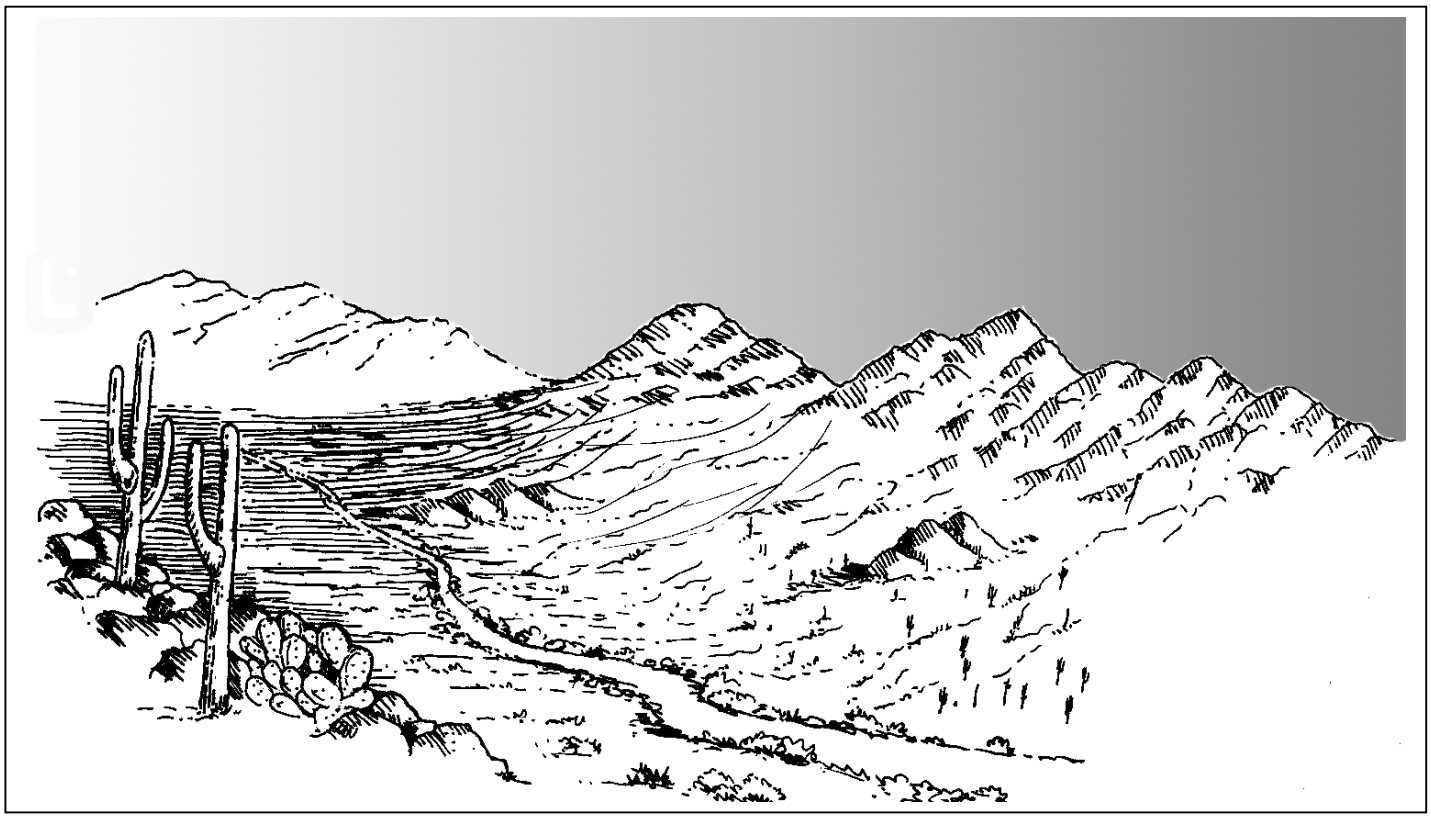
Desert Spaces

Environmentally Sensitive Development Areas (ESDA)

Policies & Design Guidelines



For:
MAG
Maricopa Association of Governments
Desert Spaces Sub Committee

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e group; A. Dye Design; SWCA, K. Floor & Associates

Contents

1. INTRODUCTION
1.1 Intent and Purpose
1.2 Background
1.3 Definitions
1.4 Environmental Planning Process

2. OPEN SPACE FRAMEWORK
2.1 Growth Options
2.2 Growth Management
2.3 Sensitive Landscape Character
2.4 Land Resources
2.5 Development Activities
2.6 Development and Open Space
2.7 Benefits

3. HOW TO USE DOCUMENT
3.1 Organization of document
3.2 Where to start

4. POLICIES
4.1 Introduction to Policies
4.2 Land Resources
1. Rivers & Washes
2. Sonoran Desert Vegetation
3. Scenic Resources
4. Wildlife Habitat
5. Cultural Resources

4.3 Development Activities
1. Agricultural Resources
2. Development Density/Type
3. Grading/ Drainage
4. Recreation
5. Resource Rehabilitation
6. Infrastructure Impact
7. Planning Coordination

5. LAND CLASSIFICATION
5.1 Landform
5.2 Vegetation
5.3 Land Classification Categories (LCC)
5.4 Matrix – LCC illustration of Categories
5.5 Description of each LCC

6. DESIGN GUIDELINE MATRIX
6.1 Policies and Land Classification
6.2 Matrix – an index to the guidelines

7. DESIGN GUIDELINES
Overall Guidelines for all LCC's
7.1 LCC – 1: Lower Sonoran, Valley Floor
7.2 LCC – 2: Lower Sonoran, Bajada
7.3 LCC – 3: Lower Sonoran, Foothills
7.4 LCC – 4: Upper Sonoran, Valley Floor
7.5 LCC – 5: Upper Sonoran, Bajada
7.6 LCC – 6: Upper Sonoran, Foothills
Figure 1 - ESDA Areas - Map
Figure 2 - Prototypical Design Guideline Sketch

8. RECOMMENDATIONS
8.1 MAG, Adopt Policies, Guidelines
8.2 MAG, Coordinate with Municipality
8.3 Municipalities, Refine Policies, Guidelines
8.4 Educational Workshops
8.5 Develop a Model Ordinance
8.6 Assistance Programs

9. APPENDIX
Glossary
Existing Policies and Design Guidelines
Bibliography of Resources

1. INTRODUCTION

1.1 Intent and Purpose

This document develops policies and design guidelines for the "Retention Areas", as identified and defined in the "Desert Spaces Plan", adopted in 1995 by The Maricopa Association of Government's Regional Council. The purpose of the design guidelines is to provide guidance to the public and private sector in making development and design decisions for projects built in the "Retention Areas". In this report, "Retention Areas" are referred to as Environmentally Sensitive Development Areas (ESDA). The report is intended to provide assistance to professional community members for development in areas identified for retention, or ESDA lands. On one hand, the protection of natural resources of the ESDA lands is critical. On the other hand, sensitive development and growth within the ESDA lands is permitted. Thus, the intent of this document is to help guide public and private sector people to work together to sensitively manage development of lands that have high open spaces value, referred to herein as Environmentally Sensitive Development Areas (ESDA).

These guidelines have a strong and appropriate environmental grounding given the sensitive nature of the lands treated; however, their use as a planning framework tool should also incorporate relevant economic, fiscal, physical and municipal service factors in the application of the guidelines at a regional or local level.

Rather than be converted directly into local policy or ordinance, each municipality should consider these guidelines as a planning framework tool within the context of their own unique community values. This should be done with a local citizen participation process.

1.2 Background

The "Desert Spaces Plan" is a Regional Open Space Plan, to guide member of Maricopa Association of Governments to protect sensitive open spaces, while allowing future growth and development. As part of this plan, Public and Private lands with high open space value were identified as "Retention Areas" and recommended for sensitive development.

The "Desert Spaces Plan" suggested growth and development in Retention Areas should be managed sensitively, to balance development with natural resource values. *"These areas should be managed to retain the integrity of undeveloped hillsides and ridge lines, rivers and washes, native vegetation, wildlife diversity, and archaeological and historic sites"*.

1.3 Definitions

The following key words, used in this document are defined in order to set the context for a planning dialogue. In addition, a glossary of terms is included in the appendix.

Environmentally Sensitive Development Areas:

"The Desert Spaces Plan" referred to these ESDA lands as "Retention Areas". Lands include 759,100 acres of Publicly owned land, and 566,643 acres of Privately owned lands with high open space value, recommended for sensitive development.

These ESDA lands are suitable for development; however, they have landscape characteristics that should be retained. Characteristics include Landforms and Vegetation Type. Landforms include: Valley Floor, with slopes from 0% to 3%; Bajada, with slopes from 3% to 6%; Foothills, with slopes over 6%. Only environmentally

sensitive development should be permitted in these ESDA land areas.

The name Environmentally Sensitive Development Areas is a refinement from the name "Retention Areas" used in "The Desert Spaces Plan", because the name retention became confusing. The name was intended to retain and protect the integrity and character of undeveloped, environmentally sensitive lands, yet provide for appropriate development.

The attached map, Figure 1. Environmentally Sensitive Development Areas (ESDA) and distribution of predominant vegetation communities in Maricopa County. This map illustrates the location of ESDA lands in Maricopa County.

Retention Areas:
As defined in "The Desert Spaces Plan", "Retention Areas" include 1,419,265 acres of Public and Private Lands with high open space value. Recommended for sensitive development regulations. This development is intended to retain the essential characteristics of the natural land resources. "Retention Areas" are herein called Environmentally Sensitive Development Areas.

Conservation Areas:
As defined in "The Desert Spaces Plan", Conservation Areas include Secured Open Spaces, Publicly and Privately owned lands with outstanding open space value. These areas are recommended for management as Conservation Areas, and to be protected from development. These areas are separate from the ESDA lands.

Fragile Areas:
Undeveloped lands that have fragile natural resources. They are highly susceptible and can be easily damaged. These special lands have an environmental and landscape character that must be protected.

1.4 Environmental Planning Process

Our traditional land use planning process and zoning does not typically fully consider environmental principles nor does it have a strong conservation and open space focus.

An environmental planning process can enhance our traditional planning process. The municipal Comprehensive Plan, its Zoning Ordinance and its Subdivision and Lands Development Ordinance are tools. These tools, in some communities, should be modified to include environmental principles to manage future growth and development in environmentally sensitive lands.

An environmental planning process is an exciting opportunity for land use planners to work more closely with conservation professionals. The goal should be to balance environmental and development needs. Landscape architects can be a principle bridge to help guide a collaborative process that balances environmental and development issues.

2. OPEN SPACE FRAMEWORK

Protecting open space, while allowing for future community growth and development, is the planning goal. Undeveloped open space and the Sonoran Desert landscape character must be valued in the environmental planning process. This approach will protect the natural qualities and character that make the ESDA lands special.

The problem is that open space often becomes unconnected left-over land areas. Rather than planning and protecting open space as an important natural resource, lands left over after development are often after thoughts to satisfy development patterns and municipal ordinance requirements. Open space should be properly planned and integrated into new development. Open space should not be unconnected land parcels left over after development of roads, parking and buildings within our land use planning process.

In order to better protect environmental sensitive lands, maintain and enhance open space, a new planning approach is needed for the ESDA lands, to better integrate environmental planning with traditional land use planning. This approach starts with creating a comprehensive open space framework. This framework must recognize and value the natural resources of the land.

An Open Space framework should include open space buffers, protection of natural areas and regional open space linkages, including wash and wildlife corridors. It should reflect strong values on areas containing native Sonoran Desert vegetation. It should protect sensitive Scenic resources within the open space framework.

2.1 Growth Options

Development continues to grow and expand into the desert, at a low density in the Valley (approximately 3 to 5 units per acre, which could be higher). Undeveloped lands at the edge of existing development are restrained by natural boundaries, such as mountain slopes and hillsides. The challenge of planning within the ESDA lands will be to protect our natural resources with high open space value, while permitting sensitive development. Our challenge is to avoid unplanned sprawl. Initiatives such as growth management and "Growing Smarter" are beginning to explore creative options.

