification system and Zoning Code contain mechanisms to allow for the ready development of two to four unit housing projects on appropriate sites.

NEWLY DEVELOPING AREAS GOAL: Newly developing areas of the city will contain adequate educational facilities, and recreational and open space and be linked to major employment centers by mass transit, including buses, and by trails.

OBJECTIVE 3.1: To ensure that new residential subdivisions, with the exception of areas currently designated as rural preservation neighborhoods by Nevada statute, are developed into walkable communities, where reliance on auto trips for convenience shopping and access to education and recreation is minimized and where development densities support transit.

POLICY 3.1.5: That urban hubs at the intersections of primary roads, containing a mix of high-density residential, commercial and office uses, and containing pedestrian linkages, be supported.

DISCUSSION: The *Las Vegas 2020 Master Plan* identifies a number of key intersections, located in both the central city area (Policy 2.1.3) and in selected portions of the newly developing areas of the Centennial Hills Sector, to be developed as urban hubs. These hubs, if properly designed, will significantly reduce the need for auto trips for those living, shopping, recreating and working within these areas. The environmental benefits from such reductions in auto trips are significant.

Action AQ.15: The City shall ensure that new suburban development projects adjacent to undeveloped public lands contain pedestrian routes that maintain historical access to these undeveloped public lands.

OBJECTIVE 3.4: To ensure that adequate portions of the lands released for urban development by the Bureau of Land Management (BLM) are developed for recreational and educational public facilities, transit facilities and fire stations that will benefit the city.

POLICY 3.4.3: That a minimum of 20 percent of available BLM lands within the Kyle Canyon area be made available for the development of a high technology business park, research and higher education, within the northwest sector of the city.



DISCUSSION: The development of employment generators such as business parks, research centers and advanced education centers in outlying areas of the city will greatly help to counteract the current jobs-housing imbalance. Such employment development will ensure that an increasing percentage of trips to work will be located within the city periphery instead of the core, thereby taking advantage of existing roadway infrastructure, and in the case of these suburban-to-suburban trips to work, reducing the length of the commute.

Action AQ.16: The City shall take the steps necessary to acquire lands suitable for the development of business, research and higher education centers, and to work with the local, regional and national business community to encourage the development of these activities within appropriate designated centers.

ECONOMIC DIVERSITY GOAL: The economy of the City of Las Vegas, while continuing to be strongly based on the gaming and tourism industries, will broaden to include other business sectors that can take advantage of the locational, climatic and work force advantages offered by Las Vegas.

OBJECTIVE 4.1: To improve the economic resource base within the city by diversifying the range of business opportunities.

POLICY 4.1.3: That the City support telecommuting as a means of reducing home-to-work trips and work with those agencies responsible for upgrading electronic infrastructure, such as telephone and cable systems, to support this trend.

DISCUSSION: Methods such as these, which improve the technical efficiency of business functions, will contribute to improvements in air quality as it is affected by vehicular emissions.

Action AQ.17: The City shall work with involved agencies and businesses to support and promote the use of telecommuting and the upgrade of technical systems to further enable this technology. The City will also work with these businesses and agencies, particularly those within the City's business parks, to promote the use of rideshare programs, provision of bike racks and secure bike storage, the provision of change room and shower facilities and other incentives to improve the desirability of non-auto commuting methods.

REGIONAL COORDINATION GOAL: Issues of regional significance, requiring the City of Las Vegas to coordinate with other government entities and agencies within the Valley, will be addressed in a timely fashion.

OBJECTIVE 7.1: To ensure that the natural resources of the city, particularly those that directly support an enhanced quality of life for its residents, are protected.

POLICY 7.1.1: That air quality throughout the city be improved through the reduction of carbon monoxide from automotive emissions and through the reduction of dust particulates.

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DISCUSSION: The level of pollutants found in vehicular emissions and the level of particulate matter caused by construction activities and dust within the Valley have been of concern for a number of years. In response to concerns raised by federal environmental authorities, implementation plans to address solutions to both carbon monoxide emissions and airborne particulate matter have been prepared by the Clark County government. The direct responsibility for the development and implementation of solutions that control these pollutants at their source has been mandated to Clark County.

While direct action targeted at resolving these issues may lie with the County government, there are steps that can be taken by the City to indirectly control and reduce airborne pollution. As stated elsewhere in the Conservation Element, these steps include improvements to the jobs-housing balance through the encouragement of Downtown and central city housing, support for employment centers in suburban areas, promotion of dense residential and mixed-use projects within urban hubs at densities that support efficient transit usage and support for work-at-home technology.

Action AQ.18: The City shall continue to support the efforts of the Clark County Department of Air Quality to address direct or indirect remedies to air quality issues in the Las Vegas Valley.

POLICY 7.1.2: That the amount of airborne particulate matter caused by land clearing and construction be reduced through adequate dust containment practices, and in areas of new construction, by reducing the amount of land on which the native overburden has been disturbed or removed to that immediately required for development.

DISCUSSION: Due to the phenomenal rate of growth that has been experienced in the Las Vegas Valley over the past few decades, it has been a common construction practice to clear and prepare large tracts of land for residential or commercial development. Often, the full development of land cleared in this manner can take months; in the meantime, the strong winds that frequently occur in the Valley can create a significant windborne dust hazard. This hazard can be significantly reduced by requiring a change in local development practices that would require developers to minimize the amount of land readied for development, and to phase these prepared areas so they are developed as quickly as possible.

Action AQ.19 The City shall research, analyze and consider regulations which will limit the amount of land cleared and prepared for large scale residential and commercial development to a prescribed maximum area or percentage of the development site, with the objective of minimizing the area of land contributing to PM_{10} levels, while allowing the developer a sufficient and reasonable phasing program for the development.

Action AQ.20: The City shall require, in accordance with the recently approved PM_{10} State Implementation Plan, that developers must apply an approved soil stabilizer on ground that waits for development after disturbance.

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OBJECTIVE 7.3: To ensure that public safety problems are fully and adequately identified and that long term solutions are identified and implemented by the respective local government departments and agencies vested with those responsibilities.

POLICY 7.3.5: That the City work with the Clark County Regional Transportation Commission, the Nevada Department of Transportation and local governments in the Las Vegas Valley to ensure that the roadway network is planned and developed to meet the needs of the anticipated population growth in the Valley, and provides for multi-modal transportation opportunities.

DISCUSSION: It is important to ensure that as the primary roadway network in the Valley continues to grow, these alignments include provisions for a transit network that is expected to grow over time; in particular, space for dedicated right-of-ways for fixed guideway systems should be reserved in selected locations. Similarly, provisions for transportation trail alignments should be made to ensure that alternate transportation modes, including bicycles, might be adequately accommodated.

Action AQ.21: The City shall work with the Regional Transportation Commission in the long-range planning and development of the primary road system through the Valley, to ensure that multi-modal and alternate transportation technologies can be adequately accommodated as the city and the Valley continue to develop.

POLICY 7.3.6: That the City, in conjunction with the Clark County Regional Transportation Commission and local governments in the Las Vegas Valley, work to achieve a shift towards greater reliance on mass transit for home-to-work trips and to make transit usage a more attractive daily travel alternative. In particular, that the affected parties pursue options for a fixed guideway system where appropriate.

DISCUSSION: The development of a fixed guideway system to serve the central portion of the Valley, in particular, the connection of the Las Vegas Strip via connection to the existing system operating in that area, to Downtown Las Vegas, would generate immediate environmental, as well as economic, benefits (Map 4).

As a phased system that could ultimately extend to the Summerlin and Centennial Hills Town Center, a monorail operating on a fixed guideway system could ensure that a significant amount of both tourist traffic within the central Valley area, and commuter traffic entering and leaving the central Valley area, could be handled in a quiet, efficient, and environmentally responsible manner. A monorail system would serve a different population than bus transit, thereby augmenting rather than merely replacing existing transit trips.

Action AQ.22: The City shall work with the Regional Transportation Commission to discuss the feasibility, financing, routing and phasing of a fixed guideway system connecting Downtown Las Vegas with the Las Vegas Strip, and ultimately with Summerlin and the Centennial Hills Town Center areas.

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LANDSCAPE MATERIAL GOAL: Landscaping materials throughout the city are free of noxious and high allergen species.

OBJECTIVE: To ensure that existing noxious and high allergen species are phased out over time and that planting of these species is prohibited.

POLICY: That the City continue to develop and update a list of noxious and high allergen species of plants and trees.

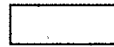
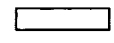
DISCUSSION: In past years, some non-native plants and trees such as the European Olive tree and the Fruitless Mulberry have been introduced into the Las Vegas Valley with serious environmental results. Some of these plants are invasive and take over habitat formerly occupied by native species. Others have very high levels of pollen and cause respiratory difficulties for some residents.

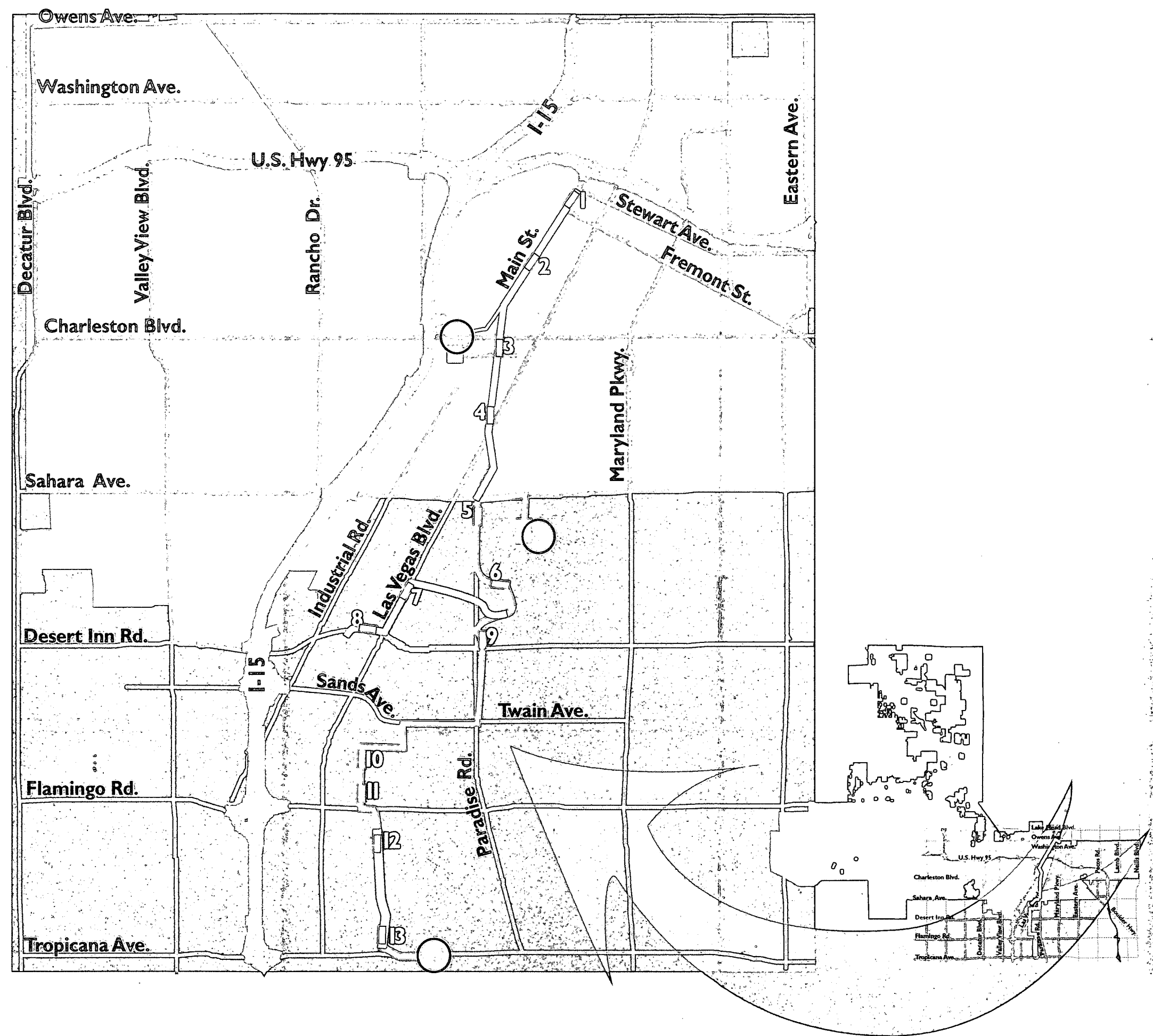
Action AQ.23: The City shall continue to work with developers, builders, homeowners and landscape maintenance associations, and the general public, to provide information on plant species that cause allergy and respiratory problems and to prohibit new planting of these species.



FIXED GUIDEWAY MONORAIL SYSTEM

Map 4

-  City of Las Vegas
-  Clark County
-  Existing Fixed Guideway
-  Phase I Extension
-  Phase 2 Extension
-  Stations
 - 1 Fremont
 - 2 Bonneville
 - 3 Charleston
 - 4 Stratosphere
 - 5 Sahara
 - 6 Las Vegas Hilton
 - 7 Circus Circus
 - 8 Stardust
 - 9 Convention Center
 - 10 Harrahs/Imperial Palace
 - 11 Flamingo
 - 12 Bally's
 - 13 MGM
-  Operations/Maintenance



February 4, 2002
 Source: Regional Transportation
 Commission of Southern Nevada

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 fixed guideway.Conserv Ele.fv/3-8-02



WATER SUPPLY AND QUALITY

PREFACE

The Las Vegas Valley lies within the Mojave Desert, one of the most arid areas on the continent. The average annual rainfall is 4.2 inches while the annual evaporation rate reaches 117 inches. This results in not only a huge deficiency for outdoor water usage but makes both conservation of water as a key resource, and protection of water quality, integral to the prosperity of the Las Vegas Valley.

There is a complex network of agencies with some role in the management and conservation of water resources in Southern Nevada. The Southern Nevada Water Authority (SNWA) is comprised of five water purveyors and two wastewater agencies. The City of Las Vegas is

an SNWA member by virtue of its role as a wastewater management agency. The Las Vegas Valley Water District (LVVWD) is also an SNWA member by virtue of its role as a water purveyor. With few exceptions, public water service to the City of Las Vegas is provided by LVVWD.

The SNWA is charged with regional water quantity and quality issues. The SNWA is responsible for: water quantity and quality issues. The SNWA is responsible for:

- obtaining new water resources;
- managing groundwater supply and quality;
- facilitating water conservation and diversion; and
- treating and delivering Southern Nevada's Colorado River water to the SNWA's member agencies.

The primary source of water for the municipal providers in the Las Vegas region is the Colorado River at Lake Mead. The Colorado River is allocated amongst the seven Colorado River basin states and Mexico (Map 5) via a series of laws, compacts, and court cases collectively called "The Law of the River." Of the 16.5 million acre-feet per year (AFY) allocated, Nevada's portion is the smallest at 0.3 million AFY or 300,000 AFY. Even though Lake Mead has



Colorado River flowing from the base of Hoover Dam.

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the capacity to hold over 26 million AFY, Nevada and the others are only able to take their respective amounts entitled under the Law of the River. Because the Las Vegas Valley treats and returns most of its wastewater back to the Colorado River at Lake Mead via the Las Vegas Wash, it receives a "return flow credit" for the returned water.

This concept enables Southern Nevada to take or divert the amount it has returned (in addition to its allocation of 300,000 AFY) thereby stretching its Colorado River supplies. As of 2002, the region is already using all of its 300,000 AFY resource, and its return flow credit, and is beginning to use some of its other resources, as described in the SNWA 2002 Water Resource Plan.

Although there are ongoing efforts to identify and acquire additional water resources for the Las Vegas Valley, one of the greatest opportunities for the region to meet future water demands is through conservation. As one of the seven member agencies of the SNWA, the City of Las Vegas is committed to regional conservation efforts.

Consumptive uses of water comprise about 60 percent of total water diversions. These consumptive uses include landscape irrigation, water used in cooling towers, and evaporation from exposed water bodies. Only consumptive uses of Colorado River water are calculated against Southern Nevada's Colorado River apportionment.

The most significant consumptive use of water in the Las Vegas Valley is watering of ornamental landscape. A recent SNWA study showed that typical residential lawn watering used 79 gallons per square foot per year, while landscapes using water-conserving principles used 17 gallons per square foot per year. The current pattern of water usage in the Valley results in millions of gallons of run-off, water that cannot be recaptured and counted towards return flow credits.

Another major issue is the preservation of wetlands along the Las Vegas Wash. Although only a small percentage of the water in Lake Mead comes from the Las Vegas Wash, it is home to a variety of animal species and plays a major role in preserving water quality in the lake.

Finally, the expanded use of reclaimed water for outdoor landscaping, particularly golf courses and parks, is one of the primary means, as established by the Southern Nevada Water Authority, for meeting projected demands.



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STATES AFFECTED by "THE LAW of the RIVER"



Map 5

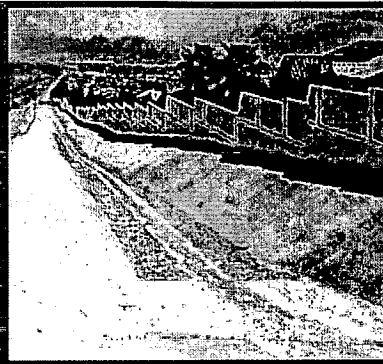
- Upper Colorado Basin
- Lower Colorado Basin
- States Affected by "The Law of the River"

Source: Southern Nevada
Water Authority

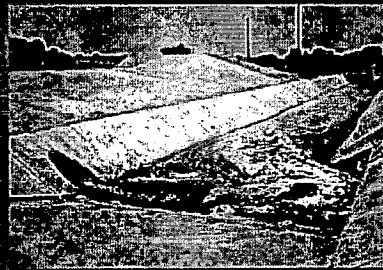
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colorado agreement.Conserv Ele.fh/5-23-02





Cheyenne flood channel.



Alta channel during a rainstorm.



Las Vegas Wash west tributary.

BACKGROUND

As stated above, the majority of the water currently used in Las Vegas Valley comes from Lake Mead. Current capacity of water facilities to treat and deliver Colorado River water to the Valley and Boulder City from Lake Mead (called the "Southern Nevada Water System" (SNWS)) is 600 million gallons per day (MGD). Henderson, North Las Vegas, and the Las Vegas Valley Water District (LVVWD) take the water from the SNWS at "turnouts" in the Las Vegas Valley and deliver it to their respective customers through their individual distribution systems, which include pumps, reservoirs, and pipelines. Parenthetically, the LVVWD is the agency that constructs and maintains the water distribution system for the City of Las Vegas and portions of unincorporated Clark County.

In 2001, the maximum delivered through the SNWS in a 24-hour period was 535 MGD in May, through some 125 miles of pipelines and tunnels to the Las Vegas Valley and Boulder City (Map 6). Another 100 MGD of capacity are expected to be complete in 2002, including an additional 24 miles of pipelines and tunnels and a second water treatment plant. A total of 900 MGD system capacity is expected to be built by 2006. Increased facility capacity does not automatically mean increased Colorado River resources. Those resources have been and are being acquired in venues separate from the expansion of facilities, as described in the 2002 Water Resource Plan.

Currently, about 94% of the water used in the Valley, most of which is Colorado River water from Lake Mead, is provided by the municipal water purveyors. The remaining six percent of the water used in the Valley is groundwater used by private and domestic well owners. These wells are distributed around the Valley, but are predominantly located outside city boundaries, on sites within unincorporated Clark County. Historically, these wells have drawn from reliable aquifers, but in recent years overuse has caused the water levels in these aquifers in some portions of the Valley to drop, as the drawdown rate in some areas has exceeded the rate of recharge. As there are few well users within the City of Las Vegas, this has not been an issue for the City from a water usage standpoint, but the reduction of water levels in some aquifers can destabilize soils and increase the rate of soil subsidence and should therefore be monitored.

In terms of flood control, prevention of erosion and wetland management, the Clark County Regional Flood Control District (CCRFCD) is the authority responsible for the development of facilities to manage storm water and its impacts. Historically, storm runoff in the Valley followed natural intermittent watercourses called washes, with all Valley runoff draining into Lake Mead through a few major wash systems. As urbanization and related construction activities occurred in the Valley through the 1970s and early 1980s,

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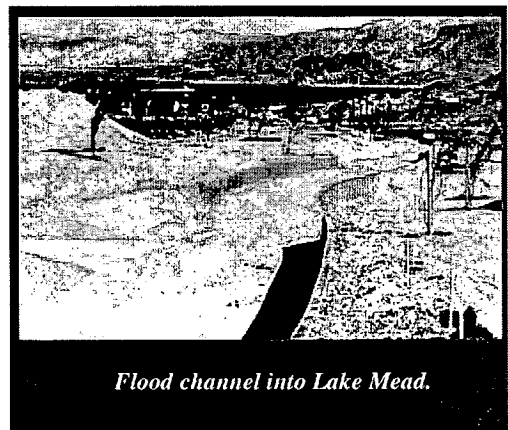
the effect on these wash systems was dramatic, as increased storm flow rates increased erosion and siltation within these wash systems.

Since its inception in 1986, the CCRFCD has constructed some 239 miles of storm drains and channels throughout the Valley, with another 23 miles currently under construction (Map 7). When referring to Map 7, it should be noted that some of these storm facilities appear to be isolated or disconnected from the overall system. This is due to the fact that, as developments are constructed, storm drains may be installed for lands within these developments that then utilize surface streets as drainage courses downstream. As development continues to occur, drainage constructed to serve other private developments, as well as RTC, CCRFCD and City projects, will provide additional drainage infrastructure that will connect these isolated drainage sections in the future.

The CCRFCD ten-year plan calls for an additional 70 miles of storm drains and channels over the first five years and another 63 miles in the second five years. Another 183 miles of storm drains and channels will be needed beyond the ten-year plan.

The District has also constructed 20 detention basins with a total capacity of 15,114 acre/feet. Another 23 detention basins are proposed, with a total capacity of 19,125 acre/feet, including upgrades to existing facilities. The Regional Flood Control Master Plan identifies three existing retention basins (capacity 543 acre/feet) with some 6 acre/feet proposed as upgrades to existing facilities. These basins are proposed for upgrading as detention basins with the addition of outfalls in the near future. There are 182 acres of basin area under construction, while the ten-year plan calls for some 308 acres in the first five years and 452 acres in the second five-year period. The intent is to manage runoff by detaining storm flows within the basins and allowing the water to drain at predetermined rates. The intent is to reduce or eliminate floodwater damage to property within the Valley and to greatly reduce the amount of erosion and consequent siltation within Lake Mead and the wetland areas around Lake Las Vegas at the outlet of the Las Vegas Wash system.

The use of reclaimed water for non-potable uses offers an alternative water supply and ultimately reduces demand on potable water sources. At this time, there are seven separate distribution systems that originate from treatment facilities operated by the City of Las Vegas. Three of these originate from the Water Pollution Control Facility. Three comprise the Northwest Water Resource Center Recycled Water Distribution System, and one is the Bonanza Mojave Water Resource Center. All the systems are owned and operated by the City, except for the Northwest Water Resource Center facility, which is owned and will be operated by the Las Vegas Valley Water District. The Water



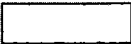
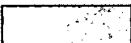
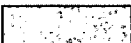
Flood channel into Lake Mead.

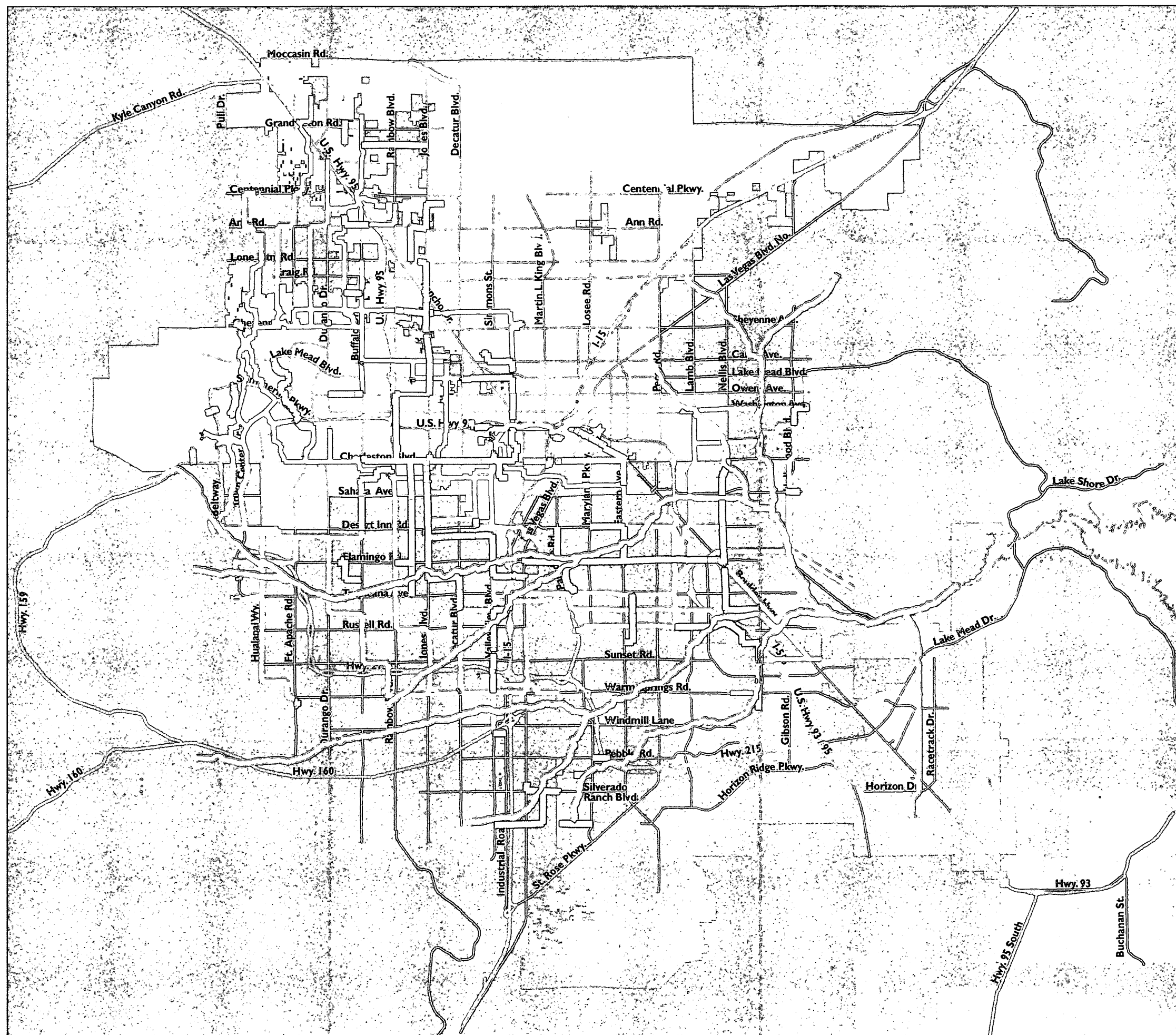
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VALLEY-WIDE WATER LINES

Map 6

-  City of Las Vegas
-  Henderson
-  North Las Vegas
-  Boulder City
-  Clark County
-  36" & Larger Lines
-  24" Water Lines
-  USGS Washes



February 22, 2002
Source: Las Vegas Valley Water District

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water lines.Conserv Ele.fh/3-8-02

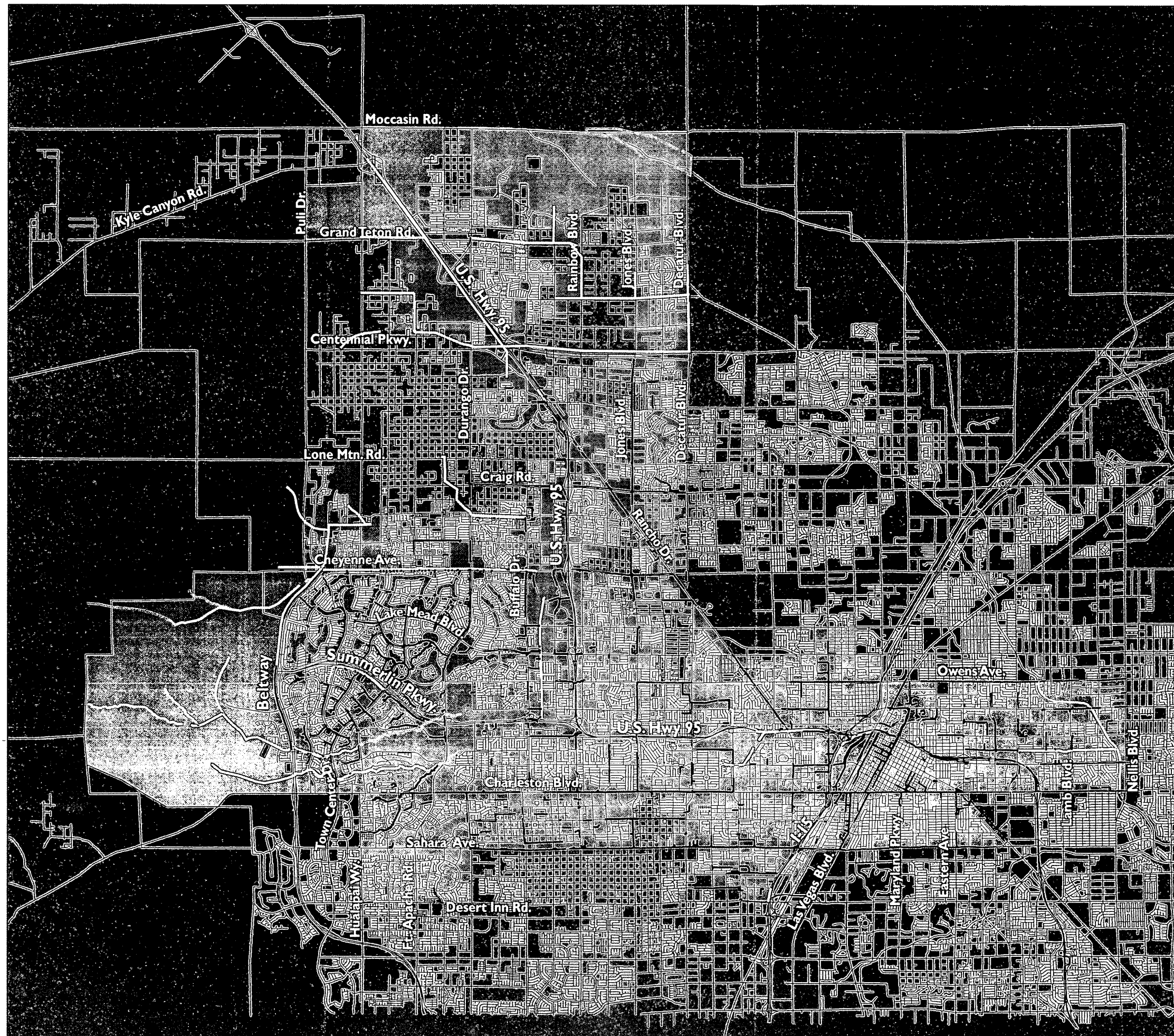


CITY of LAS VEGAS STORM DRAINAGE SYSTEM



Map 7

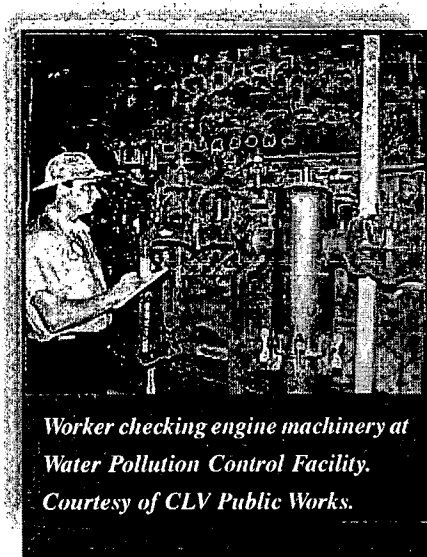
	City of Las Vegas
	Clark County
	Natural Washes
	Earth Channels
	Concrete Channels
	Rip-Rap Channel
	Gabion Channel
	Grass-lined Channels
	10" and Larger Local Storm Drains
	Lake Mead



Source: City of Las Vegas
Public Works Dept.

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clv storm system.Conserv Ele.fh/5-23-02





*Worker checking engine machinery at
Water Pollution Control Facility.
Courtesy of CLV Public Works.*

Pollution Control Facility systems serve four eighteen-hole golf courses and the cooling demands of the Sunrise Station power plant. The Northwest Water Resource Center system includes a two million gallon reservoir, three main pipelines and three pumping stations. The Bonanza Mojave system currently serves the Desert Pines Golf Club. There will be a new pipeline installed in the future to serve Freedom Park. There are no plans at this time to expand any of the existing city reclaimed water distribution systems. This is discussed in greater detail in the Reclaimed Water section of this Element.

