



Del Webb's

Sun City West—Expansion Area

**DEVELOPMENT
MASTER
PLAN**

JANUARY 1992

R E C E I V E D

JAN 31 1992

DEPARTMENT OF PLANNING AND DEVELOPMENT
BY JAM

mp 92-1

Prepared By



STANLEY CONSULTANTS, INC.

MARICOPA COUNTY DEPARTMENT OF PLANNING AND DEVELOPMENT

301 W. Jefferson Phoenix, Arizona 85003



January 31, 1992

TO: Distribution Noted Below
FROM: ^{DW for} Jill Herberg-Kusy, Principal Planner
Planning Division
SUBJ: Maricopa County Development Master Plan MP 92-1
Expansion of Sun City West

Enclosed are the following materials relating to the above subject:

Narrative Report Case Map Land Use Plan Map

A meeting will be held before the Technical Advisory Committee on **TUESDAY, FEBRUARY 18, 1992, AT 10:30 A.M.** in the Department of Planning and Development Conference Room, Third Floor, of the NEW County Administration Building, 301 West Jefferson, Phoenix.

You or your authorized representative are requested to be present, and you should be prepared to submit written comments and recommendations at this meeting. If unable to attend, written recommendations should be submitted to our Department prior to the date of the meeting.

DW/jbw
Enclosures

DISTRIBUTION:

Gerry Toscano, County Dept. of Transportation
Greg Holverson, County Dept. of Transportation
Bob Brittain, Zoning Division
Ed Raleigh, Flood Control District
Debra Stark, Current Planning
John Lee, Rural Metro Corporation
Planning Dept, City of Peoria
Sun City Utilities Company
Urban Freeways, AZDOT
Jo Crumbaker, Air Pollution/Health Dept.
Bill McManus/Ryley Carlock & Applewhite
Aquifer Protection, AZ Dept. of Enviro. Quality
Carolyn Bray, Phoenix Metro Investors

Leo Zaballa, Building Safety
Don Conroy, County Health Dept.
Sun City West PORA
Shereen Lerner, Ph.D., SHPO
Major Al Weiss, Sheriff's Office
AT&SF
Citizens Utility Company
Nicki Hansen, State Land Dept.
Arizona Corporation Commission
Dept. of Water Resources
James Wirth, Capital Resources
Parks and Recreation

MP 92-1

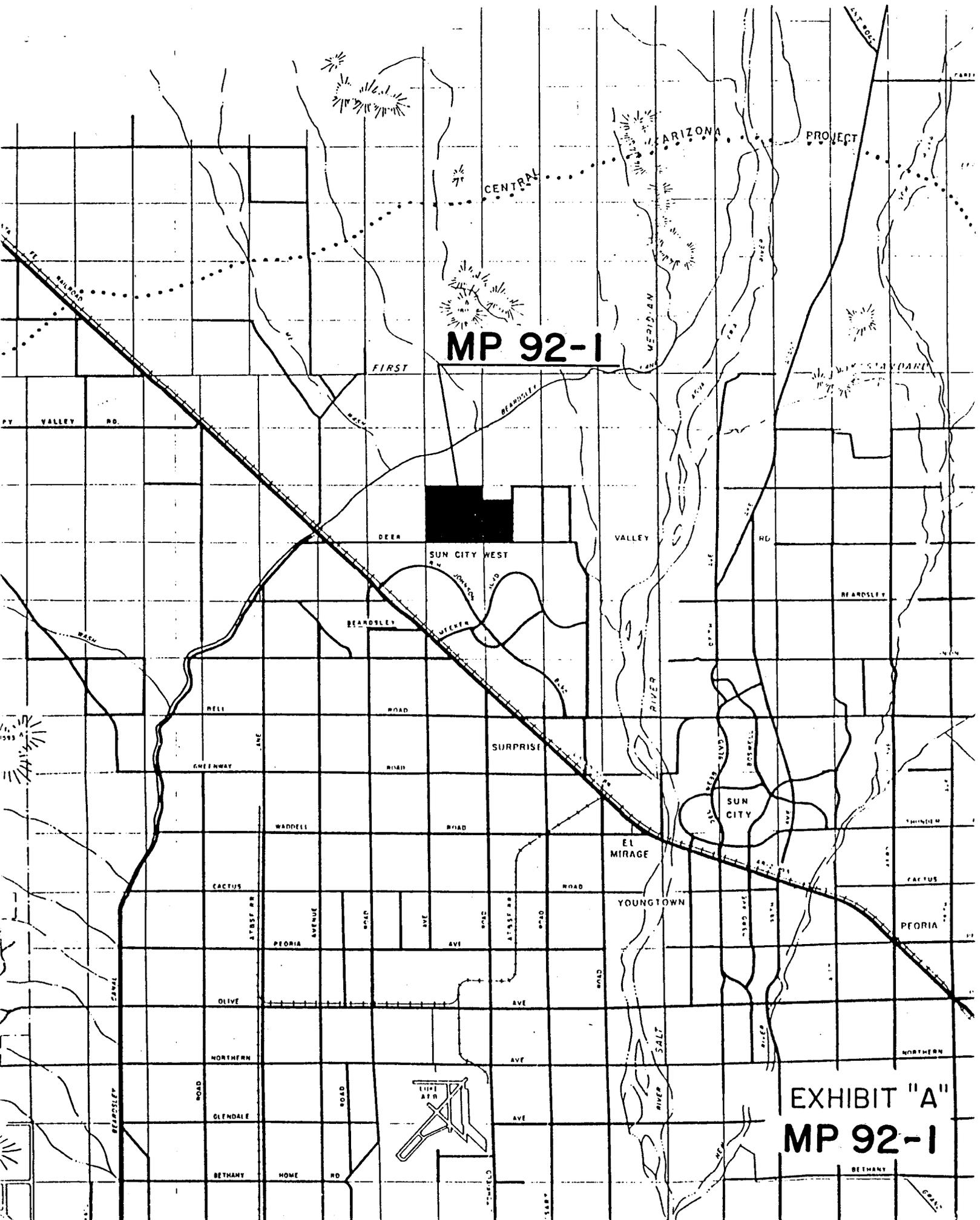
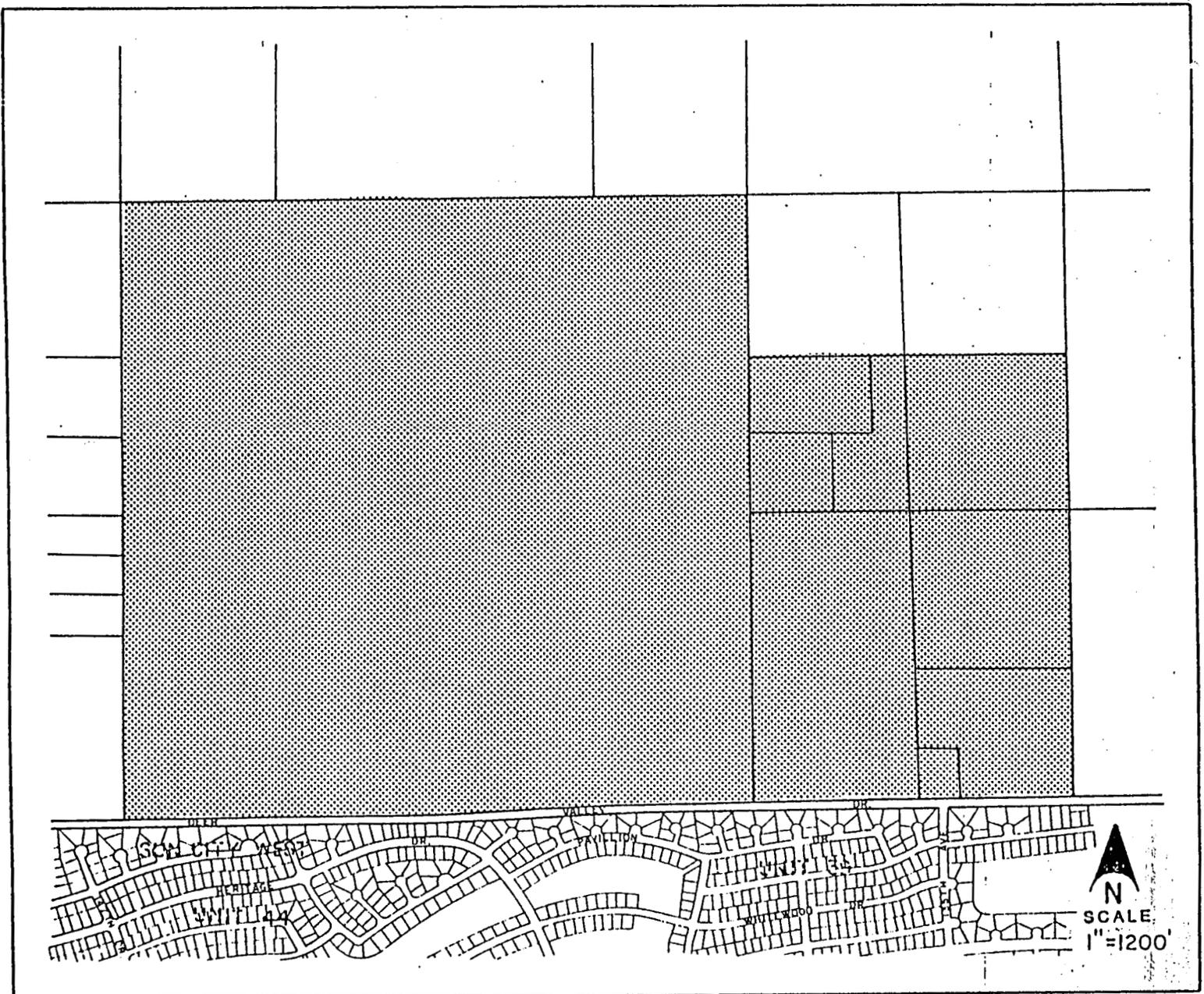
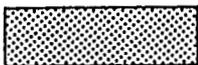


EXHIBIT "A"
MP 92-1



REQUEST FOR MASTER PLAN AMENDMENT



A REQUEST FOR AN AMENDMENT TO SUN CITY WEST DEVELOPMENT MASTER PLAN (880 ACRES)

SEE EXHIBIT "A"

MARICOPA COUNTY DEPARTMENT OF PLANNING AND DEVELOPMENT, PHOENIX, ARIZONA

DRAFTED	DATE	CHECK	REVISIONS					FINAL CHECK
AM	11/29/92	<i>[Signature]</i>						
1/4 SEC - SEC - TOWNSHIP - RANGE		Z-MAP		APPLICANT				
PT 15,16 - 4N - 1W		C-61						
FINAL ACTION		DATE		EFFECTIVE				

CASE NO. **MP92-1**



January 30, 1992

Mr. Dennis Zwagerman
Director of Planning and Development
Maricopa County Department of
Planning & Development
301 W. Jefferson
Phoenix, AZ 85003

Dear Mr. Zwagerman:

We are pleased to submit for your review and approval the proposed Development Master Plan for the Expansion Area for Sun City West. Also attached please find the Development Master Plan application that has been submitted to the Department of Planning and Development. The Development Master Plan and related Appendix reports represent Del Webb's proposal for the development of 885 acres located adjacent to and North of the existing Sun City West Community.

This Plan is the result of the coordinated efforts of Del Webb and its team of professional consultants, together with the input of the various county agencies that will service the expansion area. This Development Master Plan considers and accommodates the active life style of senior adults who continue to express their appreciation with the quality developments which have become the trademark of the Del Webb Sun City communities. This Plan is in accordance with the standards of development for Maricopa County.

Please give this Plan and Application your careful consideration. We at Del Webb and the various consultants involved in this project are available at any time should you or your staff require additional information relating to this project.

Thank you again for your thoughtful evaluation.

Sincerely,



Timothy J. Goodrich
Manager, Land Development

TJG:mjp
Attachment

13950 Meeker Blvd.
P.O. Box 1705 Sun City West, AZ 85372-1705

(602) 974-7011

DEVELOPMENT MASTER PLAN
FOR
SUN CITY WEST EXPANSION AREA

Prepared For

DEL E. WEBB DEVELOPMENT CO. L.P.,
a Delaware limited partnership,
Developer

DEL WEBB HOME CONSTRUCTION, INC.
an Arizona Corporation,
Owner
Contact: Tim Goodrich
(602) 546-5061

Prepared By

STANLEY CONSULTANTS INC.
3117 North 16th Street
Phoenix, Arizona 85016
(602) 279-0901

Contact: Tim Crall, P.E.

JANUARY, 1992



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6. Archaeology Survey Report - February, 1991
7. Environmental Property Evaluation - February, 1991
8. Preliminary Geotechnical & Geological Review - January, 1991
9. Master Drainage Study - January, 1992
10. Hydrogeological Review - April, 1991

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ACKNOWLEDGEMENTS

The information presented in this Development Master Plan for the Sun City West Expansion Area is the product of numerous studies conducted by professional engineers, environmentalists and other professional organizations committed to the success of the Sun City West Expansion Area project.

Stanley Consultants expresses its appreciation to the many individuals and representatives of public agencies and public and private utility companies that will service the Expansion Area, and particularly the staff at the Maricopa County Planning and Development Department, the Flood Control District of Maricopa County, the Maricopa County Health Department and the Maricopa County Highway Department.

EXECUTIVE SUMMARY

Del Webb plans to expand the Sun City West active adult community with approximately 884 acres located immediately north of Deer Valley Drive adjacent to the northern boundary of Sun City West (the "Expansion Area"). The Expansion Area will be developed in a manner similar to Sun City West, with single family residential lots, an 18 hole regulation golf course, and recreation complex planned to serve the residents of Sun City West and the Expansion Area. The Expansion Area will be physically integrated with Sun City West by its arrangement of major and collector streets which will permit efficient and effective circulation throughout the entire project. Existing commercial, social, medical and religious facilities within Sun City West will be available to serve the residents of the Expansion Area. Utility services, police, and fire protection will be by current providers of Sun City West. Integration with existing Sun City West will occur as residents of the Expansion Area automatically become members of the Recreation Centers of Sun City West, Inc. (the "Association"), with privileges at all of the recreational facilities and the opportunity to participate in all activities available within Sun City West and the Expansion Area.

Del Webb has retained various consultants to determine the suitability of the Expansion Area for urban residential development in a manner similar to Sun City West. Investigations that have been performed to determine suitability include drainage and hydrology, soils and geology, traffic studies, an environmental assessment, an archaeological investigation and sewage disposal and wastewater recovery analyses. All analyses that have been conducted indicate

the Expansion Area is suitable for development, and no condition exists that would impede development for expansion of the existing community.

It is planned to develop the Expansion Area with lots averaging 6000 to 8000 square feet for single family detached homes contained within residential areas defined by a curvilinear pattern of local streets, golf course fairways and residential collector streets. The Expansion Area will also contain smaller lots for single family detached homes with common yards and open space areas located near the central portion of the Expansion Area.