We have options for planning ESDA lands. We can plan development, or we can continue existing development patterns into our fringe lands. Alternatively, a new development pattern for ESDA lands can explore creative policies and guidelines for sensitive development that can balance land use planning with environmental planning principles. Creative options and guidelines are the best choice, because they can recognize both the developer and the municipality while protecting open space.

Options to creatively allow development while protecting open space may include development on only part of a land parcel. This technique can protect sensitive open spaces on part of a site by increasing net density of development in appropriate portions of a site. The overall gross densities would remain the same as a conventional uniform development on the overall site. Design guidelines can help recognize and protect valuable open spaces with this technique.

Options to creatively allow development while protecting open space of a site should also include techniques such as transferring development density rights from a sensitive part of a site to a less sensitive part of a site. When the net density of a site becomes too high it may be appropriate

to transfer density to a site in a different location, where feasible, through sufficient land ownership. This technique could even be used to transfer development densities from sensitive lands to land sites in more appropriate areas, including under-developed downtown core land and redevelopment of neighborhoods.

While development options will evolve, we must begin to explore ways to manage sensitive growth. We should protect the natural landscape character of the ESDA lands and avoid unplanned sprawl. A new planning approach is needed for the ESDA lands.

2.2 Growth Management

The Census Bureau in 1998 noted that Maricopa County was identified as the fastest growing county in the nation. Growth is a topic of concern and debate. Arizona voters approved spending $220 million from the state's general fund to preserve open space. Discussions continue about saving our unique environment, quality of life and our Sonoran Desert.

The "Growing Smarter" program in the Arizona state legislature should help focus thinking about future growth. Open Space Preservation is a top priority of the state government.

Our next challenge is for local governments, municipalities and developers to craft new environmentally balanced development approaches. We need a refined planning approach that allows growth and development, while protecting the sensitive natural resources of our Sonoran Desert Open Spaces.

2.3 Sensitive Landscape Character

Sensitive areas of land are highly susceptible and can be easily damaged. Our goal is to protect sensitive lands.

Landscape is the landform of a region in the aggregate. This includes the natural hillside scenery and the existing Sonoran Desert vegetation.

Character refers to the attributes or features that make up and distinguish the unusual qualities of the land. The value we place on our scenery, natural and visual resources is a measure of importance on quality of life.

Quality of Life is a choice. People who choose to live in Maricopa County value the open space and Landscape Character of our Sonoran Desert. The land character at the Valley's edge includes unique natural resources. This sensitive landscape character must be protected with planning policies and design guidelines.

2.4 Land Resources

Critical natural land resources include Rivers and Washes, Sonoran Desert Vegetation, Scenic Resources, Wildlife Habitat and Cultural Resources. These resources are an important part of developing and creating an open space network and framework.

An Open Space network should include land areas, linkages and buffers. Open Space land areas include natural and developed areas, such as preserves and parks. Open Space linkages include river and wash corridors, wildlife corridors, as well as hiking trails and shared pedestrian paths. Open Space buffers include separation spaces at the edge of development next to conservation

areas and landscaped open spaces to create a separation between different land uses.

2.5 Development Activities

Development activities referred to in these policies include Agricultural Resources, Agricultural Development, Land Uses, Development Density and type, Mass grading and drainage, Recreation, Resource Rehabilitation, Infrastructure impact and Planning Coordination. These resources are an important part of creating sensitive man-made development.
Traditional development activities include land uses, transportation and open space. Land uses include places for people to live, work, shop and play. Transportation uses include options for people to get around by car, transit and pedestrian linkages. Open space uses include developed landscaped areas for people to socialize, play and recreate. Open space uses provide visual relief and comfort.

The intent of this policy and design guideline is to allow development in the ESDA lands in ways that are sensitive to natural resources and environmental planning principles.

2.6 Development and Open Space

To protect ESDA lands in Maricopa County, this document recommends sensitive development. To achieve sensitive development, a shift to an environmental planning approach is recommended. A balanced planning approach will allow sensitive development that respects the unique natural resources of the ESDA lands and protects open space.

Development edges of ESDA lands adjacent to Conservation Areas and Secured Open Spaces are important and should adapt to the natural landscape character. The general intent in planning is to avoid hard straight development edges adjacent to natural areas and encourage feathered, interlocked edges of land adjacent to natural open space areas. As an example, existing drainage washes should be accommodated to integrate natural areas with development, rather than create barriers or wall edges.

Open Space can be a buffer between development and natural areas. Buffers are especially important when development is adjacent to natural areas and conservation areas. Open Space should be carefully woven together with development on the ESDA lands to create a natural character. The natural character of the land can be an important expression to protect the sensitive environmental features. This natural character of the land can also be enhanced as a unique amenity for people and an important marketing and design theme for new development.

2.7 Benefits

The benefits of planning with environmental principles include ecological and conservation management benefits, social and recreational benefits, and economic benefits.

Environmental and ecological benefits protect sensitive lands and natural resources. Water conservation and storm water management help manage our scarce water resources and sustain an environmentally responsible attitude. Conservation and Open Space retain native plant and wildlife communities.

Social and Recreational benefits provide people with valuable quality of life opportunities. Pedestrian friendly neighborhoods provide appealing places for people to socially meet, walk, play and exercise to re-create the spirit.

Economic benefits provide cost-effective investments. Lower engineering infrastructure cost can be achieved through the design of natural and non-structural elements and construction techniques. Marketing environmentally sensitive development is a winning strategy, providing an appealing natural landscape character. Land value appreciation is a benefit, through the provision of open space amenities.

3. HOW TO USE THE DOCUMENT

3.1 Organization of Document

This Desert Open Spaces Plan for Environmentally Sensitive Development Area document is comprised of two parts, Policies and Design Guidelines.

The first part, General Policies, applies to all ESDA lands. Policies are grouped under General Policies, Policies related to specific Land Resources and Policies related to Development Activities.

The second part, Design Guidelines, applies to specific ESDA lands. Design Guidelines are grouped into six appropriate Land Classification Categories. (LCC-1 to LCC-6)

An environmentally sensitive planning approach includes understanding specific ESDA lands. Vegetation and Landform are two critical components of the Land Classification Categories (LCC).

Vegetation types include Lower Sonoran and Upper Sonoran vegetation. These two types are based on grouping of a total of 38 vegetation associations identified in the preliminary GAP Analysis completed by the Cooperative Parks Study Unit at the University of Arizona. This large number of vegetation associations was reduced to simplify and allow the development of a practicable matrix of guidelines based on environmentally distinct areas. Lower Sonoran vegetation is dominated by creosote bush, bursage and saltbush. Upper Sonoran vegetation includes primary vegetation associations visually dominated by palo verde and mixed cacti.

Landforms include Valley Floor with 0 to 3% slopes, Bajada Lands with 4 to 6% slopes, and Foothill Lands with over 6% slope. Selection of these landforms was related primarily to hydrological and visual characteristics influencing the development of specific guidelines.

The next sections of this document include:

- Policies – general principles that are sensitive for development based on land resource issues and development activity issues.
- Land Classification Categories – identifying ESDA lands into one of the six categories, based on Landform and vegetation;
- Design Guidelines – general guidelines and specific design guidelines for each Land Classification Category and policy.

3.2 Where to Start

When considering development of ESDA lands in Maricopa County, the first step in this environmental planning approach is to identify the general characteristics of the land. Refer to Section 4 – Policies, to review the general policies. Next, review policies for Land Resources, including Rivers and Washes, Sonoran Desert Vegetation, Scenic Resources, Wildlife Habitat and Cultural Resources. Next, review policies for Development Activities, including Agricultural Resources, Agricultural Development, Development Density, Type, Grading, Drainage, Recreation, Resource Rehabilitation, Infrastructure Impact and Planning Coordination.

The second step in this environmental approach is to identify the characteristics of the land considered for development. Refer to Section 5.4 and the Landform/Vegetation, Land Classification Matrix. Identify landform and vegetation type, then identify the appropriate LCC.

The next step is to refer to the matrix in Section 6.2. This matrix is an introductory guide, or index

to the Design Guidelines for a specific LCC. Land Policy issues are listed, including Land Resources and Development Activities, defining matrix rows. LCC's are shown in six columns across the top of the matrix. Select the appropriate LCC and refer to Section 7 Design Guidelines for descriptions and recommendations.

The following illustration, on the next page, shows a diagram highlighting the environmental planning process approach. Key steps match the sections of this report.

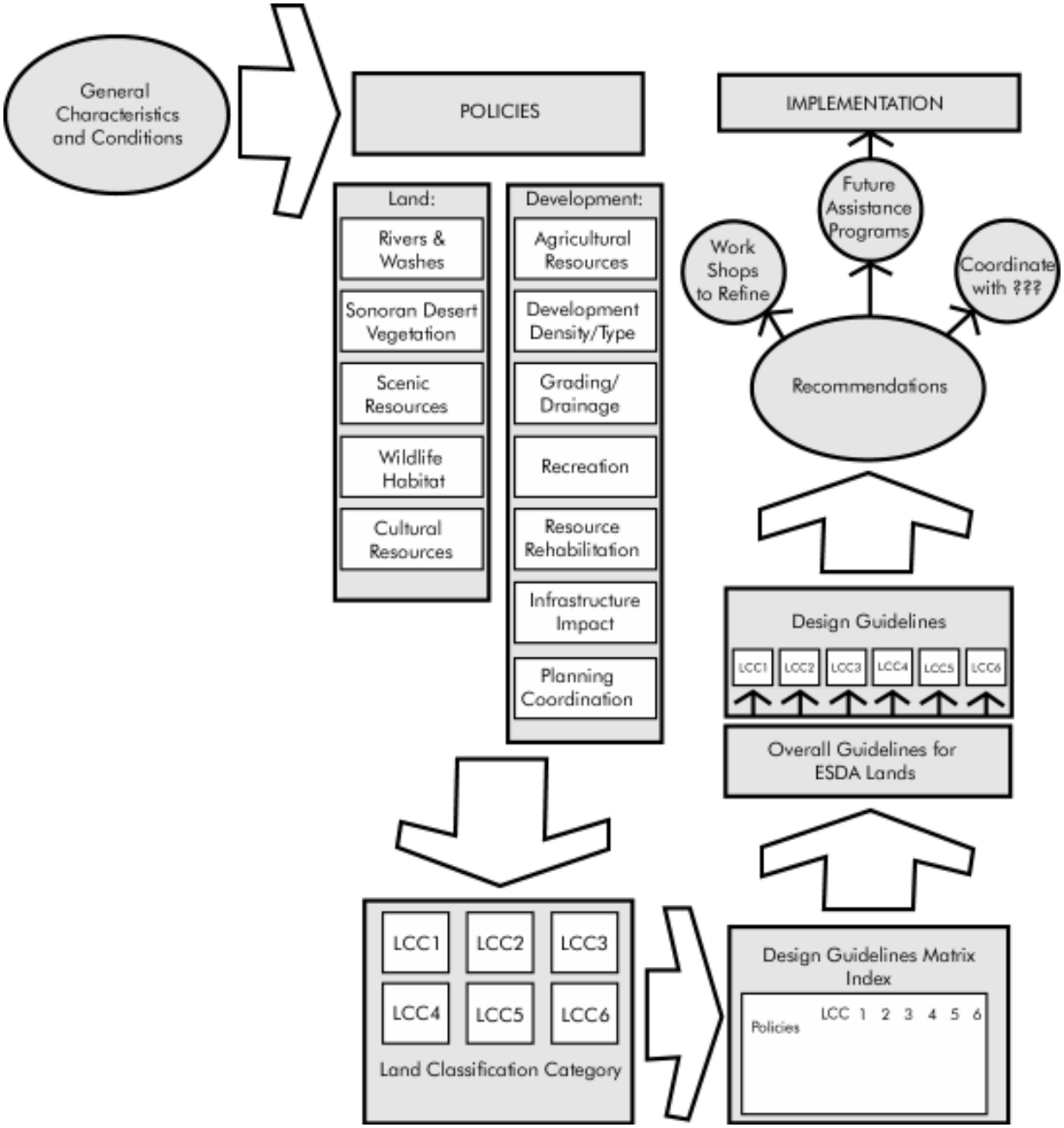


Diagram of the Environmental Planning Process

4. POLICIES

General guidelines for Land Resources and Development Activities are described to ensure development of all ESDA lands are sensitive to environmental planning issues. These general guidelines are referred to as policies. The detailed guidelines are included in Section 5, Design Guidelines.

