Conservation element of the Las Vegas 2020 master plan

City of Las Vegas, Nevada
conservation planning in southern nevada
conservation element outline

- air quality
- habitat and wildlife
- soils
- waste
- energy conservation
- implementation action list

Adopted by
City Council 11-6-02
Revised 6-01-05
The City of Las Vegas Conservation Element

of the Las Vegas 2020 Master Plan

was adopted by City Council

on November 6, 2002 (Ordinance # 5529)

and revised on June 1, 2005

(GPA-6287).
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, Habitat and Wildlife, Soils, Waste and Energy Conservation. Because the present drought situation has brought the issue of water supply and its impact on growth and development to the forefront, the City Council directed the Planning and Development Department to prepare a separate Master Plan Element in which all policies regarding water use are addressed so that they are more accessible and understandable to both City staff and the general public.

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.

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.
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.
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

NEVADA NATURAL RESOURCES PLAN

<table>
<thead>
<tr>
<th>State/Regional Legislation</th>
<th>County Legislation</th>
<th>City Legislation</th>
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<tbody>
<tr>
<td>Nevada Natural Resources Plan</td>
<td>Comprehensive Plan - Conservation Element</td>
<td>Las Vegas 2020 Master Plan</td>
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<td>Southern Nevada Regional Policy Plan</td>
<td>Multiple Species Habitat Conservation Plan</td>
<td>Conservation Element</td>
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<td>Southern Nevada Water Authority 1999 Water Conservation Plan</td>
<td>Carbon Monoxide State Implementation Plan</td>
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<td>Southern Nevada Water Authority 2002 Water Resource Plan</td>
<td>PM$_{10}$ State Implementation Plan</td>
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<td>Las Vegas Wash Comprehensive Adaptive Management Plan</td>
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<td>Nevada Statewide Energy Conservation Plan</td>
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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 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.

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.
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.

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.

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.

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 PM$_{10}$ 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 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.

**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 addressed within the Water Element;
- 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.
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. Because the present drought situation has brought the issue of water supply and its impact on growth and development to the forefront, the City Council directed the Planning and Development Department to prepare a separate Master Plan Element in which all policies regarding water use are addressed so that they are more accessible and understandable to both City staff and the general public.

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.
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 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.

**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. 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.
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.
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.
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.
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.
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.
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.
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.
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.
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.
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.
CONSERVATION MANAGEMENT CATEGORIES
Map 5

Lake Mead
Major Roads
Intensively Managed Area (IMA)
Less-Intensively Managed Area (LIMA)
Multiple Use Managed Area (MUMA)
Un-Managed Area (UMA)

(See Appendix A for species listed in these Managed Areas)

Adopted by City Council 11-6-02
Source: Clark County
Multiple Species Habitat Conservation Plan

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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.
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.
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.
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 organizations 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.
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.
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.
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.

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.

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 8). 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 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 9), 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 10). 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 11 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 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 12). 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.

Fissure south of historic well #3 located at Las Vegas Springs Preserve. Photo courtesy of LVVWD.
Map 10
LAS VEGAS VALLEY CROSS-SECTION OF THE GENERALIZED GEOLOGIC
### Table 2
Specific Cases of Damage Caused by Subsidence

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

## Table 2 continued
### Specific Cases of Damage Caused by Subsidence

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

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 hous-
ing 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.

**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 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 5.6: 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.
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.
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, Shelbome, 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 13 illustrates the location of landfills, transfer stations, convenience centers and recycling facilities within Clark County.
INSERT MAP 13 HERE  WASTE DISPOSAL
BACK OF MAP 13
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.
• 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
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.


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.
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%.

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.
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.
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.
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 14);
- 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.
INSERT MAP 14 EMPLOYMENT AREAS
BACK OF MAP 14
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.
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 3.

### Table 3
**Transportation (1999)**

<table>
<thead>
<tr>
<th>Cities</th>
<th>Vehicle Miles Traveled (millions)</th>
<th>VMT Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Las Vegas</td>
<td>35.8</td>
<td>27.1</td>
</tr>
<tr>
<td>Denver</td>
<td>57.7</td>
<td>25.2</td>
</tr>
<tr>
<td>Phoenix</td>
<td>58.0</td>
<td>19.9</td>
</tr>
<tr>
<td>Salt Lake City</td>
<td>30.0</td>
<td>22.1</td>
</tr>
<tr>
<td>San Diego</td>
<td>68.0</td>
<td>23.1</td>
</tr>
</tbody>
</table>
As shown in Table 3, 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 4. 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 4.