The 18 hole regulation golf course and its ancillary facilities will be constructed on approximately 165 acres. The course will conform to current Arizona Department of Water Resources irrigation criteria, as well as providing storm drainage and retention for the Expansion Area. The course is designed primarily with single fairways to maximize the aesthetic benefit of the course to homes located adjacent to the fairways. Portions of the golf course that will be located adjacent to Deer Valley Drive will create a landscaped parkway for residents and motorists traveling through the Expansion Area. The entrance area to the Expansion Area located near the intersection of Deer Valley Drive and 135th Avenue is designed to incorporate enhanced water features and landscaped portions of the golf course to provide an aesthetically pleasing entrance and identification to the Expansion Area.

A recreation complex on approximately 10 acres will be provided in a central location for easy access to all residents of the Expansion Area and Sun City West. Activities and facilities provided by the recreation complex will be available to all residents within Sun City West and the Expansion Area.

A 5 acre commercial parcel with access from Deer Valley Drive will provide commercial goods and services to residents of the Expansion Area. It is anticipated that residents of the Expansion Area will also utilize the various commercial facilities existing in the Sun City West core area located approximately two miles south of the Expansion Area.

Deer Valley Drive, a major street, will be realigned in a curvilinear manner and more centrally located to provide ease of access to the Expansion Area and the Sun City West core area. A pattern of looped residential collector streets and the local residential streets will be designed to provide efficient traffic circulation to Deer Valley Drive. All streets will be dedicated to the public and developed to current County standards. A landscaped buffer is to be situated along the northern boundary of the Expansion Area adjacent to the proposed Estrella Freeway. This buffer will serve to mitigate the effects of the proposed Estrella Freeway on the adjacent properties and provide a visually appealing open space area to the project.

The recreational facilities and common open space areas planned for the Expansion Area will be transferred to Recreation Centers of Sun City West, Inc. This is a non-profit organization that was formed in 1979 in connection with Del Webb's development of Sun City West, to own, operate and maintain the recreational facilities on behalf of all residents in the community. Those additional facilities, together with the 5 golf courses and the 3 multipurpose recreation centers already developed in the existing community and owned by the Association, will be available to all residents within the project and will complement the extensive array of recreational opportunities currently available to the residents of Sun City West.

INTRODUCTION

The Development Master Plan entitled "Del Webb's Sun City West-Expansion Area" represents Del Webb's plan for development of the approximately 884 acres located immediately north of existing Sun City West. This narrative report has been prepared at the direction of Del E. Webb Development Co., L.P. ("Del Webb"), developer, to provide the Maricopa County Department of Planning and Development with the proposed Master Land Use Plan and other pertinent information for the review and approval of Del Webb's Development Master Plan Application.

The Expansion Area is planned as an extension of the existing Sun City West active adult community. The development plan consists of residential neighborhoods integrated with an 18 hole target style regulation golf course, with a multi-purpose recreational facility serving the recreational needs of Sun City West residents. Convenience commercial services will be included in the Expansion Area to serve the needs of the residents as well.

The Expansion Area will be fully integrated with the community structure of Sun City West as residents automatically become members of the Association and partake in the many recreational opportunities designed to facilitate the active lifestyle exemplified by Del Webb's Sun City West.

Del Webb was the originator and developer of Sun City, Arizona, one of the first and most successful master planned communities in the United States designed specifically to meet the needs of senior active adults. With the development of the Expansion Area, Del Webb will continue its tradition of the development of quality active adult communities. This project will

be developed by the same organization that has achieved and continues to receive national recognition for its unmatched commitment to the lifestyle of active adults, and its ability to satisfy tens of thousands of buyers in Sun City, Sun City West and other Sun City communities situated throughout the southwest.

This report has been prepared in the format prescribed by the "Development Master Plan Guidelines" prepared by the Maricopa County Department of Planning and Development, Advance Planning Section (February 1990). Major elements of this report include the following: an Executive Summary, a Location and Regional Area section, Site Analysis section, Master Land Use Plan section and an Appendix.

SECTION A

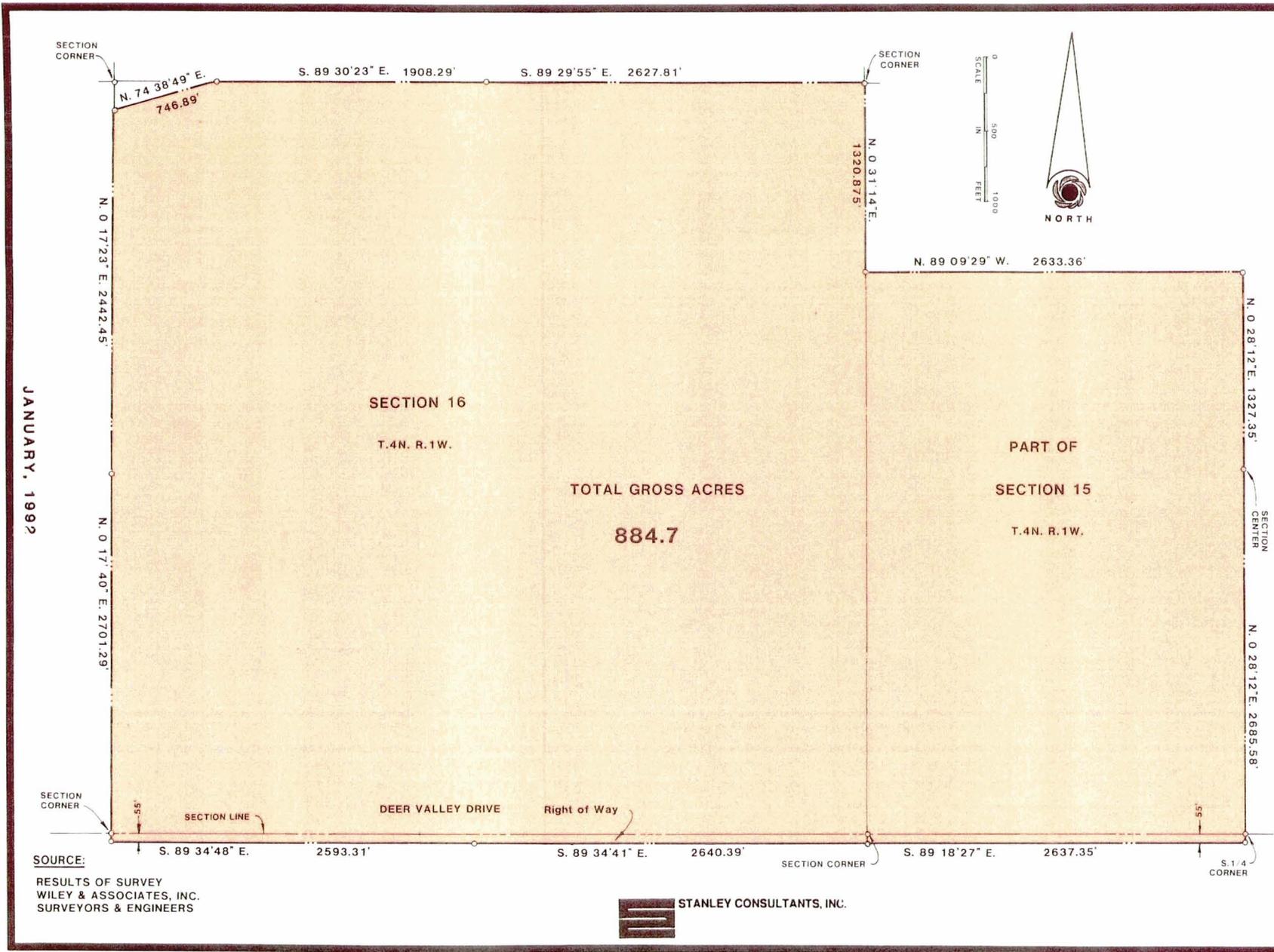
LOCATION

1. **Property Description and Location**

The subject property consists generally of Section 16 and the southwest quarter and the south half of the northwest quarter of Section 15, Township 4 North, Range 1 West in Maricopa County (hereinafter, the "Sun City West Expansion Area" or "Expansion Area"). It will include the right-of-way for the portion of Deer Valley Drive south of the section line adjacent to these sections. The Expansion Area is located immediately north of Sun City West. Figure 1, "Property Boundary" indicates the true bearings and dimensions of the Expansion Area which contains a gross area of 884.7 acres. A similar map contained within the Appendix of this narrative report delineates the ownership of adjacent properties and a metes and bounds description.

PROPERTY BOUNDARY


Del Webb's
Sun City West - Expansion Area



2. Existing Facilities

Figure 2, "Vicinity Map", portrays the location of the Expansion Area in relation to the existing street system and land uses, fire station and police stations, and municipal, school and service district boundaries.

a. School Districts

The Expansion Area presently is included within two school districts. The portion of the Expansion Area situated within Section 15 is included in the Peoria Unified School District #11, combined elementary and high school district. The portion of the Expansion Area situated within Section 16 is included in the Dysart Unified School District #89. There are no existing or proposed educational facilities on or near the Expansion Area.

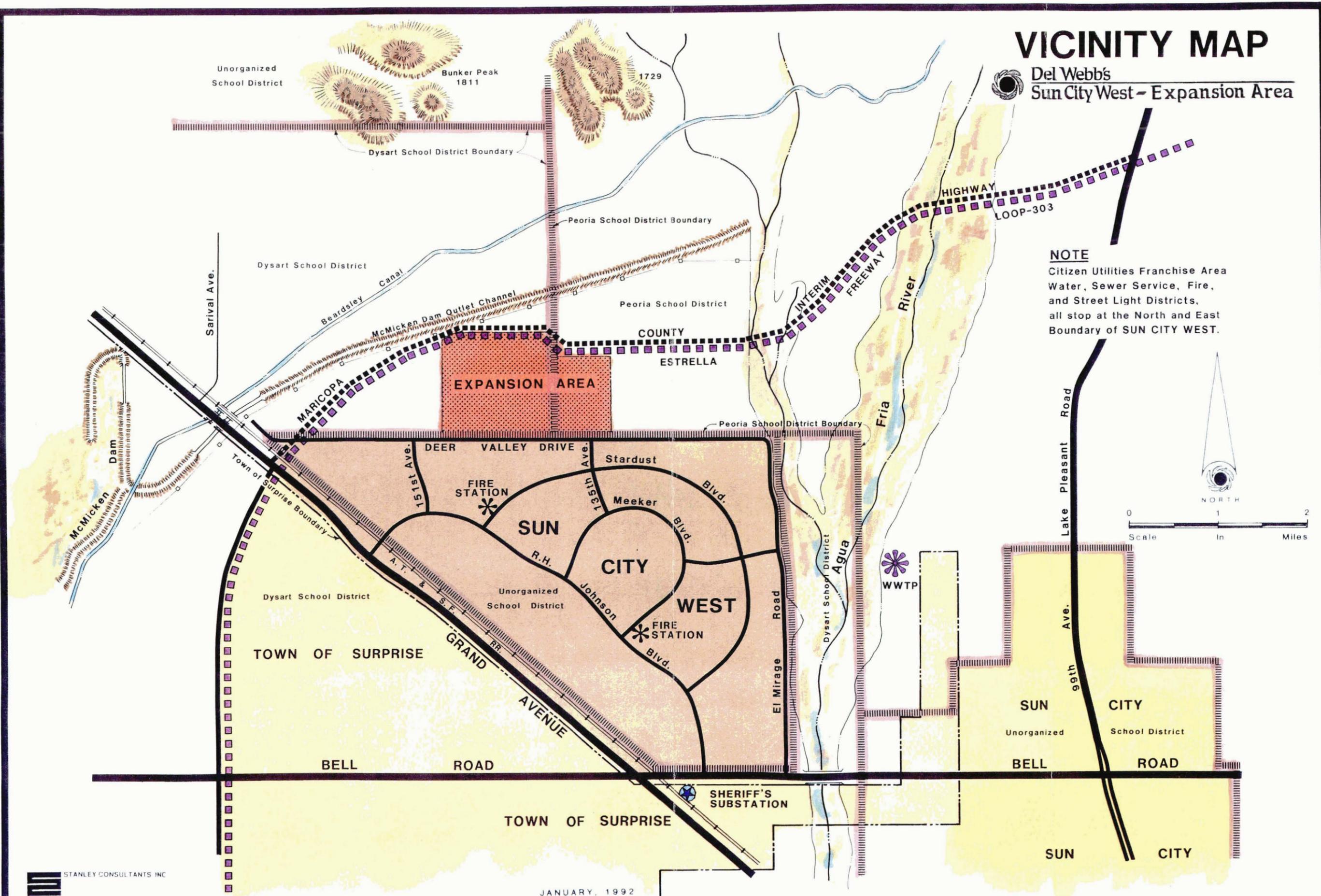
b. Water and Sewer Sanitation District

The Expansion Area is not within an established water and sanitation district; however, it is adjacent to the certificated service area of Sun City West Utilities Company.

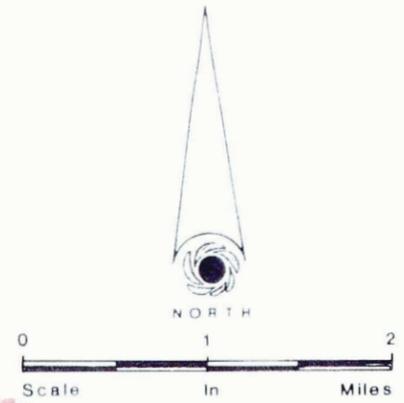
Sun City West Utilities Company has agreed to annex the Expansion Area into its certificated service area and provide water and sewage disposal to the area.

VICINITY MAP

Del Webb's
Sun City West - Expansion Area



NOTE
Citizen Utilities Franchise Area
Water, Sewer Service, Fire,
and Street Light Districts,
all stop at the North and East
Boundary of SUN CITY WEST.



c. **Municipal Boundaries and Annexations**

The Town of Surprise is the only incorporated community near the Expansion Area, located approximately 1.5 miles away. The corporate boundary of Surprise generally is located southwest of Grand Avenue and south of Bell Road, except for a finger that extends north of Bell Road for 2 miles between Sun City and Sun City West, adjacent to the east bank of the Agua Fria River. Figure 2 shows the limits of Surprise's boundary in the vicinity of Sun City West. There are no annexations planned by the Town of Surprise that will affect the Expansion Area. Sun City and Sun City West have been developed as unincorporated communities in Maricopa County. The Expansion Area will be integrated with Sun City West as an unincorporated community. The development of the Expansion Area will not adversely impact existing corporate areas or annexations.

d. **Airports and Hazardous Conditions**

There exists no airport noise or known hazardous conditions that affects the Expansion Area. The two closest airports are Luke Air Force Base, 10 miles south of the Expansion Area and the Glendale Municipal Airport, 11 miles south and 4 miles east of the Expansion Area. Figure 5 in the Air/Noise Quality section of the narrative report indicates the day/night noise level contours for these two airports.

e. **Fire Service Area**

Rural Metro Fire Department, a private company, provides fire, paramedic and ambulance service to the Sun City West Fire District from two stations; Station # 34 is located immediately north of R.H. Johnson Boulevard on Camino Del Sol and Station # 35 is located on Stardust Boulevard immediately north of R.H. Johnson Boulevard. Station # 35 is planned to be the primary station to serve the Expansion Area. It is within 1.2 miles of the Expansion Area via 151st Avenue or 1.4 miles via 135th Avenue.