POTABLE WATER

INTRODUCTION

The 2002 Water Resource Plan of the Southern Nevada Water Authority (SNWA), adopted by the SNWA Board in March 2002, provides a 50-year outlook for water resources in Southern Nevada. The Plan provides water demand projections, including assumptions about water conservation, and identifies current and future water resources to meet the long-term water needs of Southern Nevada.

Water demands in the Resource Plan have incorporated in them a 25 percent reduction in water demand by 2010 from the "base" year of 1991; the total achieved through 2001 is estimated to be about 14%. SNWA is currently involved in a water conservation strategic planning effort, including a reassessment of the 25 percent goal. The Plan is expected to reflect renewed community commitment to achieving water conservation goals; it is also likely to increase the emphasis placed on water conservation as a means to meeting the future water needs of Southern Nevada.

Nonetheless, unless economic and population growth in Southern Nevada virtually stops, water conservation alone cannot meet all the future water needs of the region. The focus of SNWA continues to be on acquisition of additional Colorado River water. As described in the Water Resource Plan, additional Colorado River water is expected to be available to Southern Nevada, Arizona and California through 2016, and SNWA expects to be acquiring Colorado River water from Arizona beginning in 2002. However, SNWA also recently purchased additional groundwater rights in Coyote Spring Valley and additional Muddy River water rights (Map 8.) The Plan also discusses the possibilities of utilizing SNWA's Virgin River water rights, desalination of Las Vegas Valley shallow groundwater, and bringing groundwater from other hydrographic basins in Clark County to the Las Vegas region.

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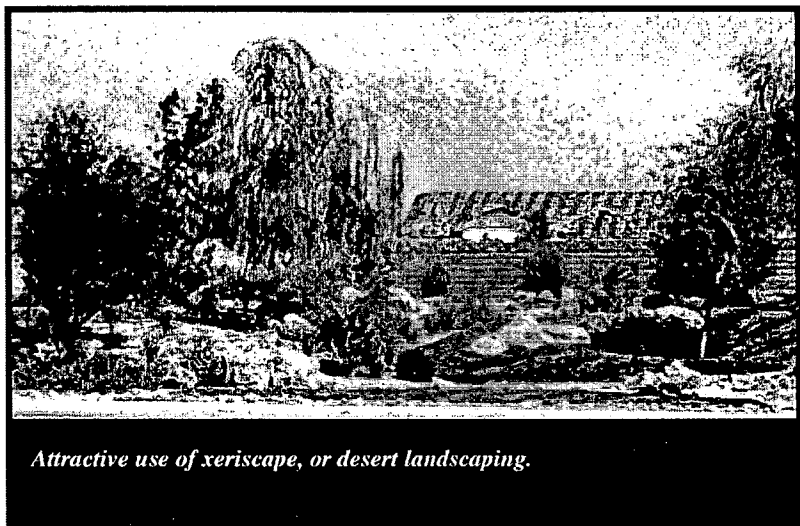
ROLE OF THE CITY OF LAS VEGAS

The City of Las Vegas participates in conservation efforts through its role as a member agency in the SNWA. The City holds one of the seven seats on the SNWA's Board of Directors. The SNWA was created in 1991 to provide for regional solutions to Southern Nevada's water needs, from both a resources management and a conservation perspective. The SNWA also ensures good water quality throughout the region and operates facilities to provide for a high-quality and reliable drinking water system that keeps pace with the growing Southern Nevada population.

The City of Las Vegas is participating in the Southern Nevada Water Authority's water conservation strategic planning process, and is committed to doing its part to ensure that the effort is successful. The outcome is intended to be a plan document that is clearly implementable, enforceable, and agreeable to all affected parties.

The greatest opportunity to achieve any conservation goal is to reduce the demand of water used for outdoor landscaping. Large expanses of turf and poorly-adapted plants require frequent watering. To address this, the City of Las Vegas has enacted a turf limitation ordinance, included within the *Las Vegas Zoning Code* (Chapter 19.12.030.H), to reduce the amount of turf that may be used in new residential (50% maximum for single-family front yards and 30% for multi-family landscapable area) and commercial/industrial (maximum 25% of total landscapable area) development. This Chapter also limits turf on new golf courses to an average of five acres per hole, with an extra 10 acres for a driving range, and prohibits the use of turf for public facilities except for schools, parks and cemeteries. Procedures to enforce these landscaping conditions of development are delineated in chapter 19.00.70 of the *Las Vegas Zoning Code*. The City has also cooperated with other entities in the development of similar ordinances. Although the City's development standards do not specifically recommend or discourage any specific types of plants or trees, prospective applicants are referred to the SNWA's list of appropriate types of drought-tolerant landscaping.

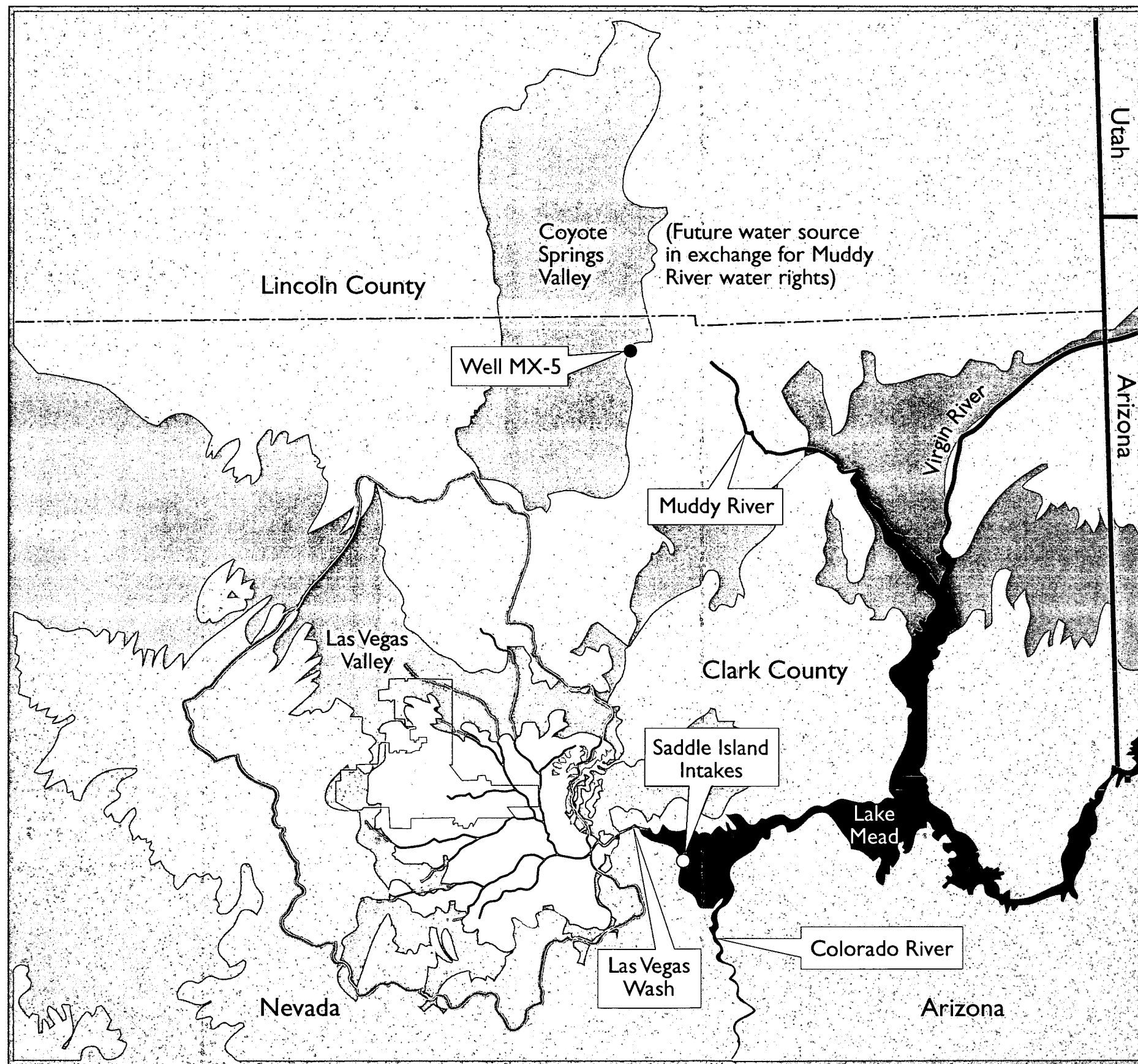
While these are steps in the right direction, there are opportunities to do more. Turf limitation requirements only apply to the front yards for residential development, despite the fact that it is just as important to limit turf throughout the entire yard. The City should recommend use of the plant list as developed by the Desert Demonstration Gardens, in conjunction

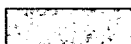


Attractive use of xeriscape, or desert landscaping.

REGIONAL WATER SOURCES

Map 8



-  Las Vegas Valley Basin
-  Shallow Aquifer
-  Washes
-  Hydrographic Basin
-  Valley Areas
-  Mountain Areas

February 10, 2002
Source: Las Vegas Valley Water District
Southern Nevada Water Authority
CLV Planning and Development Dept.

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water sources.Conserv Ele.fh/3-08-02



with Clark County. Further, the City could establish its own list of appropriate plants and trees in a manner that can be enforced when necessary. Along with drought-tolerant landscaping, the City could require water-efficient technology to be used in common areas throughout residential developments.

There are specific areas in which the City of Las Vegas can support water conservation efforts:

- Evaluate impact of existing landscape codes and design standards and consider the need for amendments to these codes and standards;
- Implement more stringent standards for inclusion in City-managed Landscape Maintenance Districts;
- Enforce existing codes more stringently; and
- Review/enhance water waste provisions.

The City has an opportunity to play a role in the promotion of the landscape conversion programs offered by the Southern Nevada Water Authority. The SNWA offers rebates when threshold amounts of landscaping are converted from traditional grass to desert landscaping. One of the problems inherent in this program is the common public impression that desert landscaping only involves rocks, with no plant life. In fact, the plant list provided by the Desert Demonstration Gardens involves a wide variety desert plants and such landscaping can involve small areas of turf as a focal point within the landscaped area. Where possible, it would be constructive for the City to offer information regarding the financial and environmental benefits of desert landscaping alternatives, by assisting the SNWA in the distribution of information and education on this subject and by setting an example in the landscaping of City facilities.

Negative environmental impacts on potable ground water can be generated by septic tank sewage systems. According to the Conservation Element of the Clark County Comprehensive Plan, one of the issues related to groundwater and wellhead protection in the Valley is that "septic systems contribute to shallow groundwater contamination when they malfunction, are used improperly or are located in non-permeable soil conditions such as caliche". Although the vast majority of city land is serviced by the municipal sanitary sewer system, there are a number of sites within the city that continue to be serviced by, or contain, septic tank systems (Maps 9a, b and c). Private septic tank systems can cause high nitrate levels in ground water, and can add to the potential for groundwater contamination.

Other obstacles to water conservation can be found in existing development codes. Development codes could be reviewed and modified where practical water conservation opportunities are identified.

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IMPLEMENTATION STRATEGY

REGIONAL COORDINATION GOAL: Issues of regional significance, requiring the City of Las Vegas to coordinate with other government entities and agencies within the Valley, will be addressed in a timely fashion.

OBJECTIVE 7.1: To ensure that the natural resources of the City particularly those that directly support an enhanced quality of life for its residents are protected.

POLICY 7.1.3: That the City work with the Las Vegas Valley Water District to ensure that the quality of the city's drinking water remains high, while maintaining an adequate water supply at reasonable cost.

DISCUSSION: While there are a number of water resources that the SNWA is in the process of acquiring, water conservation is critical to reducing demand and thereby stretching water resources. While not a purveyor of water, the City is in a position to play a major role in achieving conservation goals. This role is that of a cooperative partnership with the Las Vegas Valley Water District in the development and delivery of education and incentive programs that focus on reduction of demand, such as the Water Smart Business Rebate Programs and the Water Smart Homes Rebates and Services.

Action WSO.1: The City shall continue its participation with the Las Vegas Valley Water District by providing for the dissemination of information regarding the existing programs and benefits of water conservation measures by establishing an area at the front counters of selected City departments for LVVWD pamphlets and educational videos. The City also shall work with the LVVWD to determine where City involvement would be of benefit to established or new LVVWD conservation initiatives.

POLICY 7.1.8: That the City encourage water conservation.

DISCUSSION: As a member agency of the Southern Nevada Water Authority, the City participates in conservation efforts geared toward education and public outreach. The City helps staff the SNWA Conservation Workgroup, which is a forum for representatives of each member agency to share ideas and information.

Through this workgroup, the City gained valuable input for the development of the turf limitation ordinance and later assisted other entities in their development of similar ordinances. However, there are no methods in place to monitor the exact impact of this ordinance although it is believed to be integral to conservation throughout the Valley. Outdoor landscaping consumes by far the single largest share of water, comprising approximately 80% of the total demand.

It should be noted that the SNWA has advised that lawns and irrigation system designs in residential neighborhoods without sidewalks have been prone to lower efficiency and to waste more water into the street.

Action WSO.2: The City shall consider other requirements that result in water efficient design. These requirements can include:

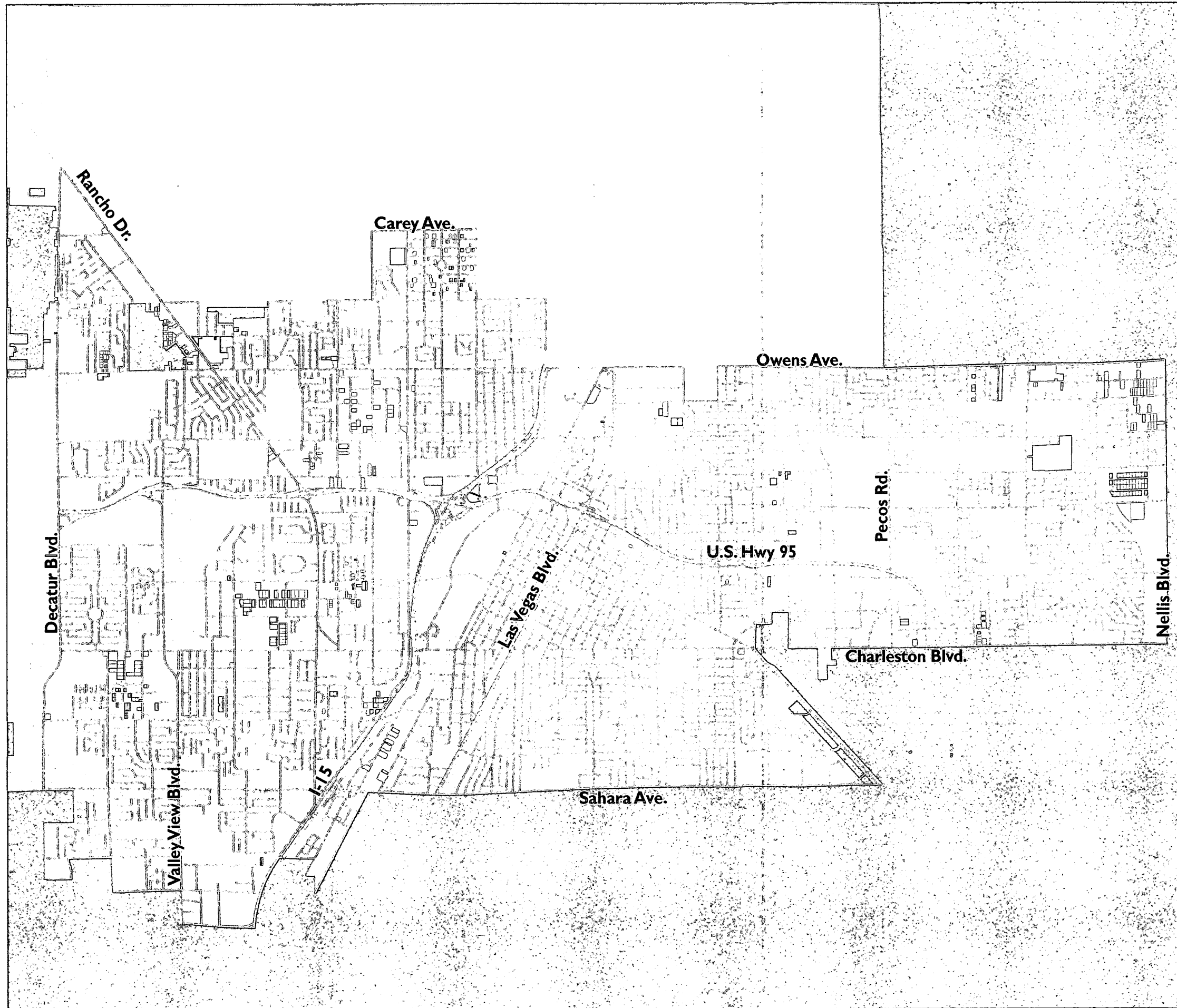


CITY of LAS VEGAS

SOUTHEAST AREA SEPTIC TANK LOCATIONS



Map 9A



	City of Las Vegas
	North Las Vegas
	Clark County
	Active Septic Tanks
	Inactive Septic Tanks
	Expired Septic Tanks

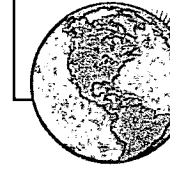
January 16, 2002
Source: City of Las Vegas
Planning and Development Dept.

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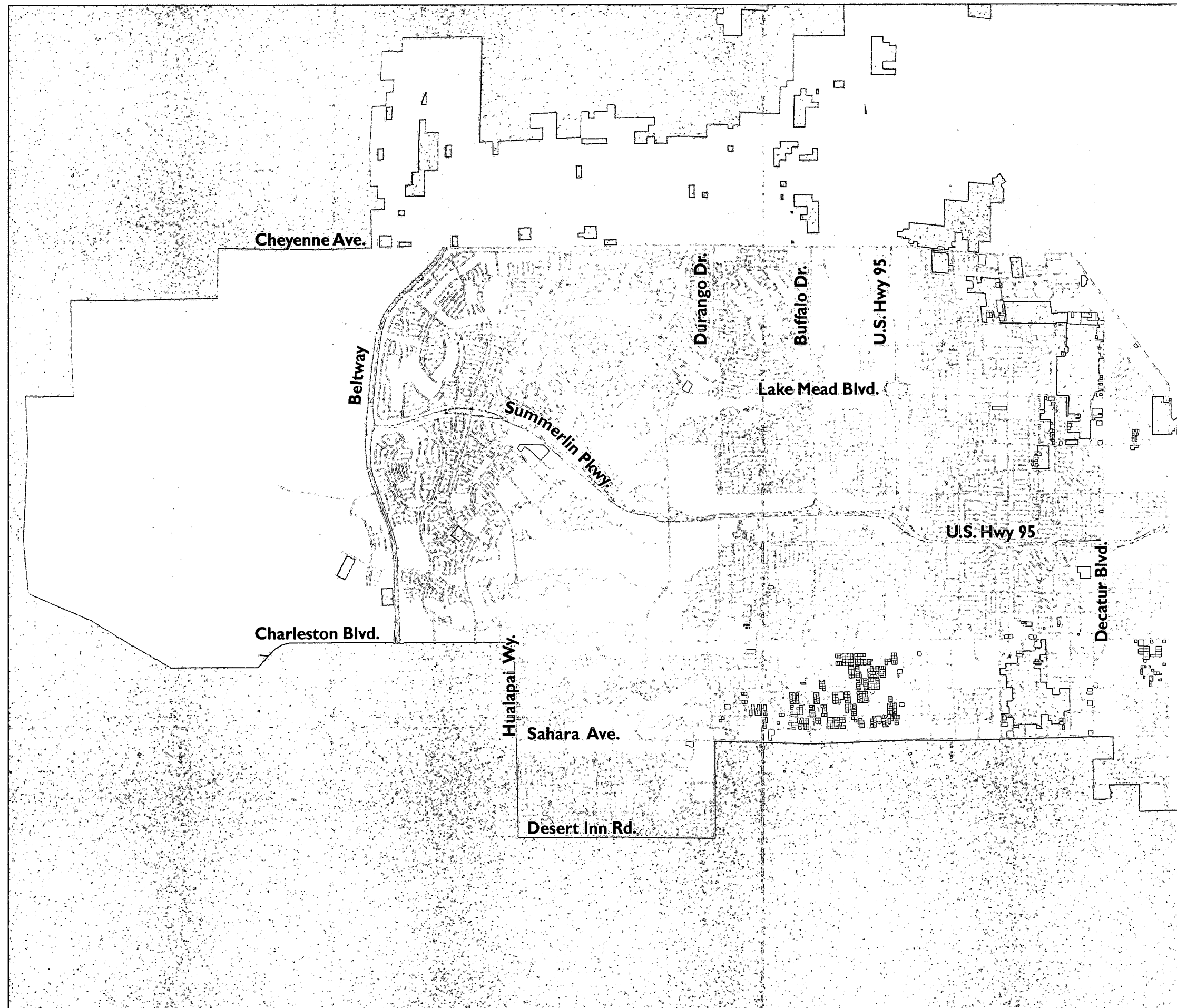
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CITY of LAS VEGAS SOUTHWEST AREA SEPTIC TANK LOCATIONS Map 9B



- City of Las Vegas
- North Las Vegas
- Clark County
- Active Septic Tanks
- Inactive Septic Tanks
- Expired Septic Tanks



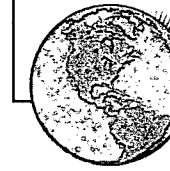
January 16, 2002
Source: City of Las Vegas
Planning and Development Dept.

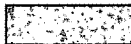
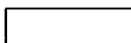
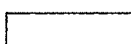
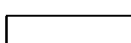
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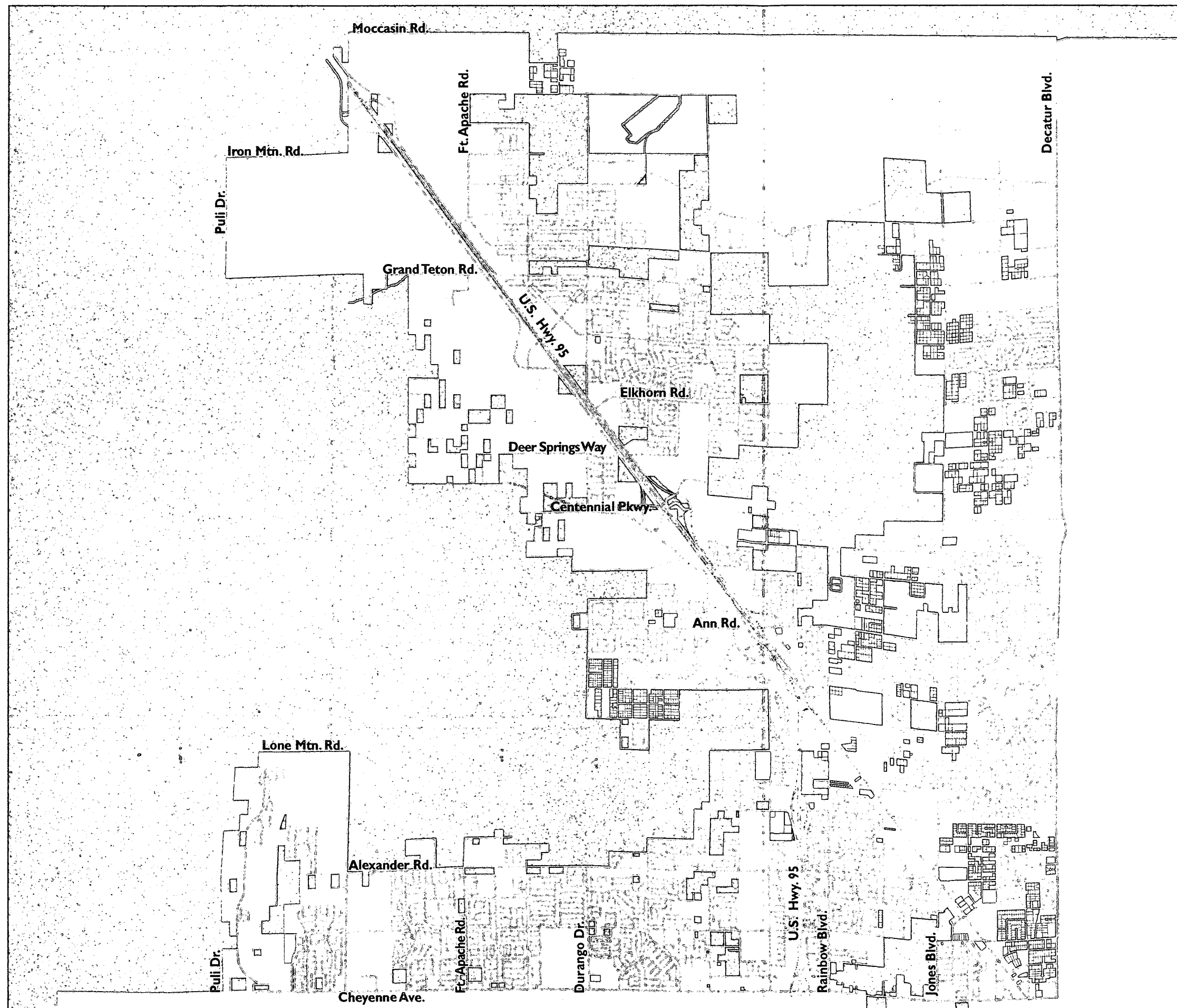
CLV Septic SW.Conserv Ele.fh/5-23-02



CITY of LAS VEGAS NORTHWEST AREA SEPTIC TANK LOCATIONS Map 9C



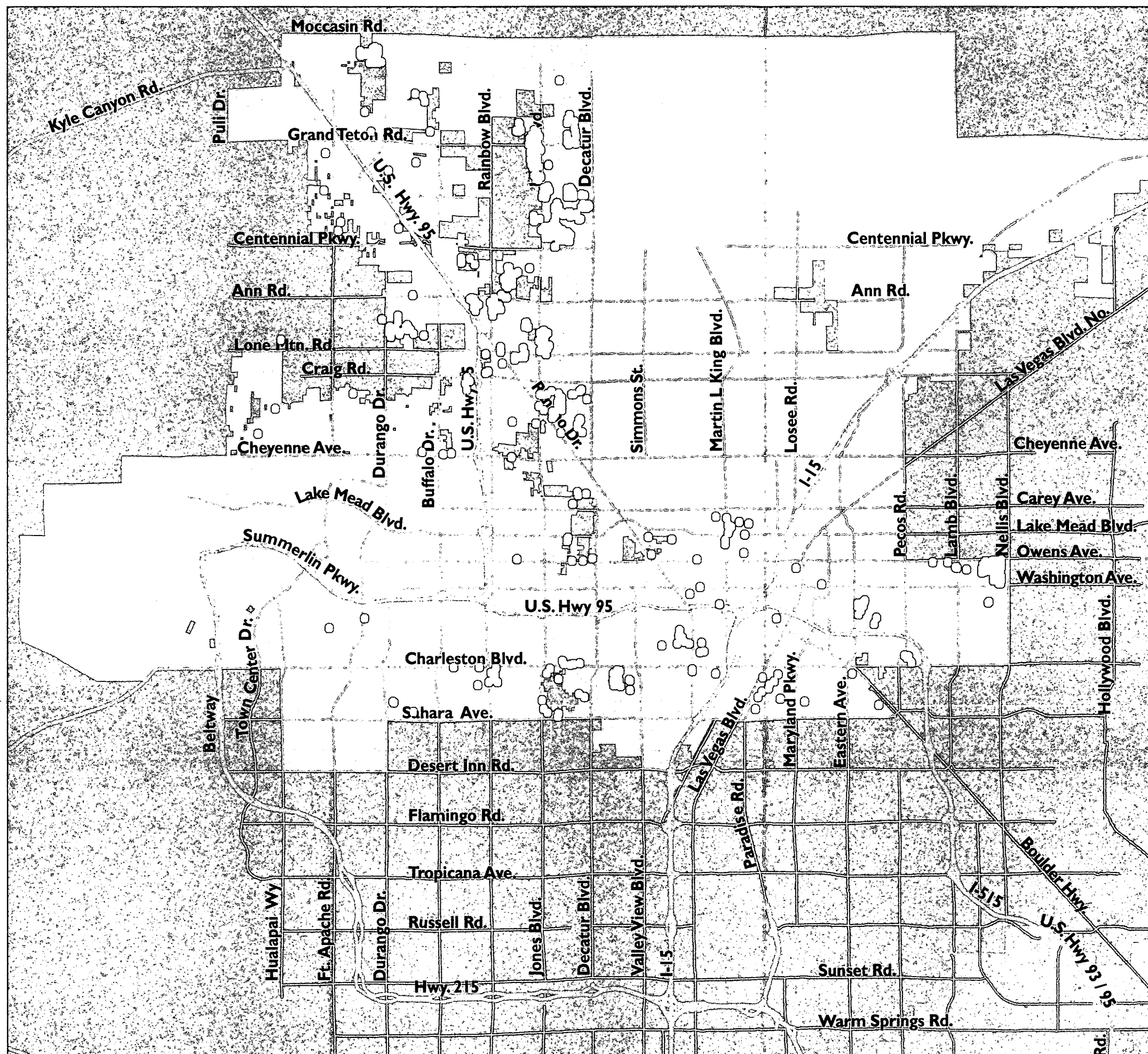
-  City of Las Vegas
-  North Las Vegas
-  Clark County
-  Active Septic Tanks
-  Inactive Septic Tanks
-  Expired Septic Tanks



January 16, 2002
Source: City of Las Vegas
Planning and Development Dept.

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CLV Septic NW.Conserv Ele.fh/5-23-02





SHALLOW WELL LOCATIONS

Map 10

-  City of Las Vegas
-  Henderson
-  North Las Vegas
-  Clark County
-  Private (non-municipal) Permitted and non-permitted (domestic) Wells

Map Prepared May 15, 2002
 Source: City of Las Vegas
 Planning and Development Dept.
 Southern Nevada Water Authority

- The expansion of the turf limitation ordinance to include the rear yard and along the sidewalk;
- Enforcement of the requirement to provide sidewalks on both sides of the street and of a requirement for sidewalks on private streets; and
- The review of building codes to ensure that the minimization of water waste is considered through technical improvements such as hot water recirculators.

Action WSQ.3: The City shall consider requirements for water efficient technology and landscaping in any ordinance that may be drafted in the future to address recent changes in NRS 278.4781 and 278.4787 regarding the creation of Landscape Maintenance Districts.

POTABLE WATER GOAL: The quality of potable groundwater remains high with no health concerns.

OBJECTIVE: To ensure that negative impacts on city groundwater resources are minimized.

POLICY: That the City prevent negative impacts on its groundwater supply that may be caused by septic systems or abandoned wells.

DISCUSSION: Over the years, the development pattern of the city has become integrated with unincorporated Clark County lands, particularly in the northwest part of the Valley, where the density of septic tanks, according to County statistics, is about 119 per square mile, and in some areas exceeds 300 per square mile. Residential development on lands serviced by septic tank systems, over time, can degrade and pollute shallow groundwater resources (Map 10). This is borne up by Clark County statistics, which demonstrate elevated levels of bacteria and sediment in some shallow groundwater aquifers. Although only a small percentage of the city's potable water comes from shallow groundwater wells, it is important to assure the quality of these limited resources into the future.

Action WSQ.4: The City shall continue to enforce the Nevada Administrative Code (NAC 444.786) requiring new development to connect to public sewer whenever public sewer is available within 400 feet of the nearest property line and can be reached by gravity flow. The City shall also continue to enforce NAC 278.460 requiring subdivisions having density of two or more dwelling units per acre to connect to public sewer when public sewer is available within the distance determined by multiplying the number of single family dwelling units by 100 feet.



Channelized portion of Las Vegas Wash.

Action WSQ.5: The City shall encourage the Southern Nevada Water Authority and the Clark County Health District to conduct a study of the potentially adverse affects of septic systems on shallow aquifer drinking wells and devise a plan to take the appropriate corrective actions to ensure the protection of residents utilizing those resources.

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EROSION CONTROL AND WETLAND MANAGEMENT

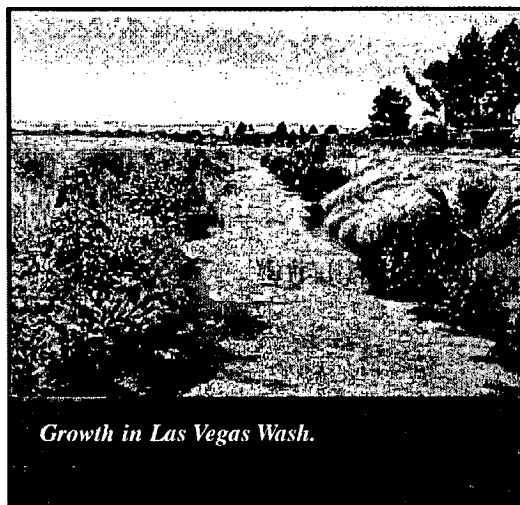
INTRODUCTION

In January of 2000, the Las Vegas Wash Coordination Committee, of which the City of Las Vegas is a participant, produced the *Las Vegas Wash Comprehensive Adaptive Management Plan*. Among the issues addressed in this plan are the protection of the water quality of Lake Mead, sustaining wetlands, and return flow credits. Although the Wash provides only about two percent of the water inflow to Lake Mead, it is the primary outlet for water flows from the metropolitan Las Vegas Valley. These flows are comprised of storm water, treated wastewater, landscape and surface street runoff, and intercepted shallow ground water. Although treated wastewater is generally the largest component, the occasional periods of storms can result in massive amounts of water flow leading to erosion, headcutting (a form of upper-channel erosion), and loss of habitat and infrastructure.