### Table 4

*Miles of Developed Regional Trails*

<table>
<thead>
<tr>
<th>Cities</th>
<th>Regional Population</th>
<th>Miles of Existing Trails</th>
<th>Miles/100,000 Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Las Vegas</td>
<td>1,321,319</td>
<td>Not available</td>
<td></td>
</tr>
<tr>
<td>Denver</td>
<td>2,286,975</td>
<td>130</td>
<td>5.68</td>
</tr>
<tr>
<td>Phoenix</td>
<td>2,913,475</td>
<td>128</td>
<td>4.39</td>
</tr>
<tr>
<td>Salt Lake City</td>
<td>1,360,159</td>
<td>51</td>
<td>3.75</td>
</tr>
</tbody>
</table>
From Table 4, 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.
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. Brownouts, blackouts, and increases in energy costs will be more commonplace 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 percent 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.
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.
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.
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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## AIR QUALITY ACTIONS

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<thead>
<tr>
<th>Master Plan Policy</th>
<th>Implementation Action</th>
<th>Liaison Department Priority</th>
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<tbody>
<tr>
<td>1.1.3</td>
<td>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.</td>
<td>Planning and Development</td>
</tr>
<tr>
<td>1.3.4</td>
<td>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.</td>
<td>Office of Business Development</td>
</tr>
<tr>
<td>1.6.1</td>
<td>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.</td>
<td>Planning and Development</td>
</tr>
<tr>
<td>1.6.2</td>
<td>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.</td>
<td>Planning and Development</td>
</tr>
<tr>
<td>2.1.1</td>
<td>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.</td>
<td>Planning and Development</td>
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<tr>
<td>2.1.1 AQ.6:</td>
<td>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.</td>
<td>Office of Business Development High</td>
</tr>
<tr>
<td>2.1.1 AQ.7:</td>
<td>The City will work with the Regional Transportation Commission to ensure that potential mixed-use redevelopment sites are adequately served with transit connections.</td>
<td>Planning and Development Ongoing</td>
</tr>
<tr>
<td>2.1.3 AQ.8:</td>
<td>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.</td>
<td>Planning and Development Medium</td>
</tr>
<tr>
<td>2.1.3 AQ.9:</td>
<td>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.</td>
<td>Planning and Development Medium</td>
</tr>
<tr>
<td>2.1.7 AQ.10:</td>
<td>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.</td>
<td>Planning and Development High</td>
</tr>
<tr>
<td>2.3.6 AQ.11:</td>
<td>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.</td>
<td>Planning and Development High</td>
</tr>
<tr>
<td>2.3.6 AQ.12:</td>
<td>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.</td>
<td>Planning and Development High</td>
</tr>
<tr>
<td>2.6.1 AQ.13:</td>
<td>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.</td>
<td>Planning and Development Public Works Medium</td>
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<td>Master Plan Policy</td>
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<tr>
<td>2.6.2</td>
<td>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.</td>
<td>Planning and Development High</td>
</tr>
<tr>
<td>3.1.5</td>
<td>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.</td>
<td>Planning and Development Ongoing</td>
</tr>
<tr>
<td>3.4.3</td>
<td>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.</td>
<td>Office of Business Development Medium</td>
</tr>
<tr>
<td>4.1.3</td>
<td>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.</td>
<td>Planning and Development Ongoing</td>
</tr>
<tr>
<td>7.1.1</td>
<td>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.</td>
<td>Planning and Development Ongoing</td>
</tr>
<tr>
<td>7.1.2</td>
<td>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.</td>
<td>Public Works High</td>
</tr>
<tr>
<td>7.1.2</td>
<td>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.</td>
<td>Building and Safety High</td>
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<td>Master Plan Policy</td>
<td>Implementation Action</td>
<td>Liaison Department Priority</td>
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<tr>
<td>7.3.5</td>
<td>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.</td>
<td>Public Works</td>
</tr>
<tr>
<td>7.3.6</td>
<td>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. 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.</td>
<td>Public Works</td>
</tr>
<tr>
<td></td>
<td>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.</td>
<td>Planning and Development</td>
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</tbody>
</table>