Station # 35 is equipped with a fire engine that carries paramedic equipment and a paramedic ambulance. The station has four fire fighters who are also trained as paramedics on duty 24 hours per day. Part-time back up personnel consists of 35 paramedics/fire fighters from both stations.

Del Webb and Sun City West Fire District representatives currently are participating in negotiations to include the Expansion Area within the Sun City West Fire District, and are reviewing future service requirements. Consideration also is being given to the reservation of additional property for a fire station in the Expansion Area.

f. Police/Sheriff

Maricopa County Sheriff's Department provides police protection, traffic control and security to Sun City West from a substation located at the southeast corner of Dysart Road and Bell Road. It is planned that service be provided to the Expansion Area from the existing substation.

SECTION B
SITE ANALYSIS

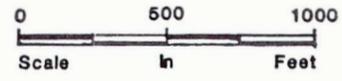
1. Existing Conditions - On Site

The Expansion Area is situated on a plain sloping to the south and southeast characterized by intermittent shallow washes. The highest elevation is 1,315 feet above sea level at the Expansion Area's northwest corner and the lowest elevation is 1,270 feet at the southeast corner with an average slope of 1/2 to 1 percent. Access to the Expansion Area is via Deer Valley Drive, a paved two lane section line road currently located adjacent to the southern boundary of the Expansion Area. The Expansion Area also is accessible via 135th Avenue and 151st Avenue at the northern boundary of the existing Sun City West community.

The Expansion Area consists of undeveloped land with sparse Sonoran desert-type vegetation. A few eroded shallow canals and berms associated with abandoned farming exist east of the monument line of Sections 15 and 16. An abandoned stock pond is located at the lower end of one wash near the southern boundary of the Expansion Area. An unmaintained drainage ditch is located adjacent to the northern right-of-way boundary of Deer Valley Drive. An overhead power line on wooden poles is located adjacent to the western boundary of the Expansion Area. Figure 3, "Existing Conditions", indicates existing land uses on and adjacent to the Expansion Area.

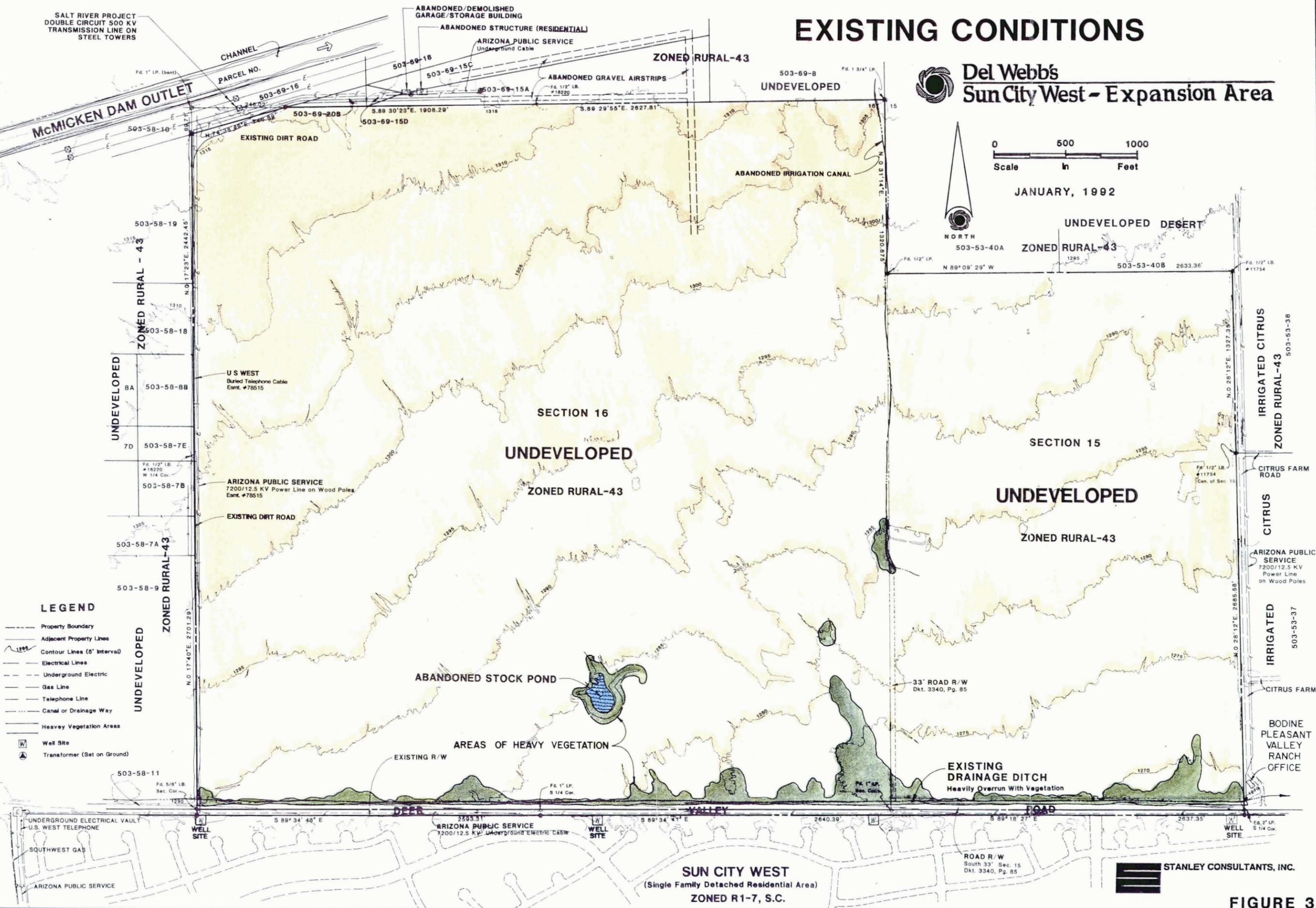
EXISTING CONDITIONS

Del Webb's
Sun City West - Expansion Area



JANUARY, 1992

NORTH



LEGEND

- Property Boundary
- Adjacent Property Lines
- Contour Lines (5' Interval)
- Electrical Lines
- Underground Electric
- Gas Line
- Telephone Line
- Canal or Drainage Way
- Heavy Vegetation Areas
- W Well Site
- ▲ Transformer (Set on Ground)

STANLEY CONSULTANTS, INC.

FIGURE 3

2. **Existing Conditions - Off Site**

Land uses adjacent to the Expansion Area are as follows: The Sun City West community is located to the south; a mature citrus orchard owned and operated by The Bodine Company is located to the east; undeveloped property and an abandoned dirt airstrip exists to the north. Adjacent to the northwest corner of the Expansion Area is the McMicken Dam Outlet Channel running in a southwest to a northeast direction and an overhead transmission line on steel towers. West of the Expansion Area boundary is undeveloped land.

South of the Expansion Area are single family residences and three well sites adjacent to Deer Valley Drive. Adjacent to the eastern boundary of the Expansion Area are a barbed wire fence, farm road, and an overhead power line on wooden poles. A modular ranch office building is located immediately north of Deer Valley Drive. North of Section 16 are abandoned gravel airstrips previously utilized for ultra light airplanes, an abandoned residential structure, a garage/storage building that is partially torn down and utilities as indicated on Figure 3.

3. **Existing Zoning**

The Expansion Area, and the adjacent property to the west, north and east of the Expansion Area are zoned Rural 43. Land to the south is zoned R1-7, single family residential, combined with a Senior Citizen Overlay (SC).

4. **Existing Physical Features**

No significant natural or man made physical features exist on the Expansion Area. However, the following sections delineate general physical or environmental conditions that apply generally to the Expansion Area and the plans for its development.

a. **Drainage/Hydrology**

On site drainage is from the northwest to southeast. The Expansion Area and adjacent property to the north and west are vacant desert land with intermittent washes ranging from approximately 1 to 3 feet in depth and from 5 to 25 feet in width. Soils are primarily fine textured alluviums ranging from sandy loam to clay loam with surface gravels present in some areas. Vegetation consists of a light to moderate cover of creosote bush, other desert shrubs and seasonal grasses.

The McMicken Dam Outlet Channel north of the Expansion Area conveys storm water discharge from the McMicken Dam to the Agua Fria River. The south embankment of the Outlet Channel forms the upper limit of the off-site contributing drainage area. This Outlet Channel has 100-year capacity for the McMicken discharge together with the local runoff it intercepts along its length, thereby reducing 100 year flows across the Expansion Area to minimal flows. The Outlet Channel discharges into an existing wash which in turn conveys the flow south to the Agua Fria River.

Located north of Deer Valley Drive is a drainage ditch which extends from Grand Avenue east toward the Agua Fria River. The drainage ditch is not maintained and currently is overgrown with trees and brush. East of the Expansion Area the ditch discharges into a wider, deeper drainage channel that was constructed by Del Webb during its development of existing Sun City West. East of the Expansion Area, the channel is well maintained and free of vegetation. The drainage ditch and channel along Deer Valley Drive protect Sun City West from surface runoff originating between Deer Valley Drive and the McMicken Dam Outlet Channel.

A review of Flood Insurance Rate Maps for Maricopa County indicates that the Expansion Area is included in Zone X. The Zone X definition indicates the possibility of shallow flooding less than 1 foot in depth during a 100 year flood. There is no county, state or federal requirement to obtain flood insurance for property situated in Zone X.

b. Soils/Geology

Western Technologies Inc. conducted a Preliminary Geotechnical and Geological Engineering Exploration of the Expansion Area and presented its findings in a report dated January, 1991 ("Geotechnical Report"). A copy of this Geotechnical Report is included in the Appendix of this narrative report. The general scope and conclusions of the Geotechnical Report are as follows.

The investigation included 25 soil test borings to 20 feet below the surface of the Expansion Area property. The property consists of alluvial deposits of sand and gravel with mixtures of silt and clay. No evidence exists of past or present faulting, rockfall or landslide hazards on the property. Soil erosion is minimal and future fissuring or subsidence due to groundwater depletion is not anticipated to be significant.

Laboratory tests were performed to detect levels of water content, dry density, expansion, gradation and plasticity in the soils. Surface soils exhibit slight to moderate tendency for expansion under light loading conditions and are estimated to shrink 5 to 10 percent for 90% compaction and 10 to 15 percent for 95% compaction. Subsurface soils indicate minimal corrosive potential for underground metallic conduits and no evidence of radon gas.

In conclusion, the Geotechnical Report does not indicate that there are any soils or geologic hazards or conditions that would preclude the development of the Expansion Area for urban residential purposes.

c. Groundwater

Groundwater aquifers exist below the Expansion Area. The aquifer is approximately 400 feet below the surface. A detailed groundwater hydrology study has been completed and approved by the Arizona Department of Water Resources. This study demonstrates the availability of a 100 year assured water

supply. The groundwater hydrology study is discussed in greater detail in the utility section of this narrative report.

d. **On-Site Utilities**

An overhead electric line owned by Arizona Public Service Company, and underground telephone cable owned by U.S. West situated adjacent to the western boundary of the Expansion Area are the only utilities affecting the site. There exist underground power lines, telephone lines and a water line located in the south 1/2 of Deer Valley Drive right-of-way. The utilities planned to serve the Expansion Area are further discussed in the Master Plan section of this narrative report.

e. **Environmental Conditions**

Climate for the area typically is considered arid desert. The area has mild winters, warm springs and falls, and hot summers. Sunny days average 352 days and the sun shines 86% of all daylight hours per year. Average annual rainfall is less than 8 inches per year. Winds are mild and primarily flow from the southeast to northwest. The climate is favorable for urban and residential development and attractive for the lifestyles of senior active adults. Table 1 delineates average monthly temperatures and precipitation.

TABLE 1
AVERAGE MONTHLY WEATHER CHARACTERISTICS

Month	Average Daily Maximum Temperature (°F)	Average Daily Minimum Temperature (°F)	Average Total Precipitation (Inches)
January	66.9	35.0	0.76
February	70.9	38.6	0.72
March	76.5	42.0	0.83
April	84.5	48.3	0.38
May	93.4	55.7	0.07
June	102.4	65.2	0.11
July	106.3	74.7	0.82
August	103.5	73.1	1.05
September	99.2	66.2	0.63
October	88.1	52.8	0.73
November	77.1	42.0	0.52
December	67.8	35.6	1.03
Annual Average	86.3	52.4	7.63

Information based on a thirty year average.
Average Total Snow, Sleet and Hail Annually: Trace
Source: Arizona Department of Commerce

Western Technologies, Inc. conducted an environmental site assessment of the Expansion Area and submitted a technical report to Del Webb in February, 1991. A copy of this technical report is included in the Appendix of this narrative report. Following is a brief summary of the conclusions of the assessment.

Several small areas of domestic dumping consisting of construction debris, automobile tires, furniture, metal, wood and material scraps were observed on the southern one-third of the Expansion Area.

No surface staining or chemically distressed vegetation indicative of accidental or intentional dumping of chemical or hazardous waste was observed on the Expansion Area. No drywells are registered with the Arizona Department of Environmental Quality ("ADEQ") and none were observed on the property. A review of the records of various governmental agencies reveals that no Resource Conservation and Recovery Act violations or compliance actions exist in connection with or within one-half mile of the Expansion Area. The Expansion Area is not located near a Water Quality Assurance Revolving Fund or Comprehensive Environmental Response, Compensation and Liability Act project as administered by the ADEQ. No registered Underground Storage Tanks or reported Leaking Underground Storage Tanks are on or within one-half mile of the Expansion Area.

Western Technology's general conclusions are that no known potential for hazardous or toxic substance contamination from past or present uses exists on the Expansion Area or properties within one-half mile of the Expansion Area. No known naturally occurring toxic or hazardous substances exist on the Expansion Area. The citrus orchard located to the east of the Expansion Area does not use or emit any hazardous or toxic substances or conditions that would affect development of the property for residential purposes.

f. **Vegetation/Wildlife**

The Expansion Area no longer is associated with the Sonoran Desert vegetation and wildlife habitat. Construction of the Beardsley Canal and McMicken Dam Outlet Channel reduced the amount of stormwater passing through the Expansion Area, thus reducing vegetation on the property and wildlife attraction to the property.

The encroachment of urban and commercial agricultural uses adjacent to the southern and eastern boundaries of the Expansion Area also has reduced the attraction to the Expansion Area of desert wildlife.