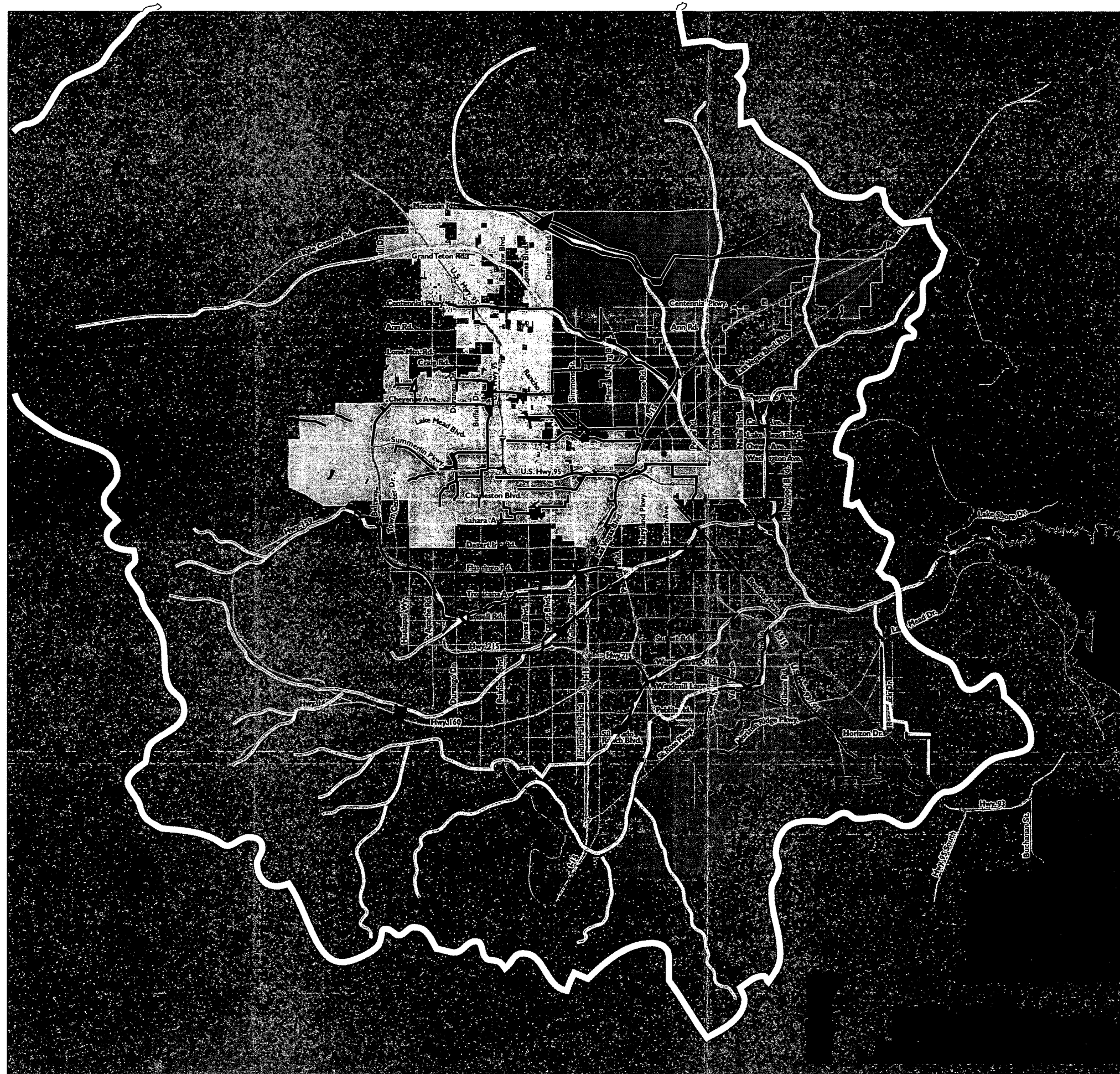
Large portions of the highly treated waste water that is returned to the Wash provides valuable return flow credits that increase the amount of water that the State of Nevada can divert from Lake Mead. These credits are a major component of southern Nevada's long term resource planning.

ROLE OF THE CITY OF LAS VEGAS

The City has a limited role in improvements to the Las Vegas Wash, as only a small portion of the Wash is located within the city boundary, and most of that has been channelized with concrete. In the Centennial Hills Sector, however, there are a number of undeveloped areas in which arroyos and small washes remain in their natural states. The City should view these intermittent watercourses not only from the perspective of their role as drainage systems, but also the role they play as recreational and visual amenities when retained in a natural condition and sensitively integrated with new urban development. It is important, however, that the City support the efforts of the Coordination Committee and work with the other involved entities to ensure that a comprehensive approach to management of the Valley's wetland resources can be realized. Although wetland areas are no longer dwindling in size, this is only due to the discharge of treated effluent; these areas are no longer naturally occurring.



Growth in Las Vegas Wash.



ARROYOS and WATERCOURSES



Map 11

 City of Las Vegas

 Henderson

 North Las Vegas

 Boulder City

 Clark County

 Hydrographic Boundary

 Natural washes

 Completed / Underconstruction Conveyances

Note: Alignment of washes in their natural state to completed conveyances is only representative.

Source: City of Las Vegas
Public Works Dept.

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arroyo & watercourses.Conserv Ele.fh/5-23-02



FLOOD CONTROL

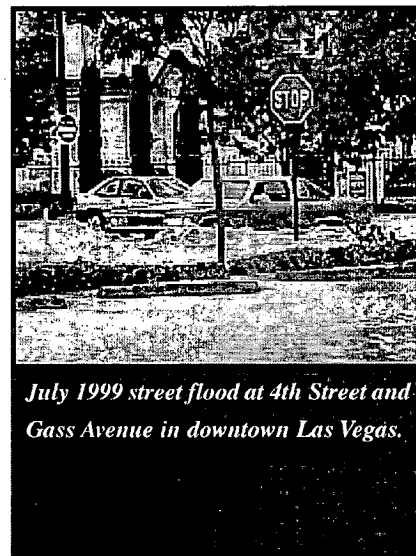
INTRODUCTION

The Clark County Regional Flood Control District (CCRFCD) was established in 1986 as a result of major flood events during the 1970s and early 1980s that were attributable to the increasing pace of urbanization in the Valley. The mandate for this agency was the prevention of "...loss of life and property, disruption of commerce, interruption of transportation and communication and waste of water resulting from floods, and in furthering the conservation, development, utilization and disposal of water" (Map 12). This agency was funded through the imposition of a 0.25-cent sales tax that same year. The CCRFCD adopted a Flood Control Master Plan in 1987. This Master Plan, which is updated at five-year intervals, provides the policy basis for the development of capital projects to control floods and erosion. The actual project programming and capital priorities are updated annually within a ten-year timeframe. (See Tables 2, 3, and 4)

In order to illustrate the task faced by the CCRFCD, Map 12 depicts special flood hazard areas within the Valley. These areas are 100-year regional flood zones (that is, areas that would flood due to a storm severe enough to only occur on an average of once every 100 years). Such areas are identified by the Federal Emergency Management Agency (FEMA) as Zone A flood zones, and are calculated based on local hydrology, topology, precipitation patterns, flood protection measures such as levees, and a range of other scientific data.

Table 2: Proposed and Completed Conveyances and Basins within the Las Vegas Valley

Conveyance Statistics	
Miles of Conveyance:	663.48
Miles of Open Channel Conveyance:	54.11
Miles of Closed Channel Conveyance:	609.37
Miles of Completed Conveyance:	280.35
Basin Statistics	
Number of Basins:	109
Acres of Basins:	3369.54
Square Miles of Basins:	5.26
Number of Completed Basins:	53
Acres of completed Basins:	1979.45
Square Miles of Completed Basins:	3.09



IMPLEMENTATION STRATEGY

REGIONAL COORDINATION GOAL: Issues of regional significance, requiring the City of Las Vegas to coordinate with other government entities and agencies within the Valley, will be addressed in a timely fashion.

OBJECTIVE 7.2: To ensure that arroyos, washes and watercourses throughout the City are integrated with urban development in a manner that protects the integrity of the watershed and minimizes erosion.

POLICY 7.2.2: That since arroyos, washes and watercourses in their natural state represent visual and possibly recreational amenities for adjacent neighborhoods, that such areas not be rechanneled or replaced with concrete structures except where required for bank stability or public safety.

DISCUSSION: Approximately 150 million gallons of water flow through the Las Vegas Wash each day (Map 11). The erosion created by this water has destabilized the Wash and reduced the amount of wetlands it supports from about 2000 acres in the 1970's to about 200 to 300 acres today.

Action WSQ.6: The City shall continue to work to preserve the state of the Las Vegas Wash by maintaining natural features in all areas of work or construction within the city portions of the Wash. The City should work with the Regional Flood Control District to ensure that natural features are not, unless dictated by physical necessity, replaced with concrete flood channels. Natural features shall be privately maintained. In areas planned for urban development along washes, setbacks from the washes should be implemented to minimize the need for channel reconstruction and to provide a valuable open space amenity.

POLICY 7.2.4: That the City ensures that development is designed to include measures to mitigate the impact of periodic flooding on those structures.

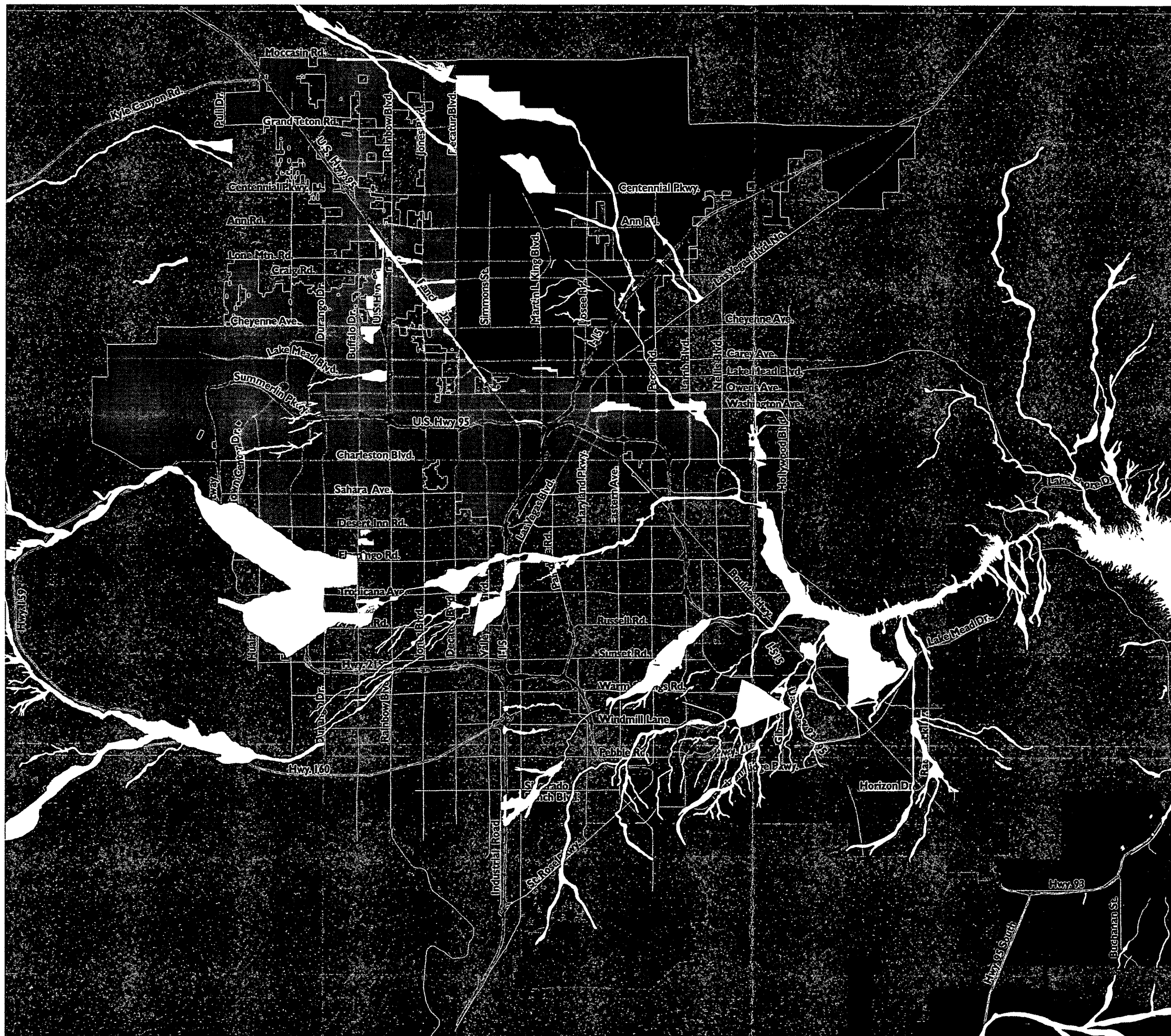
DISCUSSION: The Land Use Study Team of the Las Vegas Wash Coordination Committee developed a three-tier system for addressing land use issues along the Wash. Tier one is a half-mile zone in each direction extending the length of the Wash. This zone is obviously the most important as it has the greatest direct impact on the Wash. Tier two is the land above the shallow aquifer. This area is important as land use practices allowing access to the shallow aquifer may eventually impact the wash as intercepted shallow ground water. The Bureau of Land Management (BLM) disposal boundary delineates tier three because within it is the entire developable area of the Valley. The land use study team recommends that all land use decisions consider watershed management.

Action WSQ.7: The City supports the recommendations of the Las Vegas Wash Coordination Committee by ensuring that development within tier one (one-half mile of the Wash) incorporates appropriate drainage facilities and/or design to mitigate any negative impact on the Wash.

Action WSQ.8: The City should pursue the requirement for appropriate and adequate flood control and drainage facilities in all new development, in particular, best management practices that encourage on-site retention and infiltration of flood waters and adequate set-backs for urban development, to preserve the integrity of the Wash.

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FLOOD ZONES

Map 12

	City of Las Vegas
	Henderson
	North Las Vegas
	Boulder City
	Clark County
	Special Flood Hazard Area

January 16, 2002
Source: Clark County Regional Flood Control District
City of Las Vegas Public
Works Dept.

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flood zone.Conserv Ele.ft/5-28-02



ROLE OF THE CITY OF LAS VEGAS

The City's Public Works Department reviews development applications to ensure that new development and redevelopment contains infrastructure to control storm flows and integrate with regional flood control systems. The City Council has member representatives in two of the eight seats on the CCRFCD's Board of Directors.

The City also sits on the Las Vegas Wash Coordination Committee and the Lake Mead Water Quality Forum. These bodies benefit water quality and the environment of the Las Vegas Wash watershed. The City also participates in the Las Vegas Valley Storm Water Quality Management Committee. This Committee provides a forum for the Clark County Flood Control District to work with the Valley entities as co-permittees in complying with EPA requirements for a National Pollutant Discharge Elimination System (NPDES) Permit. The Permit currently in place is due to expire on June 16, 2002. The activities conducted in order to comply with conditions of the Permit include wet and dry weather surface water monitoring, a public education campaign, and inspection and enforcement with respect to sources of illicit discharge. These activities are reported annually by the CCRFCD.



1975 flood in Flamingo Wash under Caesar's Palace parking lot.

Table 3: Existing and Proposed Conveyances and Basins within the City of Las Vegas

Name	Completed	%	Construction	%	10 Yr. (1st 5)	%	10Yr. (2nd 5)	%	Proposed	%	Total
Conveyance Length (Miles)	64.68	46.8	9.38	6.8	7.5	5.4	8.06	5.8	48.67	35.2	138.29
Basins	16	69.9	1	4.3	0	0	2	8.7	4	17.4	23
Basin Area (Acres)	595.09		15.72		0		42.61		22.7		676.11
Basin Area (Sq. Miles)	0.93		0.02		0		0.07		0.04		1.06

Table 4: Existing and Proposed Conveyances within the Las Vegas Valley

Name	Completed	%	Construction	%	10 Yr. (1st 5)	%	10Yr. (2nd 5)	%	Proposed	%	Total
Conveyance Length (Miles)	241	41.6	28.07	4.8	63.73	11	62.84	10.9	183.52	31.7	579.13
Basins	41	56.9	6	8.3	8	11.1	9	12.5	8	11.1	72
Basin Area (Acres)	1563.91		182.46		269.45		452.04		97.83		2565.69
Basin Area (Sq. Miles)	2.44		0.29		0.42		0.71		0.15		4.01

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IMPLEMENTATION STRATEGY

FLOOD CONTROL GOAL: All areas of the City of Las Vegas and urbanized areas within the Las Vegas Valley are protected against flooding.

OBJECTIVE: To ensure that physical infrastructure is in place that will divert storm flows to appropriate and purpose-designed storm channels.

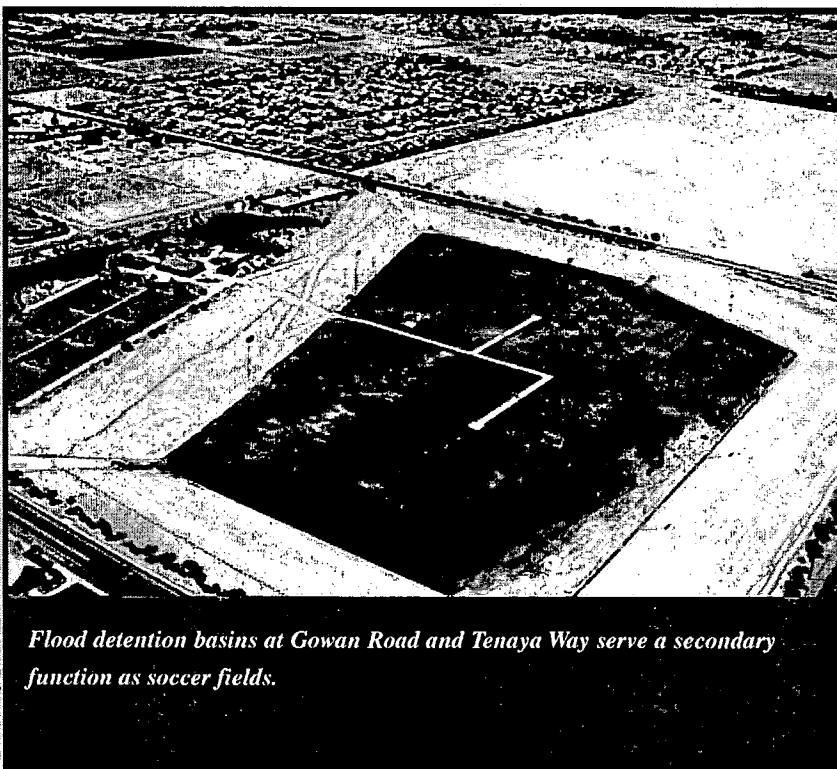
POLICY: That the City continue to ensure that new urban development be designed to adequately collect storm water flows within development parcels and to convey these flows to appropriate regional systems.

DISCUSSION: The CCRFCD is the principal authority in the Valley charged with the development of the Regional Flood Control Master Plan, and provides funding to the City for the design, construction and maintenance of facilities included in the Master Plan. The City owns the facilities (Map 13) and is responsible for ensuring that they function as designed. The City is also responsible for ensuring that new urban development that occurs in the western and northwestern portions of the City incorporates adequate flood control measures and is connected to these flood control systems. The City also has developed and maintains some facilities, such as the Gowan Detention Basin, which also perform a secondary recreational function as soccer facilities.

Although surface roads in the older parts of the City are used to convey floodwaters downstream, since approximately 1996, underground storm drains have been required as a component of new development, pursuant to storm water master plans that the City has developed. The use of these underground systems, in conjunction with detention basins, while adding to the overall cost of

development, are effective in not increasing the storm water loading on downstream surface streets.

Action WSQ.9: The City should continue to require developers to construct local storm drains in accordance with applicable storm water master plans, and to make required financial contributions to the development of the regional storm drain network.

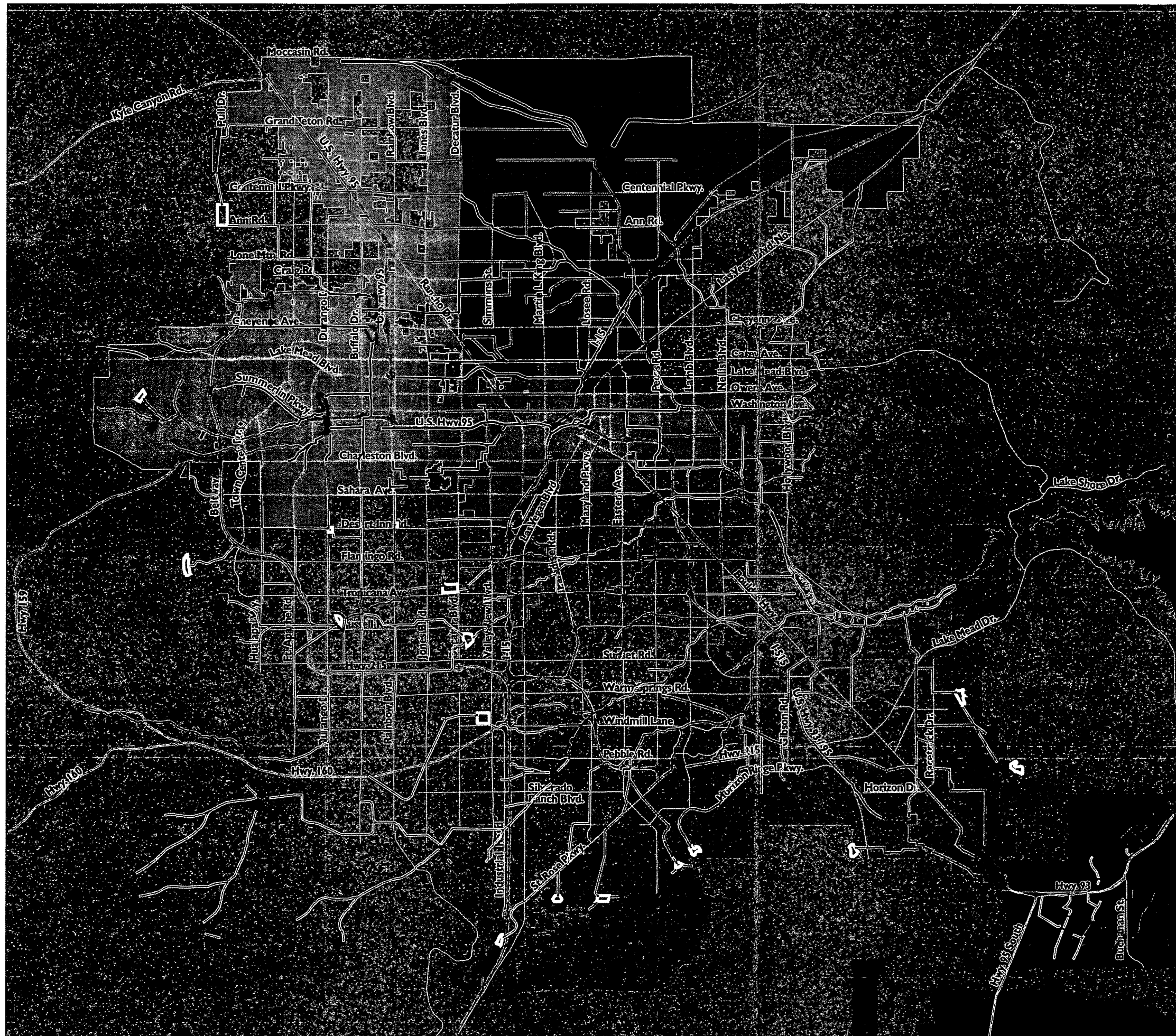


Flood detention basins at Gowan Road and Tenaya Way serve a secondary function as soccer fields.

REGIONAL FLOOD CONTROL FACILITIES



Map 13



City of Las Vegas

Henderson

North Las Vegas

Boulder City

Clark County

Flood Control Basins

completed

proposed

Flood Control Channels

completed

proposed

Source: City of Las Vegas
Public Works Dept.

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Flood Control Facilities, Conserv. Ele. fh/5-15-02



RECLAIMED WATER

INTRODUCTION

The *Area Wide Reuse Study - Las Vegas Valley Study Area* was completed in July of 2000. The study area was defined as the BLM disposal boundary. The City of Las Vegas participated along with the City of North Las Vegas, the City of Henderson and the Clark County Sanitation District, which collectively process the wastewater generated in the study area. The Las Vegas Valley Water District also participated due to its major role in the delivery of potable water. The purpose of the study was to plan an area wide water reclamation system to meet future demands. The plan to expand the use of reclaimed water was spurred by three major factors: unprecedented population growth, arid climate, and limited water resources.

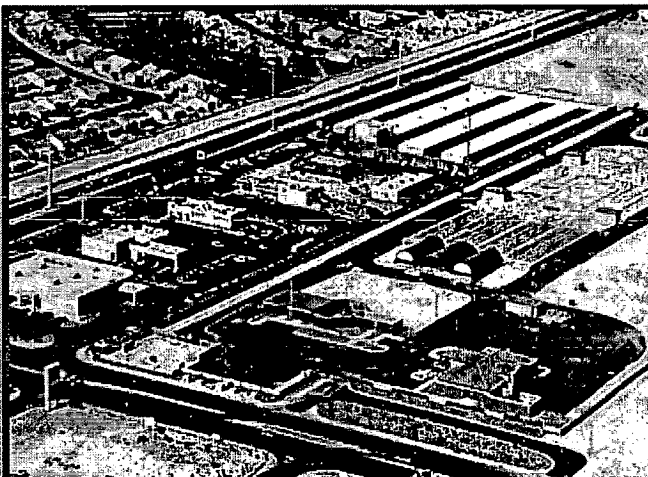
ROLE OF THE CITY OF LAS VEGAS

There are currently two reclaimed water facilities in the City of Las Vegas. A one million gallon per day (mgd) "scalping plant" was constructed at Bonanza and Mojave. This plant, which basically scrapes water off the top of effluent and allows the remainder to continue on to Lake Mead, reached full capacity in its first year. This plant handles the reclaimed water used on the Desert Pines Golf Course.

A second facility, the Northwest Water Resource Center, opened in the spring of 2001. This plant's capacity is 10 mgd and will ultimately serve up to ten golf courses (Map 14). Ultimately, the courses that are programmed to use recycled water provided by the Recycled Water Distribution System include TPC Canyons, TPC Summerlin, Angel Park, Outlaw, Badlands, Canyon Gate, Eagle Crest, Palm Valley, Highland Falls and the Northwest Family Golf Course.



Water runoff from Water Pollution Control Facility entering Las Vegas Wash. - Courtesy CLV Public Works Dept.



Northwest Water Resource Center located at Cheyenne and Durango with Palm Valley golf course Sun City in the background. Courtesy CLV Public Works Dept.

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IMPLEMENTATION STRATEGY

REGIONAL COORDINATION GOAL: Issues of regional significance, requiring the City of Las Vegas to coordinate with other government entities and agencies within the Valley, will be addressed in a timely fashion.

OBJECTIVE 7.1: To ensure that the natural resources of the city, particularly those that directly support an enhanced quality of life for its residents, are protected.

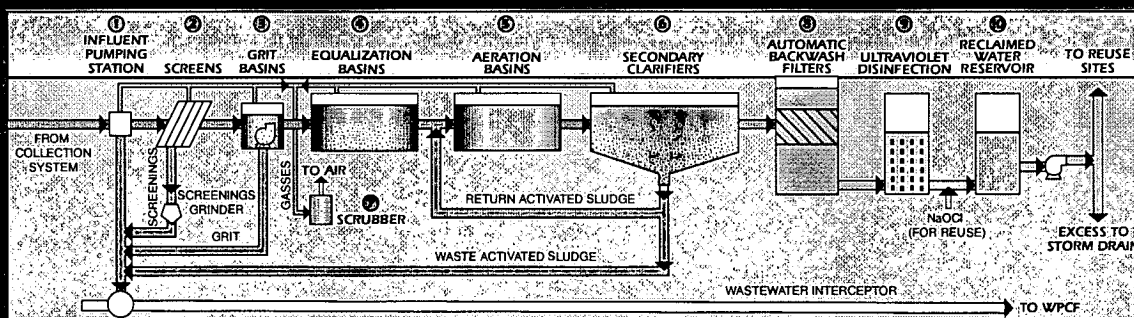
POLICY 7.1.4: That the City support initiatives for the recycling of gray water for non-potable uses and support efforts to maximize water reclamation and aquifer recharge efforts by both the public and private sectors, where such efforts are not likely to result in excessively high groundwater tables. The City shall support the protection of ground water by limiting the locations of potential pollution sources from areas of ground water recharge and pumping.

DISCUSSION: While the increased use of recycled or reclaimed water does not currently expand the Valley's limited resources, it is important to note that recycling of non-Colorado River water may prove beneficial in the future. It should also be recognized that the ability of the SNWA and the LVWWD to project water resource supplies and demands is highly dependent on accurate estimation of water use and return flow credits. As a result, it is important to involve the SNWA and its member agencies in the policy-making process related to water recycling and reclamation.

By far the greatest users of reclaimed water are golf courses. In 1999, 78% of reclaimed water (or 10.5 out of 13.45 million gallons per day) was used on golf courses. This figure comprised approximately 30% of total demand. Fifteen percent was used for power generation and seven percent was used to irrigate highway medians, cemeteries, and for construction.

By the year 2020, 83% of reclaimed water (46.5 out of 56 million gallons per day) is projected to be used for golf courses. This will account for 70% of all water used on golf courses. The rest is to be distributed among parks and industrial uses.

Action WSQ.10: The City shall continue to support the creation of additional reclamation facilities and seek additional ways to use this water to reduce the demand on our supply of potable water.

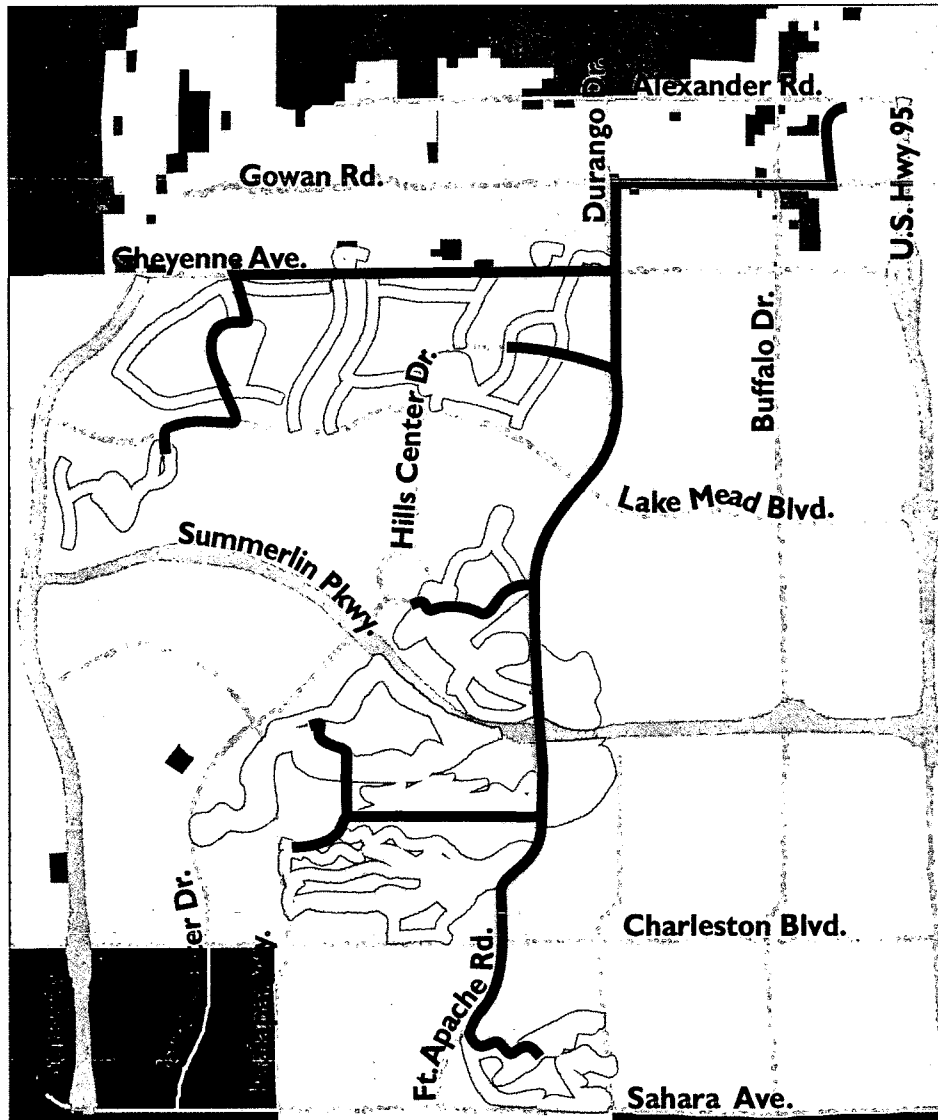


The Northwest Water Resource Center collects and treats wastewater flow from municipal sewer interceptors and produces recycled water to be used for irrigation purposes. Courtesy of CLV Public Works Dept.