4.1 Introduction to Policies

Management Approach:

The Management Approach, to guide sensitive development of ESDA lands is described in The Desert Spaces Plan, as follows:

"Only allow development that retains the integrity of and public access to regional and locally significant natural features, wildlife habitats, scenic resources, and cultural sites. Ensure that protection of natural and cultural resources is integral to the project and that low impact construction technology is used during all phases of the development process-from initiation through site restoration."

Definitions:

General policies for ESDA lands set the context to protect Public and Private lands with high open space value.

Issues:

These policies have expanded the limited description contained in "The Desert Spaces Plan", to be more specific. The intent is to retain and protect the character of the environmentally sensitive undeveloped land, while providing for appropriate development of the ESDA lands.

Policies:

General policies for all ESDA lands include:

1. Protect, purchase or dedicate by developers as part of their open space system, public and private lands with outstanding open space value.

2. Protect the integrity, landscape character and environmental sensitivity of landforms, including the Valley Floor, Bajada and Foothills of the upper and lower Sonoran desert.

3. Protect committed open space by requiring creative and sensitive development adjacent to natural open spaces. Create a mosaic edge treatment (i.e., with half street access, park/schools). No single type of edge treatment should dominate.

4. Development on sensitive lands should conform to these policies and design guidelines.

4.2 Land Resources

The natural environmental resources of the land include the following: Rivers and Washes; Sonoran Desert Vegetation; Scenic Resources; Wildlife Habitat; and Cultural Resources. This section includes policies for each of these land resource issues.

4.2.1 Rivers and Washes

Management Approach:

The Management Approach, to balance Rivers and Washes with sensitive development of ESDA lands is described in The Desert Spaces Plan, as follows:

"Retain the natural character of and public access to regionally significant rivers and washes, except for crossings."

Definitions:

Rivers and Washes in the ESDA lands of the Sonoran Desert include dry riverbed corridors and natural surface water drainage channels that accommodate storm rainwater flows from the Foothills through the Bajadas and across the Valley Floor landform.

Issues:

These policies have expanded the limited description contained in "The Desert Spaces Plan", to be more specific. The intent is to retain and protect the character of the Rivers and Washes in the ESDA lands.

The existing Rivers and Washes have a natural character as they flow across the ESDA topography with soft horizontal curves and gentle vertical elevation changes.

This natural character is threatened when development changes the natural character by replacing the natural system with straight inappropriate man-made drainage swales or an underground drainage system. This negative impact should be avoided.

Provision for continuous natural drainage along Rivers and Washes should be provided. Development alterations must be sensitively integrated to match the existing natural character of ESDA lands.

Policies:

Policies for Rivers and Washes for all ESDA lands include:

1. Discourage new development, except recreation, within 100-year flood plains especially major drainage corridors.

2. Rehabilitate the open space system as it passes through the urban cores by revegetating river banks.

3. Provide access for recreation, non-motorized transportation and maintenance and security vehicles along the edge of the corridor as defined by the limits of the 100-year flood plain.

4. Develop linear improvements such as roads and utility corridors, where appropriate, to run parallel to, not in, the regionally significant rivers and washes.

5. Design all road crossings to accommodate trails and to minimize disturbance of the natural environment.

6. Emphasize non-structural flood control techniques where feasible. Choose and foster flood control methods that retain and maintain natural flooding and riparian vegetation while minimizing damage to private property.

7. Limit impacts to riparian habitats to those required for road and utility crossings. Revegetate disturbed areas using indigenous Sonoran Desert vegetation to restore and match the existing natural characteristics and functions.

8. Conserve corridors along ephemeral washes that include the floodway, floodplain and an appropriate upland buffer to allow a transition to urbanized areas. Limit recreational activities in conservation corridors to reduce impacts.

9. Place linear utility lines parallel to rivers and washes and use them to further buffer the transition to urbanized areas.

10. Limit the use of flood control structures, and encourage non structural techniques. If required, construct control structures outside the 100-year flood plain and associated upland buffer. Promote the use of flood control structures or designs that can be contoured and revegetated to simulate natural conditions and perform natural functions.

11. Properly manage and plan for extra surface storm water run-off created by additional hardscape of development.
12. Minimize on-site losses or adverse impacts to rivers and washes. Prevent off-site (downstream) loss or damage to the natural landscape character along rivers and washes.

4.2.2 Sonoran Desert Vegetation

Management Approach:

The Management Approach, to balance Sonoran Desert Vegetation with sensitive development of ESDA lands is described in The Desert Spaces Plan, as follows:

"Permit only the use of indigenous and compatible materials and plants and avoid the use of plants which are known to be invasive to indigenous vegetation. Develop programs and policies that will encourage property owners to leave significant areas of sensitive lands in their natural state. Prohibit livestock grazing in areas with high wildlife value such as Upland Sonoran Desert vegetation. Discourage "mass grading" of parcels in favor of cluster housing or low densities that allow buildings, walls, and fences within an envelope while the remaining portion of the lot is left undisturbed."

Definitions:

Vegetation types are based on an extensive and ongoing mapping effort (GAP Analysis) for the State of Arizona. In Maricopa County, 38 vegetation associations were identified and combined into two vegetation types.

The two types of vegetation used in our ESDA lands classification include:

- Lower Sonoran – Creosotebush, bursage, saltbush associations.
- Upper Sonoran – Palo verde, mixed cacti associations.

Issues:

These policies have expanded the limited description contained in "The Desert Spaces Plan", to be more specific. The intent is to retain and protect the character of the existing Sonoran Desert Vegetation in the ESDA lands

The existing Vegetation provides a natural desert character and texture in the ESDA lands. The natural character and landform texture must be protected from development impact and damage.

This natural character is threatened when development changes the natural character by inappropriate site grading, damage to the existing vegetation and replacing the natural vegetation with inappropriate species that alter the existing ecosystems. This negative impact should be avoided.

Provision for compatible plant material to match the existing character and texture should be encouraged to mitigate development impact in the sensitive ESDA lands.

Policies:

Policies for Sonoran Desert Vegetation for all ESDA lands include:

1. Encourage development, such as cluster development to preserve meaningful open space. Development that does not require mass grading of the remaining areas of upper

Sonoran desert vegetation will protect the region's 'sense of place', wildlife habitat, drainage and scenic quality.

2. Encourage development, through the use of creative incentives, on relatively flat sites rather than on mountains and steep hillsides.

3. Protect upper Sonoran desert areas that serve as major links between regionally significant open space resources.

4. Permit only the use of indigenous or compatible materials and plants and avoid the use of plants that are known to be invasive to indigenous vegetation with the exception of schools/parks, detention and retention basins and the enclosed portions of rear yards. Allow for accent planting with biologically compatible plants in strategic areas, such as entries, focal points, and commercial and industrial areas for color enhancement.

5. Promote the protection or use of indigenous plants in more visually sensitive sloped areas (bajadas and foothills) and/or sloped areas of sparse vegetation (Lower Sonoran).

6. Where development occurs, impacted lands should be repaired to match existing natural areas. Visually enhance areas with sparse (Lower Sonoran) vegetation by using plant species that provide contrast in color and vertical diversity. Maintain indigenous color and form for both sloped areas and areas with denser and more vertically structured (Upper Sonoran) vegetation.

7. Recognize the importance of vegetation along washes in low-lying areas (Valley Floor) and areas with sparse vegetation, such as Creosotebush, bursage (Lower Sonoran) and extend it into adjacent uplands.

8. Limit the use of exotic plant species to retain the inherent Sonoran Desert landscape character. Use plant palettes that are appropriate to specific development zones and change the mix or proportion of indigenous to non-indigenous across Land Classification Categories (LCC's).

4.2.3 Scenic Resources

The Management Approach, to balance Scenic Resources with sensitive development of ESDA lands is described in The Desert Spaces Plan, as follows:
"Prohibit development that disturbs ridge and crest line or otherwise degrade the scenic integrity of visually sensitive (as seen by large numbers of people from close range) mountains and washes."

Definition:

Under Conservation Area policies, scenic resources are described as the form, color, and texture of the natural landscape. Scenic quality is degraded when there is a high degree of visual contrast between a given land use and these three elements. Environmentally sensitive development areas, formerly retention areas, describe protecting ridge and crest lines and areas seen by large numbers of people from close range. The Plan does not define the direction or orientation of crest lines.

Issue:

These guidelines use an adaptation of a system commonly used by federal agencies to determine the relative scenic quality of significant public lands. This method helps to delineate where the highest scenic values are located, accounts for community values, and attempts to predict the anticipated sensitivity of certain types of land to

development. Each municipality will be responsible to define their community values.

The design guidelines have applied the basic components of scenery management to determine the relative scenic value of the LCC categories. These components use a variety of factors as described below:

1. SCENIC ATTRACTIVENESS determines whether the landscape is distinctive or just a common representative of the landscape of the regional area. Attractiveness is quantified by rating several factors such as variety, vividness, coherence, harmony, uniqueness, and intactness.

2. The LEVEL OF CONCERN for an area's scenic quality is a measure of the degree of public importance placed on landscapes viewed from travelways such as roads which are linear concentrations of public viewing, and use areas such as natural areas, parks and civic places which receive concentrated public use. In the Desert Spaces Plan, reference is made to mountains and washes as important areas to maintain scenic integrity. Major roadways, especially those designated as scenic corridors by local jurisdictions, are also logical places to designate as having a high level of concern and interest in the scenic resource. Local jurisdictions can apply their community values to determine their own level of concern about development in a specific area.

3. DISTANCE ZONES are employed as a gauge of the sensitivity of the landscape to development: immediate foreground (0-300'), foreground (300' to ½ mile), middle ground (½ mile to 4 miles) and background (4 miles to horizon).
The evaluation process and application of this technique can be developed as a specific set of guidelines within this document. Local and county jurisdictions can either map these areas using staff time, or hand the process and tools to a developer to determine what impact the development will have on scenic quality. It is recommended that the jurisdiction first make some basic determinations such as what is truly valuable to the community, and the acceptable degree of change the community values may support. This means establishing areas of value like scenic corridors or viewsheds which give the applicant some direction.

These policies have as their basic assumption that public rights-of-way such as roadways and public parks are the most common way most people experience the landscape. Therefore, preference is given to major roadway corridors, arterial streets, and trails, as well as views from public parks. These are the important viewsheds from which to protect the scenic quality of the landscape.

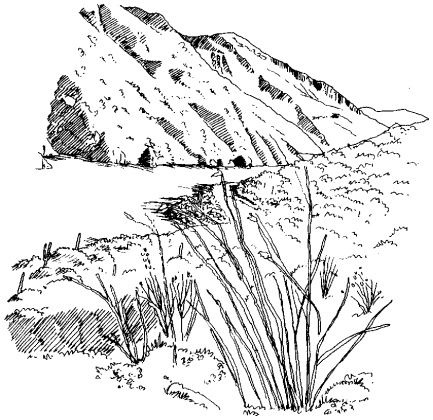
Policies:

Policies for Scenic Resources in all ESDA lands include:

1. Establish regional scenic corridors along certain primary travelways and canals from which the scenic resource value can be determined through local community values, and quantified using the system proposed in these guidelines. Set more specific guidelines on the character of any development in those areas, consistent with this document. Existing scenic corridors include Cave Creek Road and Carefree Highway.

2. Establish scenic corridors along the regionally significant rivers and washes as identified in the Desert Spaces Plan: the Salt, Gila & Verde Rivers, Cave Creek, Skunk Creek, New River, Agua Fria River, Hassayampa River, and Centennial Wash. These corridors could also include desired habitat linkages such as those listed on page 18, #3 of the Desert Spaces Plan.