A few barrel and saguaro cacti are scattered throughout the Expansion Area. Creosote bushes, palo verde trees and mesquites are scattered along some of the shallow arroyos and the drainage ditch at the south end of the project. A limited number of birds were noticed on the Expansion Area, and no desert animals or reptiles were observed during field surveys by various consultants.

g. **Archaeology**

An archaeological investigation of the Expansion Area was conducted by Archaeological Consulting Services, Ltd. ("ACS"). The report submitted by ACS to Del Webb in February, 1991 states that isolated scatters of ceramic sherds and fragmented metates and manos indicate that the northwest corner of the Expansion Area was not occupied on a year round basis, but was used for temporary or seasonal camping by small groups. Some archaeologists regard the area in the vicinity of the Expansion Area as the northern periphery of the Hohokam territorial range. Sherds found at one artifact scatter area indicate occupation of the Expansion Area during the early Hohokam Colonial period, perhaps extending back to 500 A.D. The report stated that the northeastern Yavapai, a more mobile people, may have occasionally visited the property around 1150 A.D. The "Archaeology Findings" map, Figure 4, indicates the general areas where these scattered and concentrated cultural findings occurred. This map also indicates the location of an early homestead site. This area includes some eroded canals and earth berms and linear rock alignments that form a field system that likely included surface irrigation. No evidence was found that indicates that any structures ever were established on the Expansion Area.

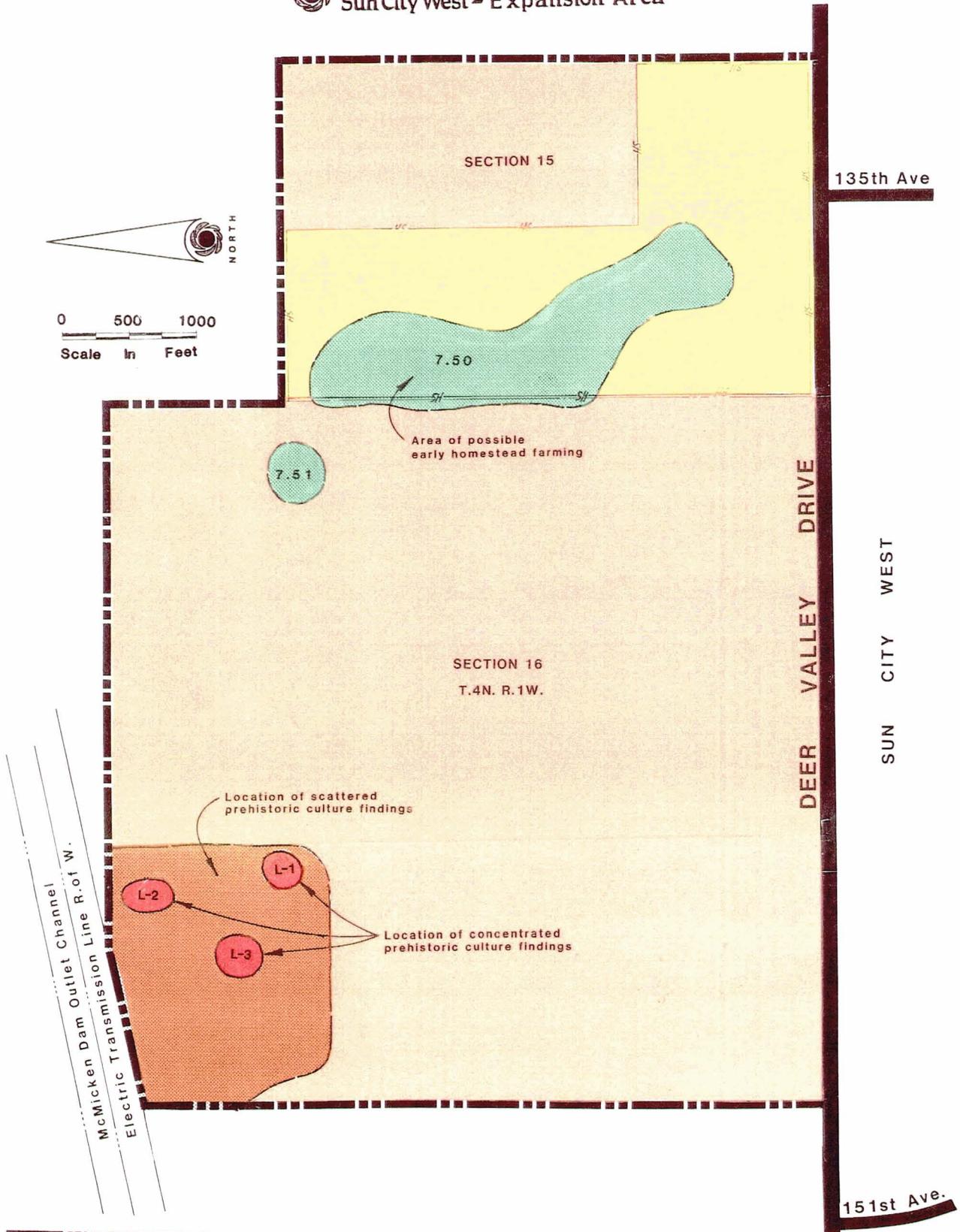
The archaeology report states that two prehistoric sites and two historic sites exist on the Expansion Area. The report also states that "these four sites are not worthy of preservation" and that "the cultural resources pose no constraints on

future development". Del Webb has submitted the report to the State Historic Preservation Office and is preparing a data recovery program in accordance with its recommendations. In addition, during development and construction, if any substantial evidence of subsurface historical archaeological resources appear, Del Webb will take appropriate steps for further studies to be made and preservation of such resources.

ARCHAEOLOGY FINDINGS



Del Webb's
Sun City West - Expansion Area



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h. **Air/Noise Quality**

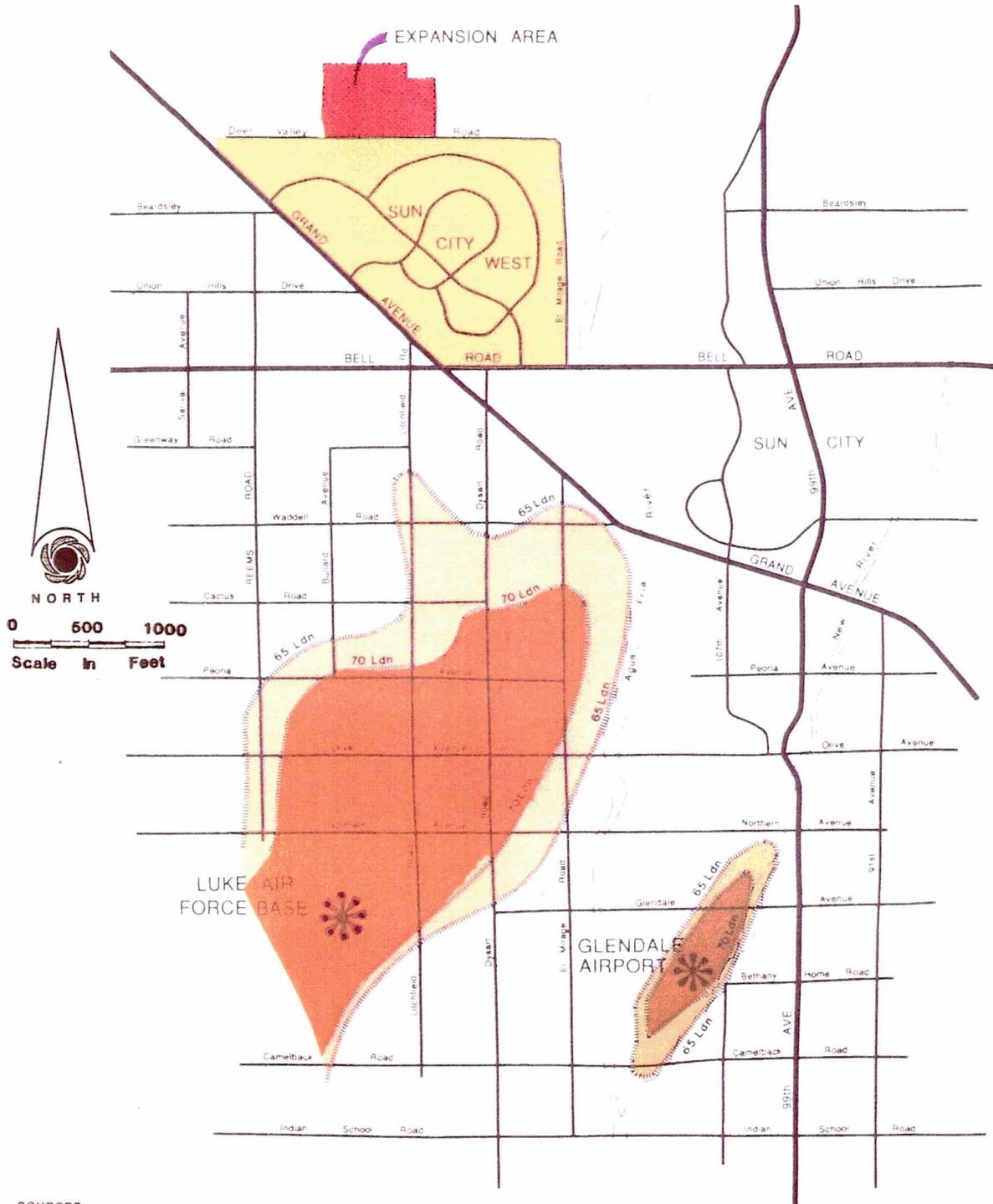
Existing air and noise quality of the Expansion Area is satisfactory. The nearest air quality monitoring station is located in Glendale. Consequently, specific air quality data is not available for the Expansion Area. Little activity occurs on or around the Expansion Area that would impact air or noise quality to a measurable degree. Auto emissions, traffic dust and noise from Sun City West and Grand Avenue are the major sources of pollutants within the neighboring area. The Expansion Area is not subject to impact by downwind pollutants from any major source. The soil surface largely consists of sandy clays and silt that produce dust when disturbed or blown.

The atmosphere in the vicinity of the Expansion Area is quiet. The Expansion Area is situated outside the areas significantly affected by the noise of Luke Air Force Base and the Glendale Airport, as indicated on Figure 5, "Airport Noise Contours - 1992". The only significant noise impacting the Expansion Area is automobile traffic along Deer Valley Drive which currently exists at a frequency of less than 50 vehicles per hour.

AIRPORT NOISE CONTOURS-1992



Del Webb's
Sun City West - Expansion Area



SOURCES:

LUKE AIR FORCE BASE
Westside Joint Land Use Study
Barnard Dunkelberg & Company
Mestre Greve Associates

GLENDALE AIRPORT
City of Glendale
Airport Directors Office

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SECTION C
LAND USE MASTER PLAN

1. **Land Use Plan**

a. **General Development Plan**

The "Land Use Master Plan", Figure 6, represents Del Webb's plan for expansion of Sun City West onto adjacent property consisting of 884.7 acres. The plan depicts a low density residential community of single family detached homes with an 18-hole regulation golf course integrated with the residential areas and a multi-purpose recreation center. Del Webb plans to integrate the Expansion Area with the existing Sun City West development in a homogeneous manner so that future residents will be and consider themselves a part of Sun City West and can share in the use and enjoyment of the existing facilities and activities contained within the community.

Del Webb has approximately 1,500 residential units remaining to be sold within Sun City West. Historically, home sales have averaged between 600 and 800 dwelling units per year. Approximately 2,400 additional homes are planned to be constructed in the Expansion Area for an extended development program of 5 to 8 years. Del Webb anticipates starting construction on the Expansion Area immediately after obtaining Master Plan approval by the County. Infrastructure improvements will be made in conjunction with subdivision development.

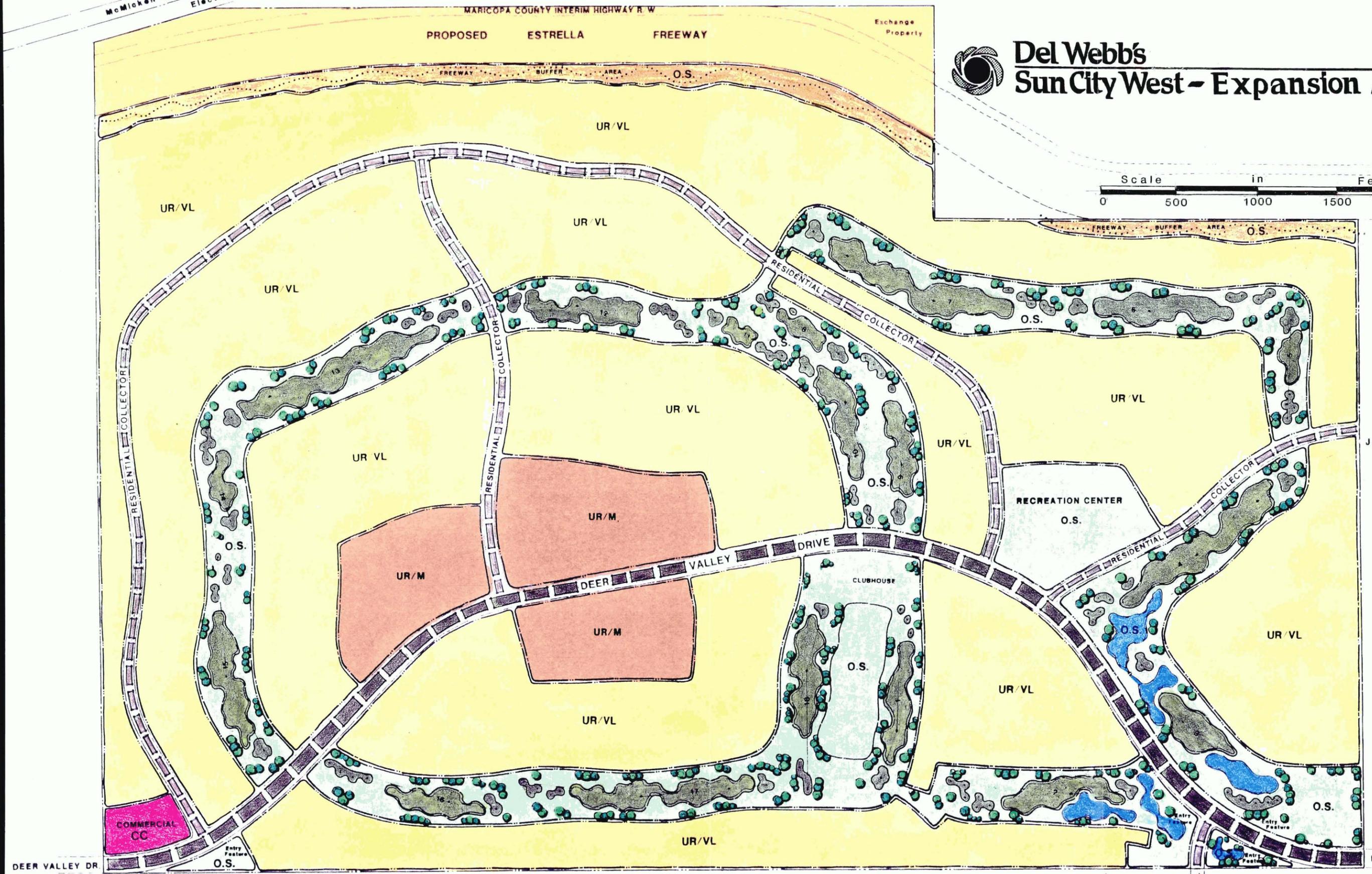
LAND USE MASTER PLAN



Del Webb's Sun City West - Expansion Area



NORTH
JANUARY, 1992



2. Land Uses

Figure 7, Land Use Classification Plan portrays the classifications of land use as set forth in the Maricopa County Development Master Plan Guidelines and indicates the approximate acreage for each designated parcel. Over 60 percent of land area within the Expansion Area is classified as Urban Residential/Very Low Density (UR/VL) and planned to be developed with single family detached homes.