RECYCLED WATER DISTRIBUTION SYSTEM



Map 14



-  City of Las Vegas
-  Clark County
-  Golf Courses
-  Recycled Water Network
-  Northwest Water Resource Center

January 2002
Source: Las Vegas Valley Water District

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recycle water.Conserv Ele.fh/5-28-02

USE OF APPROPRIATE LANDSCAPE MATERIALS

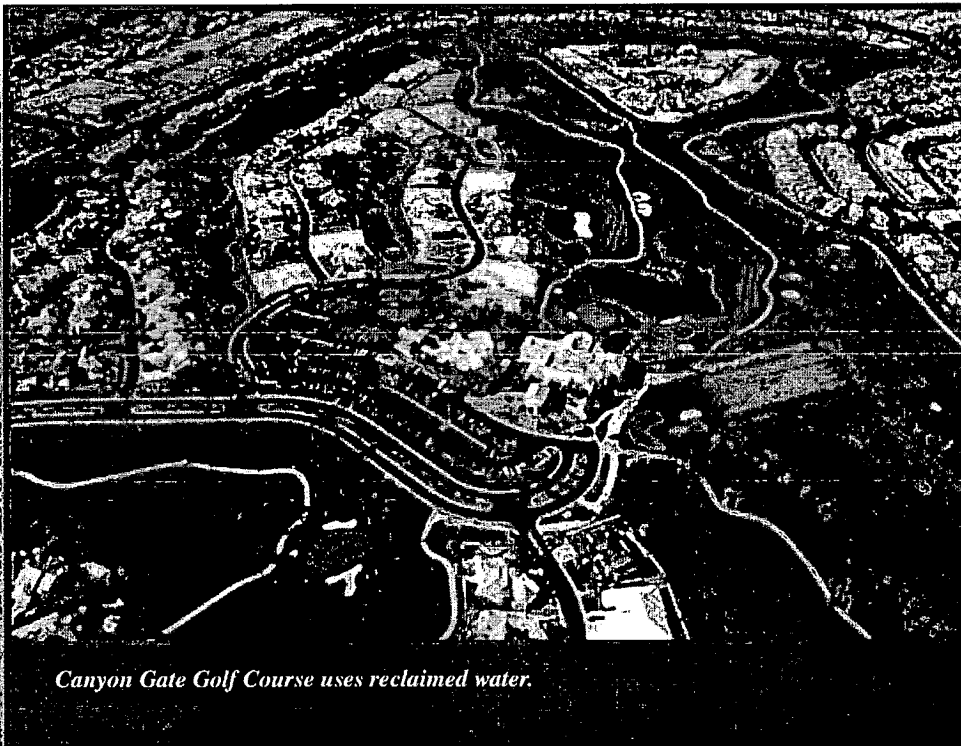
INTRODUCTION

The City must balance the need to conserve water with its goals and objectives of enhancing the quality of life of its citizens through the establishment and maintenance of parks, trails, and public rights-of-way. The use of drought-tolerant plants, or xeriscape, is very important, as well as the use of plant species specifically adapted to survival in the harsh, hot and dry, Mojave Desert environment. The use of turf and water-consumptive trees, as well as plants and trees that are noxious or create high pollen levels, should be actively discouraged.

THE ROLE OF THE CITY OF LAS VEGAS

The City of Las Vegas has mandated the use of xeriscape since 1997, when the City's *Development Code, Title 19A*, was adopted, and will continue to do so. The City was the first entity in the region to adopt a "turf limitation" ordinance, which prohibits commercial properties from employing turf over more than 25 percent of its required landscaped buffers, and also limits new residential front yard coverage by turf to a maximum of 50 percent. The City is currently developing additional measures such as the *Commercial*

Design Guidelines and *Residential Design Guidelines*, targeted for approval by City Council in 2002. These measures will give the City greater direction for the type of plant material installed in public areas.



Canyon Gate Golf Course uses reclaimed water.

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IMPLEMENTATION STRATEGY

REGIONAL COORDINATION GOAL: Issues of regional significance, requiring the City of Las Vegas to coordinate with other government entities and agencies within the Valley, will be addressed in a timely fashion.

OBJECTIVE 7.1: To ensure that the natural resources of the city, particularly those that directly support an enhanced quality of life for its residents, are protected.

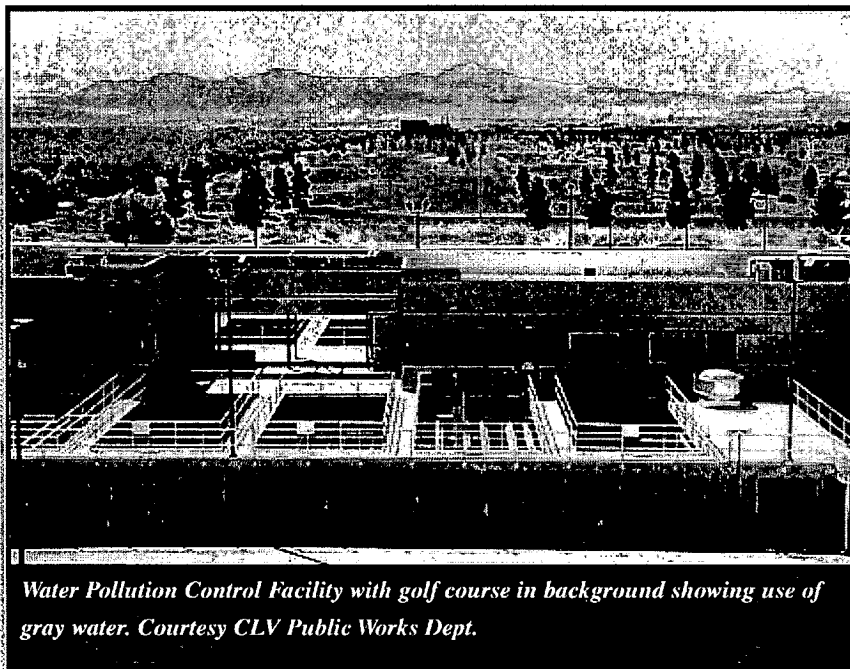
POLICY 7.1.8: That the City encourages water conservation.

DISCUSSION: *The City of Las Vegas Development Code, Title 19A, Chapter 12, Landscape, Wall and Buffer Standards*, as adopted in March 1997, and amended thereafter, makes provisions for the application of minimum landscaping standards for all multi-family, office, retail, commercial, institutional, and industrial developments, and all single-family developments with five or more lots. The intent of establishing minimum standards for landscaping, walls and buffering is:

- To ensure that new development will contribute to the overall attractiveness of the city;
- To increase design compatibility between residential and abutting commercial and industrial land uses;
- To reinforce a sense of community and preserve the integrity of neighborhoods;
- To conserve water and reduce erosion;
- To reduce unsightly views;
- To reduce heat and glare generated by development; and
- To aid in filtering dust and particulate matter from the air.

The City requires the submittal of a landscape and irrigation plan sealed by a registered professional for all site development plan reviews (which are required

pursuant to the *Las Vegas Zoning Code Title 19A.18.050.B* for all developments other than those excluded by this section of the Zoning Code, such as single-family and duplex units) showing the location, size, species, and typical spacing of all plant materials, and the irrigation system required to maintain the plants. The issuance of a certificate of occupancy by the City requires the maintenance and proper irrigation of all plant materials. The specification of turf limitation is contained within this chapter of the *Development Code*.

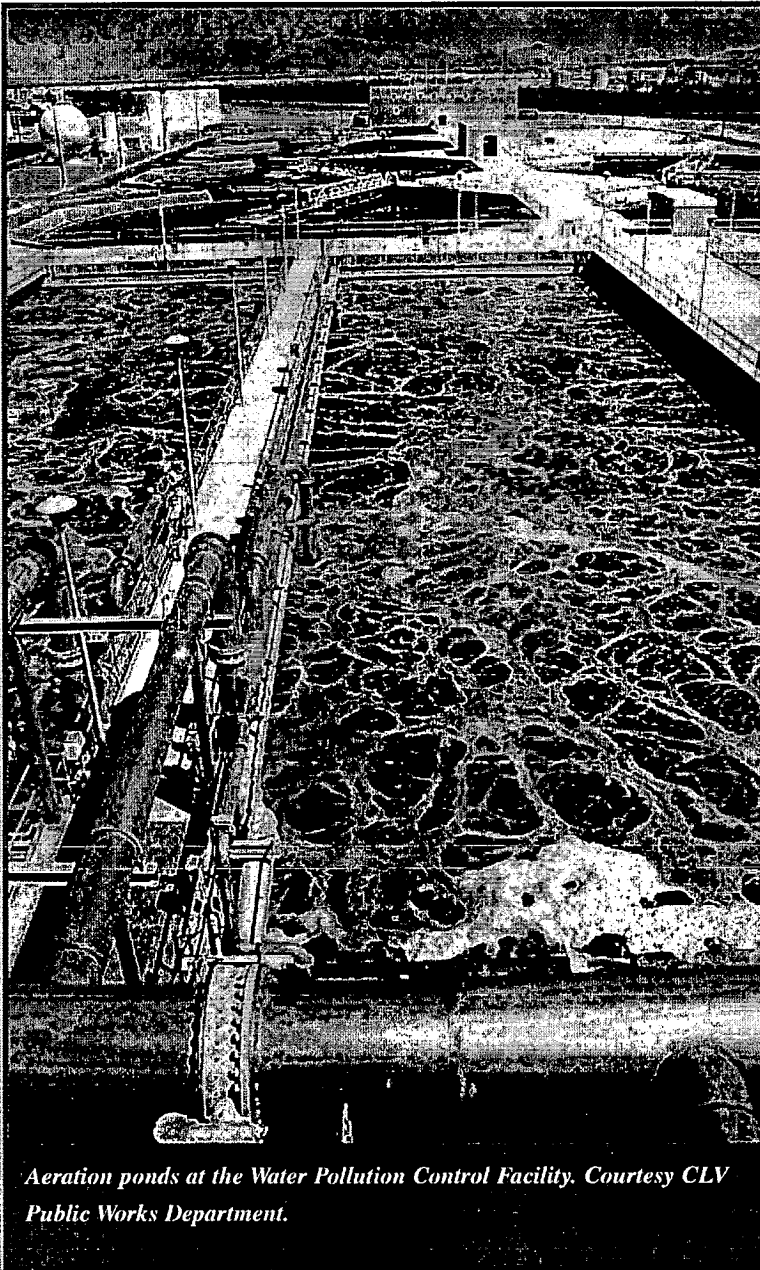


Water Pollution Control Facility with golf course in background showing use of gray water. Courtesy CLV Public Works Dept.

The City requires that all surface parking lots be broken up into smaller bays, divided by landscape islands filled with trees and shrubs at the rate of one 24-inch box tree per every six parking spaces. Additionally, perimeter buffering including regularly spaced trees, a minimum of 15 foot deep, is required where all surface parking lots are adjacent to public sidewalks and rights-of-way. Turf areas are allowed but not encouraged.

Action WSO.11: The City should continue to ensure that water conservation measures are incorporated into public projects involving the City and consider the landscaping of major projects using the recently approved turf limitation ordinance to guide landscaping choices.

Action WSO.12: The City shall continue to encourage the use of drought tolerant plants or xeriscape for public projects through proposed amendments to Title 19A.



Aeration ponds at the Water Pollution Control Facility. Courtesy CLV Public Works Department.

Action WSO.13: The City shall continue to identify and employ ways to limit its consumption of potable water for the irrigation of plant materials.

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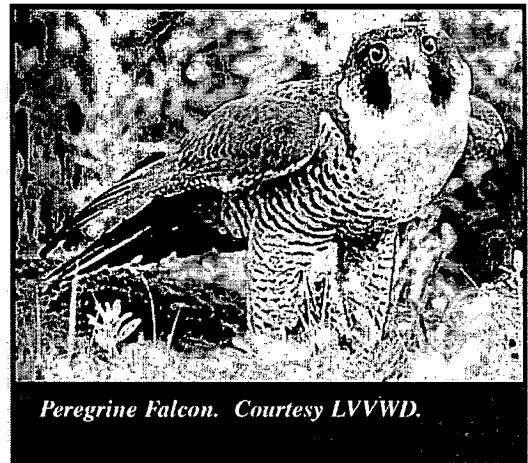
HABITAT AND WILDLIFE

PREFACE

In this section, the Conservation Element discusses issues and policies related to the well being of plants and animals. Topics covered include the protection of endangered species and the effect of municipal boundaries and urban expansion within those boundaries. Also discussed are the effect of urbanization on plants and animals and the establishment and protection of urban forestry.

BACKGROUND

Clark County has been the lead agency in the consideration of the effect of urban expansion on sensitive species of plants and animals in the Las Vegas Valley, through the research and preparation of the Multiple Species Habitat Conservation Plan (MSHCP), discussed in greater detail in the following subsection of this Element. This Plan is intended to provide policies that will strike a balance between the long-term protection and eventual recovery of threatened or endangered native species of plants and animals and their habitats, and the logical pattern of urban development that will occur in the Las Vegas Valley over a 30-year period.



In balancing these often-conflicting objectives, the MSHCP is also attempting to maximize flexibility, reduce the regulatory burden and the costs of compliance and maximize the opportunities for recovery of identified species.

The MSHCP identifies a range of habitat types within the County which:

“...supports 142 species of mammals, 54 species of reptiles, 9 species of amphibians, 41 species of fish and 775 species of plants.”

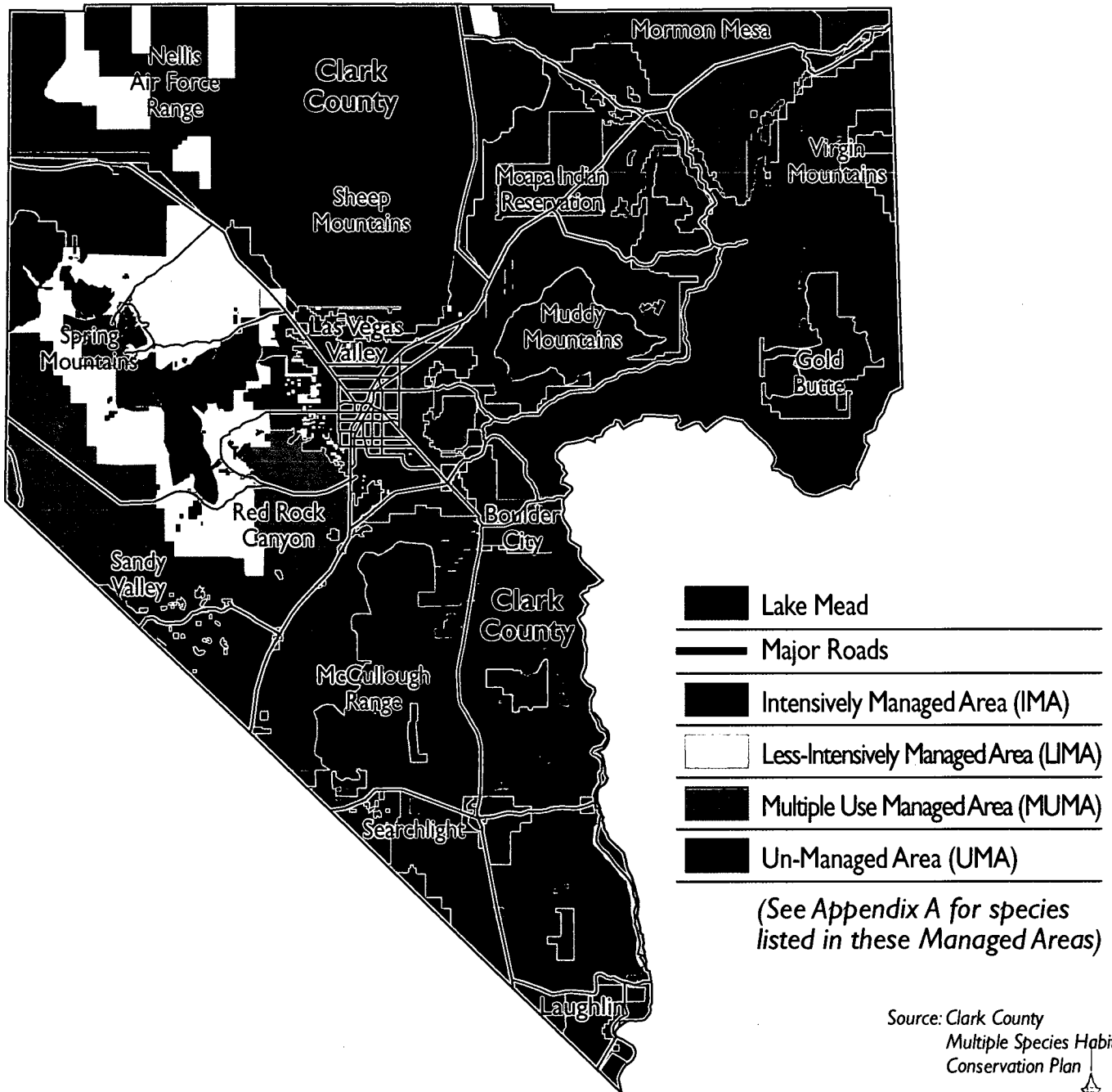
The Plan goes on to indicate that most of these species (414 plant species and 579 of all species - see *Appendix A*) are located in mountain communities; nonetheless, urban development within the Valley basin has an impact on a number of sensitive or threatened species (Map 15). These impacts are analyzed in the MSHCP and policies to address these impacts are identified.

The Las Vegas Valley is entirely surrounded by state and federal areas enjoying some level of recognition for the valuable natural assets within these areas. Map 16 illustrates the location of existing wilderness and conservation areas in the vicinity of the Las Vegas Valley.

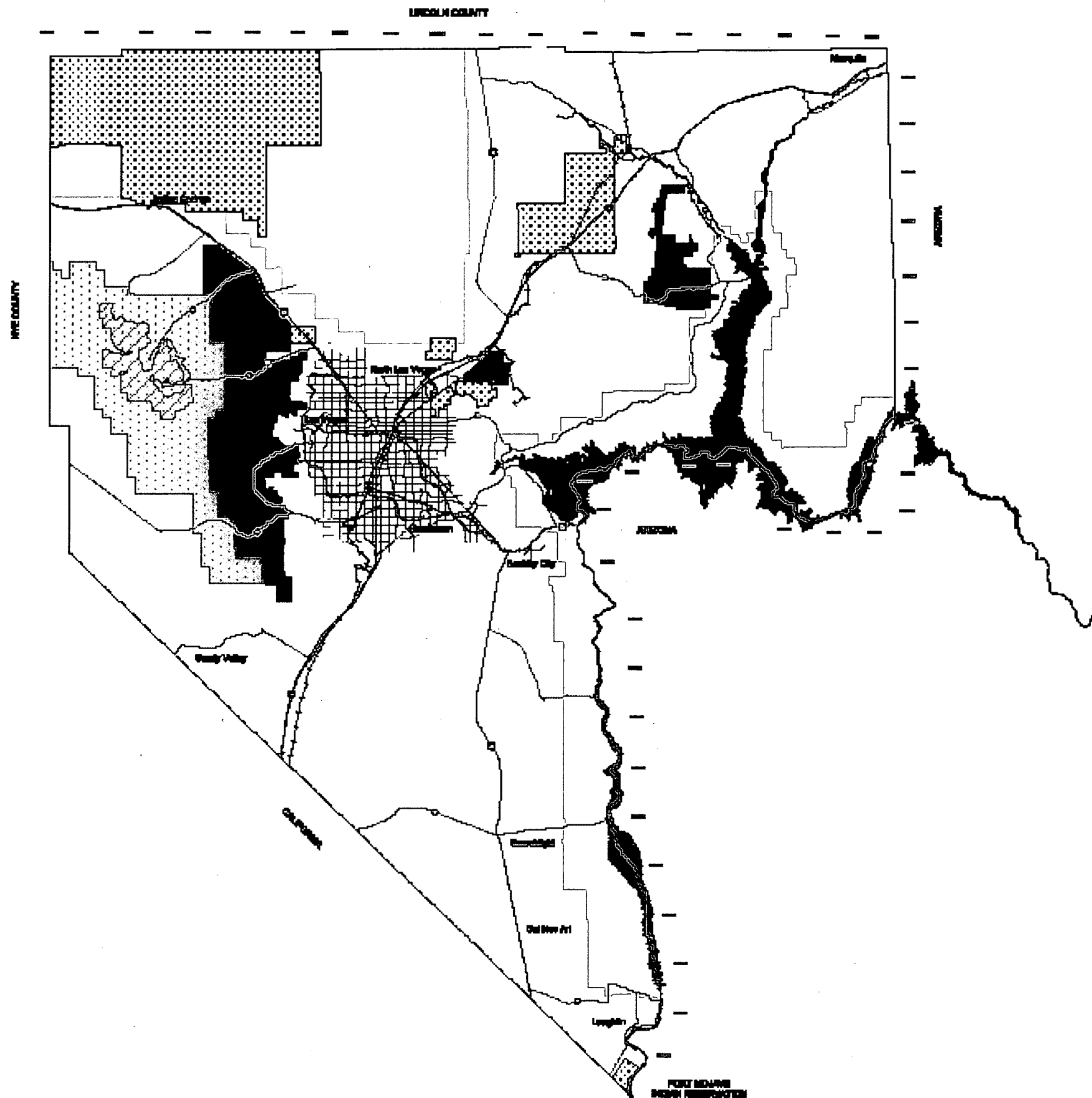
CONSERVATION MANAGEMENT CATEGORIES



Map 15



Source: Clark County
Multiple Species Habitat
Conservation Plan



FEDERAL and STATE LANDS

Map 16

- Railroad
- Freeways
- Beltway
- Major Streets
- Clark County
- Mount Charleston Wilderness Area
- Spring Mountain National Recreation Area
- Nellis Air Force Base Range
- Indian Reservations
- Lakes
- Desert National Wildlife Range/Refuge
- Lake Mead National Recreation Area
- Red Rock Canyon National Conservation Area
- Toiyabe National Forest
- Las Vegas Dunes Recreation Area
- Valley of Fire State Park
- BLM Land

February 16, 2002
Sources: Clark County Comprehensive Planning Dept.
The Nevada Wilderness Coalition

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Fed & State Lands Conserv Ele.PM/5-15-02



PROTECTION OF ENDANGERED SPECIES

INTRODUCTION

As the population continues to grow in the City of Las Vegas and the entire Las Vegas Valley region, it is important to balance growth and development with the needs of existing species of plants and animals with whom we share the land, and to meet the minimum regulations imposed by the federal government.

The Clark County *Multiple Species Habitat Conservation Plan* was adopted in February 2001, after more than eleven years of preliminary work leading up to the final multi-jurisdictional plan. On April 2, 1990, the desert tortoise was listed as threatened by the United States Fish and Wildlife Service, thereby bringing it under full protection of the federal *Endangered Species Act* of 1973. This act by the federal government nearly halted all new development in Clark County, and most especially the new 22,000-acre master-planned community of Summerlin, which was just beginning construction.

Early in September of 1989, Clark County and the cities of Las Vegas, North Las Vegas, Henderson, Boulder City, and Mesquite began investigating the possibility of applying for a permit issued by the U.S. Fish and Wildlife Service, pursuant to the provisions of Section 10(a) of the federal *Endangered Species Act* of 1973. Shortly thereafter, the County and these cities entered into an Interlocal Agreement wherein all entities agreed to fund the preparation of a Habitat Conservation Plan to provide conservation measures for the desert tortoise, and which would support a Section 10(a) Permit to allow the incidental take of that species.

That Plan was designated as the *Short-Term Habitat Conservation Plan* for the Desert Tortoise, and was approved and a Section 10(a) Permit was issued on August 24, 1991. The Plan was good for an initial term of three years, during which time the entities agreed to continue working to develop appropriate conservation measures for the desert tortoise and to thereafter apply for a long-term permit with a term of 30 years.

In 1991, the Clark County Commission appointed the 40-member Implementation and Monitoring Committee. The Committee was charged with the task of drafting an interim plan, which it did accomplish. The Clark County *Desert Conservation Plan* was approved on August 5, 1995, and a new Section 10(a) Permit was issued, which allows the incidental take of only desert tortoises for a term of 30 years.

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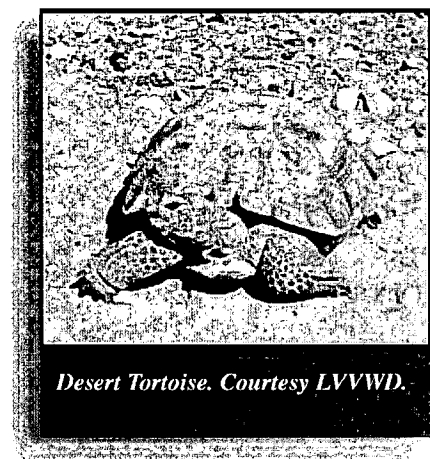


In May of 1996, the Implementation and Monitoring Committee began discussing the possibility of preparing a *Multiple Species Habitat Conservation Plan* and applying to the U.S. Fish and Wildlife Service for one or more Section 10(a) Permits to allow the incidental take of many species in addition to the desert tortoise. In August of 1996, after additional study, the Board of County Commissioners and the councils of the cities authorized the preparation of the Multiple Species Habitat Conservation Plan by means of an amendment to the existing Interlocal Agreement. The final June 2000 draft Plan was adopted by all entities by February of 2001. The Plan allows for the incidental take of some 78 endangered species, authorized through the collection of a fixed \$550 per acre fee for new development within the urbanized areas of the Las Vegas Valley.

The Plan also identifies those actions deemed necessary to maintain the viability of natural habitats in Clark County for the approximately 232 species residing in those habitats, including four species that are currently listed as endangered (the southwestern willow flycatcher, the Moapa dace, the woundfin, and the Virgin River chub), one threatened species (the Mojave desert tortoise), and one candidate species (the Blue Diamond cholla). Areas of critical concern for wildlife habitat identified in the MSHCP are shown on Map 17. The collected fee nets about \$4,000,000 per year; the expenditure of these funds is directed by the Implementation and Monitoring Committee for habitat preservation, research, security, and education.

THE ROLE OF THE CITY OF LAS VEGAS

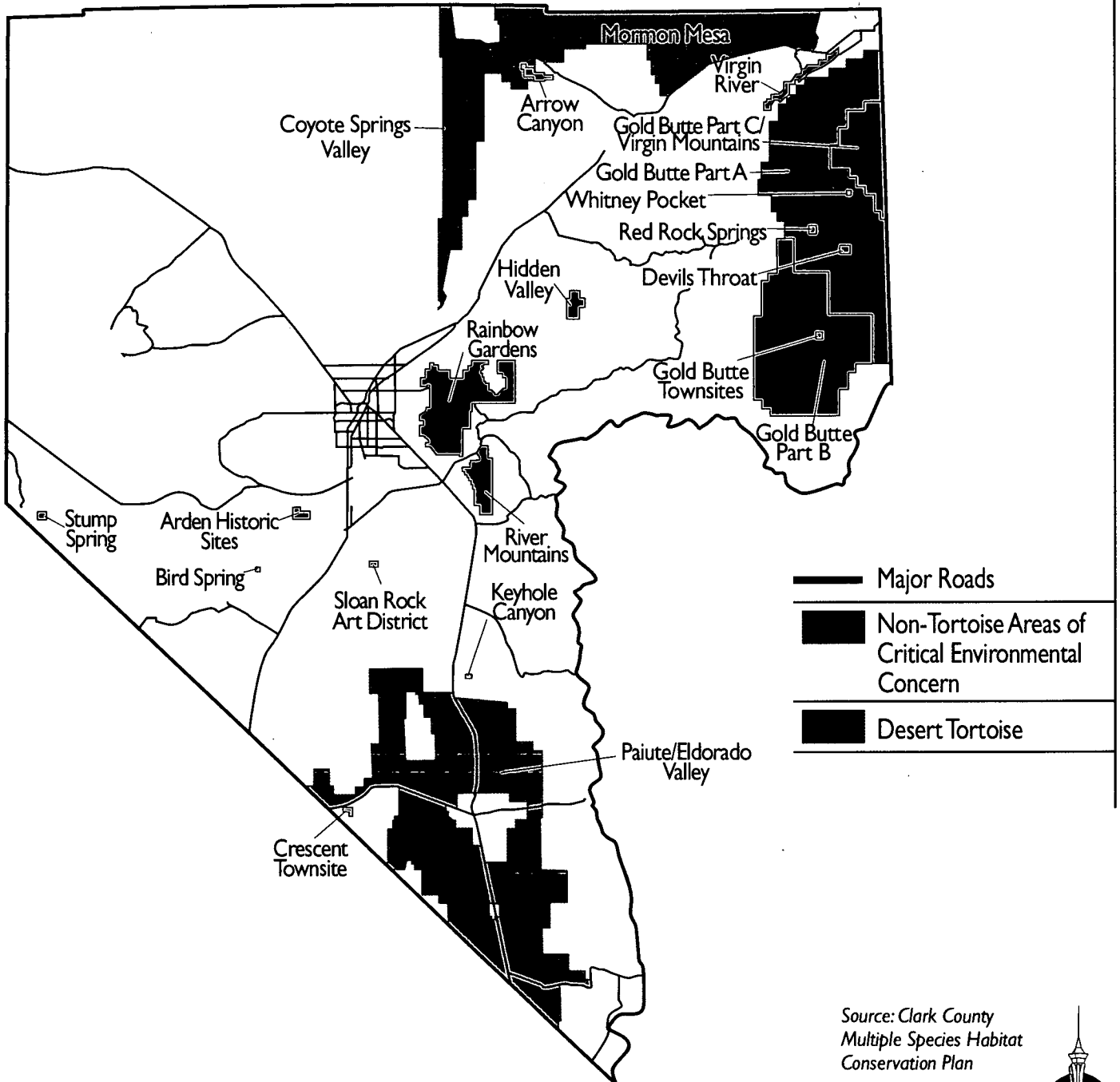
The City of Las Vegas has been an active participant in the formation, implementation, and adoption of the Short-Term Habitat Conservation Plan for the Desert Tortoise, the Desert Conservation Plan, and the Multiple Species Habitat Conservation Plan. The City, along with Clark County and the cities of Henderson, North Las Vegas, Boulder City and Mesquite, and the Nevada Department of Transportation, in cooperation with other federal and state entities, has supported the preparation by Clark County of the MSHCP and the related Environmental Impact Statement, in order to allow for future urban development in the Las Vegas Valley that is in compliance with the regulations of the federal Endangered Species Act.



Desert Tortoise. Courtesy LVVWD.

Areas of Critical Environmental Concern

Map 17



Source: Clark County
Multiple Species Habitat
Conservation Plan

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Environ Critical Area Conserv Ele.fh/3-08-02



IMPLEMENTATION STRATEGY

REGIONAL COORDINATION GOAL: Issues of regional significance, requiring the City of Las Vegas to coordinate with other government entities and agencies within the Valley, will be addressed in a timely fashion.

OBJECTIVE 7.4: To identify, protect and preserve archeological resources and areas with unique or sensitive geologic features that exist within the city boundaries, and to integrate them with new urban development that extends into archeologically sensitive areas.

POLICY 7.4.3: That the City protects and preserves desert flora and fauna to the extent practicable.

DISCUSSION: Within the Las Vegas Valley, continued urbanization is inevitable. This is particularly true within the boundaries of the urban entities in the Valley, including the City of Las Vegas. In fact, projections developed during the preparation of the Las Vegas 2020 Master Plan indicate that land within the city boundaries may be substantially built out by around 2030.

Given this situation, the methodology contained in the Clark County Multiple Species Habitat Conservation Plan offers the best opportunity to provide cash reserves, generated by development, to spend on the protection and preservation of threatened species where they exist elsewhere in the Valley or in Clark County, in locations where long-term conservation is a viable option.