**HABITAT AND WILDLIFE ACTIONS**

**PROTECTION OF ENDANGERED SPECIES**

| 7.4.3             | 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. | Planning and Development | Ongoing |
| 7.4.3             | 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. | Building and Safety | Ongoing |
| 7.4.4             | HW.3: The City should continue to participate in the implementation of the adopted Clark County Multiple Species Habitat Conservation Plan. | Public Works | Ongoing |
### BOUNDARIES AND URBAN EXPANSION

**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.

**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.

**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.

### ESTABLISHMENT AND PROTECTION OF PARKS, TRAILS AND URBAN

<table>
<thead>
<tr>
<th>1.2.1</th>
<th><strong>HW.7</strong>: 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.</th>
<th>Planning and Development</th>
<th>Medium</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.2.2.b</td>
<td><strong>HW.8</strong>: 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.</td>
<td>City Manager’s Office, Public Works, Planning and Development, and Building and Safety</td>
<td>High</td>
</tr>
<tr>
<td>1.2.3</td>
<td><strong>HW.9</strong>: The City will consider locations within the Downtown area that are suitable for the development of landscaped medians or other landscaped public areas.</td>
<td>Planning and Development/ Public Works/Field Operations</td>
<td>Medium</td>
</tr>
<tr>
<td>1.2.3</td>
<td><strong>HW.10</strong>: 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.</td>
<td>City Manager’s Office, Field Operations</td>
<td>Medium</td>
</tr>
<tr>
<td>1.2.3</td>
<td><strong>HW.11</strong>: The City will continue to seek opportunities to develop urban gathering places such as the Lewis Street project.</td>
<td>Planning and Development</td>
<td>Ongoing</td>
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<td><strong>Master Plan Policy</strong></td>
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<tr>
<td>3.4.1</td>
<td>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.</td>
<td>Planning and Development Ongoing</td>
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<tr>
<td>3.4.1</td>
<td>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).</td>
<td>Public Works/ Planning and Development Medium</td>
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<tr>
<td>3.6.1</td>
<td>HW.14: The City shall continue to pursue the development of a cohesive and balanced parks system linked by trails and alternative transportation routes.</td>
<td>Public Works/ (Parks)/ Planning and Development (Trails) Ongoing</td>
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<tr>
<td>3.6.1</td>
<td>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.</td>
<td>Public Works (Real Estate) Ongoing</td>
<td></td>
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<tr>
<td>3.6.5</td>
<td>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.</td>
<td>City Manager’s Office/ Field Operations Medium</td>
<td></td>
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<tr>
<td>3.6.7</td>
<td>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.</td>
<td>Planning and Development Medium</td>
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<tr>
<td>3.6.8</td>
<td>HW.18: The City shall coordinate trails planning to the extent possible with entities adjacent to city boundaries.</td>
<td>Planning and Development Ongoing</td>
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<td>Master Plan Policy</td>
<td>Implementation Action</td>
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<tr>
<td>3.6.8</td>
<td>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.</td>
<td>Planning and Development for SNPLMA funds, Neighborhood Services for other grants Ongoing</td>
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<tr>
<td>3.6.8</td>
<td>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.</td>
<td>City Manager’s Office Field Operations/Public Works/Neighborhood Services Low Ongoing</td>
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</table>

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 ACTIONS

#### SOILS MANAGEMENT ISSUES

- **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. Field Operations High

- **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. City Manager’s Office (lead or assign) High

- **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 owners to plan for uses which will minimize risk to both public safety and the environment, and which will integrate with surrounding urban uses. Planning and Development/Building and Safety Low

- **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 develop-
ment and maintain environmental integrity of the site.

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.

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

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.

WASTE ACTIONS

SOLID WASTE MANAGEMENT

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.

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

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.
**ENERGY CONSERVATION ACTIONS**

**TRANSPORTATION AND LAND USE ISSUES**

3.1.2  **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.

4.1.3  **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.

7.3.5  **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.
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<th>Implementation Action</th>
<th>Liaison Department Priority</th>
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<tbody>
<tr>
<td>7.3.6</td>
<td>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.</td>
<td>City Manager's Office/Planning and Development</td>
</tr>
<tr>
<td>7.3.7</td>
<td>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.</td>
<td>Public Works</td>
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**ALTERNATIVE SOURCES OF ENERGY**

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

**BUILDING PRACTICES**

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.

Field Operations/Vehicle Services | Medium
Planning and Development/Building and Safety | Medium