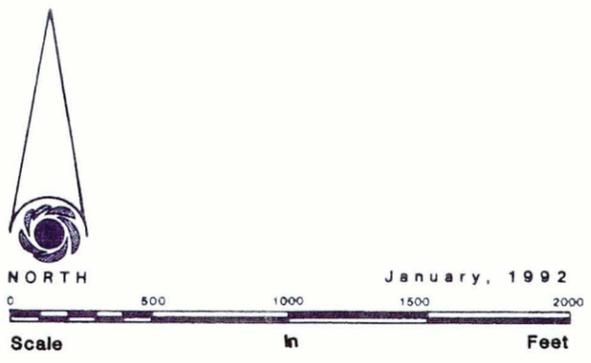
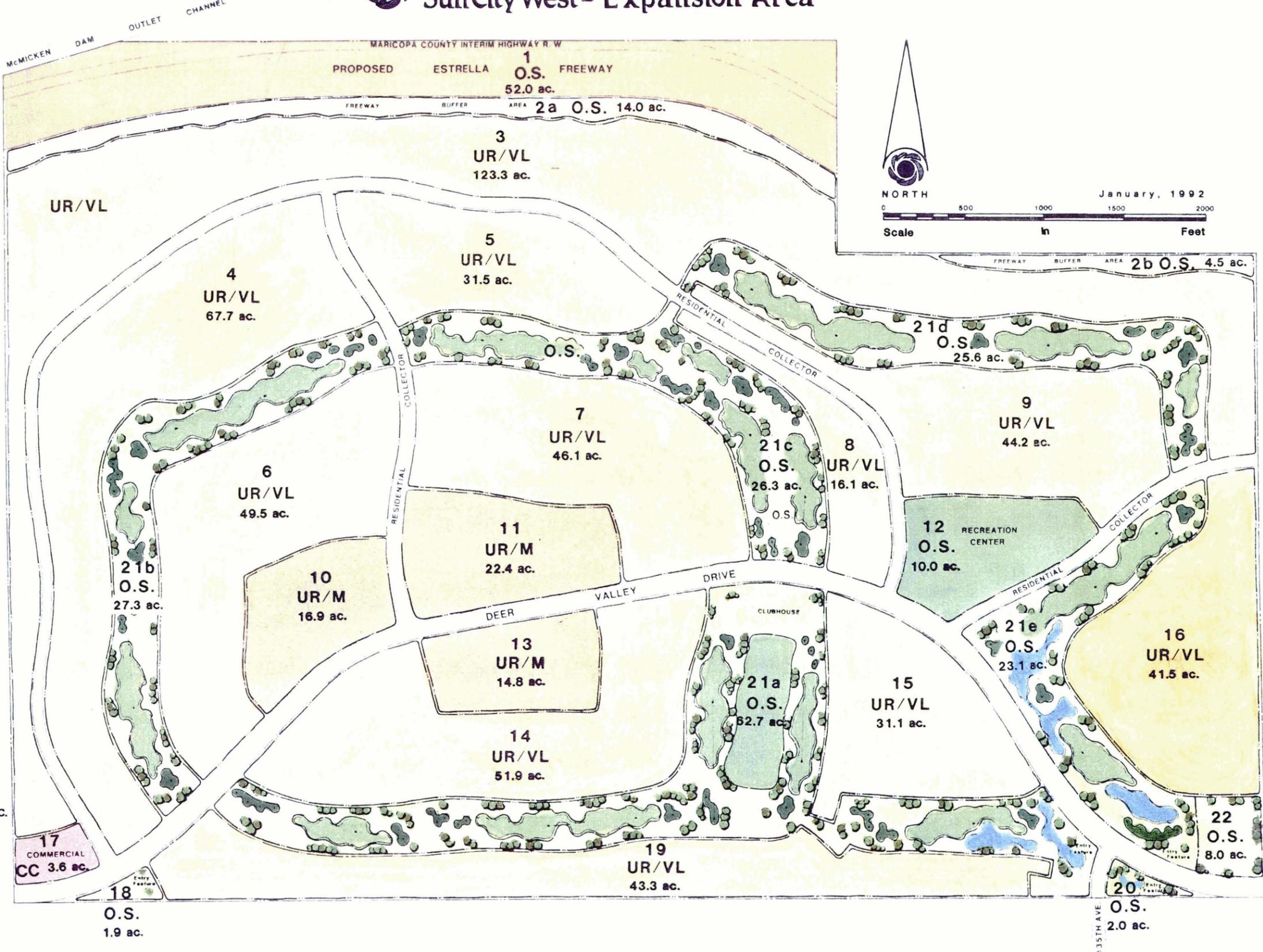
Over 30 percent of the Expansion Area is classified as Open Space (O.S.). Open Space areas include the 165 acre golf course which represents 58 percent of the total Open Space area and 18 percent of the total area of the Expansion Area. The other most significant land use included in the Open Space category is the land to be utilized for rights of way for the proposed freeway, interim highway, and arterial and collector streets. Planned rights of way account for more than 75 acres and represent 8 percent of the total area of the Expansion Area.

Land for Urban Residential/Medium Density (UR/M) development measures 54 acres and represents only 6 percent of the total area of the Expansion Area and 9 percent of the residential area within the Expansion Area. The remaining land area, representing less than 5 percent of the total area, will consist of the recreation complex site, the commercial parcel, a retention basin, entry features and the freeway landscaped buffer.

Table 2 provides a summary of land uses by classification, acres and dwelling unit counts.

LAND USE CLASSIFICATION PLAN

Del Webb's
Sun City West - Expansion Area



- LEGEND**
- Property Boundary
 - Parcel Boundary
 - Right of Way
 - 4 Parcel Number
 - UR/M Land Use Designation
 - 23.4 ac. Acreage
 - Golf Course
 - Hiking Trail

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FIGURE 7

TABLE 2
LAND USE SUMMARY TABLE

Parcel No.	Land Use Category	Type of Land Use	Gross Acres	Density D.U.'s/Ac.	Total D.U.'s
1	O.S.	Freeway & Interim Hwy.	52.0	0.0	0
2a	O.S.	Freeway Buffer	14.0	0.0	0
2b	O.S.	Freeway Buffer	4.5	0.0	0
3	UR/VL	Single Family Detached	123.3	4.0	493
4	UR/VL	Single Family Detached	67.7	4.0	270
5	UR/VL	Single Family Detached	31.5	4.0	126
6	UR/VL	Single Family Detached	49.5	4.0	198
7	UR/VL	Single Family Detached	46.1	4.0	184
8	UR/VL	Single Family Detached	16.1	4.0	64
9	UR/VL	Single Family Detached	44.2	4.0	176
10	UR/M	Single Family	16.9	12.0	202
11	UR/M	Single Family	22.4	12.0	268
12	O.S.	Recreation Center	10.0	0.0	0
13	UR/M	Single Family	14.8	12.0	177
14	UR/VL	Single Family Detached	51.9	4.0	207
15	UR/VL	Single Family Detached	31.1	4.0	124
16	UR/VL	Single Family Detached	41.5	4.0	166
17	CC	Convenience Commercial	3.6	0.0	0
18	O.S.	Landscaped Entry	1.9	0.0	0
19	UR/VL	Single Family Detached	43.3	4.0	173
20	O.S.	Landscaped Entry	2.0	0.0	0
21a	O.S.	Golf Course	62.7	0.0	0
21b	O.S.	Golf Course	27.3	0.0	0
21c	O.S.	Golf Course	26.3	0.0	0
21d	O.S.	Golf Course	25.6	0.0	0
21e	O.S.	Golf Course	23.1	0.0	0
22	O.S.	Retention Basin	8.0	0.0	0
23	O.S.	Major & Collector Streets	<u>23.4</u>	0.0	<u>0</u>
TOTAL:			884.7		2828

Average density for residential parcels that includes 280.8 acres of O.S. parcels = 3.21 units/acre.

a. **Residential Uses**

The primary land use planned will be for the construction of single family detached homes. These homes are to be constructed on average lots of 6,000 to 8,000 square feet with typical lot widths ranging from 60 to 85 feet and lot depths from 105 to 120 feet. Approximately 450 single family lots will have golf course frontage. The Master Plan shows approximately 52 acres set aside for the construction of medium density residential units. This acreage will be developed with single family detached homes at a density of 6 to 8 units per gross acre. Historic data indicates that few buyers are interested in common wall dwelling units. Therefore, common wall units are not planned to be constructed in the Expansion Area at the present time. Residential homes will continue to be substantially similar in size and exterior appearance to those in Sun City West.

b. **Commercial Uses**

There exist adequate commercial land and facilities in the core area of Sun City West and in the immediate vicinity to support the general commercial needs of future residents of the Expansion Area. Therefore, only one parcel consisting of approximately five acres has been planned for neighborhood/convenience type commercial use. This parcel is expected to be sufficient to fulfill the need for convenience goods and services for the projected population. The commercial parcel is located adjacent to Deer Valley Drive at the western boundary of the Expansion Area permitting easy access for future residents.

c. **Recreation Center**

A recreation center is to be developed on approximately 10 acres of the Expansion Area. The recreation center is planned to be located immediately north of Deer Valley Drive (as realigned) between two residential collector streets, thereby providing easy access for all residents.

d. **Golf Course**

An 18 hole regulation golf course with a club house, practice range and other ancillary facilities will be constructed as a community amenity. The golf course is planned to be conveyed to the Association and will be available for use by all residents within the community. The golf course is designed primarily with single fairways to permit residential lots to be situated adjacent to the fairways, thereby creating a feeling of openness to each lot. Lots are to be situated to take advantage of the aesthetic character of landscaped turf and desert fairways, manicured greens, traps and tee boxes. Long views of distant mountains are accommodated wherever possible. Portions of the golf course are to be located adjacent to Deer Valley Drive to provide a landscaped linear parkway appearance for residents and motorists using Deer Valley Drive. Near the intersection of 135th Avenue and Deer Valley Drive, enhanced landscaping and water features will be situated to provide an aesthetically pleasing entrance to the Expansion Area.

The golf course is planned to accommodate onsite and offsite drainage flows, as well as to provide storm water detention. The turf and hardscape areas of the golf course will be designed to meet current Arizona Department of Water Resources water use requirements. The golf course turf and landscaped areas are to be irrigated entirely with recovered effluent.

A general discussion of the plan to use recovered effluent is addressed later in this narrative report.

e. **Other Land Uses**

A retention basin of approximately 10 acres is located at the southeast corner of the Expansion Area. This basin will be designed to permit onsite storm water retention as well as to permit excess runoff to discharge into the existing drainage channel at the southeast corner of the Expansion Area at a controlled rate. The basin will be landscaped using desert type landscaping. The landscaping will create a park-like atmosphere which could be utilized by the residents.

Two triangular entry feature parcels are planned south of Deer Valley Drive at the southeast and southwest corners of the Expansion Area where the planned realignment of Deer Valley Drive meets its present alignment. These parcels will be landscaped open space areas and serve as entry way features to the Expansion Area.

Del Webb plans to provide freeway right-of-way for the proposed Estrella Freeway (Outer Loop 303) located adjacent to the north boundary of the Expansion Area. This right-of-way is 300 feet in width. An additional 50-foot wide strip adjacent to the north side of the freeway is to be dedicated to the Maricopa County Highway Department for construction of an interim County highway between Grand Avenue to the west and Lake Pleasant Road to the east.

A triangular parcel of approximately four acres located at the north/northeast corner of the Expansion Area will be severed by the planned freeway. Del Webb and ADOT have tentatively agreed that this parcel may be exchanged for a similar size parcel adjacent to the northern boundary of the Expansion Area. The southern parcel may be incorporated in the Expansion Area at some future date.

A desert landscaped buffer will be constructed adjacent to the southern right-of-way line of the proposed Estrella Freeway. This buffer is planned to mitigate the affects of the future freeway on the Expansion Area, as well as provide an amenity to the community. The buffer will reduce visual exposure to the proposed freeway, the McMicken Dam Outlet Channel and transmission lines at the northwest corner of the Expansion Area. The desert landscaped buffer will also permit Del Webb to construct a hiking trail that will provide access to additional trails that may be planned throughout the general area.

3. Traffic Circulation

The "Traffic Circulation Plan", Figure 8, excerpted from the Traffic Impact Study, indicates the location of the proposed major street alignments affecting the Expansion Area and the major streets of Sun City West. The Circulation Plan also indicates the projected average weekday vehicle trips for the year 2010 for the major streets. These projected trips are based on complete build out of the Expansion Area and all property south of the McMicken Dam and west of the Trilby Wash Outlet Channel.

The Expansion Area will have good access from existing streets. Deer Valley Drive, an existing section line but not fully improved road will provide good major street access to the east and south to Bell Road a fully improved major arterial street of the Phoenix Metro System. Access will also be provided through Sun City West via 135th Avenue and 151st Avenue, both residential collectors. These two streets connect directly to the major streets of Sun City West to Grand Avenue, U.S. 60 and 89, and to Bell Road. Deer Valley Drive is proposed to be extended to the west in the near future to an Interim Highway Loop 303. When this connection is made, very good access will be provided from the Expansion Area to Interstate 10. Future traffic projections do not indicate that the Expansion Area will have any serious impacts on the existing and proposed traffic circulation patterns and that all parts of the major street system will function without congestion. The "Expansion Area Circulation Plan", Figure 9, indicates the location of the interior, arterial and residential collector streets.

The Expansion Area traffic circulation will consist of a major interior street connected to several residential collector streets and local residential streets that are looped around the golf course areas so that all residential areas will have good access to all internal facilities as well as easy access to off-site facilities and traffic arteries. The most significant element of the planned street system within the Expansion Area is the realignment of Deer Valley Drive into the central portion of the area. This realignment provides excellent access to the internal system of collector streets.

Based on projected traffic patterns and counts normally found in adult communities as determined in the Traffic Impact Study, Deer Valley Drive will serve more in the capacity of a major collector than an arterial street. The looped interior streets will also have very low traffic volumes and are planned to be developed as residential collector streets. The local residential streets will mostly be connected to the looped collector streets and will provide easy access and circulation to adjacent residential areas.