Action HW.1: The City shall continue to be an active participant in the Implementation and Monitoring Committee of the Clark County Multiple Species Habitat Conservation Plan, for the duration of the MSHCP, which shall continue through the year 2028.

Action HW.2: The City shall continue to collect the \$550 per acre fee for new development on behalf of the Clark County Multiple Species Habitat Conservation Plan, for the duration of the MSHCP, and for use as directed by the Implementation and Monitoring Committee.

POLICY 7.4.4: That the City work with Clark County and environmental organizations to preserve viable desert habitat.

DISCUSSION: Given the divergent objectives that may exist among the MSHCP coalition members, it will be important for regular contact and ongoing discussion to occur among these members, to ensure that the Plan's objectives are met in a manner acceptable to the coalition members.

Action HW.3: The City should continue to participate in the implementation of the adopted Clark County Multiple Species Habitat Conservation Plan.

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BOUNDARIES AND URBAN EXPANSION

INTRODUCTION

New suburban growth and expansion of the urbanized portion of the city has been occurring in Las Vegas for many years. Urban growth has begun to approach the Bureau of Land Management disposal boundary, established in 1998, through the Southern Nevada Public Lands Management Act, to the west and north of the city. Urban development cannot take place outside of this boundary without Federal Congressional approval. Recent policy directives contained in State legislation, in the Southern Nevada Regional Policy Plan and through an Interlocal Agreement between the City and Clark County, will also have the effect of curtailing new urban growth within the present disposal area in the northwest part of the Las Vegas Valley.

The Land Use component of the Southern Nevada Regional Policy Plan (February 2001) directs the SNRPC to "identify preferred outlying growth areas, with special attention to the south I-15 corridor, Pahrump, Mesquite and northeast Clark County". In accordance with Regional Plan policies, new development is to be directed to these areas. The Clark County Multiple Species Habitat Conservation Plan mirrors this policy by confining future urban growth in Clark County to 145,000 acres, most of which is to be located in the areas described above in the Regional Plan.

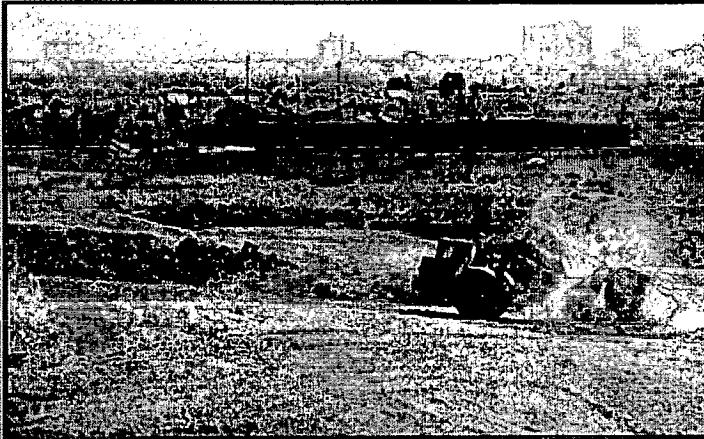
Legislation approved by the State of Nevada at its 1999 session through SB391, and now contained in NRS278.261, has the effect of protecting "rural preservation neighborhoods". Significant portions of the Centennial Hills area in the northwest part of the Valley are affected by these provisions.

The City of Las Vegas and Clark County in January 2002 entered into an Interlocal Agreement guaranteeing the continued existence and protection of rural preservation neighborhoods, even after NRS278.261 sunsets in 2004. This means that much of the Centennial Hills Sector area will not build out at urban densities, but will remain essentially rural in nature into the foreseeable future. This, in turn, means that the city's future development needs will have to be met in one of three ways:

- On vacant suburban land currently within the city's Centennial Hills area;
- On the limited amount of land within Clark county in the Centennial Hills area available for annexation; and
- On master-planned land within the Summerlin West area, west of the Beltway.

As these areas become urbanized, the City will have to increasingly look to development on infill sites and redevelopment projects to meet its urban development needs. In the future, Clark County and other Valley entities will absorb a proportionately greater share of new urban development than Las Vegas.





Grader leveling desert as the city expands its boundaries.

THE ROLE OF THE CITY OF LAS VEGAS

As it approaches build-out to its approved boundaries, the City needs to actively promote the use of infill sites and the redevelopment of blighted or underutilized areas as a means of accommodating future urban development, retaining its proportionate share of Valley growth and retaining a healthy urban core. Despite the fact that many types of capital improvements are cost-shared regionally, the City needs to consider how it will fund some of its capital improvements, upgrades of its facilities, and the operational and capital growth of jointly funded organiza-

tions that, in the future, become necessary as a result of increasing population and urban development in outlying areas beyond the City's boundaries.

IMPLEMENTATION STRATEGY

URBAN EXPANSION GOAL: The City of Las Vegas is able to accommodate its proportionate share of urban Valley growth and its costs.

OBJECTIVE: To accommodate future urban growth through expansion where this is possible and through an increasing proportion of infill development and redevelopment as the city's supply of vacant suburban land dwindles.

POLICY: That the City take the necessary steps, in conjunction with federal and regional agencies, to address the city's long-term need for some amount of urban expansion and to address the proportionate funding of City improvements that will be generated by urban growth beyond its boundaries.

DISCUSSION: As time goes by, the city's share of new urban growth will continue to diminish, while the city will continue to bear the cost associated with being the central point of a burgeoning regional population.

Action HW.4: The City shall work with the regional development community to encourage infill development and redevelopment within the city and to explore viable options to foster such growth.

Action HW.5: The City shall work with the SNRPC, Clark County, and other entities and levels of government as appropriate, to ensure that the amount of urban growth and its costs are distributed equitably among Valley entities.

Action HW.6: The City shall ensure that its future urban growth is planned and developed in a manner that is environmentally responsible and meets the environmental objectives of this Conservation Element and other Valley-wide environmental policies.

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ESTABLISHMENT AND PROTECTION OF PARKS, TRAILS AND URBAN FORESTRY

INTRODUCTION

As the City of Las Vegas matures and approaches its one-hundredth anniversary, quality of life issues become increasingly more important. It is no longer simply a matter of keeping up with the pace of growth and development; instead, the city is now challenged to strive to enhance the level of amenities provided to its citizens and visitors. Providing an inviting walkable streetscape, an abundance of parks, alternative transportation, and visually enhanced surroundings will improve the quality of the built and rebuilt city environment.

ROLE OF THE CITY OF LAS VEGAS

The City of Las Vegas can broaden its responsibility to enhance the quality of life of all its citizens and visitors. The City can continue to rebuild its streetscapes in core areas with tree-lined sidewalks and boulevard islands of decorative trees and plants. The City can continue to build new parks, and ensure that new and existing parks are well maintained and that plant growth is promoted. The City can assist with efforts to coordinate a system of connected trails throughout the city, and assure that the trails are maintained. As the task of maintaining parks, trails and streetscapes grows and requires additional resources, more formal systems and tools will necessarily have to be pressed into duty.



Meandering tree lined sidewalk along Charleston Blvd. through Peccole Ranch.



IMPLEMENTATION STRATEGY

REURBANIZATION GOAL: The Downtown area will emerge as the preeminent hub of business, residential, government, tourism and gaming activities in the City of Las Vegas and as a major hub of such activities in the Las Vegas Valley.

OBJECTIVE 1.2: To improve the livability of the Downtown through the creation of a series of safe, attractive and interesting public open spaces and non-vehicular routes to connect these open spaces and other major Downtown activities.

POLICY 1.2.1: That each District be focused around a central open space, park, public facility or landmark, which lends identity and character to that District.

DISCUSSION: Open spaces and parks are positive environmental elements within heavily urbanized areas, as they contain vegetation that processes out some pollutants and generates oxygen, provides a habitat for birds and other small animals, and otherwise contributes to the psychological health of the surrounding neighborhood.

Action HW.7: The City will identify areas within the Downtown under either public or private ownership that would help achieve this goal, and then pursue development of these lands as urban open spaces or parks to serve the needs of the surrounding District.

POLICY 1.2.2: That a major civic square, open space or park be developed in the central business/government District core, to serve as a focal point for the city and contribute to the identity, functionality and amenity of the Downtown.

DISCUSSION: As discussed above, open spaces or parks can serve the Downtown in a variety of positive ways. A major Downtown park or open space can fulfill the same role for the entire city, through the creation of a common space that can host citywide events and functions in a park setting. It will also be important to connect such a space with other important urban areas within the Downtown through identifiable streetscape themes that mark pedestrian routes linking these areas.

Action HW.8: The City shall continue to improve streetscape enhancements in the highly urbanized areas of the city, including the Downtown Centennial Plan area, the West Las Vegas area, the Medical District Plan area, and the Centennial Hills Town Center.

POLICY 1.2.3: That all Downtown parks and open spaces be linked with non-vehicular corridors or routes. These routes may incorporate a theme, and should be readily identifiable through sidewalk treatments, signage, lighting, landscaping and other techniques. Enhanced streetscapes should be developed along selected corridors. The intent is to foster a safe, pleasant and convenient pedestrian environment. The City will promote the use of public/private partnerships to develop Downtown open space.

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DISCUSSION: These types of parks and open space improvements are part of an overall approach to beautifying the Downtown area and creating a sense of identity and place for Downtown.

Action HW.9: The City will consider locations within the Downtown area that are suitable for the development of landscaped medians or other landscaped public areas.

Action HW.10: The City should consider cost and implementation of landscape maintenance procedures to adequately design, install and maintain landscaping within public rights-of-way throughout the Downtown area.

Action HW.11: The City will continue to seek opportunities to develop urban gathering places such as the Lewis Street project.

OBJECTIVE 3.4: To ensure that adequate portions of the lands released for urban development by the Bureau of Land Management (BLM) are developed for recreational and educational public facilities, transit facilities and fire stations, which will benefit the city.

POLICY 3.4.1: That a minimum of 30 percent of available BLM lands be planned for recreational and parks uses within the northwest sector of the city, in the general vicinity of the intersection of Kyle Canyon Road and US 95.

DISCUSSION: It will be important to include a significant open space component in new development at the edge of the city, presumably within the context of a master-planned development. It is possible that portions of such areas can be retained in a natural state, thereby contributing to some level of conservation of plants and animals in a natural setting.

Action HW.12: The City should pursue a standard that 30 percent of the lands transferred from the BLM to the city in the far northwest part of the city are retained through community master planning processes as park land available to the public, open space, natural resource areas and for other recreational amenities that benefit both area residents and the city as a whole.

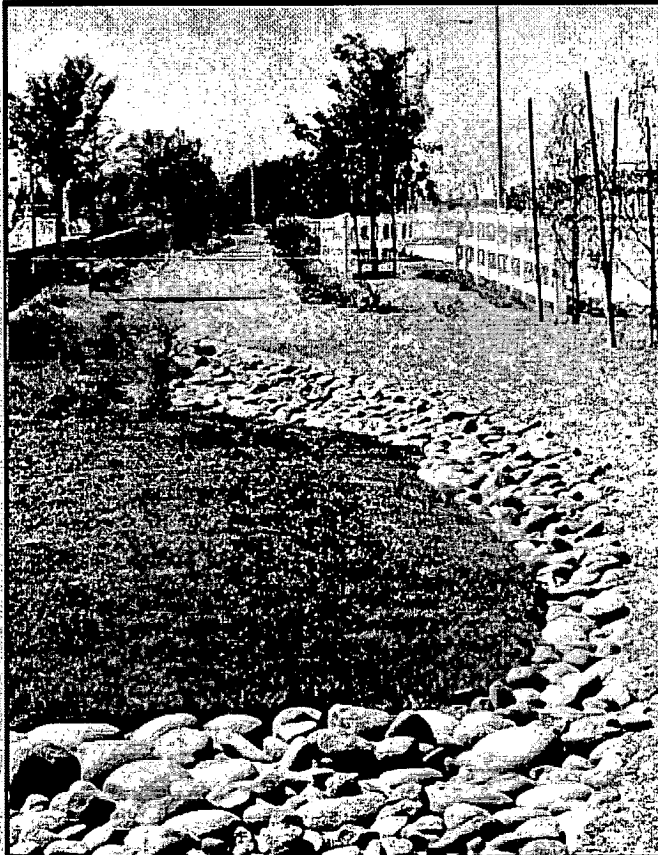
Action HW.13: The City shall attempt to provide, pursuant to the policies of the Parks Element of the Master Plan, an adequate amount of neighborhood park space provided in central city areas that form the older urban core surrounding the Downtown area. One method to meet the demand for park space in these central city areas is through a transfer of reversionary interest in lands in outlying areas, acquired by the City from the Bureau of Land Management, conveyed under the Recreation and Public Purposes Act (see Parks Plan, Appendix C).

OBJECTIVE 3.6: To ensure that adequate amounts of park space and trail systems are designated and developed to meet or exceed national standards and standards established in the Master Plan Parks Element.

POLICY 3.6.1: That the City establishes a parks system based on systematic parks classifications, park size requirements and service area standards.



DISCUSSION: By a number of national benchmarks and standards, the city is deficient in terms of the amount of its acreage devoted to parks and open space. Additionally, the distribution of existing park areas within the city heavily favors the west and northwest portions of the city, with serious parks deficiencies in the east end and in the Downtown area. There is a need to address these inequities by acquiring more land for parks, by partnering with the Clark County School District for the joint use of school lands for public recreational space, by developing parks areas in an environmentally responsible manner, and by providing trail and pedestrian linkages to and between public parks sites.



Multi-use trail system bordering a new development along the Bradley Road alignment in the northwest.

Action HW.14: The City shall continue to pursue the development of a cohesive and balanced parks system linked by trails and alternative transportation routes.

Action HW.15: The City shall continue to partner with the Clark County School District where feasible, and as described in the Parks Element of the Master Plan (Appendix A), on the joint use and maintenance of a portion of school sites for recreational use by the general public.

POLICY 3.6.5: That the City maintains high standards with respect to the maintenance and operation of existing parks.

DISCUSSION: The City has recently upgraded its *Urban Design Guidelines*. This improved document should be used to guide the City in the planning, development and maintenance of its parks in the future.

Action HW.16: The City shall continue to seek ways in which to enhance its landscape maintenance procedures to adequately maintain and enhance the existing, new and proposed parks and trails throughout all the neighborhoods and districts of the city, subject to budgetary requirements.

POLICY 3.6.7: That the City encourages the development of parks that link with and take advantage of trail and pedestrian/bike traffic plans.

DISCUSSION: Parks and open space become more usable and attractive if they are interconnected by a trails system. Whether these connections are through recreation trails or transportation trails, park use can be improved by developing trails connections that provide ready access between parks.

Action HW.17: City plans for the development of future parks and trails should allow for deliberate or incidental linkages of park sites by recreation and/or transportation trails.

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POLICY 3.6.8: That the City coordinate the planning, development and construction of a Valley-wide trail system with other Las Vegas Valley entities.

DISCUSSION: The City has developed both *Recreation Trails Plan* and *Transportation Trails Plan* components to its Trails Element of the 2020 Master Plan. There is a need to ensure that the trails system can logically connect with existing and proposed trail routes within Clark County and the City of North Las Vegas, where city trails may abut the boundaries of these other entities.

Action HW.18: The City shall coordinate trails planning to the extent possible with entities adjacent to city boundaries.

Action HW.19: The City shall seek out alternate funding sources, such as grants, for the development of trails, and for the placement and maintenance of trees and landscaping along trail alignments.

Action HW.20: The City should consider an Urban Forestry program within the City of Las Vegas, to assure the protection, preservation and maintenance of mature trees, shrubs and decorative plantings within public parks, public rights-of-ways, and public facilities throughout the city for future generations.

POLICY: That the City require high standards with respect to the maintenance and operation of common areas in residential neighborhoods.

DISCUSSION: Recent changes in state legislation allow the formation of Landscape Maintenance Districts within residential areas specifically to obtain City assistance with certain types of improvements, including landscaping, public lighting, security walls, and trails, parks and open space that provide a substantial benefit to the public and are required by the City for the primary use of the public. These improvements need to be along the perimeter of the development or in the median of a roadway along the perimeter of the development. The City will support property owners who meet the approved guidelines that have been established to determine areas that qualify as Landscape Maintenance Districts. The City's *Urban Design Guidelines* will be used to guide the design and placement of these improvements.

Action HW.21: The City shall continue to consider applications by existing and future property owners and neighborhood associations to form and sustain Landscape Maintenance Districts, where appropriate. Property owners or neighborhood associations must follow the guidelines established by the City in order to qualify for the creation of a Landscape Maintenance District by the City.



SOILS

PREFACE

Conservation practices relating to local soils conditions overlap a number of other issues discussed elsewhere in this Conservation Element. For example, poor or negligent soil conservation practices can have negative effects on both air and water quality through blowing dust, erosion of soils impeding storm water flows, and creation of public safety risks. The Las Vegas Valley has many areas, including lands within the city, which contain expansive soils that are poor for construction and urban uses by virtue of the fact that they may collapse when they absorb water. Still other areas are subject to tectonic movement due to sub-surface fissures created by horizontal groundwater movement. Finally, the City has conducted a Brownfields program that has indicated that there may be sites in the older portions of the city that have been at risk for contamination by chemicals or other toxic substances by virtue of improper industrial practices in the past. There is a need to continue to monitor the situation and utilize available state and federal programs to assist in their remediation where necessary.

Where directly relevant to these types of conservation or public safety issues, discussion of and development of policies in response to these issues is contained within the relevant chapter of this Conservation Element, or within the appropriate section of the approved Public Safety Element of the *Las Vegas 2020 Master Plan*.

This section contains a discussion of selected soils management practices and recommendations for City action to adequately address concerns related to such practices.

BACKGROUND

The City of Las Vegas is located in the central portion of the Las Vegas Valley, which is bordered by mountains on all four sides. To the west are the Spring Mountains, which feature Mount Charleston as the region's highest point at over 11,900 feet (Map 18). To the north of the Valley is the Sheep Range, located within the Desert National Wildlife Range. To the east are the Sunrise Mountains and Frenchman's Peak, and to the south of Henderson are Black Mountain and the McCullough Range. The floor of the Valley, which ranges from about 1,800 feet to about 2,500 feet above mean sea level, drains generally from the west and north to the east and south, with major intermittent wash systems draining to Lake Mead to the east. Many of these wash systems within the urbanized

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portion of the Valley have been channelized or replaced with underground drainage facilities. As one approaches the perimeter of the basin, slopes increase to between one and three per cent within the urbanized portion of the Valley.

While the mineral composition of the surrounding hills is a mixture of shale, sandstone and dolomite with gypsum and quartzite deposits (Map 19), the floor of the Las Vegas Valley basin is covered with silt and clay left by retreating prehistoric lake water. These types of soils have provided some significant obstacles to urbanization (Map 20). For instance, the impermeability of the clay substrata can contribute to rapid flooding during heavy rain events. Also, silt and clay soils in arid climates are prone in some circumstances to be collapsible or expansive in nature. This is due in part to the fact that desert soils of this type in many cases have never been subjected to saturation; as a result, when such soils are fully saturated, the loose structure of clay and silt, which can contain voids between the particles, tends to compress when lubricated with water. The soil structure then collapses as these voids fill in. This can occur under just the weight of the soil alone; when the weight of a structure is added, the problem is magnified. In the Las Vegas Valley in particular, where some of the binding agents in dry soil include soluble materials such as carbonate, gypsum or halite, soil saturation can result in a loss of shear strength in the soil. In the eastern part of the Valley, over-hydration of the shallow aquifer layer due to runoff from watering and industrial uses has led to saturated water tables virtually at the ground surface.

Soils in some areas of the Las Vegas Valley are also subject to subsidence (Map 21 and Table 2). Locally, subsidence can occur when groundwater is extracted from deep aquifers. Research (Nevada Bureau of Mines and Geology, report 93-4) has indicated that since 1946, the amount of groundwater extracted from deep aquifers in the Valley has exceeded the recharge rate. From 1935 to 1980, the amount of subsidence in the Valley has exceeded five feet. Studies of subsidence in the Valley conducted and updated as recently as 2001 show that the principal areas of subsidence in the Valley continues to occur in the central area of the Valley, centered in three "bowls"; one centered around the Downtown area, from Sahara Avenue to Lake Mead Boulevard, a second northwest of McCarran Airport, and the third in the northwest part of the city, centered near the Rainbow Boulevard/Rancho Drive area. In the first two areas, subsidence has been occurring at the rate of two to three centimeters per year; in the northwest



Fissure south of historic well #3 located at Las Vegas Springs Preserve. Photo courtesy of LVVWD.



100 METER CONTOUR LINES VALLEY-WIDE

 **Map 18**

-  City of Las Vegas
-  Henderson
-  North Las Vegas
-  Boulder City
-  Clark County
-  Lake Mead
-  100 Meter Contour Lines

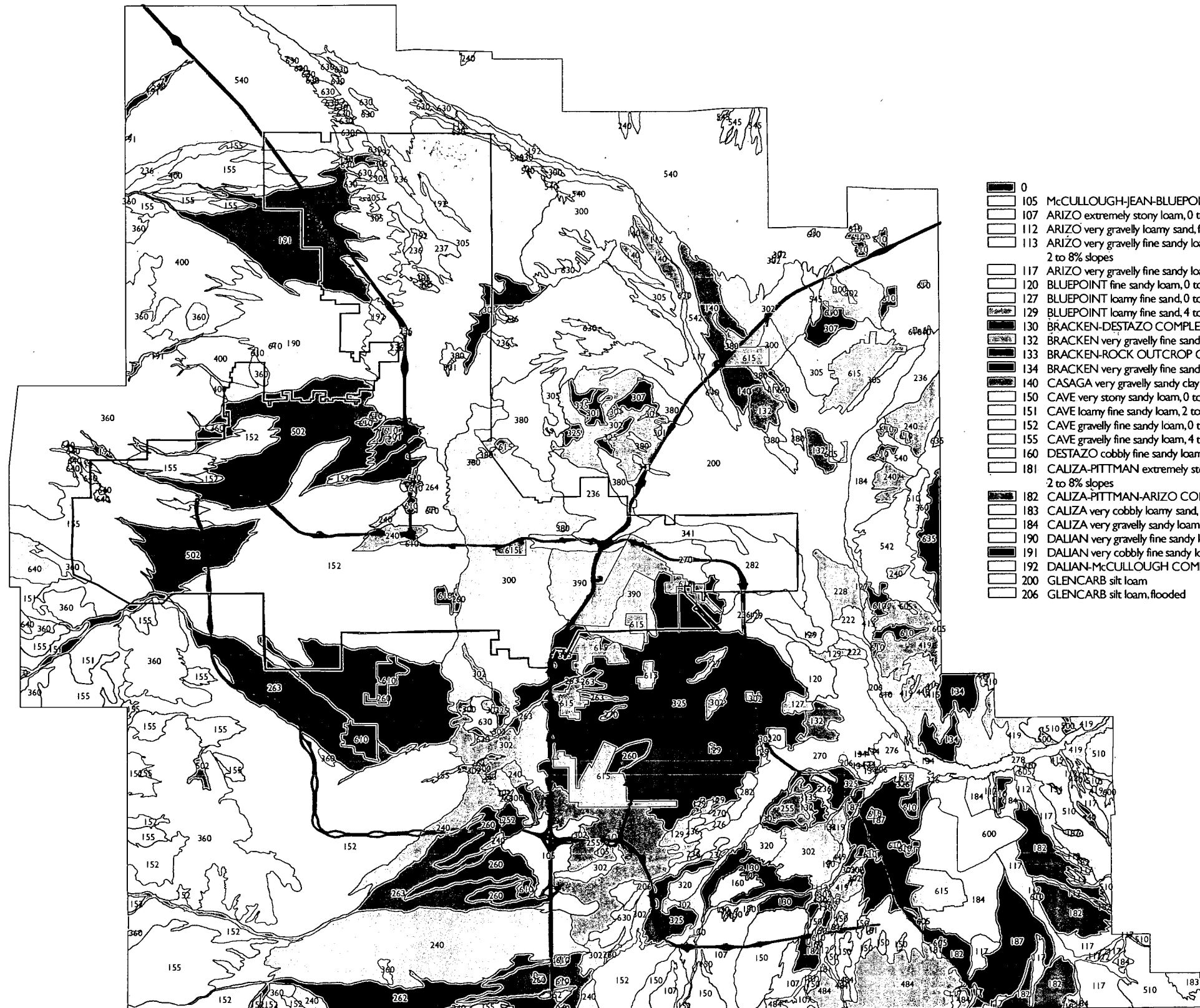
January 16, 2002
Source: City of Las Vegas
Planning and Development Dept.

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Contour Lines Conserv. Ele. fh/6-26-02



LAS VEGAS VALLEY SOILS CLASSIFICATION

Map 19



- 0
- 105 McCULLOUGH-JEAN-BLUEPOINT COMPLEX, 0 to 4% slopes
- 107 ARIZO extremely stony loam, 0 to 4% slopes
- 112 ARIZO very gravelly loamy sand, flooded, 0 to 4% slopes
- 113 ARIZO very gravelly fine sandy loam, gypsiferous substratum, 2 to 8% slopes
- 117 ARIZO very gravelly fine sandy loam, 2 to 8% slopes
- 120 BLUEPOINT fine sandy loam, 0 to 2% slopes
- 127 BLUEPOINT loamy fine sand, 0 to 2% slopes
- 129 BLUEPOINT loamy fine sand, 4 to 15% slopes
- 130 BRACKEN-DESTAZO COMPLEX, 2 to 15% slopes
- 132 BRACKEN very gravelly fine sandy loam, 2 to 8% slopes
- 133 BRACKEN-ROCK OUTCROP COMPLEX, 8 to 30% slopes
- 134 BRACKEN very gravelly fine sandy loam, 4 to 30% slopes
- 140 CASAGA very gravelly sandy clay loam, 0 to 8% slopes
- 150 CAVE very stony sandy loam, 0 to 4% slopes
- 151 CAVE loamy fine sandy loam, 2 to 8% slopes
- 152 CAVE gravelly fine sandy loam, 0 to 4% slopes
- 155 CAVE gravelly fine sandy loam, 4 to 15% slopes
- 160 DESTAZO cobbly fine sandy loam, 0 to 2% slopes
- 181 CALIZA-PITTMAN extremely stony fine sandy loam, 2 to 8% slopes
- 182 CALIZA-PITTMAN-ARIZO COMPLEX, 0 to 8% slopes
- 183 CALIZA very cobbly loamy sand, 4 to 8% slopes
- 184 CALIZA very gravelly sandy loam, 2 to 8% slopes
- 190 DALIAN very gravelly fine sandy loam, 2 to 4% slopes
- 191 DALIAN very cobbly fine sandy loam, 2 to 8% slopes
- 192 DALIAN-McCULLOUGH COMPLEX, 0 to 4% slopes
- 200 GLENCARB silt loam
- 206 GLENCARB silt loam, flooded

- 222 GLENCARB silty clay loam, wet
- 228 GLENCARB very deep soils, on flood plains & alluvial flats
- 236 GLENCARB very fine sandy loam, saline
- 237 GLENCARB very fine sandy loam, hardpan substratum
- 240 GOODSPRINGS gravelly fine sandy loam, 2 to 4% slopes
- 252 GRAPEVINE very fine sandy loam, 0 to 2% slopes
- 255 GRAPEVINE loamy fine sand, 2 to 4% slopes
- 260 JEAN gravelly loamy fine sand, 2 to 4% slopes
- 262 JEAN-GOODSPRINGS COMPLEX, 2 to 4% slopes
- 263 JEAN COMPLEX, 2 to 4% slopes
- 264 JEAN very gravelly loamy fine sand, 2 to 4% slopes
- 270 LAND silt loam, drained
- 278 LAND very fine sandy loam, wet
- 282 LAND silty clay loam
- 300 LAS VEGAS gravelly fine sandy loam complex, 0 to 2% slopes
- 301 LAS VEGAS gravelly fine sandy loam complex, 2 to 4% slopes
- 302 LAS VEGAS-McCARRAN-GRAPEVINE COMPLEX, 0 to 4% slopes
- 305 LAS VEGAS-DESTAZO COMPLEX, 0 to 2% slopes
- 307 LAS VEGAS-SKYHAVEN COMPLEX, 0 to 4% slopes
- 325 McCARRAN fine sandy loam, 0 to 4% slopes
- 326 McCARRAN very cobbly fine sandy loam, 2 to 8% slopes
- 341 PARADISE silt loam
- 360 ROCK OUTCROP-ST. THOMAS COMPLEX, 15 to 30% slopes
- 380 SKYHAVEN very fine sandy loam, 0 to 4% slopes
- 390 SPRING clay loam
- 400 TENCEE very gravelly fine sandy loam, 2 to 8% slopes
- 415 AZTEC very gravelly sandy loam, 2 to 8% slopes
- 419 AZTEC-BRACKEN COMPLEX, 4 to 30% slopes
- 440 NICKEL very gravelly fine sandy loam, bedrock substratum, 2 to 8% slopes
- 484 HOBORG very cobbly fine sandy loam, 15 to 50% slopes
- 500 CANUTIO-AKELA COMPLEX, 2 to 15% slopes
- 501 CANUTIO gravelly fine sandy loam, 0 to 2% slopes
- 502 CANUTIO-CAVE gravelly fine sandy loam, 2 to 8% slopes
- 510 AKELA-ROCK COMPLEX, 15 to 50% slopes
- 540 WEISER extremely gravelly fine sandy loam, 2 to 8% slopes
- 542 WEISER-AZTEC COMPLEX, 2 to 8% slopes
- 545 WEISER-GOODSPRINGS COMPLEX, 2 to 4% slopes
- 600 SLICKENS
- 605 DUMPS
- 610 PITS gravel
- 615 URBAN land
- 630 BADLAND
- 635 ROCK OUTCROP limestone
- 640 ROCK OUTCROP sandstone

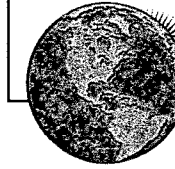
Note: The exterior soils boundary depicted is based on data provided by sector portions.

February 20, 2002
Sources: City of Las Vegas Planning Dept.