3. Establish regionally important use areas from which the scenic resources can, in some measure be protected. These might include key destinations within McDowell Regional Park, Estrella Regional Park, White Tank Regional Park, Cave Creek Recreation Area, Lake Pleasant Regional Park, Phoenix Mountain Preserve, South Mountain Park, Buckeye Hills Recreation Area and the Tonto National Forest.



4. Establish regionally significant landmarks within each jurisdiction in the region. These could include the large mountain ranges mentioned in the Desert Spaces Plan including Union Hills, Hedgpeth Hills, Deem Hills, Mazatzals, McDowells, Estrellas, White Tanks, Hieroglyphics, and New Rivers. Develop ways in which to jointly protect viewsheds and distance zones to these landmarks and avoid the negative visual impact development has created on landmarks such as Mummy, Black and Camelback Mountains.

5. Provide assistance and support to local county jurisdictions desiring intergovernmental agreements to protect scenic resources along shared travelway corridors and from other regionally significant places.

6. Help local and county jurisdictions establish transitional zones on slopes less than 15% which surround the regionally significant landmarks to protect their scenic quality. Parking areas and roadways providing access to these features can be built in these areas, provided these development follow the design guidelines as described in this document; urban development should be restricted and carefully designed to blend in to these natural features. Special attention should be given to color, reflectivity, roof shapes and materials, placement of structures and landscaping.

7. Establish methods for protecting the foreground and background view to major regional landmarks identified above from primary travelways and scenic corridors established in # 5 above.

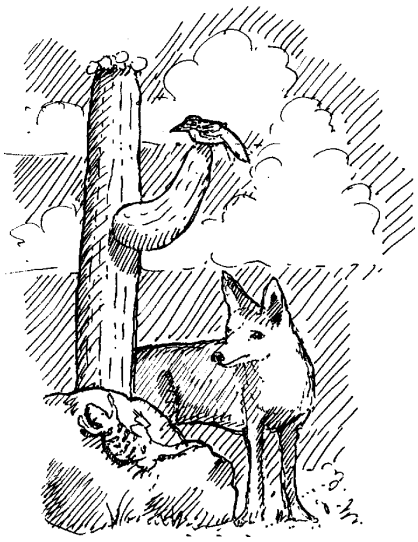
8. Establish parameters for development of areas adjacent to conservation areas and other types of preservation areas. These areas should be sensitively designed to create a sense of transition to the protected area. Special emphasis is given in the guidelines to sensitively integrate development adjacent to conservation areas and preservation areas.

4.2.4 Wildlife Habitat

Management Approach:

The Management Approach, to balance Wildlife Habitat with sensitive development of ESDA lands is described in The Desert Spaces Plan, as follows:

"Recognize that many animal species are essential components of healthy ecosystems; conserve their existing habitat; recreate habitat where it has been destroyed and provide new habitats where appropriate."



Definitions:

Wildlife Habitat includes: Watchable wildlife (native birds, smaller reptiles, insects), targeted to limited smaller areas of open space with urbanized settings; All Wildlife (large to small mammals, native birds, reptiles, insects), targeted in larger open space areas at the fringes or periphery of urbanized areas.

The essential components of a healthy ecosystem for Wildlife Habitat for peripheral open space include: Species Diversity (to keep foodwebs intact and allow complex species interactions, including predator prey relationships and competition; Connectivity (allow migration / emigration of individuals, dispersal, maintenance of genetic diversity, recolonization of areas); Control of introduced and pest species; Control of human impacts (noise, recreational activities (off-highway vehicular use), vandalism, unauthorized trash dumping.

Issues:

Wildlife Habitat needs Native Sonoran desert scrub vegetation (palo verde, mesquite, ironwood, saguaro, mixed scrub and cacti) and riparian vegetation (cottonwood, willow, mesquite, and mixed deciduous woodland).

Essential components to retain Wildlife Habitat include: Water (for some); Food (related to type, diversity, and density of vegetation); Space (territories, home range sizes); Cover (predator escape, movement, breeding sites, related to type and density of vegetation); Connectivity (allow migration / emigration of individuals, dispersal, maintenance of genetic diversity, recolonization of areas.

The area that needs to be retained for wildlife depends on type of open space.

In Interior open spaces: Researchers have suggested that lower density development (2 houses per 2.5 acres) can help maintain natural diversity and diversity of native birds if native vegetation is used in landscaping. Direct connectivity is not required for birds and many insects that can fly between patches of suitable habitat or lizards which have very small home ranges; However, indirect connectivity by use of native vegetation in urban landscaping likely enhances the viability of otherwise isolated "habitat islands" for these species.

In Peripheral open spaces: To maintain full complement of wildlife species, connections to large tracts of preserved natural open space must be maintained, particularly for large predators such as mountain lions, which may require several thousand square kilometers of habitat to persist. Connections must be maintained in a natural and undisturbed state to allow movement of individuals. Wildlife corridors need to allow movement; thus fences or segmentation of open space should be prohibited, unless designed to allow wildlife movement.

Wildlife values are generally related to the density and diversity of vegetation. Values, in decreasing order are: mixed-deciduous riparian, desert riparian (wash), Upland Sonoran Desert scrub, Lower Colorado River Sonoran Desert scrub.

A healthy ecosystem and ecological viability for Wildlife includes maintaining all or part of "pre-settlement" plant and wildlife communities.

Policies:

Policies for Wildlife Habitat in all ESDA lands include:

1. Limit impacts to riparian habitats to those required for road and utility crossings. Revegetate disturbed areas using indigenous vegetation to restore habitat functions and values.

2. Conserve corridors along ephemeral washes to preserve habitat with the greatest value for wildlife. Include the floodway, floodplain, and an appropriate upland buffer to allow a transition to urbanized areas. Limit recreational activities within conservation corridors to limit disturbance of wildlife and degradation of habitat conditions. Make corridors continuous and linked to dedicated conservation areas.

3. Place linear utility lines parallel to conserved corridors and use them to further buffer the transition to urbanized areas. Design overhead structures to provide nesting habitat and to prevent impacts to wildlife. Where appropriate adjacent to development areas, power lines should be buried underground.

4. Design road crossings of washes to minimize impacts to wildlife movement. Appropriate solutions may include bridges or culverts that accommodate wildlife movement. Larger washes should be bridged or culverted, particularly those receiving moderate to high traffic volume. Smaller washes with relatively low traffic volume should have dip crossings. For larger divided roadways, the median should be open and span (lane) width minimized to encourage movement underneath the structure. Bridges and culverts should have a minimum height clearance of 6.5 to 10 feet (2-3 meters) above the ground. In general, the dimensions of the structure should conform to an openness ratio of 0.6 or greater, based on meters [(opening width x height)/(length of crossing)]. In situations where these dimensions cannot be achieved and traffic volume is relatively low, low flow or dip crossings should be constructed. If a roadway obstructs access to surface water source, an alternate source should be developed on the other side of the road to discourage movement across the road and to minimize traffic-related mortality.

5. Avoid impacts to special status wildlife by conducting inventories and establishing standard procedures for dealing with such species, if they occur.

6. Maintain patches of natural habitat of the appropriate size and spacing to retain wildlife use and movement patterns.

7. Increase the proportion of protected natural open space in areas closer to dedicated conservation areas to provide a more gradual transition to urbanized areas.

8. Complete studies or inventories to determine appropriate natural open space connections or linkages between conservation areas.

9. Allow fencing or walls only where they do not disrupt natural wildlife movement patterns.

10. Promote planting and maintenance of indigenous vegetation along canals and in other public places to enhance use by native wildlife.

11. Establish and enforce regulations on household pets to reduce impacts to native wildlife.

12. Use designs and measures that minimize undesirable conflict or contact between humans and wildlife.

4.2.5 Cultural Resources

Management Approach:

The Management Approach, to balance Cultural Resources with sensitive development of ESDA lands is described in The Desert Spaces Plan, as follows:

"Protect and conserve resources that give a sense of history such as landmarks; historical places, structures, and artifacts; archaeological sites; and significant locations of petroglyphs and other use areas."

Definitions:

Cultural Resources include historic buildings, landmarks, sites and archaeological sites with local or regional importance (including petroglyphs, temporary and permanent habitation sites, canals, trails), traditional cultural and historical properties.

Issues:

Federal standards should be applied with oversight by the State Historic Preservation Office (SHPO). The SHPO currently works with communities in this capacity. Use of existing standards and criteria for determining significance of cultural resources will ensure consistency and facilitate implementation of guidelines.

High concentration of archaeological sites are known to occur along the Salt and Gila Rivers, and other waterways. However, archaeological sites occur across virtually all landform types in the County. Due to large gaps in the database, predictive modeling to determine the potential for cultural resource sites in particular areas is not likely to be reliable.

Policies:

Policies for Cultural Resources in all ESDA lands include:

1. Assess development areas for the presence of significant cultural resources. Avoid or preserve significant sites where possible, and mitigate through data recovery otherwise.

2. Encourage interpretive development of regionally and locally significant sites. Tailor design of interpretative facilities based on size and location and maintain surrounding vegetation in natural condition to preserve site context.

4.3 Development Activities

The man-made resources of the land include the following issues: Agricultural Resources; Development Density, Type; Grading, Drainage; Recreation; Resource Rehabilitation; Infrastructure Impact; Planning Coordination. This section includes policies for each of these land resource issues.

4.3.1 Agricultural Resources

Management Approach:

The Management Approach, to balance Agricultural Resources with sensitive development of ESDA lands is not described in The Desert Spaces Plan, however The Maricopa Farm Bureau Board identified concerns. This section includes

Agricultural Resources and Agricultural Development.

Definition:

The ESDA lands contain 17,600-acres of agricultural land, based on the 1995 Land Use Plan. Thus, agricultural land represents only about 1% of the ESDA lands. This includes 17,430-acres of agricultural land in the Valley Floor, 130-acres of agricultural and in the Bajada, and 40-acres of agricultural land in the Foothills.

Agriculture as a resource has several benefits as listed in the Desert Spaces Plan. Agriculture is important to the economy of the region, contributing $6.3 billion in 1993 from direct and indirect sales. This statistic has stayed steady at least through 1997, the latest date which numbers are available. Existing agricultural land helps define the edges of community, acting as a buffer from urbanization. The land conveys a sense of openness and rural character which is valued by many people. Recent instances where agricultural land has taken on added value is in protecting the airports at Williams Gateway and Luke Air Force Base. Retaining these lands as agriculture will help ensure that these airports remain viable.

Issues:

The proximity to urban development often leads to a higher tax burden, making it difficult for farmers to continue farming. Some measure of protection by local communities may be necessary in order to retain this land available for agriculture. The land is typically on the fringe of urban development, is flat and easily developed.

While not a natural desert landscape, agricultural land does retain a sense of history or openness from other land uses, essential qualities of "open" and "space". Existing patterns of agricultural land often occur next to major ways contributing to scenic quality and landscape character. In most cases, however, the open land contributes to the vastness of the landscape, and a sense of separation from things urban. The landscape is often homogeneous, flat and is without tremendous diversity, supporting a monocultural plant community. Tree farms or orchards provide a vertical sense of enclosure and simulate woodland/forest character. Cropland adds spatial distance, an uninterrupted foreground and middleground from which to view the surrounding landmarks on the horizon. Protecting agricultural land can contribute to establishing an edge to suburban sprawl and a boundary to a community, reinforcing community identity by buffering one community from another.

Certain types of agriculture, however, appear in conflict with scenic quality and desert vegetation and to some degree, retaining open space character. In ESDA lands, livestock grazing may require restriction and more aggressive management. The conversion of natural desert land into agricultural production is inherently contrary to the assumption that the open space character of environmentally sensitive lands should be retained. Additionally, the 1980 Groundwater Management Act makes development of these lands as agriculture improbable, therefore feasible.