The intersection of 135th Avenue and Deer Valley Drive will provide access to Sun City West and will carry the highest traffic counts of any other intersections within the Expansion Area. At buildout, approximately 70 percent of the Expansion Area's internal traffic is expected to flow toward 135th Avenue, while the other 30 percent is expected to flow toward 151st Avenue to access the Sun City West core area. Consequently, special consideration must be given to the design of this intersection to permit anticipated north-south flowing traffic.

All streets within the Expansion Area are planned to be developed as public streets and constructed to Maricopa County Highway Department standards.

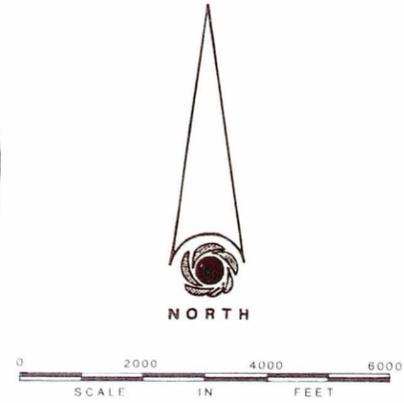
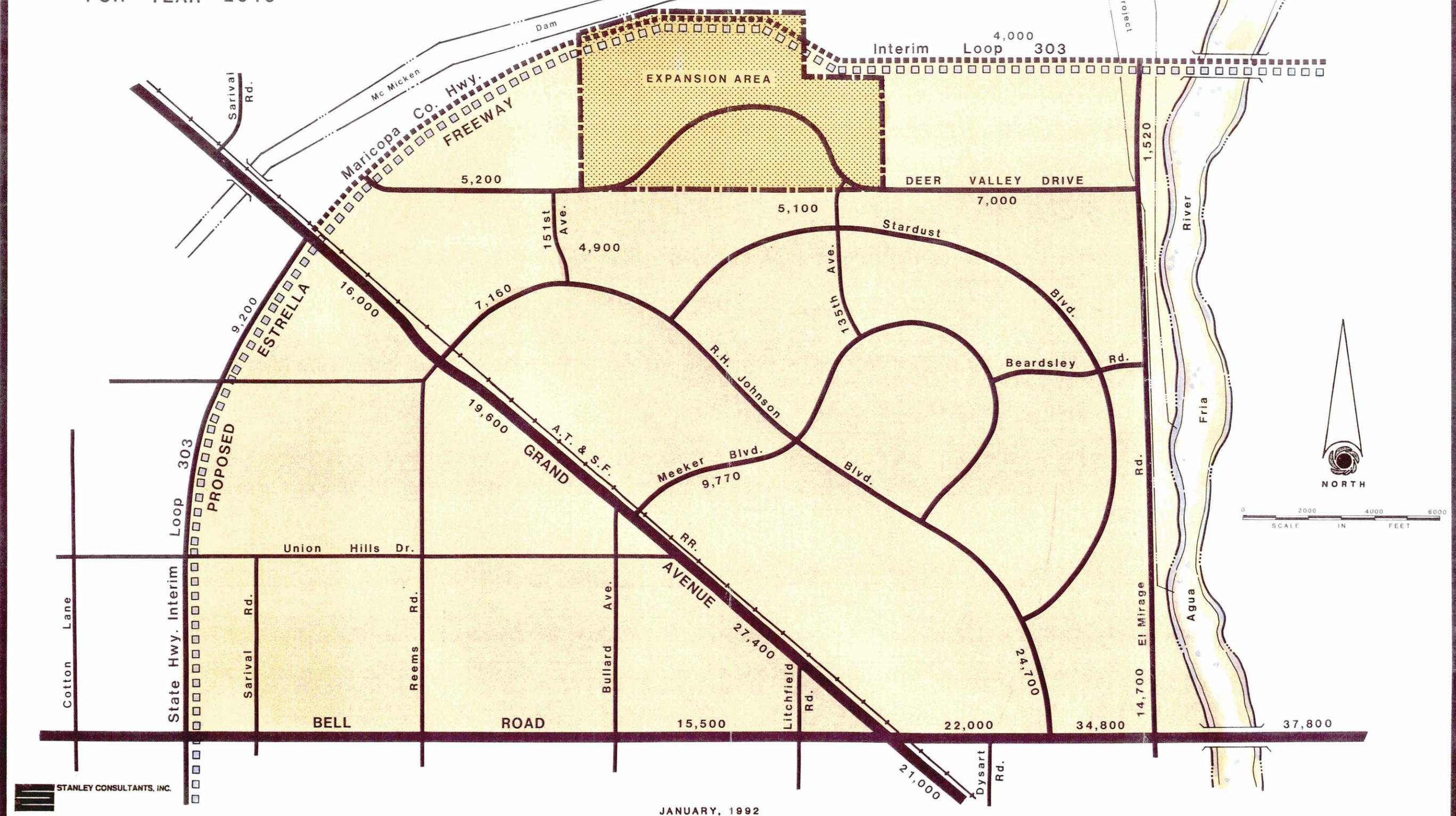
The proposed Estrella Freeway-Loop 303 as shown on the vicinity map is a planned outer loop of the Maricopa Association of Governments (MAG) Freeway/Expressway Plan for the Phoenix metropolitan area. The Expansion Area will have access to this freeway via a planned interchange of Deer Valley Drive with the freeway west of the Expansion Area, and a planned interchange east of the Expansion Area at the future extension of El Mirage Road north to the freeway. The Maricopa County Highway Department plans to construct an interim highway along the proposed freeway alignment between Grand Avenue and Lake Pleasant Road. The construction of the interim highway is part of the County's current 5 year development program. The interim highway segment will connect to an existing segment of interim Loop 303 that extends from Grand Avenue south to Interstate 10. Completion of the interim highway will provide greater access to residents of Sun City West and the Expansion Area to I-10 and to other elements of the planned freeway system. A Traffic Impact Study of Sun City West and the Expansion Area was conducted by Stanley Consultants, Inc. and is included in the Appendix of this narrative report.

TRAFFIC CIRCULATION PLAN

PROJECTED AVERAGE
WEEKDAY VEHICLE TRIPS
FOR YEAR 2010



Del Webb's
Sun City West - Expansion Area



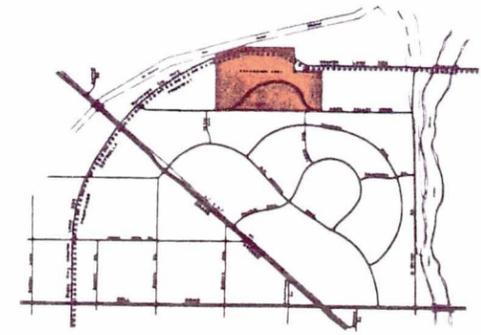
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JANUARY, 1992

FIGURE 8

EXPANSION AREA CIRCULATION PLAN

Del Webb's
Sun City West - Expansion Area



LEGEND

ARTERIAL STREET

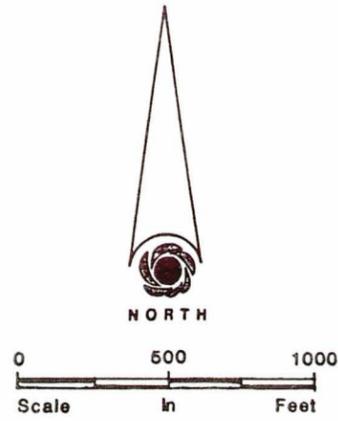
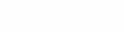
RESIDENTIAL COLLECTOR

EXISTING ADJACENT STREETS

EXISTING



PROPOSED



JANUARY, 1992

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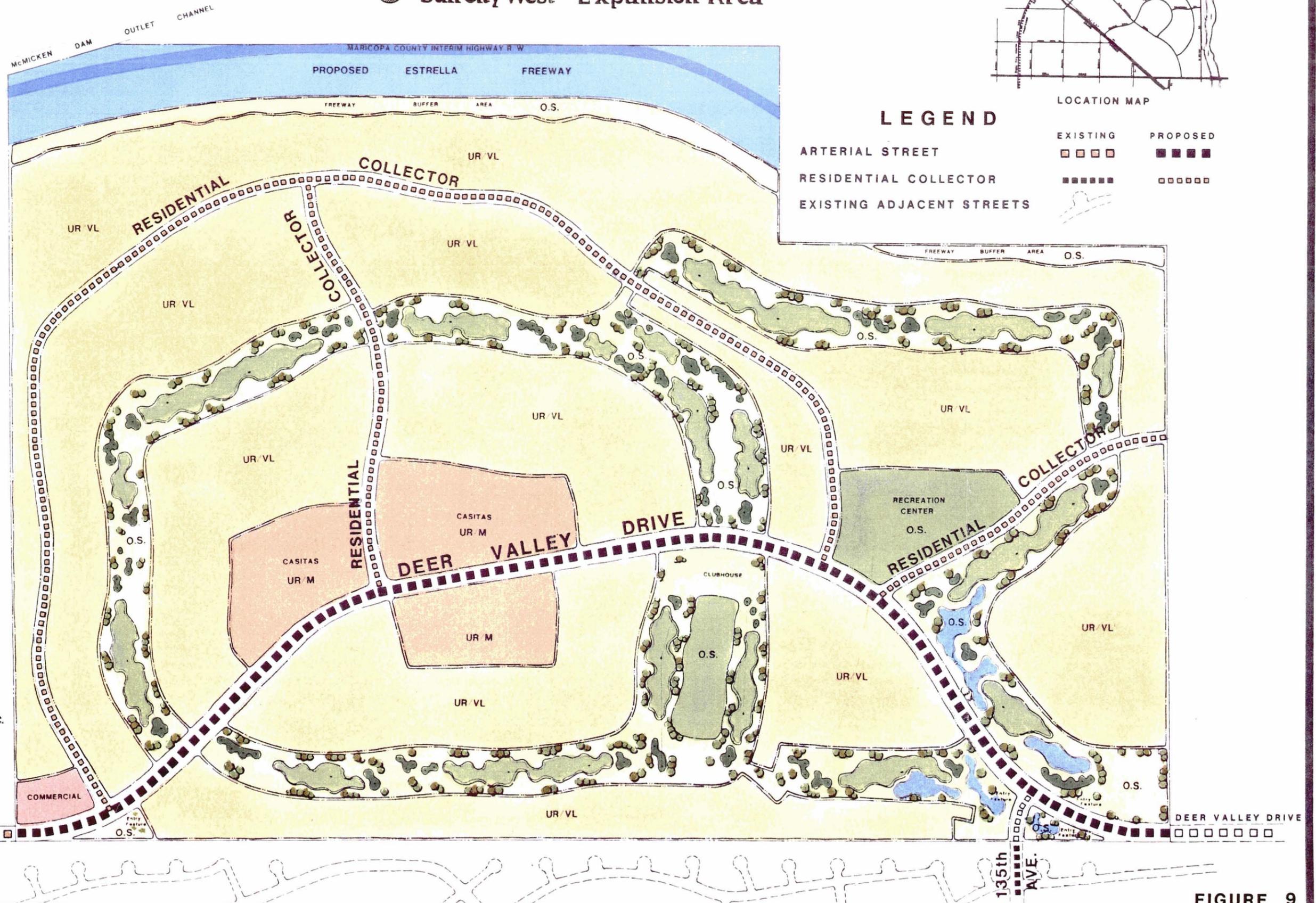


FIGURE 9

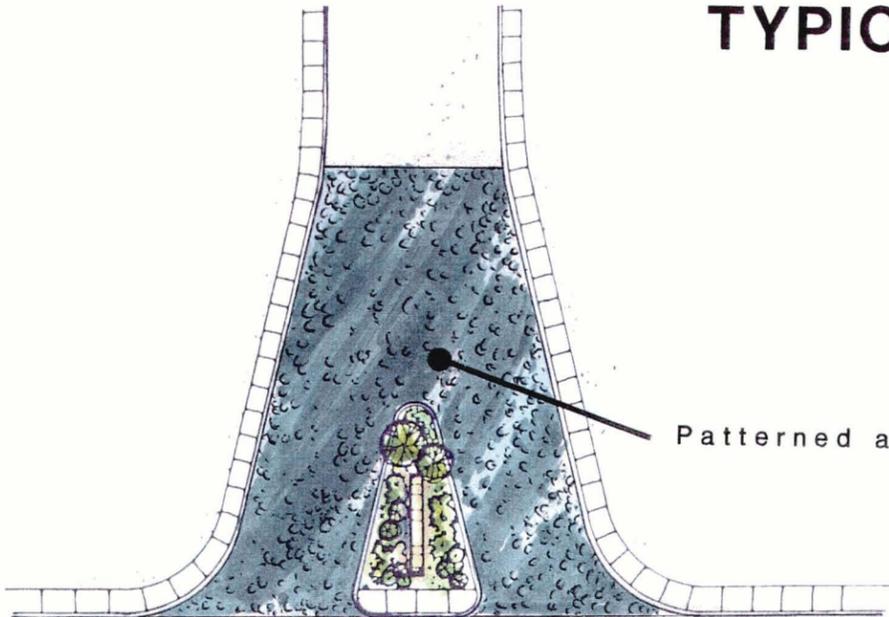
Interior local streets will be designed to accommodate automobiles as well as golf carts in a safe and efficient pattern. Street intersections will be designed to maximize traffic flows and reduce congestion. Due to the planned golf course layout and the desire to reduce construction, energy and maintenance costs, and the number of intersections, it is anticipated that some residential block lengths may exceed the lengths recommended in the Maricopa County Subdivision Regulations and variances may be requested. All streets will be dedicated to the public and improved to Maricopa County Highway Department standards. Del Webb may construct entrance islands and pavement improvements at certain intersections to enhance identity for residential areas, traffic circulation and signage, and to create more visual appeal. The typical entrance island proposed to be constructed is illustrated in Figure 10. Final designs will be presented to the Maricopa County Highway Department for approval.