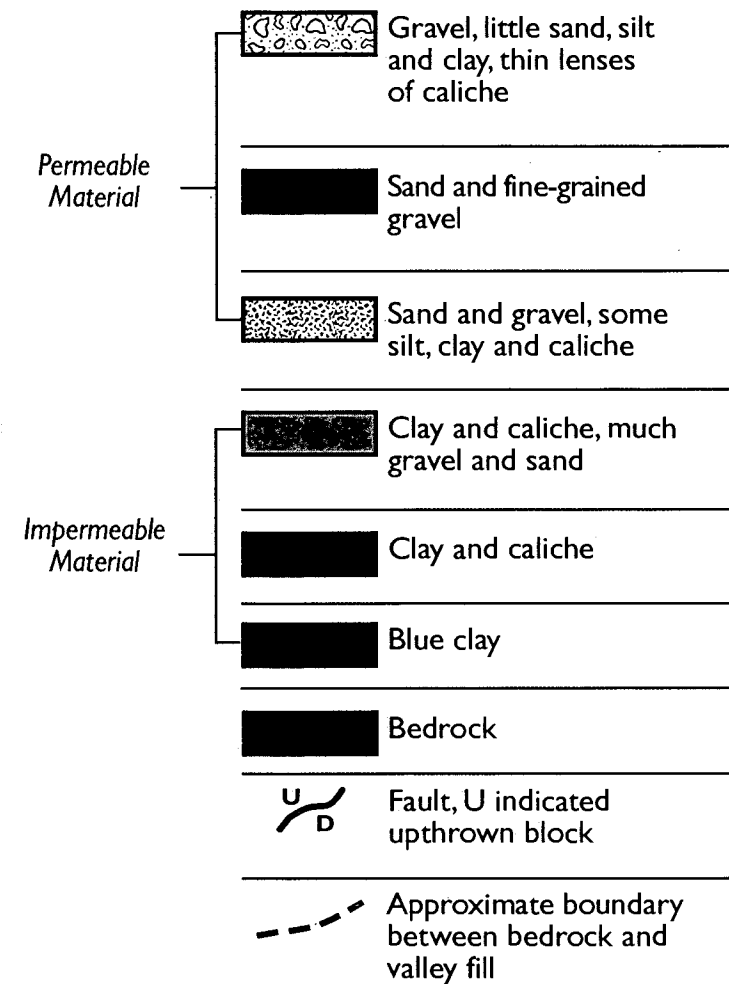
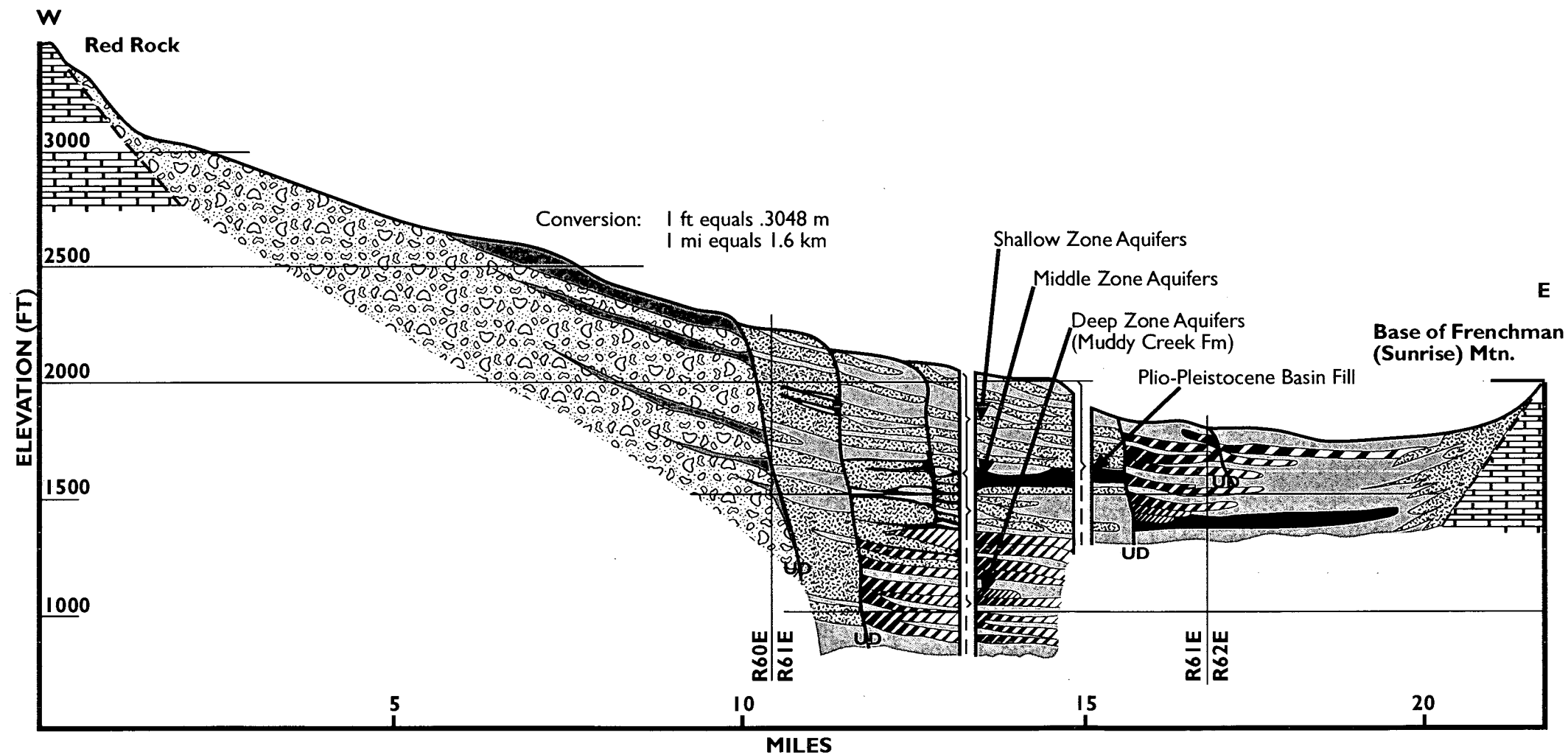
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Soils Class.Conserv.Ele.PM/3-8-02



GENERALIZED GEOLOGIC CROSS-SECTION of the LAS VEGAS VALLEY



Map 20



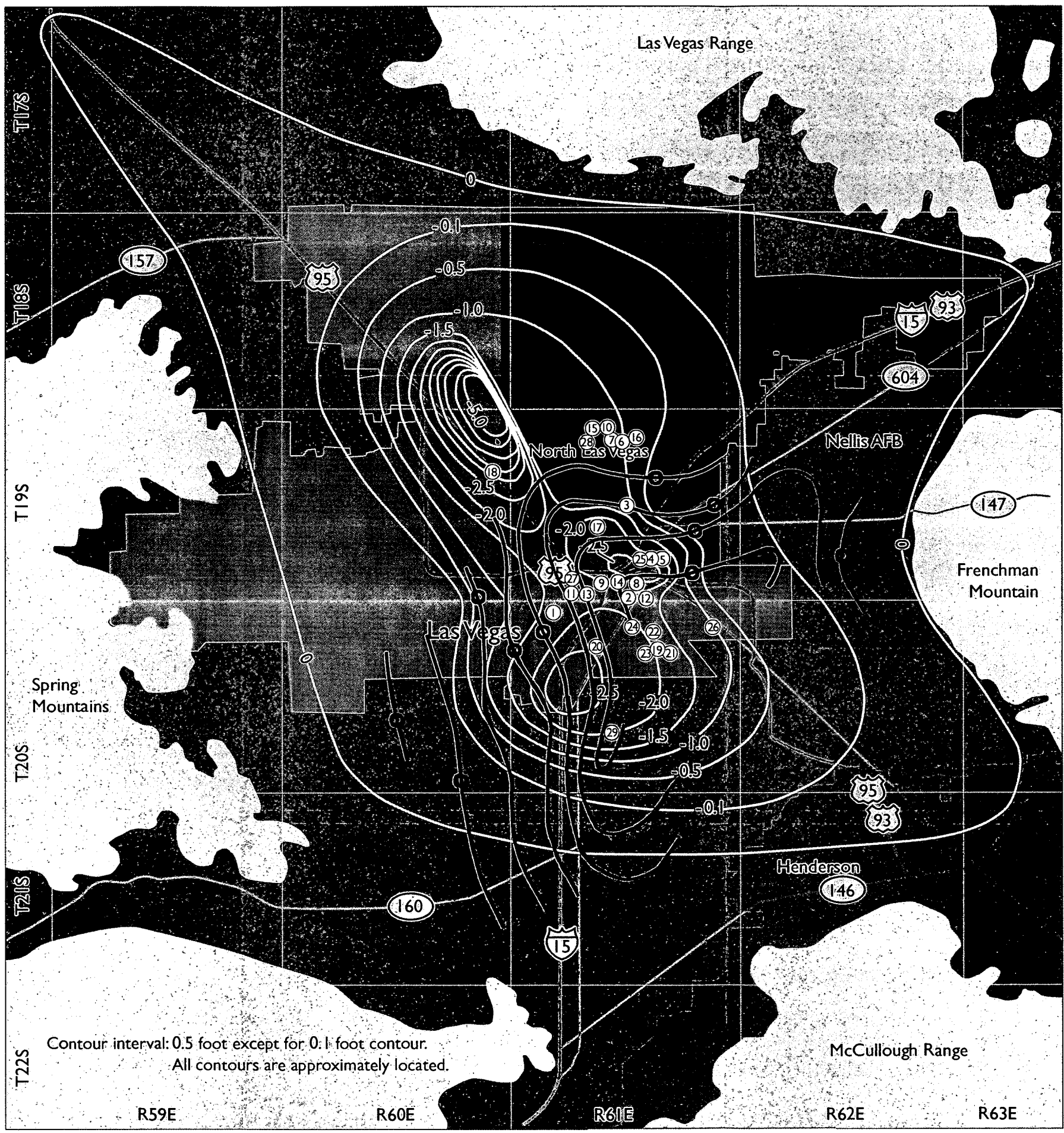
Source: Maxey & Jameson (1948), Bell (1981), Nevada Bureau of Mines and Geology

January 16, 2002
Source: City of Las Vegas
Planning and Development Dept.

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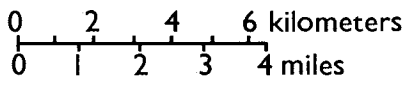




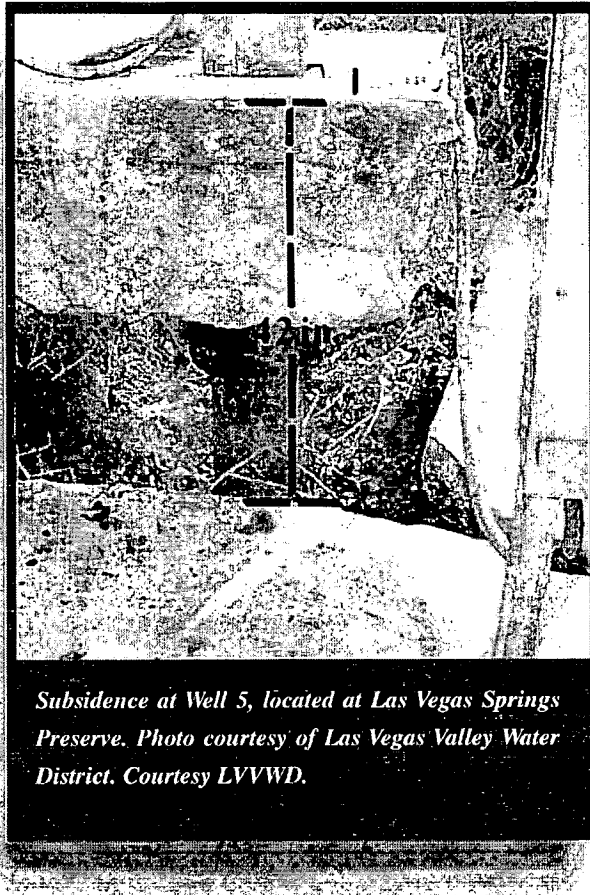
COMPRESSIBILITY and SUBSIDENCE

Map 21

-  City of Las Vegas
-  Henderson
-  North Las Vegas
-  Clark County
-  Areas of Subsidence Potential
-  Soil Compressibility
-  Subsidence Cases (Refer to Table 5 in text)



January 16, 2002
Source: City of Las Vegas
Planning and Development Dept.



area "bowl", the rate is approximately five to six centimeters per year.

In some cases, the groundwater extracted from aquifers within the Valley is a non-renewable resource, as the aquifers may collapse as subsidence occurs and cannot be re-hydrated to the same capacity, although artificial recharge since the late 1980s has stabilized water levels in the some parts of the Valley. Research indicates that as much as 10% of the groundwater extracted in the Valley may be non-renewable.

Fissuring is another soils condition that has led to problems with urban development in some portions of the Valley (Map 22). Fissuring may take place in areas where faulting (due to tectonic movements) has occurred; however, fissuring is caused by underground water movements. Research has indicated that horizontal aquifer movement is responsible for much of the fissuring that has occurred in the Las Vegas Valley. Known and predicted fissures in conjunction with vertical groundwater changes are being studied constantly by the Nevada Bureau of Mines and Geology, in order to create predictive three-dimensional modeling capability. This, in turn, will assist planners and local legislators to assign appropriate land use controls for areas subject to these seismic activities. The perspective of this Conservation Element is to promote conservation measures that will minimize the potential for soil collapsibility, fissuring and subsidence in existing and future urban areas of the city.

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Table 5
Specific Cases of Damage Caused by Subsidence

ID # on Map 21	Type of Damage	Location	Date of Occurance	Remarks
1	Protruding well	Las Vegas Valley Water District Well Field No. 5	By 1963 As of 1978	1.5 ft. of protrusion 4 ft. of protrusion of well head, casing pumping in 1971; pumped much sand.
2	Protruding well	City of N. Las Vegas Stocker (west tank) Well	1936- 1963 1963- 1969	3 ft. of protrusion 6 in. protrusion; casing repalces in 1969; shows no present protrusion.
3	Protruding well	City of North Las Vegas Losee Well	1968- 1971 1968	7 in. protrusion; casing replaced in 1969; shows no present protrusion. Ruptured well line.
4	Protruding well	City of North Las Vegas Tonopah Well	Unknown	
5	Protruding well	City of North Las Vegas Tonopah Well	Unknown	Presently shows 6 in. of protrusion with broken well pad.
6	Protruding well	Nellis AFB area Nellis Well No. 4		Well head and pad show 4 in. of protrusion.
7	Protruding well	City of North Las Vegas LVVWD Well No. 57	As of 1978	2.5 ft. protrusion of casing; well abandoned.
8	Warping of railroad tracks	UPRR at Owens Ave.	1961	5 in. gradual displacement; 6 in. rapid displacement associated with fissuring.
9	Damaged house	Harrison and Owens	1961	2 in. rupture in house believed result of fissuring.
10	Damaged house	Near Craig Ranch near Country Club	Unknown	Reportly large separation
11	Damaged house	Twin Lakes Drive between Bonanza Rd. and Washington Ave.	Pre 1974	Two residences damaged; extent of damage unknown; online with fissures from LVVWD well field.
12	Damaged house	Adams St at Las Vegas Blvd.	Pre 1963	Result of movement on scarp III.
13	Popped windows in houses, cracked driveways, broken curbs	Twin Lakes Drive area	Pre 1965	Attributed to movement on scarp II.
14	Cracked pavement and curbs	Between Owens and Harrison Aves. And A and B Sts.	Pre 1970	Accompanied renewed fissuring.

Soils



Source: Bulletin 95: Subsidence in Las Vegas Valley, by John W. Bell, MacKay School of Mines, UNR, 1981 (Nevada Bureau of Mines and Geology). Also quoted in 1992 City of Las Vegas General Plan, Appendix, and in Las Vegas 2020 Master Plan Public Safety Element, 9/05/01.

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Table 5 continued
Specific Cases of Damage Caused by Subsidence

ID # on Map 21	Type of Damage	Location	Date of Occurance	Remarks
15	Cracked pavement	Commerce St. near Losee Well	Pre 1971	
16	Cracked pavement	Craig Rd. near Nellis AFB well filed	Unknown	
17	Cracked asphalt in playground	Gilbert School in North Las Vegas	Unknown	Occurs where fissure extends beneath pavement.
	Well failures	Strip area	1970- 1974	At least two failures due to sheared casing.
18	Damaged wells	Northwest of North Las Vegas Airport	1974- 1976	15 claims or complaints of: decreased productivity, turbid or sandy water, and deformation or shearing of casing.
19	Ruptured water mains; damaged pavement	Charleston Blvd at Maryland Pkwy.	1964	\$10,000 damage reportly related to movement on scarp III.
20	Ruptured water main	Highland Ave at Hastings Ave.	1964	\$2,000 damage
21	Ruptured water main	1626 Thelma Ln	1964	\$1,500 damage
22	Ruptured water main	12th St between Bonneville and Clark Aves.	1964	\$1,500 damage
23	Ruptured water main	1128 Francis Ave	1964	\$14,000 damage
24	Ruptured water main	400 E. Garces Ave	1964	\$12,000 damage
25	Ruptured water mains; damaged pavement; cracked house	Near Owens Ave and UPRR	1961	Related to fissuring
26	Warped sewage line	Charleston Blvd. Between Eastern Ave. and Pecos Rd.	Unknown	Differential movement attributed to land subsidence; lowered flow gradient required construction of new line.
27	Ruptured gas line	Washington Ave near Twin Lakes Dr.	Unknown	Two reported breaks attributed to movement on scarp II.
28	Ruptured swimming pool	Near Commerce St. and Losee Rd.	Unknown	Concrete pool back rotated and cracked; attributed to movement on scarp III.
29	Buckled drainage channel	In Flamingo Wash	Pre 1974	

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SOILS MANAGEMENT ISSUES

INTRODUCTION

Soils within the Las Vegas Valley are not highly arable and can require significant attention to produce vegetation. While there are few agricultural operations in the Las Vegas Valley, and particularly with the city, many residential and commercial properties have extensive vegetated areas requiring the regular application of fertilizers and pesticides to ensure the continued health of trees, shrubs and turf. Best management practices dictate that organic products be used to reduce or avoid the continued input of potentially harmful chemicals through storm water runoff, and ultimately into the principal drinking water supply, Lake Mead.

Areas containing soils that pose risks to urban development for a variety of reasons, including areas of expansive soils (high shrink-swell potential), poor bearing capacity, high saline or gypsum content which can corrode concrete, and areas with subsidence problems due to underground fissuring or changing water table levels, have been identified across the Valley. For those areas within the city that are subject to these types of conditions, it is good practice for the City to identify the type of urban use that can take place on these sites without, primarily, risk to public safety, but also without risk to the environment.

ROLE OF CITY OF LAS VEGAS

The City has not taken a direct role in the regulation or control of soils conservation measures. In fact, at this time, there are no local or regional regulations in place to monitor or control the conservation of soils. Such controls should occur at the regional level to be most effective. The City's role is that of proactive planning with respect to soils conservation, designation and regulation of land to ensure that development avoids areas of sensitive soils, and promoting best management practices in terms of landscaping and urban development, to minimize the conveyance of harmful chemical ingredients into the ground. Federal housing guidelines call for geotechnical studies for federally assisted housing within 500 feet of known faults or fissures; however, this type of program is concerned with public safety, rather than conservation and resource management. The State of Nevada is continuing to study modeling techniques that will improve understanding of the activities that accelerate collapsibility, fissuring and subsidence, so that actions can be recommended that will reduce the effect of human activity on sensitive desert soils.



VALLEY-WIDE FISSURE LINES

Map 22

-  City of Las Vegas
-  Henderson
-  North Las Vegas
-  Boulder City
-  Clark County
-  Fissure Lines



January 16, 2002
 Source: Referenced on Map 11 of the Las Vegas 2020 Master Plan Public Safety Element. Source data compiled by Clark County GIS Management Office using data provided through soils surveys conducted by U.S. Department of Agriculture and the Nevada Bureau of Mines and Geology.

IMPLEMENTATION STRATEGY

SOILS MANAGEMENT GOAL: Las Vegas Valley soils are arable as a result of the application of proper management practices, and the uses of areas of problem soils are integrally planned as a component of urban development.

OBJECTIVE: To ensure that landscaping practices and other measures intended to increase the arability of local soils do not contribute harmful chemicals to the environment.

POLICY: That the City encourages the use of fertilizers and pest control substances and measures that are organic and do not add non-biodegradable chemicals or pollutants to the water system.

DISCUSSION: By setting an example of best management practices for lands under its control, the City can avoid the negative environmental effects caused by improper fertilization and pest control measures. While not all chemical plant and soils treatments can be eliminated from domestic and commercial application, the City can make its own best practices known through an appropriate public awareness campaign. These efforts will serve to reduce the negative impacts on local aquifers and on Lake Mead.

Action S.1: The City shall examine its own practices for fertilization and pest control, to ensure that the most current and effective methods are being employed.

Action S.2: The City shall pursue greater public awareness of the issue by making available information on environmentally friendly methods to feed plant systems and to protect them from insects and disease with a minimum negative impact on the local ecosystems.

OBJECTIVE: Areas of poor or unstable soil quality are seamlessly integrated with surrounding urban uses.

POLICY: That the City ensures that areas of poor or unstable soil, if developed, are occupied with passive or low intensity uses that blend with and support the surrounding, more intensively developed lands.

DISCUSSION: The State of Nevada, as well as local entities within the Las Vegas Valley, have conducted studies to identify areas within the Valley that have inherent instabilities due to soils subject to underground fissures, poor chemical composition, poor bearing capacity, or poor shrink-swell potential. There is a need for the City to work with other agencies that have the technical ability to continually assess these soils conditions to determine if additional adjacent lands become affected. Although there is some existing urban development in such areas, it is important to assess and monitor undeveloped areas, to ensure that urbanized land uses do not expand into these unstable areas. These areas are appropriate for passive or low intensity development that does not require many buildings and structures, such as golf courses.

Action S.3: The City shall investigate, in concert with other relevant agencies, areas that have been previously identified as areas with poor or unstable soil

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quality and continue to monitor these areas and work with owners to plan for uses which will minimize risk to both public safety and the environment, and which will integrate with surrounding urban uses.

Action S.4: The City shall develop an updated inventory of these areas that can be integrated with the development review process, so that urban development on these sites, where suitable, can incorporate appropriate design measures to neutralize risk to the development and maintain environmental integrity of the site.

Action S.5: The City shall assess the risks associated with urban activities in areas with continuing soil problems and make recommendations as to the long-term future use of, and setbacks from future urban development adjacent to, such lands.

OBJECTIVE: All portions of the City identified as "brownfields" sites are appropriately remediated and redeveloped for safe and productive urban uses.

POLICY: That the City use available state and federal programs that provide for research, testing, analysis and remediation of urban sites that may have been exposed to contamination by paint, dry cleaning fluids and other toxic chemicals.

DISCUSSION: Brownfields sites are defined as sites that are abandoned, idled or underused, based on real or perceived contamination. The City of Las Vegas used five sets of criteria to determine the most likely areas of such contamination in Las Vegas:

- The Redevelopment Plan boundary;
- The current zoning designations for manufacturing and industrial uses;
- The current case file listing from NDEP;
- Historic phone books listing uses such as dry cleaners, radiator and auto repair, paint, chemical and fertilizer storage, and plating companies; and
- Information from the Sanborn maps, which provided historic information on fire ratings based on claim histories.

Based on this analysis, it was determined that there were as many as 30 such sites, mostly in the older central portion of the city. Since 1998, the City has used federal funds administered as grants through the Environmental Protection Agency for the purpose of testing, outreach and notification, and as loans for cleanup, of contaminated sites. Sites subject to only gasoline contamination are not eligible for federal Brownfields program funds; instead, these sites are addressed through the Nevada State Petroleum Fund.

The City has evaluated approximately nine sites using federal program funds. Some sites have been determined to not need remediation and one (the former armory site at Eastern Avenue and Stewart Avenue) has been cleaned up and is currently being redeveloped as a community center site. There is a need for the City to continue using available federal monies to identify and remediate contaminated sites, in order to bolster the continued reurbanization of the Downtown area.

Action S.6: The City shall continue to examine the identified list of potentially contaminated sites, using federal and state grants as appropriate, and obtain loans to assist in remediation activities, with the goal of returning these sites to a condition where either private redevelopment is financially feasible or where the site is made suitable for a necessary public use.



CONSERVATION OF STEEP SLOPES

INTRODUCTION

There are areas within the city boundary where slopes exceed 12%. Portions of these steep areas are located within areas that will eventually be developed for urban uses, primarily low density residential uses. Special engineering considerations are required for such areas, while development of slopes greater than 30% are constrained by the *Uniform Building Code*. Disturbance or disruption of soils in areas of significant slope will add to erosion and siltation problems downstream.

ROLE OF THE CITY OF LAS VEGAS

The City needs to ensure that areas of steep slopes within its boundaries are regulated regarding urban development to prevent erosion, habitat damage and visual blight that can result from disturbance of such areas. Where such areas exist beyond city boundaries, but could have a negative environmental affect on city lands that may be downstream from such sites, the City needs to communicate with the responsible entities to suitably regulate urban development of these areas.

IMPLEMENTATION STRATEGY

SOILS GOAL: Areas of steep slopes are retained in a natural state.

OBJECTIVE: To limit urban forms of development in areas with steep slope constraints.

POLICY: That the City identify areas affected by steep slope considerations within its boundaries and not allow any form of major surface disturbance or development, in order to conserve the natural state of these areas.

DISCUSSION: Areas of steep slopes are constrained from development in a number of ways. First, the ability to access these areas by vehicle becomes a formidable obstacle, possibly requiring large areas to be affected by cut-and-fill techniques in order to get road access to these areas. Second, these areas by their nature tend to be visible at a distance, and the presence of large areas of disturbance and cut-and-fill can be unattractive to view. Third, development in such areas can require costly and often unsightly engineering systems to control runoff and erosion. The City's Commercial Development Standards provide that where natural sloping for topographic transition between developed parcels should not exceed a 3:1 slope. This requirement underlines the fact that steep slopes are undesirable in urbanized areas.

Action S.7: The City shall work closely with developers and landowners to ensure that areas constrained by steep slopes are retained as desirable natural features on site or in proximity to urban development, that urban development that takes place in areas with significant gradients complies with the City's Commercial Development Standards and that use of such areas be limited to appropriate activities.

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WASTE

PREFACE

Responsible control and proper management of waste that is created as a by-product of the urban environment can be one of the main contributing factors to a high quality of life and a sound long-term sustainable approach to conserving and protecting the environment. In particular, ground water resources can be negatively affected if landfills are not properly designed and used. Recycling of many types of waste can be an efficient use of manufactured materials and a key part of a long-term approach to sustain renewable and particularly non-renewable resources. Both recycling and solid waste management methodologies as they are employed in the Las Vegas Valley are examined in this portion of the Conservation Element and recommendations are made as to actions that the City of Las Vegas can take regarding waste management issues.

BACKGROUND

Both recycling and solid waste collection services in the Las Vegas Valley are provided through long-term contracts by Republic Services of Southern Nevada (RSSN). The following sections of this Element outline in detail the roles and procedures regarding these services. Regional recycling facilities are located in North Las Vegas and the Apex solid waste landfill is located several miles northeast of the urban portion of the Valley, to the east of I-15.

ROLE OF THE CITY OF LAS VEGAS

The City, through its franchise agreement with Republic Services of Southern Nevada, is in a position to influence and encourage sound environmental practices regarding solid waste disposal, and to ensure that advanced recycling practices are maximized.



SOLID WASTE MANAGEMENT

INTRODUCTION

Nevada's waste generation and management infrastructure reflect the character of the state, as well as its geography, climate and economy. Although the population is approximately 2 million, most of the state is very sparsely populated. The counties of Washoe and Clark are served by large municipal solid waste landfills that, between them, account for about 90% of the solid waste disposal in the state. There are several large transfer stations in urban centers, while the remoter parts of the state use smaller waste storage bin facilities. Approximately 85% of municipal solid waste is landfilled, with the rest being recycled.

JURISDICTIONS AND PERMITTING

There are three solid waste management authorities, each of which administers state solid waste management regulations, including permitting and enforcement, in their areas of jurisdiction:

- The Clark County Health District;
- The Washoe County District Health Department; and
- The Nevada Division of Environmental Protection.

The Nevada Division of Environmental Protection has direct jurisdiction over all counties outside of Clark and Washoe and also has limited responsibilities to oversee the Health Districts' solid waste programs.

Permits are required for municipal and industrial solid waste disposal sites. Municipal Solid Waste Landfill regulations follow the federal requirements of 40 CFR Part 258. Permits are also required for incinerators and municipal solid waste compost plants. Other solid waste management facilities, such as transfer stations and other processing sites, are subject to a simpler approval process before they can be established.

STATUTORY FRAMEWORK OF SOLID WASTE MANAGEMENT

Each county has a solid waste management plan approved by the Solid Waste Branch of the NDEP Bureau of Waste Management, as required by law. There is also a general state plan, and a special waste plan for used tire management. The Solid Waste Branch provides technical assistance to local municipalities.

The Nevada Environmental Commission revised state landfill regulations on July 23, 1992. The regulations were changed to reflect more stringent federal landfill regulations. These federal regulations became effective in October 1993.

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A new classification system for landfills was adopted that reflects the federal criteria. The system distinguishes three classes of municipal landfills based on a quantifiable amount of, and type of, waste. The types of landfills are as follows:

- Class I site - a municipal solid waste landfill that accepts 20 tons per day or more on average of solid waste;
- Class II site - a municipal solid waste landfill that accepts less than 20 tons per day on average of solid waste; and
- Class III site - a land disposal site that accepts only industrial waste.

EXISTING SOLID WASTE MANAGEMENT RESOURCES

Clark County has two active waste management facilities in the Las Vegas Valley servicing the solid waste disposal needs. These are the APEX Regional Waste Management Center and Republic Services of Southern Nevada Recycling.

The APEX Regional Landfill started accepting waste in October 1993 under a 99-year lease, 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 and 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.

There are currently five (5) transfer stations (Cheyenne, Shelborne, Black Mountain, Sloan and Henderson) and four (4) convenience centers (Logandale, 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 RSSN. 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. Map 23 illustrates the location of landfills, transfer stations, convenience centers and recycling facilities within Clark County.



ENERGY CONSERVATION

PREFACE

The predominant sources of energy consumed in the Las Vegas Valley are either non-renewable or produced from non-renewable resources. For this reason, it is important that steps be taken to:

- Reduce the use of these resources to the maximum extent possible; and
- Explore use of other renewable resources to supplement or replace the present ones.

The following discussion addresses those goals, objectives and policies of the *Las Vegas 2020 Master Plan* that deal with energy conservation issues. Other energy conservation measures are also discussed.

BACKGROUND

The State of Nevada has established an Energy Conservation Program, through the preparation of the *Energy Conservation Plan for State Government* and the *Nevada Statewide Energy Conservation Plan* (NSECP). The former Plan mandates state departments in Nevada to prepare individual conservation plans that propose short-term and long-term energy conservation actions within the purview of each department. The latter Plan, which was approved and signed off by the Governor in April 2000, is intended to provide energy conservation guidelines, suggestions and contacts to businesses, local governments and agencies. The NSECP suggests a series of local government and regional conservation initiatives; in particular, Appendix I to the NSECP contains a number of energy conservation measures suggested for implementation by public sector agencies in their own operations. These deal with everything from suggestions on heating and cooling of buildings and other aspects of buildings operations, to the use of staggered shifts, teleconferencing and flexible work schedules.

Surface transportation is becoming increasingly congested as urban development continues at a rapid pace within the Valley. Private automobiles carrying a lone occupant are the overwhelming modal preference for home-to-work trips within the region and are, by far, the most energy-inefficient method of transportation. Although convenient, the increasing congestion, particularly during peak travel times, will continue to make alternate modes of transportation, or different types of home/work solutions increasingly attractive to growing segments of the work force.

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The increasingly high costs of electrical power in Southern Nevada that began to escalate in 2000, and which can be expected to continue to rise over the next few years, make alternative energy sources such as wind and solar power, which are abundantly available in the region, increasingly attractive. Part of this equation is also the need to promote higher energy efficiency in new home construction as a mainstream feature, rather than as an optional feature. Mass production of energy-saving features in homes will reduce the costs of these features and make them more attractive to a wider range of homebuyers.

TRANSPORTATION AND LAND USE ISSUES

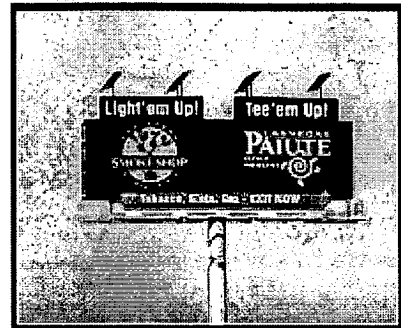
INTRODUCTION

There is a need for the Conservation Element to address some of the indirect causes of negative environmental impacts within the Las Vegas Valley, and to indicate how some of these impacts can be reduced over time through a paradigm shift in the way that the city is planned and built. In particular, there is a need to examine:

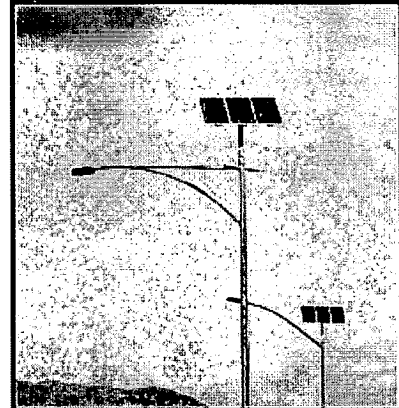
- Transportation planning and land use planning, to see where efficiencies can be achieved in terms of reducing the length and number of home-to-work trips, and through economic diversification (Map 24);
- The promotion and use of alternative sources of energy such as wind and solar power, that are abundant within the Valley and the use of which would result in a reduction of fossil fuels consumption; and
- Improved building practices that stress improved levels of insulation and the use of energy-efficient appliances.

THE ROLE OF THE CITY OF LAS VEGAS

Significant amounts of fossil fuels are being used daily in home-to-work trips throughout the Valley. The consumption of these fossil fuels result in elevated levels of pollutants such as carbon monoxide in some of the older central city neighborhoods that are located in the central part of the Las Vegas Valley, due to proximity to major highways and the low elevation of these areas. If the City is successful in reducing the number and duration of these trips through improved land use and transportation planning, a corresponding reduction the use of these fossil fuels may be achieved. There are several goals, objectives and policies of the *Las Vegas 2020 Master Plan* that address this issue. These goals are grouped and restated here with discussion and recommended actions that will address these policies.



Billboard powered by Photovoltaics located along Hwy. 95.



Lights powered by Photovoltaics in commuter 'Park & Ride' parking lot located at Hwy. 95 and Centennial Pkwy.

IMPLEMENTATION STRATEGY

NEWLY DEVELOPING AREAS GOAL: Newly developing areas of the city will contain adequate educational facilities and recreation and open space and be linked to major employment centers by mass transit, including buses, and by trails.

OBJECTIVE 3.1: To ensure that new residential subdivisions, with the exception of areas currently designated as rural preservation neighborhoods by Nevada statute, are developed into walkable communities, where reliance on auto trips for convenience shopping and access to education and recreation is minimized, and where development densities support transit.

POLICY 3.1.2: That new residential neighborhoods emphasize pedestrian linkages within the neighborhood, ready access to transit routes, linkages to schools, and integration of local service commercial activities within a neighborhood center that is within walking distance of homes in the neighborhood.