Policies:

1. Support local and County efforts to acquire conservation easements and use other land use planning strategies to retain rural character. This will protect compatible uses such as airport development and wildlife habitat, protect viewsheds that define community values, and stabilize the agricultural economy of their community.

2. Investigate ways in which tax relief can be granted to those farmers who seek to remain on the land and wish to transfer ownership to succeeding generations. Seek ways in which farms can remain in agriculturally viable

parcels, without encouraging lot splitting. Ensure the tax code is an incentive not a deterrent to sustaining the agricultural base.

3. Evaluate the agricultural land use pattern in relation to providing for community edges, protecting regional viewsheds, and retaining agricultural on the most arable land.

4. Encourage linkage of agricultural open space and wildlife habitat corridors.

5. Allow urban development of critical rural/agricultural landscape only when the development includes elements that retain scenic quality and open space resources.

6. Provide assistance to the communities of Wickenburg, Cave Creek, Buckeye, New River, and Queen Creek in their efforts to protect a sense of separation between their communities and the advancing urbanization.

7. Provide assistance and support to cities and the county in retaining the unique rural landscapes of North, South Mountains and the citrus groves of East Mesa.

Agricultural Development

The Management Approach to Agricultural Development builds from Agricultural Resources.

Policies:

1. Support local and County efforts to protect existing agriculturally viable land from being converted to human settlement.

2. Seek ways to discourage the conversion of undeveloped land to new cropland except when immediately contiguous to existing developed agricultural land, and part of an existing viable agricultural enterprise. The conversion should only be allowed if:
   - The land is viable and appropriate for agriculture.
   - The conversion is a continuation of a logical buffer or edge from one community to another,
   - Strengthens this buffer or community edge,
   - The action does not substantially affect wildlife habitat or corridors,
   - And the newly converted land is restricted from future development. The restrictions can be in the form of conservation easements, deed restrictions, density transfer or other such techniques.

3. Determine and publicize the important role in which agriculture contributes to the regional economy in order to keep this practice an important part of the region's economic diversity.

4. Support ways in which to support retaining the family farm, allowing the smooth financial transition from one generation to another without significant financial burden. Ensure that this transition does not by default support lot splitting or somehow weaken the viability of the parcel of land as a farming entity in the long term.

5. Provide support to local farmers and their families to help evaluate the need for and location of additional land which is desirable for agricultural uses. Support efforts to grow more sustainable crops that are less water demanding in lieu of cotton and other high demand crops.

6. Actively pursue and apply techniques which protect the open space character of lands that contain natural resources, pristine desert vegetation and wildlife habitat from agricultural development. Discourage

conversion of natural desert land to agricultural land.

7. Allow livestock grazing only in areas where there is the potential for natural recovery over relatively short time frames (LCCs 1-4). In these areas, implement rotation schedules to minimize impacts to resources and ensure more rapid recovery.

8. Management principles to buffer livestock grazing from adjacent land uses and future development should be carefully considered, in order to mitigate land use conflicts. Consider "Land Banking" as an option for sustainable grazing.

4.3.2 Development Density / Type

Management Approach:

Explore creative incentives for development density transfers to help protect sensitive landscapes for open space. Encourage infill development in built-up areas to minimize leapfrog-type development and its potential impacts on natural open space areas.

Definition:

Development includes all man-made land uses that change or impact the natural landform and vegetation. Density refers to development intensity. Measurement techniques include: units per gross acre, for residential homes, or floor area ratio for commercial and other uses. Development type refers to specific land uses and building types.

Issues

New Development within ESDA land has, in the past, utilized planning techniques usually found in urban areas, without regard for the topography and vegetation patterns of the site.

It is the intent of these policies and guidelines to protect natural area open spaces. Thus, densities are included only to illustrate possibilities. It should be the responsibility of the developer, working with the municipality, to show how natural area open spaces are protected when interpreting actual density.

Policies:

Policies for Development Density in all EDSA lands include:

1. The hillsides, unique landforms and drainage corridors of sensitive lands should be preserved and protected, while permitting appropriate development. Define building envelopes to protect existing landscape.

2. Density transfer technique should be used to protect sensitive landscapes and open spaces. This technique can be beneficial to save sensitive landscapes but must be implemented in such a way that the design is compatible with the surrounding environment to support quality of life levels and values expected by the community.

3. Creative ideas to protect natural area open space should be explored, including techniques such as clustering. This technique helps minimize the impact on our fragile desert environment and protects open space by concentrating development in small pockets, rather than allowing development over the entire site.

4. Limit development to a density appropriate to protect the landscape character of a site and encourage a development pattern that

respects sensitive environmental resources and provides abundant open spaces.

5. Integrate community uses including housing, shops, working, schools, parks and civic facilities.

6. Plan and design new communities with easy walking distances between community facilities.

7. Provide convenient access to transit and future transit corridors.

8. Provide pedestrian and bicycle paths to community facilities.

9. Ensure each community contains a central focus with open spaces, parks and community facilities.

10. Provide a mix of one and two story homes within higher density parcels to minimize the impact of the development.

11. Vary setbacks for homes to minimize impact of structures within higher density parcels. Larger and/or multi-story homes shall have larger setbacks to increase landscape buffer zones.

12. New development should utilize colors and materials that blend into the surrounding desert landscape.

13. Encourage grading techniques that respect the topography of the land, utilizing terracing rather than mass grading. Use areas that are not usable for building sites as open space zones.

14. Minimize widths of roads and streets where possible to create wider landscape buffer zones.

15. Explore sharing uses, such as parking, between community facilities.

4.3.3 Grading / Drainage

Management Approach:

Altering existing topography and drainage patterns on large tracts of land, with sensitive vegetation on hillside slopes should be carefully assessed to ensure existing landscape character is protected. Mass grading of large land parcels should be discouraged, when the impact damages sensitive site and environmental factors, such as existing vegetative coverage, existing washes and existing drainage patterns.

Definition:

Grading and Drainage techniques are necessary when changes are proposed to alter the landscape character of an existing landform and vegetation. These man-made techniques should be sensitively integrated into the existing topography and drainage patterns.

Issues:

In order to accommodate man-made land uses on ESDA lands there will be impacts to the existing land. The intent of these guidelines is to help minimize environmental impacts.

Mass grading of large land parcels and changing existing drainage patterns will need to be carefully assessed. Mitigation techniques may be required to protect sensitive lands and reduce negative environmental impacts.

Grading of small land parcels or clusters of development are preferred, because natural open space buffers and separation spaces can more easily be integrated with development. Land

terraces and natural drainage channels should be provided on steeper slopes.

Policies:

1. Developers should produce a master grading plan that respects the natural features of a site, especially on sensitive slopes of the Sonoran Bajada and Sonoran Foothills.

2. Avoid mass grading of sensitive natural areas. Guidelines define when mass grading is appropriate, applicable and beneficial for smaller lot developments.

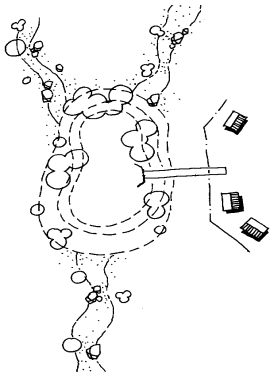
3. Developers are encouraged to create roadway standards that are responsive to site grades and steeper slopes.

4. Innovative grading solutions are encouraged to minimize large retaining walls, steep landscape banks, and excessive cut and fill requirements to create buildable parcels.

5. Developers are encouraged to examine split level products and side yard retaining walls as a way to reduce grading impacts. In addition, they are required to adhere to federal and local accessibility codes regarding maximum slope criteria.

6. Changes to drainage should be carefully integrated into a master drainage plan, that recognizes existing drainage and wash patterns, discharge locations and storm water flows.

7. Creative design for storm water harvesting and detention ponds should be considered to reduce increased storm water flows and provide the opportunity to channel storm rain-water to the Sonoran desert plant material.



8. Integrate natural drainage into the development as an environmental amenity feature, such as trails and open spaces.

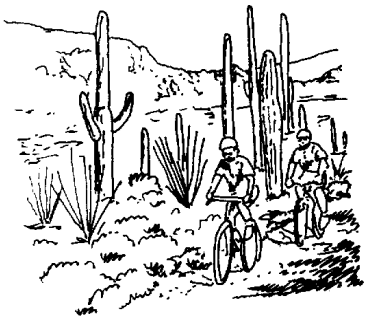
4.3.4 Recreation

Management Approach:

Provide open spaces, which serve the passive and active recreational needs of the region's growing population. Coordinate with existing Municipal and County Parks and Desert Preserves to support Recreational needs. Develop a network of trails, bikeways and pathways, along rivers, streams and washes, to provide for passive recreational activities linking parks, scenic viewpoints and trail heads along major transportation corridors, with major destination areas. Develop active recreational facilities in conjunction with public facilities.

Definition:

Recreation provides refreshment of strength and spirits after work, or a diversion. Activities include active and passive recreational uses. Active uses bring more people and create a higher impact on the landscape, with intensive uses such as sporting events, entertainment, amusement and social gatherings. Passive uses bring fewer people and create a lower impact on the landscape, with uses such as relaxation, walking, sitting and play.



Issues:

Recreation is an important component of community development, yet in the ESDA lands, recreation includes protection of natural resources and landscapes. A comprehensive holistic park and open space plan is critical to the development of communities. This includes a park system that balances resource based recreation and traditional recreation. Both are important and essential to a community.

Parks and development of community open space is a critical part of development uses. Developing open space to complement other uses is important to accommodate user needs, however developed open space it is not considered natural area open space. Natural open spaces should be protected in ESDA lands.

Golf Courses can be environmentally sensitive, with careful planning, design, construction, as well as good maintenance and operations procedures and principles. Golf Courses in ESDA lands should be environmentally sensitive; however, they are not considered natural area open spaces. Golf Courses are considered a developed use and are subject to the same guidelines as other developed uses.

Policies:

1. Coordinate with existing system of regional, community and neighborhood parks and the Desert Preserves to develop linkages, trails, bikeways and pathways along rivers, streams and washes and other existing circulation corridors.

2. Develop safe public access to passive recreational activities and trails linking open spaces, between existing park facilities and new development areas.

3. Provide active recreational facilities in conjunction with public facilities, including schools, retention basins and flood control areas, in order to maximize benefit to the public.

4. Include recreational planning as a required part of all proposed master plans. Recreational amenities should be included in the first phases of development to ensure the connectivity is protected.

5. Non-desert parks will become public green spaces for communities, including intensively developed turf areas.

4.3.5 Resource Rehabilitation

Management Approach:

"Rehabilitate natural and cultural resource areas that are in proximity to downtown areas and other population centers. Encourage infill development to revegetate rivers, floodways and washes, make pedestrian connections and accommodate public access.

Definition:

Resource Rehabilitation includes: Natural resources that have been designated due to adverse impact, including rivers, floodways and washes in the upper Sonoran desert foothills and in the lower desert areas and population centers;

Cultural resources that have been adversely impacted or underutilized in proximity to downtown areas and population centers.

Rehabilitating underutilized natural and cultural resources near population centers will help relieve development pressure on the more sensitive, undisturbed natural areas.

Issues:

Rehabilitation standards should include a range of conditions, including protection of natural areas, historic restoration of cultural resources and development of urban parks. Standards should be compatible with community values, municipal and state agency standards for protection, restoration and open space development.

Careful management and protection of sensitive wildlife issues, as well as development of passive trails and appropriate active recreational uses should be developed.

Gravel pits, located in natural rivers and washes, should be rehabilitated to match natural conditions where appropriate.

Policies:

1. Identify sensitive natural resources that have been degraded due to adverse impact, including rivers, floodways and washes.

2. Identify cultural resources that may be impacted by development.

3. Protect and preserve sensitive natural resources as natural area open space.

4.3.6 Infrastructure Impact

Management Approach:

"Evaluate the social, economic, and environmental impacts of extending roads and utilities into undeveloped areas and the subsequent demand for publicly accessible open space resources and recreational opportunities. Only permit infrastructure to extend into undeveloped areas pursuant to local and regional land use and open space plans that protect critical private lands as identified in this plan".