4. **Air Quality**

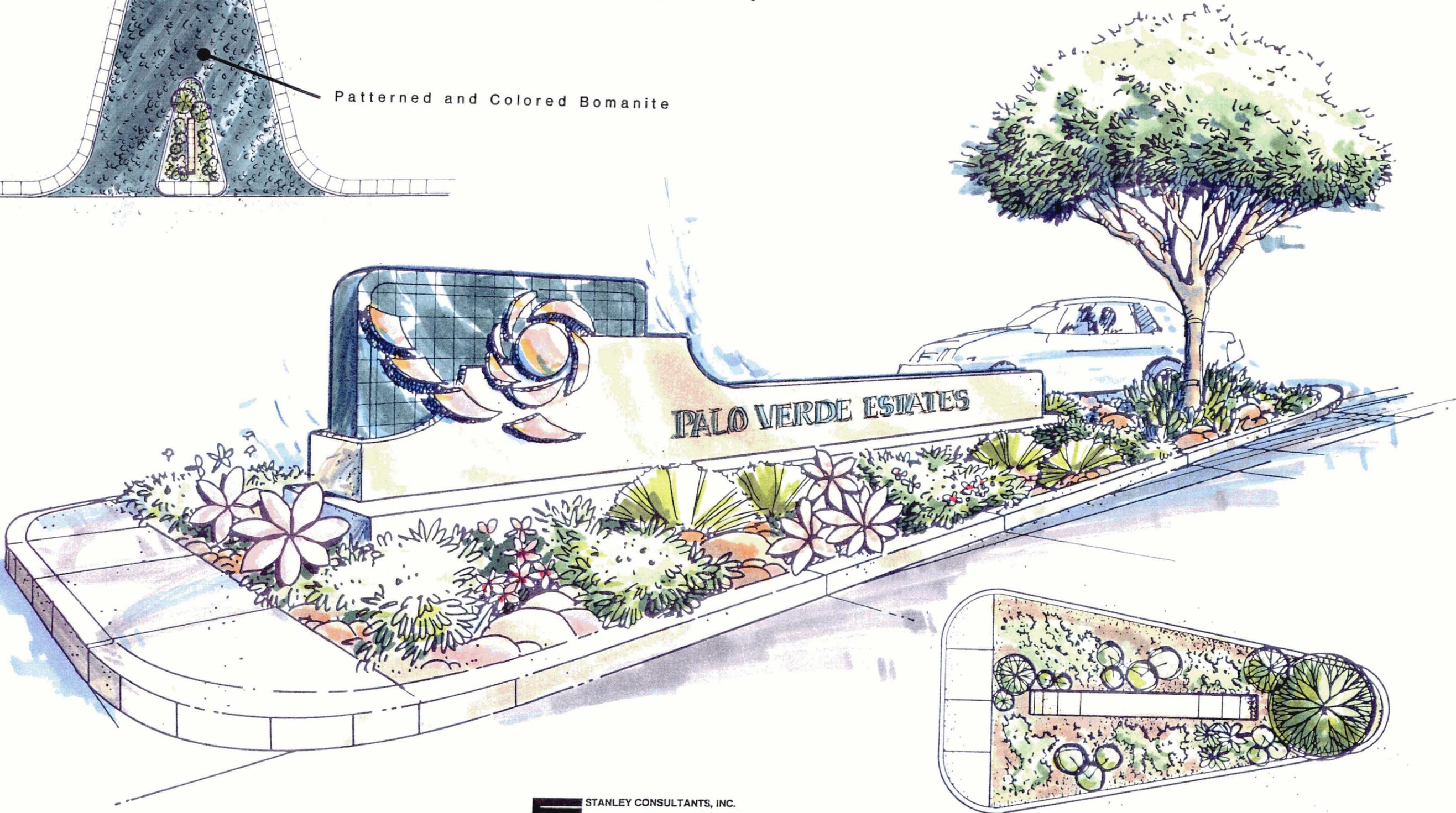
Air quality of the Expansion Area is satisfactory. The property is not subject to downwind pollution from any stationary source. Air pollutants that do impact the Expansion Area primarily consist of auto emissions from traffic flows within Sun City West and on Grand Avenue. Emissions from traffic on the proposed Estrella Freeway are likely to be reduced considerably when the freeway is constructed due to the utilization of improved fuels, better emission control devices and more efficient auto and truck designs. The landscaped buffer also will mitigate the future affects of the Estrella Freeway on the community.

TYPICAL INTERSECTION WITH ENTRANCE ISLAND

Del Webb's
Sun City West - Expansion Area



Patterned and Colored Bomanite



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FIGURE 10

Del Webb intends to preserve the ambient air quality as much as possible during construction through proper use of grading equipment and the use of dust palliation techniques. All work will be phased and closely coordinated so as to minimize effects of construction.

When construction of the Expansion Area is completed, ambient air quality will be preserved to a greater extent than in typical residential developments. Historic data indicates that retirement communities generate on the average about one-third of the daily automobile trips generated by conventional communities, and the use of low speed electric golf carts for short trips fulfills the resident's need for local transportation while not contributing pollutants to the atmosphere.

Use of desert plants and inorganic materials for landscaping and ground cover greatly reduces dust, spores and pollen contamination. The golf course and parkways are planned to be landscaped with a minimal number of pollen-producing plants. Trees and plants that tend to clean the air are planned to be utilized wherever possible.

5. **Drainage**

The Expansion Area is gently sloped in a southeasterly direction; offsite drainage water entering the Expansion Area is limited due to the McMicken Dam Outlet Channel. An existing offsite drainage ditch situated along the north side of Deer Valley Drive will continue to intercept storm flows from the west and carry them east to the Expansion Area. In addition, a channel system is planned along the west boundary of the Property to intercept additional flows from the west. Surface runoff from the west will enter the

Expansion Area at points on the western boundary of the property and be carried through the golf course to the southeast corner of the Expansion Area. Drainage from the north also will be intercepted by proposed channels and brought into the property. It will be carried through the golf course to the southeast corner of the Expansion Area.

Onsite drainage generally will be directed toward the golf course, open space and driving range areas where it will be conveyed through a system of swales and detention basins. The ultimate outfall for both the onsite and offsite flows will be at the southeast corner of the Expansion Area where drainage waters will pass through a final single detention basin and weir before being discharged to the improved channel downstream situated adjacent to Deer Valley Drive. The post-development discharge at this location will be less than the existing discharge because of the detention basins to be provided onsite.

Figure 11, "Master Drainage Plan", illustrates the general detention basin areas, drainage flows and other major elements of the drainage system. A "Conceptual Master Drainage Report" prepared in conformance with the Drainage Regulations of the Flood Control District of Maricopa County is included within the Appendix of this narrative report.

MASTER DRAINAGE PLAN

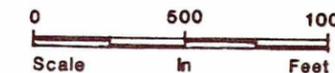
Del Webb's
Sun City West - Expansion Area

LEGEND

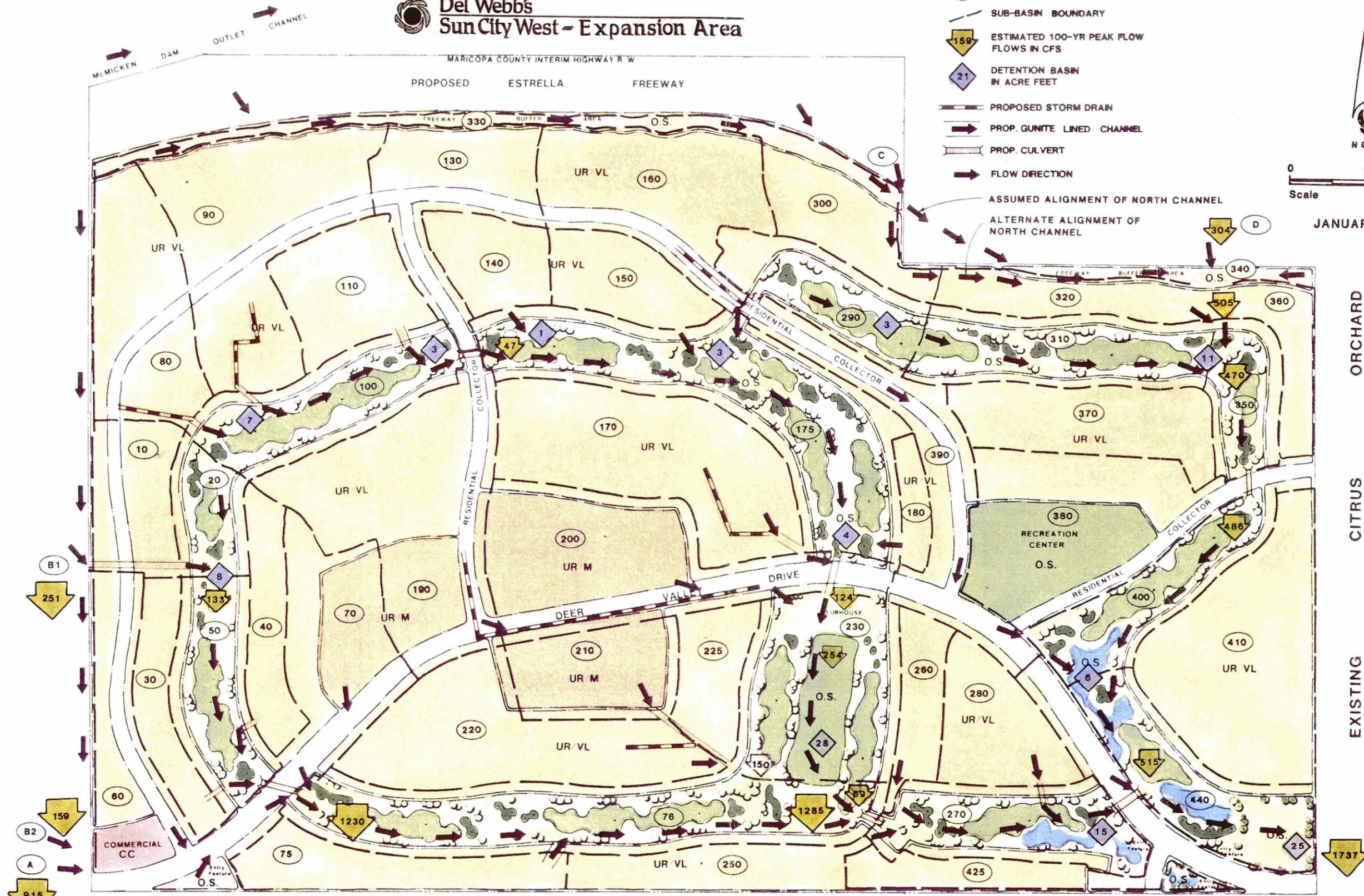
- 203 DRAINAGE SUB-BASIN
- SUB-BASIN BOUNDARY
- 150 ESTIMATED 100-YR PEAK FLOW FLOWS IN CFS
- 21 DETENTION BASIN IN ACRE FEET
- PROPOSED STORM DRAIN
- PROP. GUNITE LINED CHANNEL
- PROP. CULVERT
- FLOW DIRECTION
- ASSUMED ALIGNMENT OF NORTH CHANNEL
- ALTERNATE ALIGNMENT OF NORTH CHANNEL



NORTH



JANUARY, 1992



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SUN CITY WEST

6. **Utilities**

Public utilities are planned to be provided to serve the needs of future residents. Public utilities will be placed underground when appropriate and constructed in accordance with current codes, rules and regulations.

a. **Water**

Del Webb contracted with Leonard C. Halpenny of Water Development Corporation ("WDC") to conduct a hydrogeological investigation and analysis of 1,045 acres of land adjacent to Sun City West, north of Deer Valley Drive. This area of investigation includes the Expansion Area planned for development as described in this report. The report shows that there is adequate groundwater supply to provide an assured water supply for 100 years.

WDC concluded its extensive investigation and analysis and submitted a final report to Del Webb and the Arizona Department of Water Resources ("ADWR") in April 1991. ADWR has reviewed and approved this report as to compliance with the requirements set forth in A.R.S. Section 45-577.B. Approval of the report is primary evidence of an assured water supply. Del Webb has prepared application for assured water supply designation for submittal to ADWR. A copy of the hydrogeological report is included within the Appendix of this narrative report.

Sun City West currently is supplied with domestic water by Sun City West Utilities Company, a subsidiary of Citizens Utilities Company. It is planned

that the franchise area for Citizens Utilities will be expanded to cover the Expansion Area so that domestic water can be provided to the area by extending and supplementing the existing storage and distribution network as detailed in the Water System Study in the Appendix of this narrative report.

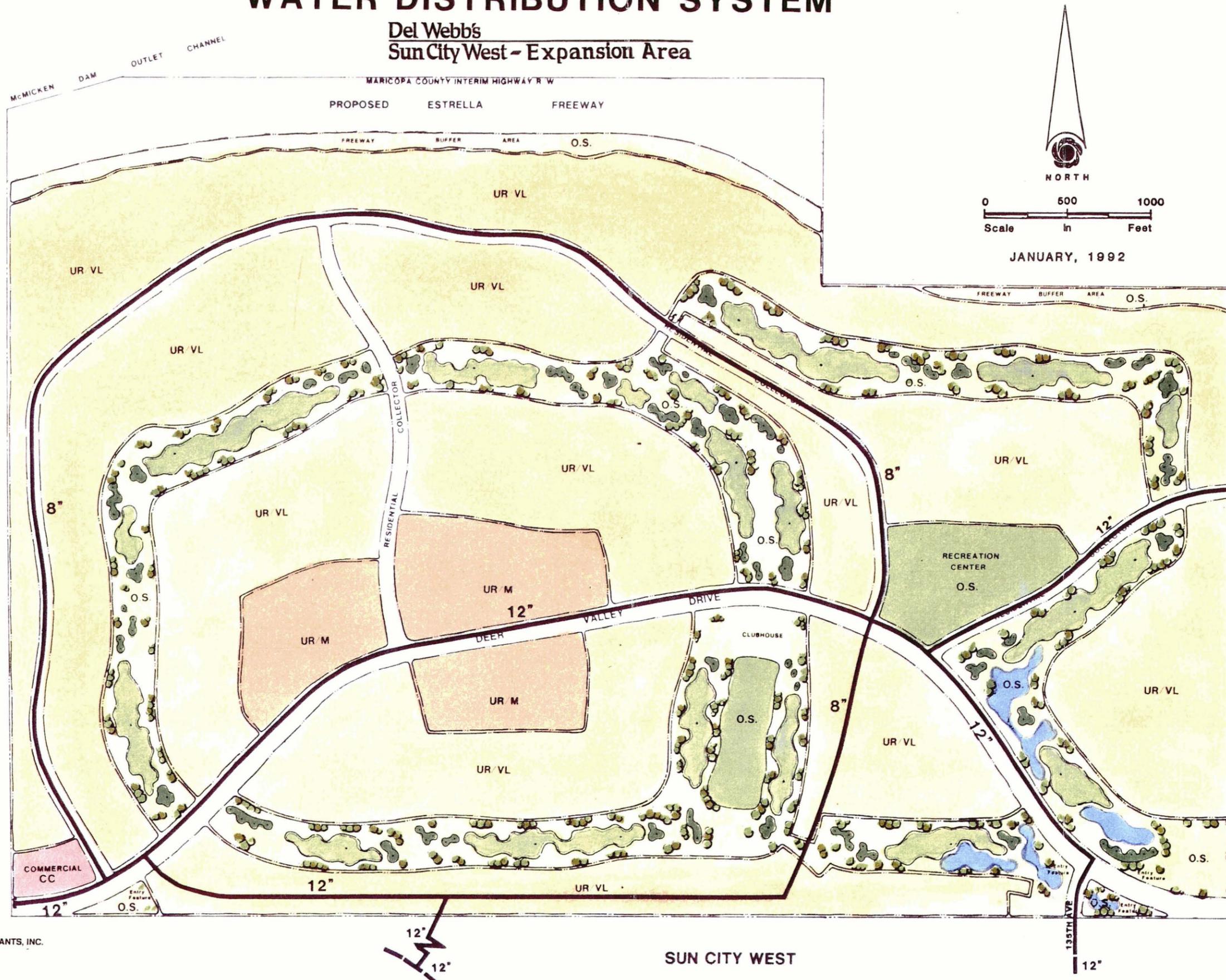
Water is supplied to the Sun City West system by eight (8) wells which pump groundwater into the water storage reservoirs at two water plant locations, Water Plants No. 1 and No. 2. Historical test data show that the quality of the groundwater is good and is expected to remain acceptable under current Arizona Safe Drinking Water Standards.