DISCUSSION: The improvement of pedestrian linkages and services that make walking and transit more attractive modes of travel within neighborhoods, in terms of trips to schools, parks and recreational services, and minor local shopping trips, needs to be strongly endorsed by the City, through both its policy decisions and through its participation in the planning and development of these systems.

Action EC.1: The City shall promote the integration of pedestrian-friendly design elements into new residential development projects, which are intended to make walking through neighborhoods to local schools, parks and shopping a safe and pleasurable alternative to automobile trips for the same purposes.

ECONOMIC DIVERSITY GOAL: The economy of the City of Las Vegas, while continuing to be strongly based on the gaming and tourism industries, will broaden to include other business sectors that can take advantage of the locational, climatic and work force advantages offered by Las Vegas.

OBJECTIVE 4.1: To improve the economic resources base within the city by diversifying the range of business opportunities.

POLICY 4.1.3: That the City support telecommuting as a means of reducing home-to-work trips and work with those agencies responsible for upgrading electronic infrastructure, such as telephone and cable systems, to support this trend.

DISCUSSION: The emphasis on the use of modern technology to conduct business will continue to produce efficiencies in the marketplace, not the least of which is the trend to home-based businesses and to telecommuting for certain job areas. The City needs to support this trend in order to reduce the demand for physical home-to-work trips, thereby reducing daily demand for fossil fuel consumption within the Valley area.

Action EC.2: The City shall examine any current code requirements that may inhibit telecommuting in residential areas for other than safety reasons, and consider appropriate steps to address such inhibiting legislation.

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REGIONAL COORDINATION GOAL: Issues of regional significance, requiring the City of Las Vegas to coordinate with other government entities and agencies within the Valley, will be addressed in a timely fashion.

OBJECTIVE 7.3: To ensure that public safety problems are fully and adequately identified and that long-term solutions are identified and implemented by the respective local government departments and agencies vested with those responsibilities.

POLICY 7.3.5: That the City work with the Clark County Regional Transportation Commission, the Nevada Department of Transportation and local governments in the Las Vegas Valley to ensure that the roadway network is planned and developed to meet the needs of the anticipated population growth in the Valley and provides for multi-modal transportation opportunities.

DISCUSSION: There are goals, objectives and policies within the *Las Vegas 2020 Master Plan* that promote the use of mass transit, trails and alternative land use forms to reduce or eliminate home-to-work trips and, in turn, reduce use of fossil fuels. If employment centers, schools, and local service commercial centers are located close to or within the same neighborhoods, then there is less dependence on use of the private vehicle.

Clarion Associates LLC, a consultant for the Southern Nevada Regional Planning Coalition, prepared a regional policy plan presentation on comparative regional indicators (i.e. how the Valley compares to other major metropolitan areas of other Southwestern communities). One of the comparisons made by Clarion is the number of vehicle miles traveled per the population in other metropolitan areas. These data are shown in Table 6.

Table 6
Transportation (1999)

Cities	Vehicle Miles Traveled (millions)	VTM Population
Las Vegas	35.8	27.1
Denver	57.7	25.2
Phoenix	58.0	19.9
Salt Lake City	30.0	22.1
San Diego	68.0	23.1



As shown in Table 6, the Salt Lake City region had the lowest number of vehicle miles traveled (VMT) at 30 million; this means that there is less distance traveled by vehicle in this region than in other areas. The San Diego region had the highest VMT.

When the VMT is compared to the population of each metropolitan area, the Salt Lake City region had the second to the lowest mileage or fewest miles traveled per person. Conversely, the Las Vegas Valley had the most VMT per person; that is, the lowest number of persons per vehicle traveling the most miles. Clearly, steps could be taken in the Las Vegas area to increase the ridership per VMT and to reduce the number of vehicle trips. The means of doing so should include the use of mass transit and ride share programs.

Action EC.3: The City shall work with the Regional Transportation Commission (RTC) to encourage businesses and other places of employment within the Las Vegas Valley to establish ride-share programs, alternate hours of employment and to encourage their employees to use mass transit for home-to-work trips.

POLICY 7.3.6: That the City, in conjunction with the Clark County Regional Transportation Commission and local governments in the Las Vegas Valley, work to achieve a shift toward greater reliance on mass transit for home-to-work trips and to make transit usage a more attractive daily travel alternative. In particular, that the affected parties pursue options for a fixed guide way system where appropriate.

DISCUSSION: The Clark County Regional Transportation Commission has instituted a ride-share program called CAT Match Club Ride that provides incentives to encourage employees within the Valley to share rides to and from work. The City of Las Vegas is an active participant in this program. Other businesses and employment agencies should be encouraged to do likewise.

Another comparison made by Clarion Associates LLC is the miles of developed trails for the regions of other Southwestern U.S. communities. This information is shown in Table 7. It should be noted that the total miles of trails for the entire Valley is not known, as Clark County does not track this statistic within the unincorporated County area, thus preventing a determination of the miles per 100,000 population on a Valley-wide basis, which is the comparable regional area to the data provided for the other cities listed in Table 7.

Table 7
Miles of Developed Regional Trails

Cities	Regional Population	Miles of Existing Trails	Miles/100,000 Population
Las Vegas	1,321,319	Not available	Not available
Denver	2,286,975	130	5.68
Phoenix	2,913,475	128	4.39
Salt Lake City	1,360,159	51	3.75

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From Table 7, it is obvious that the Denver region has more miles of trails at 5.68 miles per 100,000 population than any other region surveyed with available data. The City of Las Vegas is projected to have an eventual population of 815,000 at full build-out. If Las Vegas were to have the equivalent of from 3.75 to 5.68 miles of trails per 100,000 residents, then a goal of 30.56 to 46.29 miles of trails at full build out seems reasonable, based on such comparisons. Presently, Las Vegas has approximately 8.5 miles of trails; this indicates that the City needs to engage in a greater effort to ensure that trails facilities are constructed.

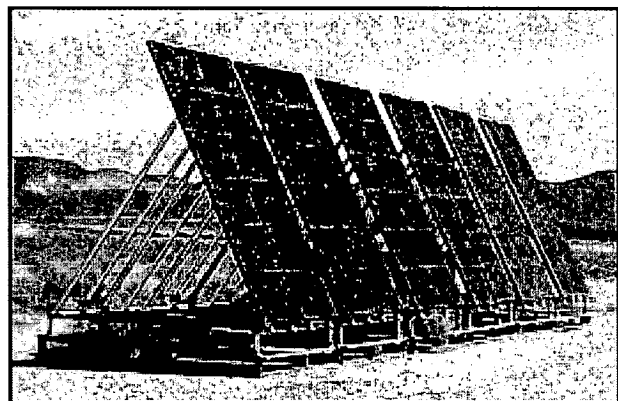
Action EC.4: The City should encourage employers to join the CatMatch Program and to provide bicycle-friendly work environments for employees that may include secured bike parking and change/shower facilities.

POLICY 7.3.7: That the City work together with the Clark County Regional Transportation Commission to identify the amount and location of lands required to address transit needs, and to acquire such lands from the federal Bureau of Land Management where appropriate.

DISCUSSION: As the solutions to transit issues are a regional responsibility, the City needs to provide input from the context of local level regarding the solutions to these transit issues, including location and suitability of transit routes and facilities, to the Regional Transportation Commission. The City also needs to promote the continued and expanded use of special transit services to serve the needs of the infirm or disabled that are reliant on such services.

The City has already been involved with the development of the Valley monorail project. In February 2002, Las Vegas City Council authorized the franchisee (Transit Systems Development) currently developing the \$650 million extension of the existing private monorail segment north to Sahara Avenue, to extend that system into Downtown Las Vegas. This extension, which is proposed to be open to the public by the first quarter of 2007, is expected to cost approximately \$450 million.

Action EC.5: The City shall examine the transit issues and potential solutions to the issues within the city boundaries and then liaise with the Regional Transportation Commission to ensure that these issues and potential solutions are considered and factored into regional transit operational and facility planning.



An existing system powered by photovoltaics is used for remote monitoring of air quality at the Nevada Test Site. Photo courtesy of UNLV Center for Energy Research.

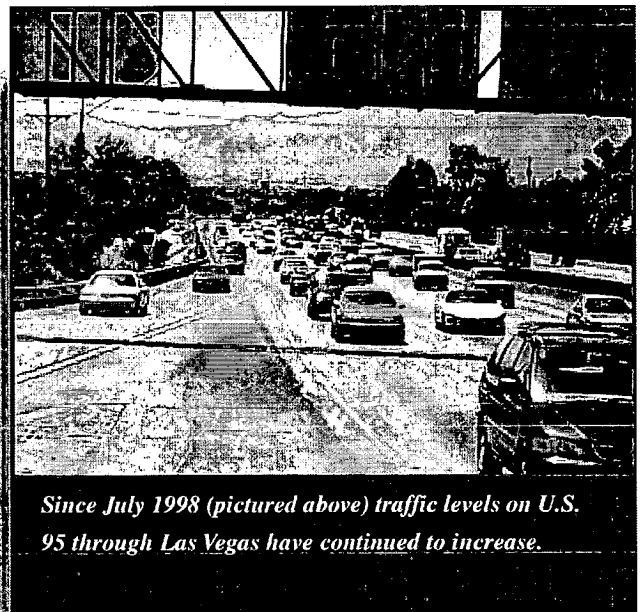
ALTERNATIVE SOURCES OF ENERGY

INTRODUCTION

The phenomenal increase in population within the Las Vegas Valley over recent years is placing an ever-increasing burden on the use of existing energy sources of electricity and natural gas. Brown-outs, blackouts, and increases in energy costs will be more common-place unless alternative sources of energy are developed and used to supplement the existing power sources of electricity and natural gas, particularly during periods of high usage. Two alternative sources that could be explored include wind and solar energy.

ROLE OF THE CITY OF LAS VEGAS

The City occupies two key positions in this regard: that of a major user of energy resources, and that of a regulator and policy-setter. In the first role, the City can set an example by conversion, on an opportunity basis, of some of its facilities to alternative energy sources, or of incorporating such energy sources into its new capital projects. As a policy-setter, the City can approve policy directives, possibly supported by a variety of incentives, that encourage private development to take advantage of solar and wind power for certain types of developments.



IMPLEMENTATION STRATEGY

ALTERNATIVE ENERGY GOAL: The use of freely available alternative energy resources in the Las Vegas Valley are maximized.

OBJECTIVE: To promote the use of environmentally responsible alternative energy sources.

POLICY: That the City examine alternate energy sources, such as wind and solar power, and determine the feasibility and cost-effectiveness of harnessing and utilizing these resources.

DISCUSSION: The Southwest is one of the most favorable places in the country for the practical use of solar energy because of the predominance of sunny weather in the desert environment. On a small scale, it is common for individual residential property owners to use this energy source to heat water in swimming pools. On a larger scale, the opportunities are virtually unlimited, but these opportunities are not being exploited. To do so may require government intervention to establish incentives for its development and usage.

Wind is another source of energy that is virtually uncultivated. Several windmill farms have been established in California with much success. A similar environment exists in Southern Nevada that is favorable to similar windmill farms locally.

Nevada Power Company has recently signed an agreement with MNS Wind Co. to buy power from its 85 megawatt wind farm at the Nevada Test Site. This contract covers all power generated by MNS at its Shoshone Wind Farm over a 17 year period, with a possible extension for an additional 8 years. This agreement will help Nevada Power achieve its mandated 2003 objective of five per-

cent of all energy sales based on renewable power sources, and will provide a starting point to raising this minimum to 15 percent by 2015. The City needs to encourage energy providers in the valley to take full advantage of such renewable sources of energy.

Action EC.6: The City shall investigate ways of promoting the development and use of alternative sources of energy.



Nevada Power has an agreement with MNS Wind Co. to use power generated on a wind farm at the Nevada Test Site.

BUILDING PRACTICES

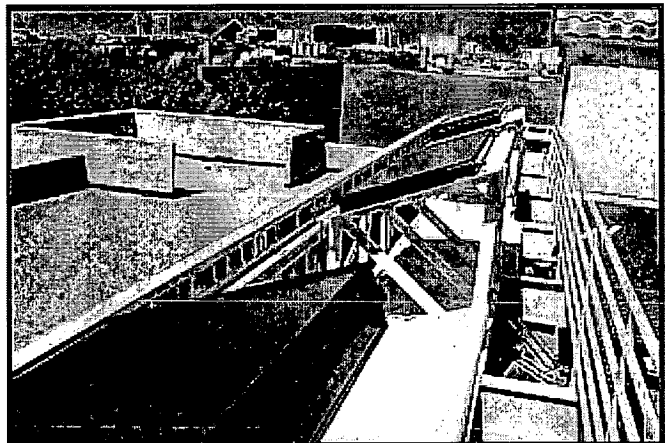
INTRODUCTION

As a further means of reducing the emphasis on existing energy sources, energy efficient building methods, utility systems, and appliances should be used. Extensive use of building insulation and high-efficiency furnaces that reduce natural gas consumption are good examples.

Energy-efficient building practices are generally more expensive at the outset, but over an extended period of time, most if not all such practices pay for themselves in reduced utility costs. Still, to the consumer, long-term costs are often discarded in favor of lower construction costs. For this reason, energy-efficient building practices may need to be legislated.

ROLE OF THE CITY OF LAS VEGAS

The City is in a position to influence the local development industry to think "out of the box" and offer high-efficiency insulation options and appliances as part of their developments. Some enlightened local builders have already taken such steps, but the City needs to promote environmentally responsible development into the mainstream of new residential planning.



Three solar water heating collectors mounted on the rooftop laboratory of the Center for Energy Research, University of Nevada Las Vegas. Photo courtesy of UNLV Center for Energy Research.

IMPLEMENTATION STRATEGY

BUILDING PRACTICES GOAL: New housing projects employ environmentally responsible energy conservation measures.

OBJECTIVE: To improve the level of energy efficiency in local residential projects, in order to reduce the overall demand for electric power and natural gas resources.

POLICY: That the City endorse residential building practices that include higher levels of insulation, energy-efficient designs and the inclusion of energy-efficient appliances, and work with the local development industry to make these features common to housing projects across the city.

DISCUSSION: Currently, the City has adopted the National Model Energy Code (MEC), which requires strict compliance with energy efficient building practices. Every project, including conversions to habitable living space, must meet MEC standards.

There is also a need to encourage the use of energy-efficient appliances within new homes. Energy Star is a federal government-sponsored program that encourages homeowners to use energy efficient utility systems and appliances, resulting in tax deductions. Every utility system and appliance is required to be rated for energy efficiency. The program is based on homeowners garnering a sufficient number of points based on these ratings to be identified as having energy-efficient homes.

Action EC.7: The City encourages the use of non-typical construction methods and materials, such as adobe, rammed earth, and straw bale construction, and alternative energy sources such as solar and wind power. Owners, developers and design professionals are encouraged to contact the City's Building Official for further information.



PLAN IMPLEMENTATION

INTRODUCTION

This Section contains all of the Action Statements of the Conservation Element, placed together by topic in a tabular format for ease of reference. These Action Statements are listed together with the relevant policy of the Las Vegas 2020 Master Plan, to ensure compatibility and ease of reference. As part of the City's Master Plan, these implementation actions are to take place over the 20-year life of the Plan. Each action has been shown to have a high, medium or low priority which generally conforms to the timing of the various tasks. However, the actual implementation depends upon subsequent actions that in many cases may be beyond the immediate control of the City of Las Vegas, such as obtaining State or Federal funds.

It is also a complex task of coordination to bring about many of these tasks entailing the work of many departments. A liaison department is identified for each task. This department may not have ultimate responsibility, nor will it necessarily be the department doing most of the actual work necessary to accomplish the task, but rather the department charged with the task of coordination and/or processing necessary approvals.

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IMPLEMENTATION ACTION LIST

Master Plan Policy	Implementation Action	Liaison Department	Priority
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AIR QUALITY ACTIONS

1.1.3	<i>AQ.1: The City shall prepare an inventory of vacant and under-utilized parcels within each Downtown District that could be determined to be appropriate for building new urban housing of transit-appropriate density, preferably with ground-floor commercial components where appropriate.</i>	Planning and Development	High
1.3.4	<i>AQ.2: The City shall actively promote the development of a range of residential, commercial and business activities on sites within the Downtown and other nearby areas designated within the Redevelopment Plan boundary, primarily through the City's Office of Business Development, by working closely with property owners and business interests to assemble appropriate redevelopment sites and assist with tax increment financing, where appropriate.</i>	Office of Business Development	Ongoing
1.6.1	<i>AQ.3: The City shall continue to work with the Clark County Regional Transportation Commission and other involved agencies and private groups to facilitate the development of a fixed guideway system connecting an extension of the existing monorail system currently operating along the Strip within Clark County.</i>	Planning and Development	High
1.6.2	<i>AQ.4: The City shall encourage, and to the extent practicable, participate with the Regional Transportation Commission, as part of its consideration and planning for a future monorail system connecting Downtown with the Clark County Strip, to incorporate long-term future phasing for extension of the system to Summerlin Town Center and the Centennial Hills Town Center areas.</i>	Planning and Development	Low
2.1.1	<i>AQ.5: The City shall consider revisions to its Zoning Ordinance to create zoning mechanisms that facilitate mixed-use development on appropriate sites. Specifically, a new mixed-use zoning district that contains requirements for higher density and intensity of development, the mixture of residential and commercial uses within the same building, design provisions which limit the impact of building mass on surrounding sites, and provide for ease of access to and use of mass transit, shall be considered.</i>	Planning and Development	High

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Master Plan Policy	Implementation Action	Liaison Department	Priority
2.1.1	<i>AQ.6: The City will work with property owners to identify potential mixed-use redevelopment sites in central city locations. The City will also consider the options for financial incentives that may be available, necessary and desirable in order to successfully promote mixed-use development projects.</i>	Office of Business Development	High
2.1.1	<i>AQ.7: The City will work with the Regional Transportation Commission to ensure that potential mixed-use redevelopment sites are adequately served with transit connections.</i>	Planning and Development	Ongoing
2.1.3	<i>AQ.8: The City shall prepare a plan or study that addresses the central city locations, linkages, content and design of urban hubs as identified in the Las Vegas 2020 Master Plan.</i>	Planning and Development	Medium
2.1.3	<i>AQ.9: The City shall work with the Regional Transportation Commission to ensure that adequate transit service is planned for and can be provided at central city urban hub locations as they are developed.</i>	Planning and Development	Medium
2.1.7	<i>AQ.10: The City shall encourage the development of walking and bicycling routes and connections to areas of Downtown and central city housing and live/work projects. The intent is to integrate pedestrian and cycling routes into major redevelopment projects, and to have nodes of pedestrian-oriented activity within the Downtown and central city that are interconnected with walking and cycling routes.</i>	Planning and Development	High
2.3.6	<i>AQ.11: when preparing the Rancho Corridor Study, the City will consider the beneficial impacts of beautification measures, as well as land use changes within the Corridor that support an improved jobs-housing balance for the city, in conjunction with the Nevada Department of Transportation and the City of North Las Vegas.</i>	Planning and Development	High
2.3.6	<i>AQ.12: The City should, when preparing the Rancho Corridor Study, consider identifying opportunities to establish alternative transit modes to serve the area and provide access to the Centennial Hills Town Center employment area.</i>	Planning and Development	High
2.6.1	<i>AQ.13: The City will evaluate the potential for physical and infrastructure improvements that will make central city neighborhoods more desirable as locations for residential infill projects, and then based on available funding, prioritize and carry out these improvements.</i>	Planning and Development/ Public Works	Medium

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Master Plan Policy	Implementation Action	Liaison Department	Priority
2.6.2	<i>AQ.14: The City shall ensure that its land use classification system and Zoning Code contain mechanisms to allow for the ready development of two to four unit housing projects on appropriate sites.</i>	Planning and Development	High
3.1.5	<i>AQ.15: The City shall ensure that new suburban development projects adjacent to undeveloped public lands contain pedestrian routes that maintain historical access to these undeveloped public lands.</i>	Planning and Development	Ongoing
3.4.3	<i>AQ.16: The City shall take the steps necessary to acquire lands suitable for the development of business, research and higher education centers, and to work with the local, regional and national business community to encourage the development of these activities within appropriate designated centers.</i>	Office of Business Development	Medium
4.1.3	<i>AQ.17: The City shall work with involved agencies and businesses to support and promote the use of telecommuting and the upgrade of technical systems to further enable this technology. The City will also work with these businesses and agencies, particularly those within the City's business parks, to promote the use of rideshare programs, provision of bike racks and secure bike storage, the provision of change room and shower facilities and other incentives to improve the desirability of non-auto commuting methods.</i>	Planning and Development	Ongoing
7.1.1	<i>AQ.18: The City shall continue to support the efforts of the Clark County Department of Air Quality to address direct or indirect remedies to air quality issues in the Las Vegas Valley.</i>	Planning and Development	Ongoing
7.1.2	<i>AQ.19: The City shall research, analyze and consider regulations which will limit the amount of land cleared and prepared for large scale residential and commercial development to a prescribed maximum area or percentage of the development site, with the objective of minimizing the area of land contributing to PM10 levels, while allowing the developer a sufficient and reasonable phasing program for the development.</i>	Public Works	High
7.1.2	<i>AQ.20: The City shall require, in accordance with the recently approved PM10 State Implementation Plan, that developers must apply an approved soil stabilizer on ground that waits for development after disturbance.</i>	Building and Safety	High

Master Plan Policy	Implementation Action	Liaison Department	Priority
7.3.5	<i>AQ.21: The City shall work with the Regional Transportation Commission in the long-range planning and development of the primary road system through the Valley, to ensure that multi-modal and alternate transportation technologies can be adequately accommodated as the city and the Valley continue to develop.</i>	Public Works	Low
7.3.6	<i>AQ.22: The City shall work with the Regional Transportation Commission to discuss the feasibility, financing, routing and phasing of a fixed guideway system connecting Downtown Las Vegas with the Las Vegas Strip, and ultimately with Summerlin and the Centennial Hills Town Center areas.</i>	Public Works	High
	<i>AQ.23: The City shall continue to work with developers, builders, homeowners and landscape maintenance associations, and the general public, to provide information on plant species that cause allergy and respiratory problems and to prohibit new planting of these species.</i>	Planning and Development	High

WATER SUPPLY AND QUALITY ACTIONS

POTABLE WATER

7.1.3	<i>WSQ.1: The City shall continue its participation with the Las Vegas Valley Water District by providing for the dissemination of information regarding the existing programs and benefits of water conservation measures by establishing an area at the front counters of selected City departments for LVVWD pamphlets and educational videos. The City also shall work with the LVVWD to determine where City involvement would be of benefit to established or new LVVWD conservation initiatives.</i>	City Manager's Office, with Public Works, Building and Safety, and Planning and Development	High
7.1.8	<i>WSQ.2: The City shall consider other requirements that result in water efficient design. These requirements can include:</i> ▪ <i>The expansion of the turf limitation ordinance to include the rear yard and along the sidewalk;</i> ▪ <i>Enforcement of the requirement to provide sidewalks on both sides of the street and of a requirement for sidewalks on private streets; and</i> ▪ <i>The review of building codes to ensure that the minimization of water waste is considered through technical improvements such as hot water recirculators.</i>	Planning and Development/ Building and Safety	Medium



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Master Plan Policy	Implementation Action	Liaison Department	Priority
7.1.8	<i>WSQ.3: The City shall consider requirements for water efficient technology and landscaping in any ordinance that may be drafted in the future to address recent changes in NRS 278.4781 and 278.4787 regarding the creation of Landscape Maintenance Districts.</i>	Public Works/Field Operations	High
	<i>WSQ.4: The City shall continue to enforce the Nevada Administrative Code (NAC 444.786) requiring new development to connect to public sewer whenever public sewer is available within 400 feet of the nearest property line and can be reached by gravity flow. The City shall also continue to enforce NAC 278-460 requiring subdivisions having density of two or more dwelling units per acre to connect to public sewer when public sewer is available within the distance determined by multiplying the number of single family dwelling units by 100 feet.</i>	Public Works	High
	<i>WSQ.5: The City shall encourage the Southern Nevada Water Authority and the Clark County Health District to conduct a study of the potentially adverse affects of septic systems on shallow aquifer drinking wells and devise a plan to take the appropriate corrective actions to ensure the protection of residents utilizing those resources.</i>	Public Works	High

EROSION CONTROL AND WETLAND MANAGEMENT

7.2.2	<i>WSQ.6: The City shall continue to work to preserve the state of the Las Vegas Wash by maintaining natural features in all areas of work or construction within the city portions of the Wash. The City should work with the Regional Flood Control District to ensure that natural features are not, unless dictated by physical necessity, replaced with concrete flood channels. Natural features shall be privately maintained. In areas planned for urban development along washes, setbacks from the washes should be implemented to minimize the need for channel reconstruction and to provide a valuable open space amenity.</i>	Public Works	High
7.2.4	<i>WSQ.7: The City supports the recommendations of the Las Vegas Wash Coordination Committee by ensuring that development within tier one (one-half mile of the Wash) incorporates appropriate drainage facilities and/or design to mitigate any negative impact on the Wash.</i>	Public Works	Ongoing

Master Plan Policy	Implementation Action	Liaison Department	Priority
7.2.4	<i>WSQ.8: The City should pursue the requirement for appropriate and adequate flood control and drainage facilities in all new development, in particular, best management practices that encourage on-site retention and infiltration of flood waters and adequate setbacks for urban development, to preserve the integrity of the Wash.</i>	Public Works	Ongoing

FLOOD CONTROL

	<i>WSQ.9: The City should continue to require developers to construct local storm drains in accordance with applicable stormwater master plans, and to make required financial contributions to the development of the regional storm drain network.</i>	Public Works	Ongoing
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RECLAIMED WATER

7.1.4	<i>WSQ.10: The City shall continue to support the creation of additional reclamation facilities and seek additional ways to use this water to reduce the demand on our supply of potable water.</i>	Public Works	Ongoing
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USE OF APPROPRIATE LANDSCAPE MATERIALS

7.1.8	<i>WSQ.11: The City should continue to ensure that water conservation measures are incorporated into public projects involving the City and consider the landscaping of major projects using the recently approved turf limitation ordinance to guide landscaping choices.</i>	Public Works	Ongoing
7.1.8	<i>WSQ.12: The City shall continue to encourage the use of drought tolerant plants or xeriscape for public projects through proposed amendments to Title 19A.</i>	Planning and Development	Ongoing
7.1.8	<i>WSQ.13: The City shall continue to identify and employ ways to limit its consumption of potable water for the irrigation of plant materials.</i>	Planning and Development	Ongoing

HABITAT AND WILDLIFE ACTIONS

PROTECTION OF ENDANGERED SPECIES

7.4.3	<i>HW.1: The City shall continue to be an active participant in the Implementation and Monitoring Committee of the Clark County Multiple Species Habitat Conservation Plan, for the duration of the MSHCP, which shall continue through the year 2028.</i>	Planning and Development	Ongoing
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Master Plan Policy	Implementation Action	Liaison Department	Priority
7.4.3	<i>HW.2: The City shall continue to collect the \$550 per acre fee for new development on behalf of the Clark County Multiple Species Habitat Conservation Plan, for the duration of the MSHCP, and for use as directed by the Implementation and Monitoring Committee.</i>	Building and Safety	Ongoing
7.4.4	<i>HW.3: The City should continue to participate in the implementation of the adopted Clark County Multiple Species Habitat Conservation Plan.</i>	Public Works	Ongoing

BOUNDARIES AND URBAN EXPANSION

<i>HW.4: The City shall work with the regional development community to encourage infill development and redevelopment within the city and to explore viable options to foster such growth.</i>	City Manager's Office/Planning and Development	High
<i>HW.5: The City shall work with the SNRPC, Clark County, and other entities and levels of government as appropriate, to ensure that the amount of urban growth and its costs are distributed equitably among Valley entities.</i>	City Manager's Office/Planning and Development	Low
<i>HW.6: The City shall ensure that its future urban growth is planned and developed in a manner that is environmentally responsible and meets the environmental objectives of this Conservation Element and other Valley-wide environmental policies.</i>	City Manager's Office/Planning and Development	Low

ESTABLISHMENT AND PROTECTION OF PARKS, TRAILS AND URBAN FORESTRY

1.2.1	<i>HW.7: The City will identify areas within the Downtown under either public or private ownership, that would help achieve this goal and then pursue development of these lands as urban open spaces or parks to serve the needs of the surrounding District.</i>	Planning and Development	Medium
1.2.2.b	<i>HW.8: The City shall continue to improve streetscape enhancements in the highly urbanized areas of the city, including the Downtown Centennial Plan area, West Las Vegas area, the Medical District Plan area, and the Centennial Hills Town Center.</i>	City Manager's Office, Public Works, Planning and Development, and Building and Safety	High
1.2.3	<i>HW.9: The City will consider locations within the Downtown area that are suitable for the development of landscaped medians or other landscaped public areas.</i>	Planning and Development/ Public Works/Field Operations	Medium

Master Plan Policy	Implementation Action	Liaison Department	Priority
1.2.3	<i>HW.10: The City should consider cost and implementation of landscape maintenance procedures to adequately design, install and maintain landscaping within public rights-of-way throughout the Downtown area.</i>	City Manager's Office, Field Operations	Medium
1.2.3	<i>HW.11: The City will continue to seek opportunities to develop urban gathering places such as the Lewis Street project.</i>	Planning and Development	Ongoing
3.4.1	<i>HW.12: The City should pursue a standard that 30 percent of the lands transferred from the BLM to the city in the far northwest part of the city are retained through community master planning processes as park land available to the public, open space, natural resource areas and for other recreational amenities that benefit both area residents and the city as a whole.</i>	Planning and Development	Ongoing
3.4.1	<i>HW.13: The City shall attempt to provide, pursuant to the policies of the Parks Element of the Master Plan, an adequate amount of neighborhood park space provided in central city areas that form the older urban core surrounding the Downtown area. One method to meet the demand for park space in these central city areas is through a transfer of reversionary interest in lands in outlying areas, acquired by the City from the Bureau of Land Management, conveyed under the Recreation and Public Purposes Act (see Parks Plan, Appendix C).</i>	Public Works/ Planning and Development	Medium
3.6.1	<i>HW.14: The City shall continue to pursue the development of a cohesive and balanced parks system linked by trails and alternative transportation routes.</i>	Public Works, (Parks)/ Planning and Development (Trails)	Ongoing
3.6.1	<i>HW.15: The City shall continue to partner with the Clark County School District where feasible, and as described in the Parks Element of the Master Plan (Appendix A), on the joint use and maintenance of a portion of school sites for recreational use by the general public.</i>	Public Works (Real Estate)	Ongoing
3.6.5	<i>HW.16: The City shall continue to seek ways in which to enhance its landscape maintenance procedures to adequately maintain and enhance the existing, new and proposed parks and trails throughout all the neighborhoods and districts of the city, subject to budgetary requirements.</i>	City Manager's Office/ Field Operations	Medium



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Master Plan Policy	Implementation Action	Liaison Department	Priority
3.6.7	<i>HW.17: City plans for the development of future parks and trails should allow for deliberate or incidental linkages of park sites by recreation and/or transportation trails.</i>	Planning and Development	Medium
3.6.8	<i>HW.18: The City shall coordinate trails planning to the extent possible with entities adjacent to city boundaries.</i>	Planning and Development	Ongoing
3.6.8	<i>HW.19: The City shall seek out alternate funding sources, such as grants, for the development of trails, and for the placement and maintenance of trees and landscaping along trail alignments.</i>	Planning and Development for SNPLMA funds, Neighborhood Services for other grants	Ongoing
3.6.8	<i>HW.20: The City should consider an Urban Forestry program within the City of Las Vegas, to assure the protection, preservation and maintenance of mature trees, shrubs and decorative plantings within public parks, public rights-of-ways, and public facilities throughout the city for future generations.</i>	City Manager's Office	Low
	<i>HW.21: The City shall continue to consider applications by existing and future property owners and neighborhood associations to form and sustain Landscape Maintenance Districts, where appropriate. Property owners or neighborhood associations must follow the guidelines established by the City in order to qualify for the creation of a Landscape Maintenance District by the City.</i>	Field Operations/ Public Works/ Neighborhood Services	Ongoing

SOILS ACTIONS

SOILS MANAGEMENT ISSUES

<i>S.1: The City shall examine its own practices for fertilization and pest control, to ensure that the most current and effective methods are being employed.</i>	Field Operations	High
<i>S.2: The City shall pursue greater public awareness of the issue by making available information on environmentally friendly methods to feed plant systems and to protect them from insects and disease with a minimum negative impact on the local ecosystems.</i>	City Manager's Office (lead or assign)	High
<i>S.3: The City shall investigate, in concert with other relevant agencies, areas that have been previously identified as areas with poor or unstable soil quality and continue to monitor these areas and work with</i>	Planning and Development/ Building and Safety	Low