Definition:

Infrastructure impacts from roads and utilities include social impacts, including public and community comments; economic impacts, including evaluating the cost and benefits; environmental impacts, including the sensitivity of the land to accommodate roads and utilities without adverse disturbance to the natural landscape.

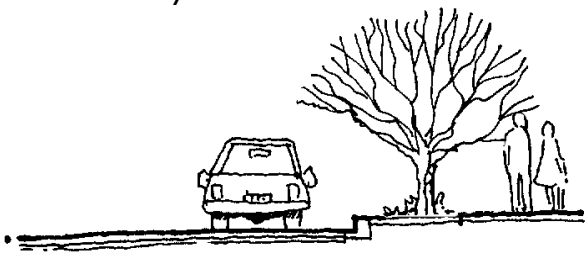
Issues:

Infrastructure is being expanded by municipalities and developers for new development growth. Approvals should include adjacent municipalities and local agencies. Conditions can be part of a developer agreement.

Adverse impact of infrastructure extensions can be mitigated by proper planning of route corridors to avoid sensitive landscapes. Impacts can be minimized by salvaging plant materials and replanting compatible plants to restore the open space character.

Policies:

1. Ensure community infrastructure roads and services do not compromise pedestrian walking scale opportunities, which help strengthen the creation of a livable community.



2. Assure that large scale development bear the cost of providing any additional public facilities their occupants require, including schools and open spaces.

3. Provide proper planning of utility corridors in order to mitigate any environmental impacts on sensitive landscapes and natural resources.

4.3.7 Planning Coordination

Management Approach:

"Encourage review of projects occurring in Retention areas by appropriate agencies/organizations through out planning activities.

Definition:

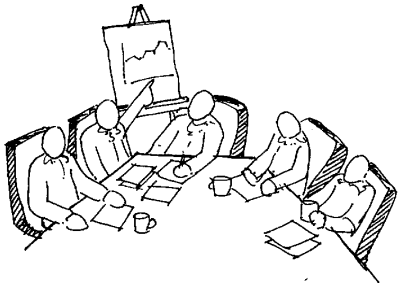
Planning coordination includes municipalities and local agencies. Planning tools include the general plan, municipal ordinances, and continuing with policies and design guidelines to search for creative and sensitive development of specific projects to protect and enhance open spaces in new developments.

Issues:

Planning coordination should reach out beyond one municipality to adjacent municipalities to work together.

Municipalities, local agencies and developers should work together as partners. Policies and guidelines are important tools to protect critical environmental areas, while encouraging sensitive development.

Techniques to encourage planning coordination, that should be explored, may include tax sharing, and joint community overlay districts.



Policies:

1. Coordinate planning of development sites with municipal General Plans and open space plans, to ensure sensitive landscape character of a site is identified and techniques for protection are agreed upon.

2. Coordinate planning of development with local municipal master plans, guidelines and ordinances, including: (ESLO) Environmentally Sensitive Lands Ordinances, Sonoran Preserve Master Plan, design guideline documents that reflect local values and these design guidelines.

5. LAND CLASSIFICATION

Vegetation and Landform are the primary parameters that define a land classification category. Together, Vegetation and Landform define the character of the land. They are quantified, mapped, measurable, objective criteria. ESDA lands are sensitive lands for development, thus each Landform Classification Category should protect the natural landscape character and features of our Sonoran Desert.

5.1 Vegetation

Vegetation density and diversity affects wildlife value and influences visual sensitivity. Vegetation affects recreational opportunities and vegetation type and condition may affect resource rehabilitation potential.

Vegetation types are based on an extensive and ongoing mapping effort (GAP Analysis) for the State of Arizona, undertaken by the Cooperative Parks Study Unit at the University of Arizona. In Maricopa County, the GAP analysis identified a total of 38 vegetation associations. These associations were combined to form two vegetation types that describe the majority of the vegetation occurring in the County.

Vegetation is organized into two types:

- Lower Sonoran – Creosotebush, bursage, saltbush associations;
- Upper Sonoran – Palo verde, mixed cacti associations.

Vegetation types, within the ESDA lands, are shown on the attached MAP – Figure 1 – Environmentally Sensitive Development Areas (ESDA) and distribution of predominant vegetation communities in Maricopa County.

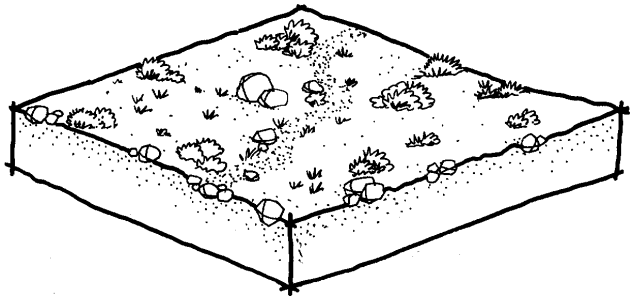
5.2 Landform

Hillside slope is part of landform, which affects soils, hydrology and visual sensitivity. Slope may also correlate with cultural resource types and influences recreational opportunities.

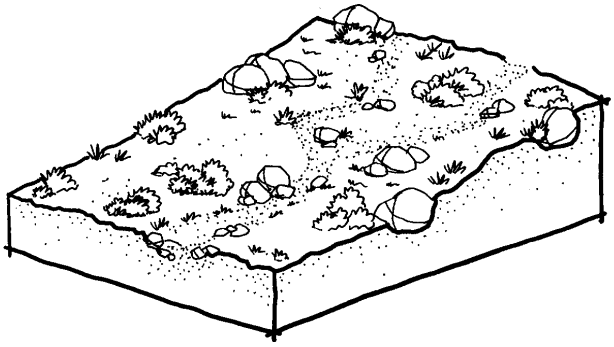
Landform categories are based on three slope classes which represent the general landform characteristics of the study area. Slope is based on existing Geographic Information System (GIS) data obtained from the U.S. Geological Survey.

Landforms are organized into three types:

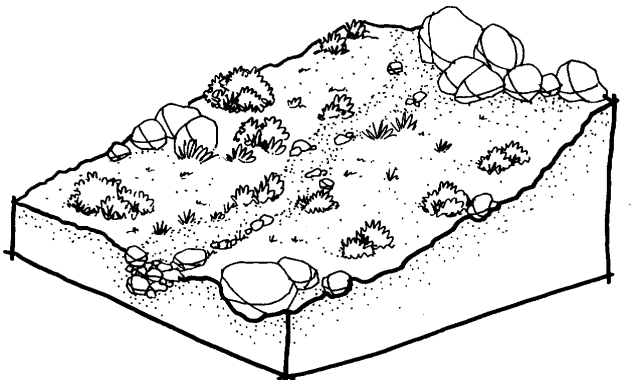
- Valley Floor – flatter developable lands with 0 to 3% slope;



- Bajada – gently sloping hillside lands with 3% to 6% slope;



- Foothills – steeper hillside lands with over 6% slope;



5.3 Land Classification Categories

The combination of Vegetation and Landform create six Land Classification Categories (LCC). These categories define the character of the land. The Design Guidelines for sensitive development of ESDA lands will be based on these six categories, as follows:

LCC-1: Lower Sonoran, Valley Floor
LCC-2: Lower Sonoran, Bajada
LCC-3: Lower Sonoran, Foothills
LCC-4: Upper Sonoran, Valley Floor
LCC-5: Upper Sonoran, Bajada
LCC-6: Upper Sonoran, Foothills

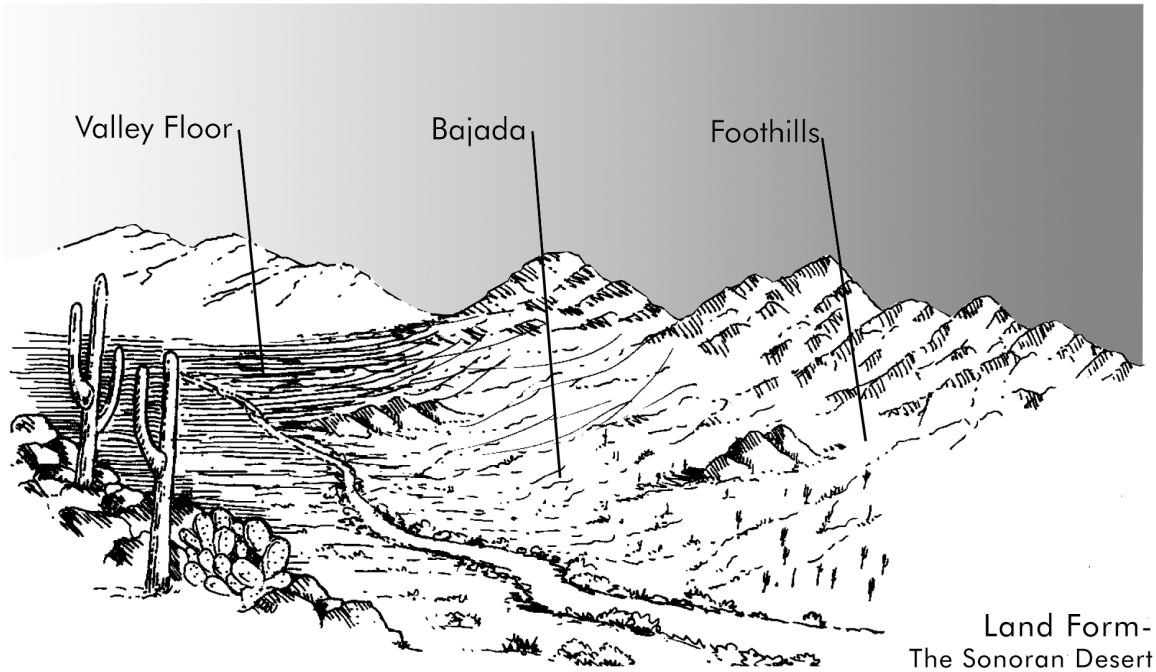
5.4 LCC Matrix

The following sketch illustrates a typical sketch of the ESDA lands, with a matrix of the six LCC icons to show general characteristics of each category.

The view of the hillside shows the three landforms: Valley Floor, Bajada, Foothills. The context illustrates the landscape character of the ESDA lands.

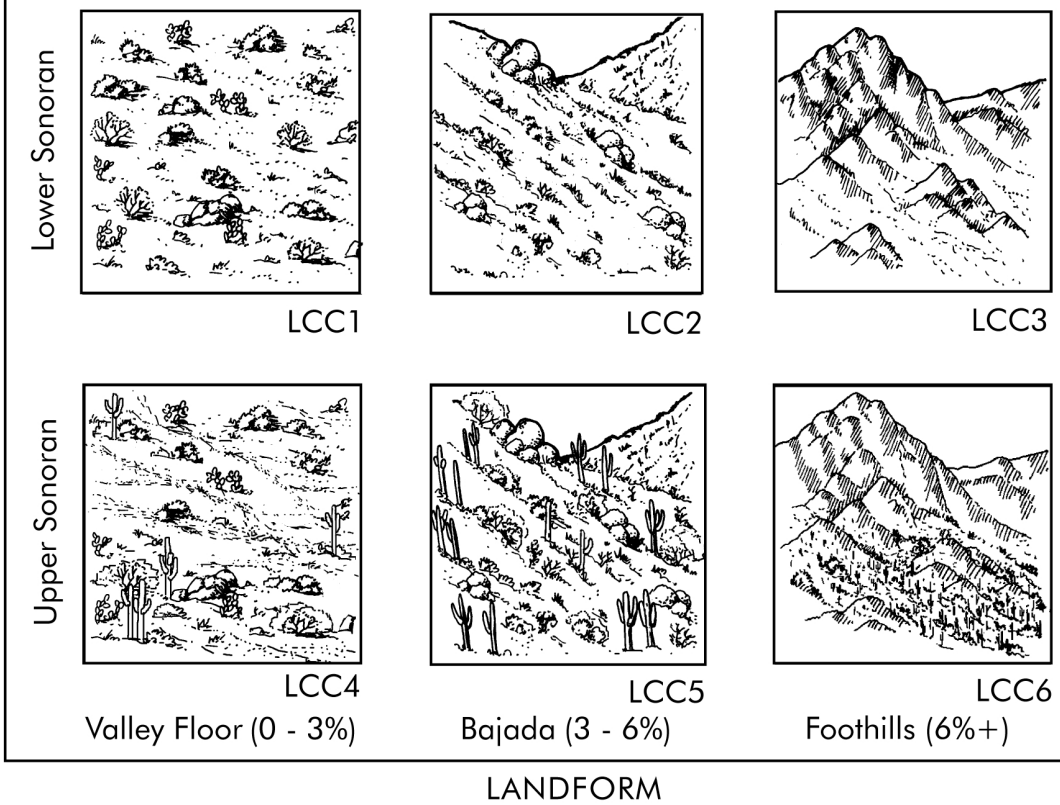
The six icon sketches, LCC-1 through LCC-6 shown below the landform sketch, illustrates each Land Classification Category (LCC), as a combination of vegetation type and landform.