Sun City West's water distribution system consists of two pressure zones. The water plants provide both water storage and pressure boosting facilities to each zone. Each water plant will include two above ground storage tanks and booster pump facilities to supply water to the two different pressure zones.

The Expansion Area will be serviced from the high pressure zone. Water mains will be extended from the existing system into the Expansion Area. Figure 12 shows the proposed mains by size and location.

WATER DISTRIBUTION SYSTEM

Del Webb's
Sun City West - Expansion Area



STANLEY CONSULTANTS, INC.

SUN CITY WEST

A detailed analysis of the existing system has been completed. This study indicates that adequate flow rates and pressures can be supplied to the Expansion Area. Computer models indicate that no significant upgrades to the booster pumps for the high pressure zone are needed and that no additional storage tanks or storage capacity need to be provided. Existing wells can provide adequate supplies of water to the storage tanks.

The various water distribution models included improvements to Water Plant 1 planned for the Spring of 1992. These improvements consist of a 1.25 million gallon storage reservoir and three (3) additional pumps to compliment supply requirements of the high pressure zone. The improvements will be constructed by Del Webb and turned over to Citizens Utilities for operation and maintenance. All Water Plant 2 improvements are completed and are operational.

b. Sewer

Sun City West Utilities Company provides sewage service to Sun City West and plans to extend service to the Expansion Area.

Sun City West is served by a gravity wastewater collection system that is constructed primarily in the roadway right-of-ways. This collection system was constructed concurrent with the development of subdivisions in Sun City West. The collection network delivers all sewage to an existing pump station located at the northwest corner of the intersection of Bell Road and El Mirage Road. A

gravity wastewater collection system also will be utilized in the Expansion Area. This planned system is shown on Figure 13.

From the southeast corner of the Expansion Area, a planned trunk line will deliver the sewage to the Bell Road Pump Station. This line will flow east from the Expansion Area within the Deer Valley Drive right-of-way to El Mirage Road and then south within the El Mirage Road right-of-way to the pump station.

The trunk line will not be constructed prior to the start of construction within the Expansion Area. A detailed analysis has been completed that indicates there is excess capacity in the existing system in Sun City West. This excess capacity will be utilized for a portion of the dwelling units in the Expansion Area. A route from the Expansion Area to the pump station utilizing existing mains in 135th Avenue, Meeker Boulevard, Beardsley Road, 128th Avenue and R.H. Johnson Boulevard, will be utilized for interim use.

The Bell Road Pump Station currently consists of two 3,000 gpm pumps. Both are equipped with variable speed drives. The two pumps are the first phase of what was planned in 1978 as a four pump station to service the 13,300 acres initially planned as opposed to the 5,700 acres actually developed. The projected 13,550 dwelling units in Sun City West together with the 2,400 units planned in the Expansion Area will generate a peak daily flow of 4,670 gpm. Therefore, the pump station will be improved to accommodate the increased demand.

Additionally, modifications are planned that will allow the three pump system to operate in the wells constructed for a four pump system.

An 18 inch force main connects the Bell Road Pump Station to the Wastewater Treatment Plant located east of the Agua Fria River and north of Beardsley Road. The force main has the capacity to carry projected flows after buildout of the Expansion Area.

A detailed Sewer System Study is located in the Appendix of this narrative report. This study provides the supporting material and calculations for the conclusions provided in this section regarding the gravity collection system, trunkline, pump station and force main.

The existing wastewater treatment plant has a capacity of 2.14 mgd. This plant consists of primary and secondary treatment processes followed by aerated storage reservoirs. The plant is planned to be expanded to handle the additional flows from the Expansion Area. A Preliminary Design Report contained in a separate document is in the process of being reviewed by Maricopa County Health Department and Arizona Department of Environmental Quality.

Figure 14 shows the proposed gravity trunkline, existing Bell Road Pump Station, force main and wastewater treatment plant locations.

WASTEWATER COLLECTION SYSTEM

Del Webb's
Sun City West - Expansion Area

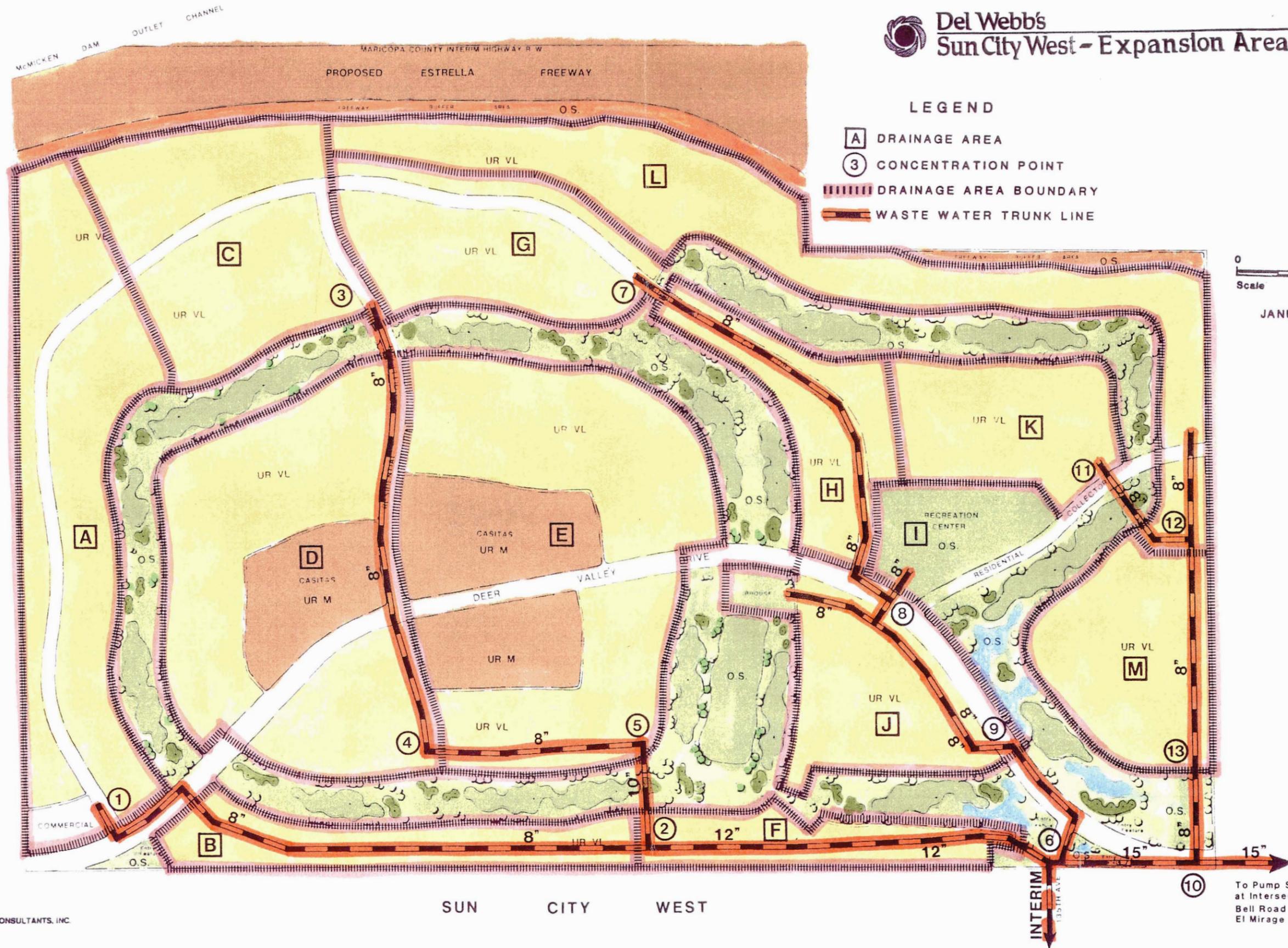
LEGEND

- A DRAINAGE AREA
- 3 CONCENTRATION POINT
- DRAINAGE AREA BOUNDARY
- WASTE WATER TRUNK LINE



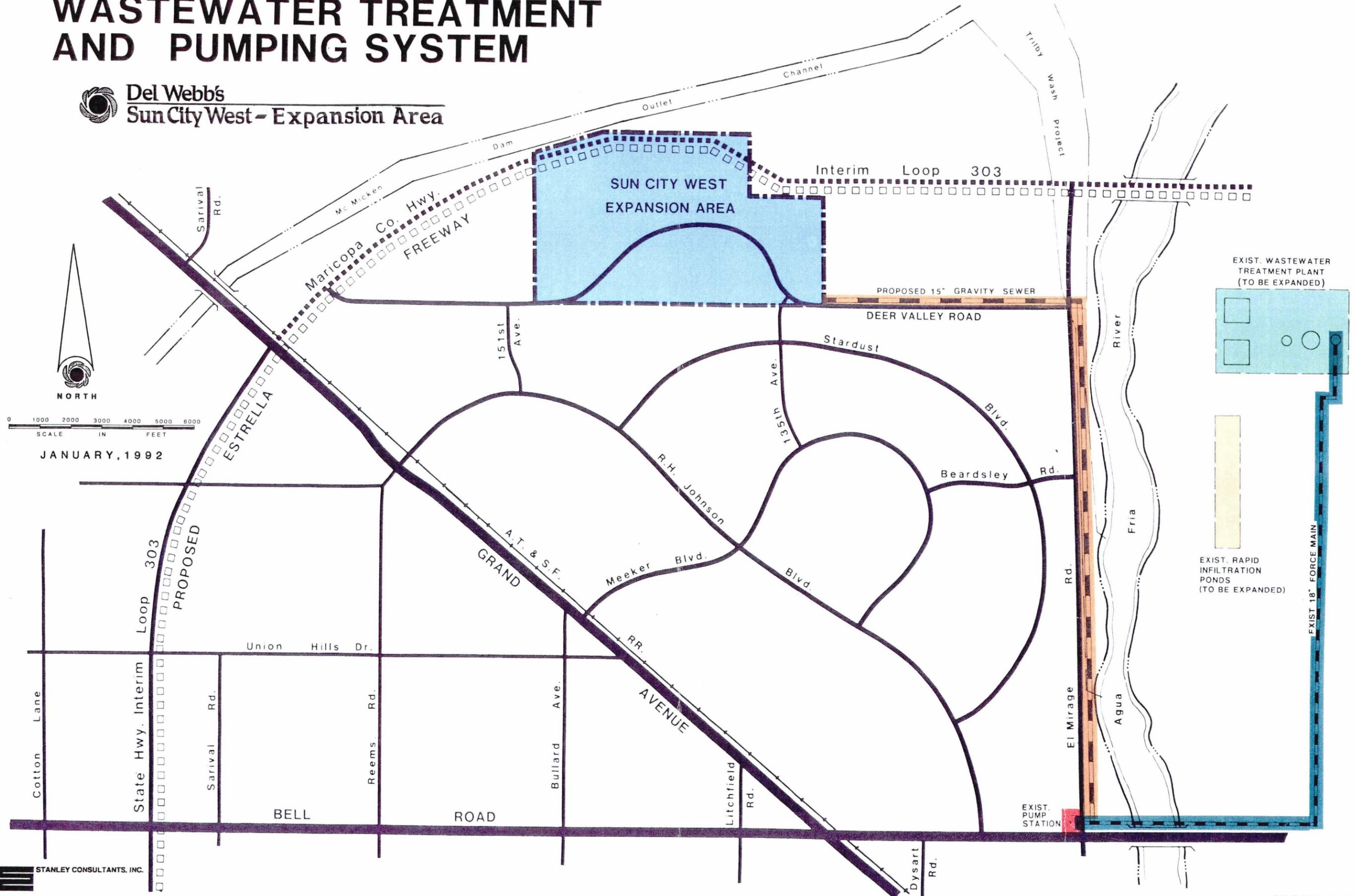
0 500 1000
Scale In Feet

JANUARY, 1992



WASTEWATER TREATMENT AND PUMPING SYSTEM

Del Webb's
Sun City West - Expansion Area



JANUARY, 1992

STANLEY CONSULTANTS, INC.

FIGURE 14

c. **Electrical**

Electric service will be provided by Arizona Public Service Company ("APS") from an existing substation located on Stardust Boulevard just north of R.H. Johnson Boulevard, and an underground vault located at 151st Avenue immediately south of Deer Valley Drive. APS does not anticipate the need for an additional above ground substation within the Expansion Area.

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ii. Golf Course and Lakes

The golf course will consist of approximately 165 acres and will comply with consumptive use criteria established in the ADWR Second Management Plan. The irrigated turf area will not exceed 90 acres.

The golf course is planned to be irrigated with 100% recovered effluent. The recovered effluent is planned to be withdrawn by recovery wells as part of an Underground Storage Recharge and Recovery Project currently being reviewed by ADWR. As an alternative to this project, the system for direct distribution of effluent which was developed in existing Sun City West will be extended up to the Expansion Area irrigation system. ADWR emphasizes reduction in the use of groundwater and has adopted and encourages recharge and recovery projects such as the one planned by Del Webb for Sun City West and the Expansion Area. The Underground Storage Recharge and Recovery Project planned for Sun City West will recharge effluent by percolation of treated effluent at rapid infiltration ponds located south of the existing treatment facility.

Del Webb has considered several alternatives for the treatment of wastewater and effective reuse of the maximum amount of available effluent. The recharge and recovery project submitted to ADWR appears to be the most effective means of effluent storage and reuse.

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The planned implementation of a recharge and recovery project is a result of several years of investigation and test implementation of direct use of effluent on Sun City West golf courses. Del Webb considered the recharge and recovery alternative for effluent reuse after test implementation of the direct use determined that the effluent was generated at different times of the year than required for irrigation purposes. This imbalance combined with the increased operation and maintenance requirements of direct effluent use make the recharge method a preferable alternative for effluent reuse.

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A review of the historic irrigation demands of the seven existing golf courses in Sun City West indicates that 75% of the total annual water use occurs during the summer months (April through September). The remaining 25% is used in the winter (October through March). Based on ADWR's Second Management Plan criteria and historic results of consumptive use, it is assumed that the new golf course will use 425 Ac.Ft. in the summer and 142 Ac.Ft. in the winter for a total use of 567 Ac.Ft/Yr.

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