Master Plan Policy	Implementation Action	Liaison Department	Priority
	owners to plan for uses which will minimize risk to both public safety and the environment, and which will integrate with surrounding urban uses.		
	<i>S.4: The City shall develop an updated inventory of these areas that can be integrated with the development review process, so that urban development on these sites, where suitable, can incorporate appropriate design measures to neutralize risk to the development and maintain environmental integrity of the site.</i>	Planning and Development/ Building and Safety	Low
	<i>S.5: The City shall assess the risks associated with urban activities in areas with continuing soil problems and make recommendations as to the long-term future use of, and setbacks from future urban development adjacent to, such lands.</i>	Building and Safety	Ongoing
	<i>S.6: The City shall continue to examine the identified list of potentially contaminated sites, using federal and state grants as appropriate, and obtain loans to assist in remediation activities, with the goal of returning these sites to a condition where either private redevelopment is financially feasible or where the site is made suitable for a necessary public use.</i>	Office of Business Development	Ongoing

CONSERVATION OF STEEP SLOPES

<i>S.7: The City shall work closely with developers and landowners to ensure that areas constrained by steep slopes are retained as desirable natural features on site or in proximity to urban development, that urban development that takes place in areas with significant gradients complies with the City's Commercial Development Standards and that use of such areas be limited to appropriate activities.</i>	Planning and Development	Ongoing
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WASTE ACTIONS

SOLID WASTE MANAGEMENT

<i>W.1: The City shall work with Clark County and the franchise operator to ensure that truck haul routes are planned to minimize adverse impacts to the citizens of Las Vegas.</i>	City Manager's Office (through franchise agreements)	High
<i>W.2: The City shall work with Clark County and the franchise operator to ensure that the location of transfer stations will be consistent with the Las Vegas 2020 Master Plan.</i>	City Manager's Office (through franchise agreements)	Ongoing



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RECYCLING AND SOURCE REDUCTION

<i>W.3: The City shall examine successful residential recycling programs in other municipalities, determine workable options, and work with Clark County and the franchise operator to implement an incentive program.</i>	City Manager's Office (through franchise agreements)	Medium
<i>W.4: The City shall investigate the possibility of instituting a green waste recycling program, possibly on a pilot basis, with RSSN and the other Valley entities.</i>	City Manager's Office (through franchise agreements)	Medium
<i>W.5: The City shall work with local business and industry representatives, and with Clark County and the franchise operator, to identify options for local consumption of selected recycled materials.</i>	City Manager's Office (through franchise agreements)	Medium
<i>W.6: The City shall work with Clark County and the franchise operator to encourage an increase in the number of convenient recyclable materials drop-off locations.</i>	City Manager's Office (through franchise agreements)	Medium
<i>W.7: The City shall work with Clark County and the franchise operator to investigate the cost, participants and other factors for an enhanced public awareness program promoting recycling, identifying participation incentives and possible penalties as may be developed as part of an incentive program.</i>	City Manager's Office (through franchise agreements)	High

ENERGY CONSERVATION ACTIONS**TRANSPORTATION AND LAND USE ISSUES**

3.1.2	<i>EC.1: The City shall promote the integration of pedestrian-friendly design elements into new residential development projects, which are intended to make walking through neighborhoods to local schools, parks and shopping a safe and pleasurable alternative to automobile trips for the same purposes.</i>	Planning and Development	High
4.1.3	<i>EC.2: The City shall examine any current code requirements that may inhibit telecommuting in residential areas for other than safety reasons, and consider appropriate steps to address such inhibiting legislation.</i>	Planning and Development	Medium

Master Plan Policy	Implementation Action	Liaison Department	Priority
7.3.5	<i>EC.3: The City shall work with the Regional Transportation Commission to encourage businesses and other places of employment within the Las Vegas Valley to establish ride share programs, alternate hours of employment and to encourage their employees to use mass transit for home-to-work trips.</i>	City Manager's Office/Planning and Development	High
7.3.6	<i>EC.4: The City should encourage employers to join the CatMatch Program and to provide bicycle-friendly work environments for employees that may include secured bike parking and change/shower facilities.</i>	City Manager's Office/Planning and Development	High
7.3.7	<i>EC.5: The City shall examine the transit issues and potential solutions to the issues within the city boundaries and then liaise with the Regional Transportation Commission to ensure that these issues and potential solutions are considered and factored into regional transit operational and facility planning.</i>	Public Works	Ongoing

ALTERNATIVE SOURCES OF ENERGY

<i>EC.6: The City shall investigate ways of promoting the development and use of alternative sources of energy.</i>	Field Operations/ Vehicle Services	Medium
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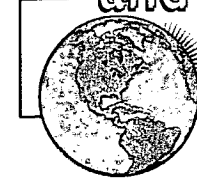
BUILDING PRACTICES

<i>EC.7: The City encourages the use of non-typical construction methods and materials, such as adobe rammed earth, and strawbale construction, and alternative energy sources such as solar and wind power. Owners, developers and design professionals are encouraged to contact the City's Building Official for further information.</i>	Planning and Development/ Building and Safety	Medium
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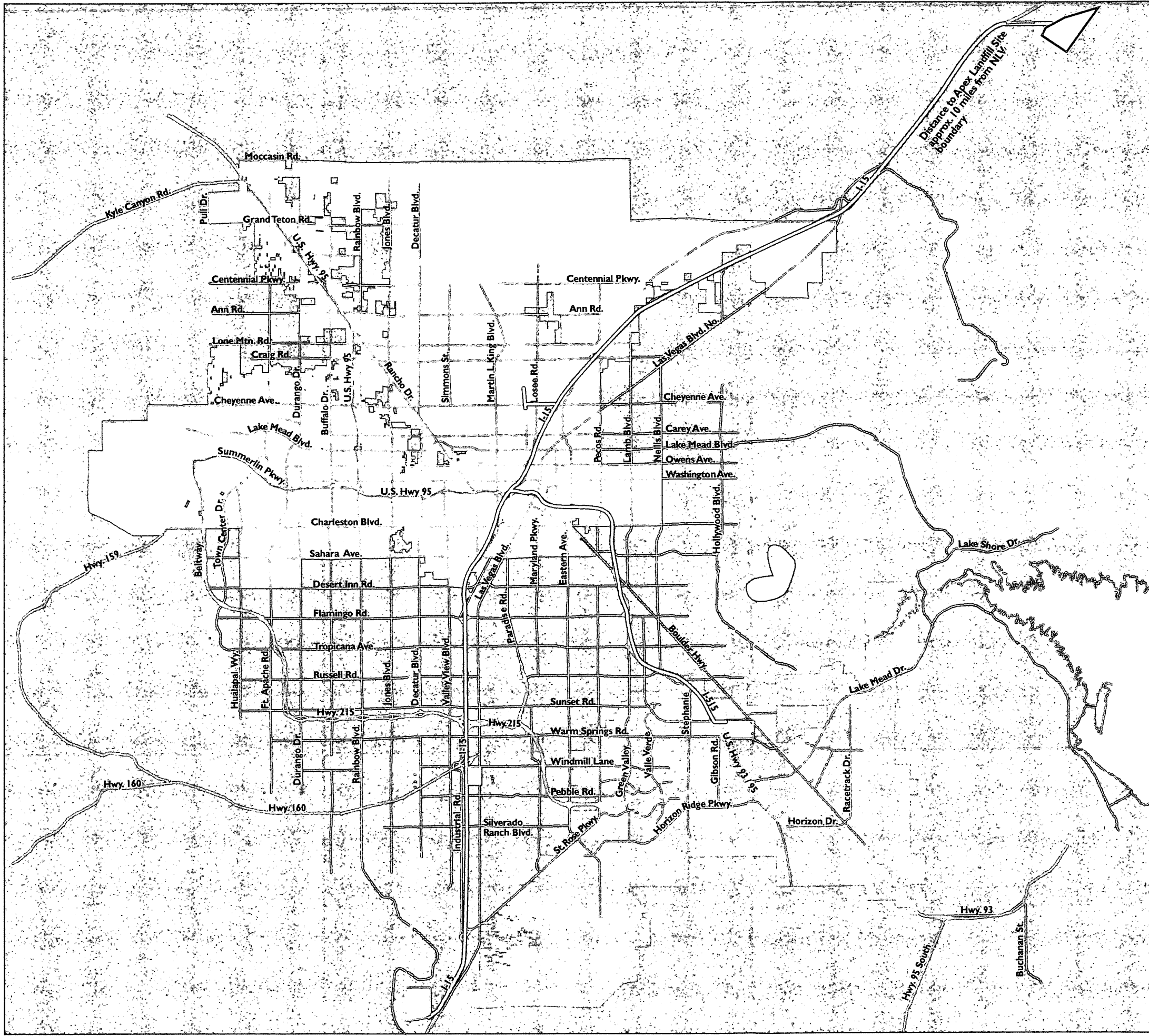


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WASTE DISPOSAL and RECYCLING FACILITIES



Map 23

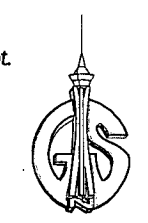


- City of Las Vegas
- Henderson
- North Las Vegas
- Boulder City
- Clark County
- Active Transfer Station
- Inactive Transfer Station
- Active Recycle Center
- Active Landfill Site
- Closed Landfill Site
- Designated Haul Route

Source: City of Las Vegas
Planning and Development Dept.

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Landfill Sites.Conserv Ele.fh/3-8-02



IMPLEMENTATION STRATEGY

• HAZARDOUS MATERIALS

Hazardous waste is generated from many commercial, industrial, and even residential activities. Products such as batteries, insecticides, paints, solvents, and even certain household cleaners exhibit characteristics such as flammability, corrosivity, combustibility, and toxicity that require special disposal restrictions. Hazardous wastes cannot be disposed of in any landfill within Clark County.

These types of wastes either require special treatment to lessen their hazardous characteristics prior to disposal in landfill sites 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 the community to reduce the quantities of this waste stream. RSSN

offers a household hazardous waste collection program as part of the recycling system to its residential customers.

Nuclear waste is possibly the most hazardous material that may be disposed of in Nevada, depending on federal actions affecting the Yucca Mountain disposal site, some ninety miles north of the city. Las Vegas has declared itself a nuclear-free zone, and will not support the transportation of spent nuclear materials to the Yucca Mountain disposal site for long-term storage (if approved) on roads through the city.



The city of Las Vegas has declared itself a nuclear-free zone.

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• DISPOSAL TRUCK HAUL ROUTES

Current street routes through the city that are used to convey bulk waste from transfer locations and sources of treated sewage sludge may pass through or near residential areas. These haul vehicles are sources of obnoxious odors and vehicle noise and therefore are incompatible with residential areas, schools, parks, and other areas where people may congregate outdoors.

SOLID WASTE DISPOSAL GOAL: The amount of solid wastes that has been reduced to a minimum through successful recycling programs is disposed of safely in landfill sites using the best available technology, and these waste materials are conveyed to the site along haul routes and in a manner that minimizes exposure of residential areas to these wastes.

OBJECTIVE: To ensure that land use decisions and haul route planning protect residents from exposure to the negative impacts of solid waste disposal.

POLICY: That the location of solid waste haul routes through the City of Las Vegas be minimized, and where these haul routes must unavoidably pass through the city, that these routes be located along highways or primary roads, so that the impact on residential areas is minimized.

DISCUSSION: Landfill sites serving the Las Vegas Valley and the City of Las Vegas in particular are located well outside of the city. Although placing landfill activities away from urban areas eliminates possible negative impacts on urban uses, the corollary is that waste must be hauled to these sites, in some cases through urbanized areas. The impending completion of the Beltway may help to alleviate the need to place these routes through more urban portions of the Valley; however, until this project is completed over the next few years, care will have to be taken to select routes that minimize the impact of waste disposal carriers, which include noise, odor and in some cases blowing debris, on nearby residential areas.

Action W.1: The City shall work with Clark County and the franchised operator to ensure that truck haul routes are planned to minimize adverse impacts to the citizens of Las Vegas.

POLICY: That the City ensure that the location of solid waste disposal activities are consistent with the allowable uses set out within the City's approved land use classification system.

DISCUSSION: Areas designated as residential or commercial are not intended to allow the placement of transfer stations within such areas. Uses associated with the disposal of solid waste must be located in areas appropriately designated, such as manufacturing areas. The City's land use categories are laid out in the Las Vegas 2020 Master Plan, using the categories carried over from the City's 1992 General Plan.

Action W.2: The City shall work with Clark County and the franchise operator to ensure that the location of transfer stations will be consistent with the Las Vegas 2020 Master Plan.

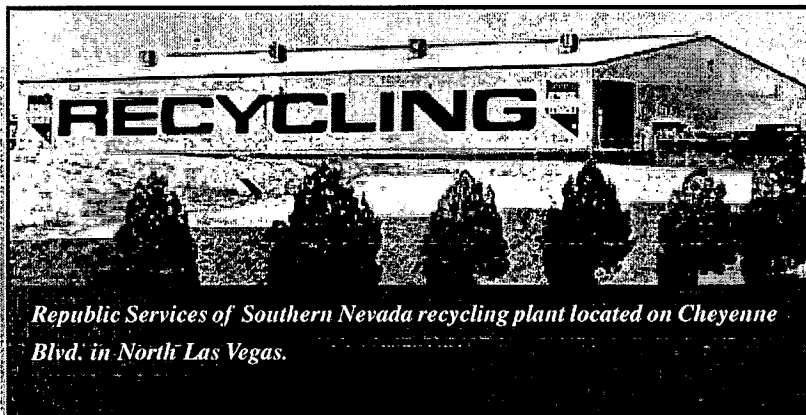


RECYCLING AND SOURCE REDUCTION

INTRODUCTION

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 the use of materials designed with longer life spans or which use less packaging.

The Nevada Environmental Commission (NEC), a state agency, is responsible for the establishment of 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 state 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 oversight authority. Republic Services of Southern Nevada, the franchised waste management company for Clark County, offers curbside recycling services to its residential customers and some businesses, including the casino industry.



STATUTORY FRAMEWORK FOR RECYCLING

Several sections of the Nevada Revised Statutes contain regulations regarding recycling and solid waste, including a section that is entirely devoted to recycling and waste reduction (Nevada Revised Statutes 444A.010 through Nevada Revised Statutes 444A.110). The

statute that identifies the status of recycling in Nevada is Nevada Revised Statutes 444A.040). This statute requires counties to establish different levels of recycling services based on the size of their populations. Counties with over 100,000 people are required to provide curbside recycling and household hazardous waste disposal programs. There are two counties in Nevada currently with populations over 100,000 people, one of which is Clark County.

RECYCLING IN CLARK COUNTY

Recycling services in Clark County are offered by various recycling businesses. While Republic Services of Southern Nevada provides residential collection, several companies offer commercial

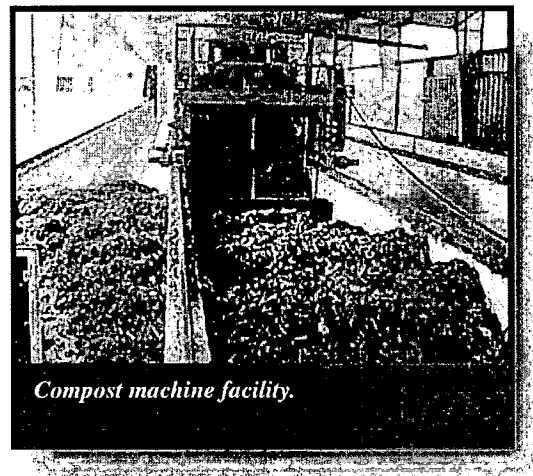
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recycling services to commercial uses. Several buy-back centers are available for the public to use, as well.

Franchise agreements between Republic Services of Southern Nevada and the City of Las Vegas give RSSN the exclusive right to collect garbage and recyclables at curbside within the limits of City of Las Vegas. Every homeowner, multi-family dwelling and public building or business is required, by City ordinance, to pay for garbage collection. The curbside collection of recyclable materials is offered to homeowners and some apartment dwellers. Homeowners may self-haul solid waste to a transfer station; however, they are still required to pay for curbside garbage and recycling collection. Garbage collection is provided twice a week to homeowners; recycling collection is offered once every two weeks. Recyclable items collected at curbside in the City of Las Vegas include aluminum cans, glass, plastic bottles, tin/steel cans, newspapers, magazines, phone books, used motor oil and cardboard. Colored collection receptacles are provided to allow for separated collection of paper, glass and metals. Participation in the recycling program is optional.

Approximately 300,000 homeowners in Clark County have the opportunity to participate in the curbside recycling collection program. RSSN reports that 265,000 of those 300,000 homeowners have requested bins and the participation rate of homeowners varies anywhere from 15% to 36%, depending on the area of the Valley being serviced. Recyclables collection service from commercial businesses or from multi-unit apartment complexes is available from RSSN, although proper sorting and secure on-site storage prior to collection often poses difficulties to multi-unit apartment properties. Apartment dwellers also have the option of taking their recyclables to a recycling center.

The franchise agreements allow other companies to either collect or accept source-separated recyclable materials from commercial businesses. While exclusive franchises may provide the area with reliable and economical waste disposal services, it puts strict limitations on recycling business development. These other recycling businesses collect and market recyclables from schools, businesses and other institutions. Several companies handle construction and demolition debris; others handle food waste from casinos and restaurants, while still others collect cardboard, plastic, aluminum, metals and other commonly recycled commodities.



To date, there has been no recycling program contemplated for green waste, such as lawn trimmings. The City should investigate the possibility of instituting such a program, possibly on a pilot basis, with RSSN and the other Valley entities.

Household hazardous waste (such as petroleum products, insecticides, paints, etc.) can be disposed of properly at the RSSN Recycling Center in North Las Vegas four days a week. This program is available to



all Clark County residents at no charge. There are many other places within Clark County that accept used motor oil from the public and several places that accept antifreeze.

RECYCLING MARKETS

The NDEP is required by *Nevada Revised Statutes* 444.587 to develop markets in Nevada for products made from recycled materials. This statute requires that NDEP determine the feasibility for the development of markets outside the state and to provide producers of recycled materials with information relating to manufacturers of products made from those materials.

In fiscal year 1998, NDEP pursued and developed a contract with the Nevada Commission on Economic Development to:

- Research and develop a state Market Development Plan;
- Prepare the annual Market Development Report;
- Produce a guide on where to buy recycling services and recycled content products;
- Attend a conference on recycling economic development; and
- Conduct recycling business attraction activities.

A summary of recent efforts to develop a recyclables market can be found in the *Recycling Market Development Report*, submitted to Nevada's Legislative Council Bureau in January 1998. The Recycling Market Development Report is on file in NDEP's Office of Waste Management.

The development of recyclables markets continues to involve several challenges in Nevada. Some of these challenges include:

- Development of incentives to manufacturers who use recycled material to relocate to Nevada;
- Convincing existing manufacturers to switch to recycled materials and providing an incentive for those manufacturers continuing to use recycled materials;
- Current low use fees at landfills;
- A lack of businesses in Nevada that process locally recycled materials; and
- Long distances to current markets for recycled material.

Generally, challenges to recycling in Nevada include:

- The cost to operate collection programs;
- The cost to prepare materials for transportation; and
- The cost to transport the recycled material to a market.

The associated costs are often higher than the revenue generated from the sale of the material. This problem continues in Nevada and in other rural states in the West. If new and existing manufacturers in Nevada were encouraged to use locally recycled materials, the cost to transport materials would decrease and collection programs for these materials may expand.

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REVENUE SOURCE: TIRE RECYCLING FEES

When the 1991 legislature created a one-dollar per tire recycling fee, to be charged on the sale of each retail tire sold in Nevada, a source of funding for solid waste management was generated from the sale of tires. *Nevada Revised Statutes 444.616* requires the money to be used for solid waste management and to be divided as follows:

- Department of Conservation and Natural Resources receives 44.5%;
- Clark County Health District receives 30%;
- Washoe County District Health Department receives 25%; and
- The Department of Taxation receives 0.5%.



In 1991 the Nevada legislature created a one-dollar per tire recycling fee.

The revenue generated by this program has steadily increased each year, with FY98 generating close to \$1.2 million dollars.

LEVEL OF RECYCLING

Each year, Nevada measures the amount of material collected for recycling in the state. *Nevada Revised Statute 444A.050* requires counties to report to the state information about the number of tons of material "disposed" (referring to the material that has been recycled.) This information has been collected since June 1993. The data was initially collected and recorded based on a fiscal year; in 1997 the reporting period was changed to a calendar year.

In an effort to assist counties in the collection of recycling information from recycling centers, NDEP asked the Environmental Commission to create *Nevada Revised Statute 444A.135*. This regulation is intended to give counties some authority to collect the recycling information they need to report the County recycling rate to the state.

Nevada Revised Statute 444A.020 requires that each municipality work toward recycling 25% of the total solid waste generated within that municipality. So far, no municipality in Nevada has achieved that goal; however, the recycling rate has trended upwards over the last few years. For example, the 1997 recycling rate of Clark County was 14%. Each year, Nevada gets better at calculating an accurate recycling rate. Counties get better at including more businesses and businesses get better reporting information to counties. Although Nevada has not reached the mandated 25% recycling goal, Nevada currently has a recycling rate that is similar to other western states with similar demographics, including Idaho, Montana, and Wyoming.



IMPLEMENTATION STRATEGY

The *Las Vegas 2020 Master Plan* does not contain direct policy references to the issues related to recycling and waste management. This is primarily due to the fact that the City does not fulfill a role of direct responsibility with regard to these issues. Despite this, it is important to note the fact that responsible and efficient recycling and solid waste management programs are intrinsically important to achieving and maintaining a high level of environmental quality for the city.

At this time, Nevada's statutes do not contain stringent mandatory recycling requirements. The current statutes place the responsibility to recycle on the residential sector, and even that responsibility is voluntary. On the commercial side, there is no requirement or incentive for businesses to recycle. The commercial sector must bear some responsibility to recover and use recyclable materials. This would help Nevada recover more recyclable materials and increase the recycling rate.

RECYCLING GOAL: The rate of recycling and the development of recyclable markets in southern Nevada meet standards as set out in state regulations.

OBJECTIVE: To encourage the development of programs that increase the rate of recycling activities, particularly in the commercial and industrial sectors, and that expand the markets for local consumption of products manufactured from recycled materials.

POLICY: That the City work with the franchise operator and the other entities to create incentives for residents to participate in recycling programs, to increase the number of convenient recycling opportunities available, and to implement the provisions of the Clark County Solid Waste Management Plan.

DISCUSSION: At this time the voluntary participation of some area residents is not sufficient to reach the state-mandated goal of 25% recycling of total solid waste. The creation of incentive programs would greatly increase the level of voluntary participation. Such incentives can involve reward systems, or can involve penalties, as in extra charges beyond a one-garbage-can maximum per pick up.

Action W.3: The City shall examine successful residential recycling programs in other municipalities, determine workable options, and work with Clark County and the franchise operator to implement an incentive program.

Action W.4: The City shall investigate the possibility of instituting a green waste recycling program, possibly on a pilot basis, with RSSN and the other Valley entities.

POLICY: That the City take steps to promote recycling in all sectors of the local economy.

DISCUSSION: While increased residential participation in recycling efforts is desirable, there is also a major need to involve the participation of the commercial and industrial sectors of the economy in recycling programs. Incentives and penalties must be developed to remove the inherent competitive disadvantage that would exist in a completely voluntary and unregulated marketplace. A greater effort must be made to develop local markets for recycled materials, and to enter more distant markets in the case of certain types of recycled materials, where this can be done cost-effectively.

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Action W.5: The City shall work with local business and industry representatives, and with Clark County and the franchise operator, to identify options for local consumption of selected recycled materials.

POLICY: That the convenience of introducing recyclable materials into the recycling system be increased, to promote increased use of recycling services and awareness of its benefits.

DISCUSSION: In order to achieve a greater level of participation in the residential, and particularly in the commercial/industrial components of regional recycling efforts, it will be necessary to not only develop incentives through a specific program, but to also increase the convenience of participation in recycling efforts. In the non-residential sectors, one way this can be done is by increasing the number of collection points for non-residential clients to drop off recyclable materials. Methods to increase awareness of the benefits of recycling also need to be examined.

Action W.6: The City shall work with Clark County and the franchise operator to encourage an increase in the number of convenient recyclable materials drop-off locations.

Action W.7: The City shall work with Clark County and the franchise operator to investigate the cost, participants and other factors for an enhanced public awareness program promoting recycling, identifying participation incentives and possible penalties as may be developed as part of an incentive program.

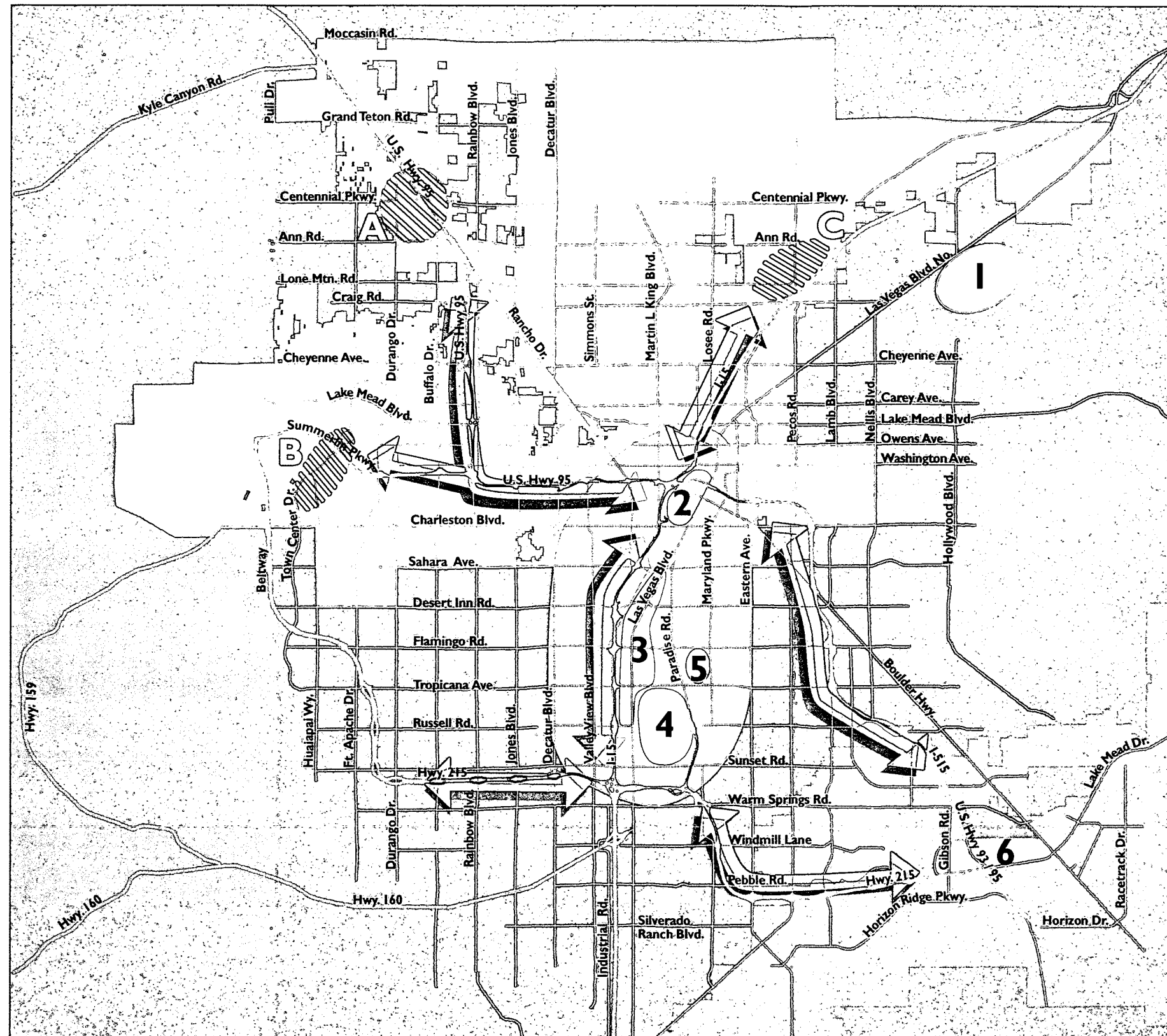


Trash in Flamingo Wash.

EMPLOYMENT AREAS and TRANSPORTATION ROUTES



Map 24



- Las Vegas
- Henderson
- North Las Vegas
- Clark County
- Existing Employment Areas
 - 1 Nellis
 - 2 Downtown
 - 3 The Strip
 - 4 McCarran Airport
 - 5 UNLV
 - 6 Henderson Industrial Area
- Emerging Employment Areas
 - A Town Center
 - B Summerlin
 - C North Las Vegas Industrial Area
- Primary Area of Concentration of Valley Employment
- Primary Home to Work Traffic Corridors

February 22, 2002
Source: City of Las Vegas
Planning and Development Dept.

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employmnt areas.Conserv Ele.fh/5-15-02



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2002 OCT 29 A 11:56

AFFP DISTRICT COURT
Clark County, Nevada
AFFIDAVIT OF PUBLICATION

STATE OF NEVADA)
COUNTY OF CLARK) SS:

Donna Stark, being 1st duly sworn, deposes and says:

That she is the Legal Clerk for the Las Vegas Review-Journal and the Las Vegas Sun, daily newspapers regularly issued, published and circulated in the City of Las Vegas, County of Clark, State of Nevada, and that the advertisement, a true copy attached for,

LV CITY CLERK
2465907

2296311LV

was continuously published in said Las Vegas Review Journal and/or Las Vegas Sun in 1 edition(s) of said newspaper issued from 10/24/2002 to 10/24/2002, on the following days: OCT. 24, 2002

Signed: _____

Donna Stark

SUBSCRIBED AND SWORN BEFORE ME THIS THE _____

25

day of _____ 2002

October

Mary B. Sheffield

Notary Public

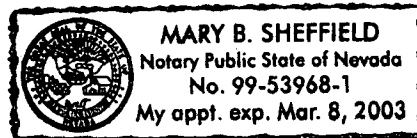
BILL NO. 2002-109

AN ORDINANCE TO ADOPT THE CONSERVATION ELEMENT OF THE LAS VEGAS 2020 MASTER PLAN, AND TO PROVIDE FOR OTHER RELATED MATTERS.

Proposed by: Robert S. Genzer, Director of Planning and Development
Summary: Adopts the Conservation Element of the Las Vegas 2020 Master Plan.

At the City Council meeting of OCTOBER 2, 2002
BILL NO. 2002-109 WAS READ BY TITLE AND REFERRED TO A RECOMMENDING COMMITTEE

COPIES OF THE COMPLETE ORDINANCE ARE AVAILABLE FOR PUBLIC INFORMATION IN THE OFFICE OF THE CITY CLERK, 1ST FLOOR, 400 STEWART AVENUE, LAS VEGAS, NEVADA.
PUB: October 24, 2002
LV Review-Journal



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2002 NOV 15 P 12: 32

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STATE OF NEVADA)
COUNTY OF CLARK)

SS:

Donna Stark, being 1st duly sworn, deposes and says:

That she is the Legal Clerk for the Las Vegas Review-Journal and the Las Vegas Sun, daily newspapers regularly issued, published and circulated in the City of Las Vegas, County of Clark, State of Nevada, and that the advertisement, a true copy attached for,

LV CITY CLERK
2493396

2296311LV

was continuously published in said Las Vegas Review Journal and/or Las Vegas Sun in 1 edition(s) of said newspaper issued from 11/09/2002 to 11/09/2002, on the following days: NOV. 9, 2002

Signed: _____

Donna Stark

SUBSCRIBED AND SWORN BEFORE ME THIS THE _____ //

day of *November* 2002

Mary B. Sheffield

Notary Public

BILL NO. 2002-109
ORDINANCE NO. 5529

AN ORDINANCE TO ADOPT THE CONSERVATION ELEMENT OF THE LAS VEGAS 2020 MASTER PLAN, AND TO PROVIDE FOR OTHER RELATED MATTERS.

Proposed by: Robert S. Genzer, Director of Planning and Development
Summary: Adopts the Conservation Element of the Las Vegas 2020 Master Plan.

The above and foregoing ordinance was first proposed and read by title to the City Council on the 2nd day of October, 2002, and referred to a committee for recommendation; thereafter the committee reported favorably on said ordinance on the 6th day of November, 2002, which was a regular meeting of said City Council; and that at said regular meeting the proposed ordinance was read by title to the City Council as first introduced and adopted by the following vote:

VOTING "AYE": Mayor Goodman and Councilmembers Reese, M. McDonald, L. Brown, Weekly, and Mack
VOTING "NAY": NONE
EXCUSED: L.B. McDonald

COPIES OF THE COMPLETE ORDINANCE ARE AVAILABLE FOR PUBLIC INFORMATION IN THE OFFICE OF THE CITY CLERK, 1ST FLOOR, 400 STEWART AVENUE, LAS VEGAS, NEVADA.
PUB: November 9, 2002
LV Review-Journal