Desert Spaces
e group



Land Form-
The Sonoran Desert

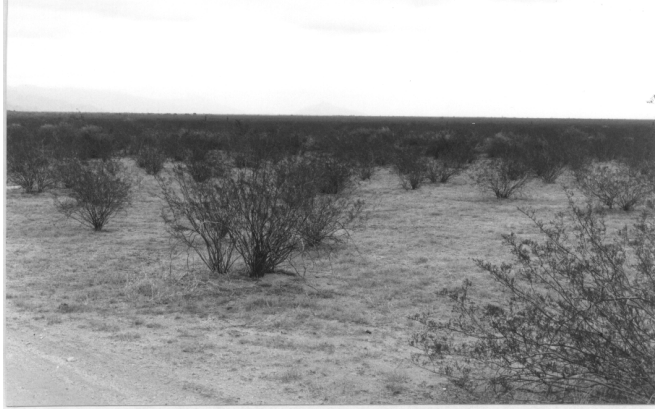
Land Classification Category (LCC) Matrix



e group; A. Dye Design; SWCA, K. Floor & Associates

5.5
Description of each Land Classification Category (LCC)

5.5.1
LCC-1: Lower Sonoran, Valley Floor



This category represents the majority, about 61% of the ESDA lands, or about 776,219 acres.

This LCC is characterized in general as level plains with sparse vegetation. The Lower Sonoran vegetation type is dominated by relatively homogeneous and monotypic stands of creosotebush, bursage, or saltbush. Areas in the western and southern part of the County are consistent with this LCC. Overall, the density and diversity of vegetation are low, with most of the trees restricted to drainageways. This creates a visual dichotomy between the sparse uplands and more vegetated wash areas. Wildlife density and diversity are relatively low; most of the wildlife resources such as food, cover, and breeding areas are concentrated along the larger washes. Low or no slope tends to concentrate visual effects to the foreground, while the lack of vegetative screening also results in middleground and background effects.

Soils within this LCC are generally deep and alluvial. The more numerous smaller washes found in more sloped areas are consolidated into fewer, but larger washes in this LCC. Streambeds are typically wide and sandy and carry high volumes of floodwaters.

This LCC includes lower areas that have been occupied, both historically, and prehistorically, by a greater number of people. Cultural resource types therefore include prehistoric and historic permanent settlements and agricultural features.

Recreational opportunities in this LCC include those associated with passive, non-motorized activities as well as motorized activities. Motorized recreational activities dominate in some areas due to relative ease of access.

5.5.2
LCC-2: Lower Sonoran, Bajada

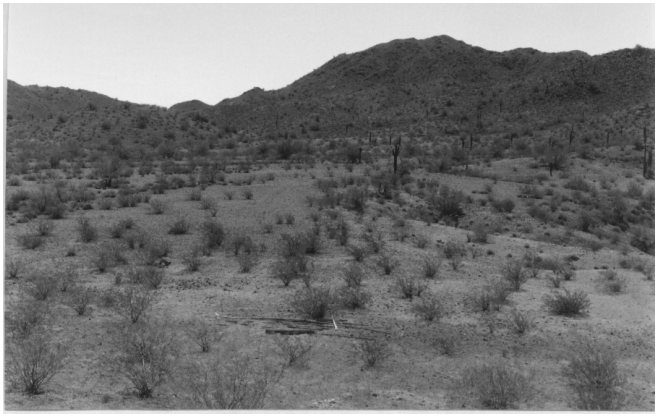
This category represents about 6% of the ESDA lands, or about 73,989 acres.

This LCC is characterized by slightly more sloped areas that support sparse vegetation. The lower portions of wide outwash plains or alluvial fans that are dominated by creosotebush and/or bursage typify this LCC. Vegetation characteristics of this LCC are similar to LCC-1; plant and wildlife density and diversity are relatively low, wildlife resources are concentrated along larger washes, and there is a clear visual distinction between washes and uplands. Due to

higher slope and low vegetative screening potential, visual effects of modification occur in the foreground, middleground, and background.

Soils of this LCC are shallower and more rocky compared to Valley Floor (LCC-1 and 4) areas. The density of washes is also higher, as are wash flow rates. Volume is lower per wash because stormwater is distributed over a larger number of smaller washes. Cultural resource site characteristics are scattered with smaller sites. Cultural resource types include prehistoric temporary settlements and some petroglyphs. Larger sites are less prevalent due to reduced emphasis on agriculture and greater distance from the larger riverine systems. Recreational opportunities in this LCC include those associated with passive, non-motorized activities as well as motorized activities. Motorized recreational opportunities may be somewhat limited by access and terrain.

5.5.3
LCC-3: Lower Sonoran, Foothills



This category represents about 4% of the ESDA lands, or about 45,157 acres.
This LCC typifies areas with relatively high slope and low vegetation density and diversity, such as the middle or upper portions of alluvial fans and foothills of some mountains. Plant and wildlife density and diversity are relatively low and wildlife resources are concentrated along larger washes. A visual dichotomy exists between washes and uplands. Due to relatively high slope and low vegetative screening potential, visual effects of modification occur throughout the foreground, middleground, and background. Development activities within this LCC are likely to have the greatest visual impact, from a local and regional standpoint.

Soils of this LCC are generally shallow and rocky. Wash density and flow rates are high, while volume per wash is low. Streambeds are typically narrow, rocky, and incised. Cultural resource sites are smaller and more scattered. There are a greater number of petroglyphs and few sites related to prehistoric agricultural uses. Motorized recreational opportunities in this LCC are limited by slope and terrain.

5.5.4
LCC-4: Upper Sonoran, Valley Floor

This category represents about 28% of the ESDA lands, or about 355,746 acres.

This LCC is characterized as relatively level areas that exhibit notably greater vegetation density and diversity than LCC-1 lands. In addition to low-growing shrubs, such as creosotebush and bursage, upland areas also support trees (palo verde, ironwood) and larger shrubs and cacti (including saguaro), resulting in greater structural

diversity and higher species richness. Areas in the northern and southwestern part of the County are consistent with this LCC. Because the uplands support a greater diversity and density of plants, the visual distinction between washes and uplands is reduced. For the same reason, wildlife density and diversity are higher and important wildlife resources occur in both wash and upland areas. Visual effects are primarily in the foreground, due to low slope and the role of denser vegetation in more effectively screening visual effects in the middleground and background.

Physical characteristics (soils, hydrology) and cultural resource site characteristics of this LCC are similar to those described for LCC-1. Denser vegetation may limit motorized recreational uses in some areas.

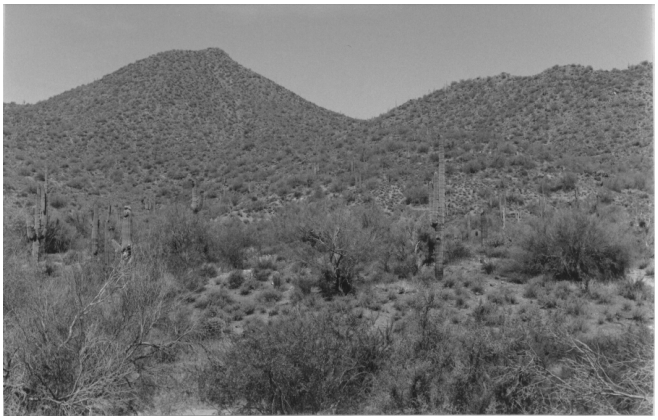
5.5.5
LCC-5: Upper Sonoran, Bajada

This category represents about 1% of the ESDA lands, or about 11,572 acres.

This LCC represents more sloped areas with relatively high vegetation density and diversity. The lower portions of alluvial fans dominated by palo verde and mixed cacti vegetation typify this LCC, such as the bases of low mountain ranges in the northern part of the County. Saguaro is a visually dominant and important component of this LCC. Higher density and diversity of vegetation plant results in higher wildlife density and diversity that is dispersed between both wash areas and upland areas. Because the uplands support a greater diversity and density of plants, the visual distinction between washes and uplands is less. Visual effects of modification occur primarily in the background due to higher slope. Visual effects in the foreground and middleground are reduced by vegetative screening.

Physical characteristics (soils, hydrology) and cultural resource site characteristics of this LCC are similar to those described for LCC-2. Denser vegetation likely limits motorized recreational uses in some areas.

5.5.6
LCC-6: Upper Sonoran, Foothills



This category represents less than 1% of the ESDA lands, or about 6,882 acres.

This LCC represents areas with relatively high slope and relatively high vegetation density and diversity. Upper portions of alluvial fans and the foothills of low mountains dominated by palo verde and mixed cacti vegetation typify this LCC. Like LCC-5, saguaro is a visually dominant and important component of this LCC and higher density and diversity of vegetation plant results in higher wildlife density and diversity that is

dispersed between both wash areas and upland areas. Due to greater diversity and density of plants, the visual distinction between washes and uplands is reduced. Visual effects of modification occur primarily in the background due to higher slope. Visual effects in the foreground and middleground are reduced by vegetative screening.

Physical characteristics (soils, hydrology) and cultural resource site characteristics of this LCC are similar to those described for LCC-3. Both denser vegetation and steeper terrain limits motorized recreational uses many areas. Recreational opportunities are primarily passive, non-motorized, and nature-oriented.

6. DESIGN GUIDELINE MATRIX

The matrix, on the next page, is an index showing the combination of Policies and Land Classification Categories. The matrix highlights principles described in the ESDA Design Guidelines for each LCC.

6.1 Policies and Land Classification

Policies include general principles to protect sensitive Land Resources and guide Development Activities, as outlined in Section 4. The left column of the matrix lists the policies, including:

A. General Guidelines
B. Land Resources
C. Development Activities

Land Classification Categories (LCC) include six categories outlined in Section 5. These categories are listed along the top row heading the six columns of the matrix.

6.2 Matrix – Index to the Guidelines

This organizational matrix technique provides an index to the design guidelines. The guidelines are organized according to Land Classification Categories, LCC-1 through LCC-6.

Design Guidelines for each category describes how to achieve the general policies for Land Resources and Development Activities.

In order to use this matrix, identify the LCC of interest, along the top row. Then, refer to specific rows for A. General Guidelines; B. Land Resources; C. Development Activities.

Refer to the relevant sub section number of Section 7 Design Guidelines for environmental guidelines specific to each LCC.

6.2 Design Guidelines Matrix

	Lower Sonoran Vegetation			Upper Sonoran Vegetation		
	LCC-1	LCC-2	LCC-3	LCC-4	LCC-5	LCC-6
	Lower Sonoran Valley Floor	Lower Sonoran Bajada	Lower Sonoran Foothills	Upper Sonoran Valley Floor	Upper Sonoran Bajada	Upper Sonoran Foothills
A. Overall Guidelines	**7.1 A**	**7.2 A**	**7.3 A**	**7.4 A**	**7.5 A**	**7.6 A**
B. Land Resources	**7.1 B**	**7.2 B**	**7.3 B**	**7.4 B**	**7.5 B**	**7.6 B**
1. Rivers & Washes	7.1 B1	7.2 B1	7.3 B1	7.4 B1	7.5 B1	7.6 B1
2. Sonoran Desert Vegetation	7.1 B2	7.2 B2	7.3 B2	7.4 B2	7.5 B2	7.6 B2
3. Scenic Resources	7.1 B3	7.2 B3	7.3 B3	7.4 B3	7.5 B3	7.6 B3
4. Wildlife Habitat	7.1 B4	7.2 B4	7.3 B4	7.4 B4	7.5 B4	7.5 B4
5. Cultural Resources	7.1 B5	7.2 B5	7.3 B5	7.4 B5	7.5 B5	7.6 B5
C. Development Activities	**7.1 C**	**7.2 C**	**7.3 C**	**7.4 C**	**7.5 C**	**7.6 C**
1. Agricultural Resources	7.1 C1	7.2 C1	7.3 C1	7.4 C1	7.5 C1	7.6 C1
2. Development Density/ Type	7.1 C2	7.2 C2	7.3 C2	7.4 C2	7.5 C2	7.6 C2
3. Grading/ Drainage	7.1 C3	7.2 C3	7.3 C3	7.4 C3	7.5 C3	7.6 C3
4. Recreation	7.1 C4	7.2 C4	7.3 C4	7.4 C4	7.5 C4	7.6 C4
5. Resource Rehabilitation	7.1 C5	7.2 C5	7.3 C5	7.4 C5	7.5 C5	7.6 C5
6. Infrastructure Impact	7.1 C6	7.2 C6	7.3 C6	7.4 C6	7.5 C6	7.6 C6
7. Planning Coordination	7.1 C7	7.2 C7	7.3 C7	7.4 C7	7.5 C7	7.6 C7

7. DESIGN GUIDELINES

This section includes guidelines to help public sector agencies and private developers to achieve consensus in an environmental planning approach for the ESDA lands.

Overall Guidelines for ESDA lands apply to all Land Classification Categories (LCC). In addition to these guidelines, see Section 4, Policies.

Specific Design Guidelines for each Land Classification Category (LCC) describe ways to protect the vegetation and landform with sensitive development. The intent is to protect Land Resources and guide Development Activities.

Guidelines - (A – Overall)

The following overall design guidelines apply to all Land Classification Categories (LCC-1 through LCC-6):

All categories should encourage connectivity to secured open space and conservation areas. Development should be in close proximity to urban areas and existing land uses. Guidelines should enhance open space connections, linkages and buffers where appropriate.

The inherent open space character that needs to be retained includes desert preservation based on community values and natural resource issues such as views, plant densities, wildlife corridors, cultural resources and recreation. Open space is a framework around which sensitive development should be planned and designed. Open space linkages must be carefully woven into development plans, rather than providing unconnected leftover open space after development.

The following overall design guidelines (B-1 through B-5 and C-1 through C-7) apply to all Land Classification Categories (LCC-1 through LCC-6)

Guidelines – (B-1 Land Resources - Rivers & Washes)

A significant river or wash has an influence on the character of the landscape, they can be measured and rated by the size or amount of storm water flow.

Larger washes with greater amount of water flow generally produce significant amounts of vegetation and sustain a significant amount of wildlife within the wash corridor.

All washes, recognized by the "waters of the US designation", are subject to the 404 permitting criteria and planning process.

Natural wash character can be retained by protecting the sloping wash edges and vegetation, while allowing continuous, unimpeded storm water flows.

Wash edges should be managed to avoid increased storm water runoff impact from future adjacent development areas.

Design of wash crossings and hydrology should retain natural geomorphology of washes.

Guidelines – (B-2 Land Resources – Sonoran Desert Vegetation)

Plants retain open space character in the Lower Sonoran Valley Floor, by providing visual texture and a natural aroma, to integrate new development into the existing landscape. Plants also provide habitat for desert animals and insects. However, in order to retain open space character,

plants should be protected in critical mass groupings.

The Native Plant Law provides the opportunity to protect and preserve designated Sonoran Desert Plants. Salvage techniques are important ways to protect native vegetation, ensure significant existing vegetation is moved from it's native habitat to adjacent open spaces, and permit successful integration of development with the existing landscape.

Guidelines – (B-3 Land Resources - Scenic Resources)

Guidelines for Scenic Resources include: The inherent characteristics of visual quality of the landscape including vegetation density and texture; the scenic quality of the landscape; and a scenic quality rating for each LCC.

Guidelines – (B-4 Land Resources – Wildlife Habitat)

Guidelines for wildlife habitat protection include disturbance to washes, linear utility lines, road crossings and open space protection.

Guidelines – (B-5 Land Resources – Cultural Resources)

Guidelines for protection of cultural resources include current Federal standards for archaeology.

Guidelines – (C-1 Development Activities – Agricultural Resources)

Guidelines for agricultural resources include linkages between current agricultural areas and wildlife. Buffers space between communities and adjacent conservation area can provide a transition from urban to natural landscapes.

Guidelines – (C-2 Development Activities - Development Density / Type)

Development should be appropriate to protect the landscape character and sensitivity of the ESDA lands. An open space plan should be considered to guide the planning framework and integrate a proposed development.

Vegetation impact and ground disturbance should be carefully addressed to integrate new development into the sensitive Sonoran landscape.

Guidelines – (C-3 Development Activities – Grading & Drainage)

Site grading and drainage changes must blend into the natural landform and vegetation. Natural techniques are encouraged in place of structural or engineered techniques.

Drainage changes should carefully integrate grading and drainage routes, especially at development edges where storm water drainage discharges into existing washes and channels. The shape of drainage channels should be natural smooth curves. Straight hard surfaced channels should be avoided. Techniques such as energy dissipaters should be considered, to reduce flow rates from man-made channels or culverts to natural areas. Storm water flow rates must be reduced to help mitigate erosion of sensitive channel side slopes and vegetation edges.

Creative storm water-harvesting and detention ponds should be considered, where appropriate, to reduce increased storm water flows and provide the opportunity to allow storm rain-water

to enhance growth of the existing Sonoran desert plant material. These water-harvesting areas should be designed with a naturally graded shape to match the existing topography and provide for a higher intensity of natural plant material.

Guidelines – (C-4 Development Activities - Recreation)

All facilities should be planned well in advance of the actual residential development to eliminate the potential of the "not in my back yard" attitude that develops when a new defined use appears after development has started.

All facilities should be master planned with the participation of the local Parks and Recreation Department of the municipality. This will facilitate a coordinated overall strategy for recreational uses within the municipality.

Guidelines – (C-5 Development Activities – Resource Rehabilitation)

Sensitive natural resources that have been degraded due to adverse impacts, including rivers, floodways and washes should be rehabilitated.

Natural and Cultural resources, in proximity to downtown areas and population centers should be rehabilitated.

Infill development should be encouraged with rehabilitation. In redevelopment areas, rivers, floodways and washes should integrate linear parks, greenways and pedestrian connections for public access, where appropriate.

Guidelines – (C-6 Development Activities – Infrastructure Impact)

Infrastructure impact all LCC's needs to evaluate the impacts of extending roads and utilities into undeveloped areas. Infrastructure should only be permitted when local and regional open space plans identify techniques to protect sensitive environmental factors.

Appropriate pedestrian walks and trails should be included in public right-of-way with road plans. Pedestrian routes should be provided to link schools and open spaces with new development activity centers.

Planning and design for utility corridors should consider the rehabilitation and salvage of existing plant material to mitigate impacts. A maintenance program should be developed to care for the sensitive vegetation within utility corridors and protect the sensitive lower Sonoran Desert vegetation in all LCC's.

Guidelines – (C-7 Development Activities – Planning Coordination)

Planning review of ESDA lands should be carefully coordinated by appropriate agencies/ organizations throughout the process, to ensure environmental guidelines are considered with the land use planning requirements.

Coordinate planning of development sites with municipal requirements, including General Plans, Open Space Plans and municipal ordinances. Ensure environmental guidelines for ESDA lands are carefully evaluated.

Coordinate planning of development sites with local municipal policies and guidelines, including Environmentally Sensitive Lands Ordinances (ESLO), Sonoran Preserve Master Plan, and design

guideline documents that reflect local community values.

7.1 LCC-1: Lower Sonoran, Valley Floor

7.1 A. General Guidelines LCC-1):

Guidelines are specific to Land Classification Category 1 - Lower Sonoran Valley Floor. The Lower Sonoran Vegetation includes creosotebush, bursage, saltbush associations. The Valley Floor Landform includes 0-3% slopes. This land classification category comprises about 61%of the Environmentally Sensitive Development Areas.

Techniques that will help ensure protection of natural systems include proper planning for sensitive development of the Valley Floor, that respects existing natural resources, desert vegetation and site grading. Biological assessment techniques, priority land character mapping and planning should be done to ensure natural resources are sustainable. Other techniques include land acquisition, easements and density transfer from sensitive lands to more suitable development parcels.

The overall guidelines at the beginning of Section 7 shall apply to all LCC's, in addition to the following guidelines that are specific to this LCC.

7.1 B. Land Resources (LCC-1):

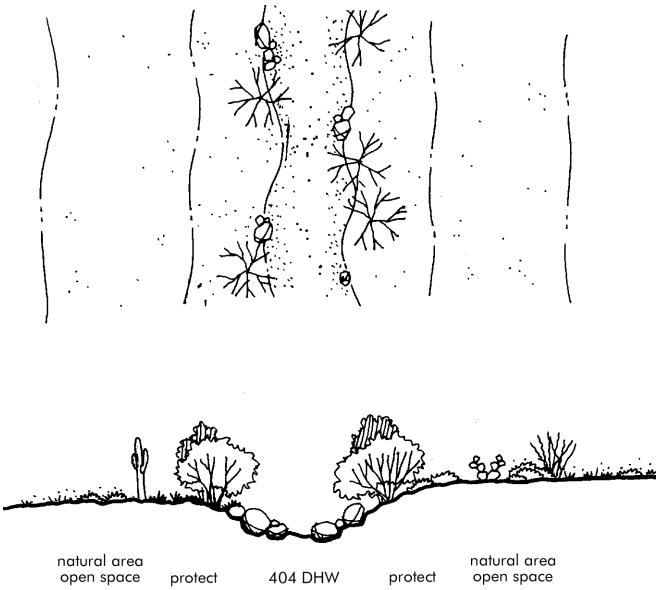
This section includes guidelines for five land resources.

7.1 B1. Rivers & Washes (LCC-1):

Rivers in this LCC are primarily ephemeral in nature, typically receiving only storm water from ephemeral washes draining bajada and foothills areas and upper portions of the watershed. Portions of some of the rivers, such as the Gila and the Hassayampa, receive water year-round from agricultural returns and/or wastewater treatment discharge. Washes are ephemeral drainages, i.e., those that carry surface water only during or immediately following significant storm events. Storm water is carried from bajada and foothills areas onto the Valley Floor, where the washes are typically large, braided, and connected to the rivers, or small runnels that do not connect to the downstream watershed. Larger washes convey high volumes of storm water through a wide flood plain. Within the flood plain, channels undergo periodic surface shifting which results in wide, braided channel systems. Vegetation density and diversity in this LCC is typically concentrated along the larger washes, which results in disproportionately higher wildlife resource values compared to the adjacent upland and sparsely vegetated areas.

Disturbance to larger ephemeral washes should be limited to that required for road and utility crossings. Disturbed areas should be revegetated using indigenous vegetation so that no net loss of habitat value or function occurs. Revegetation areas will receive temporary mitigation area only and will be monitored to ensure success.

Wash conservation corridors should be created along ephemeral washes to preserve habitat with the greatest value for wildlife.



These corridors should include estimated 100-year flood plains and an additional upland buffer to appropriately buffer the corridor from adjacent development. Trails will be permitted within the upland buffer, but no motorized vehicles will be permitted in the corridor.

Wash conservation corridors should be separated from residential, institutional, commercial, and industrial areas by common areas, natural open space, and streetscape with predominantly indigenous vegetation.

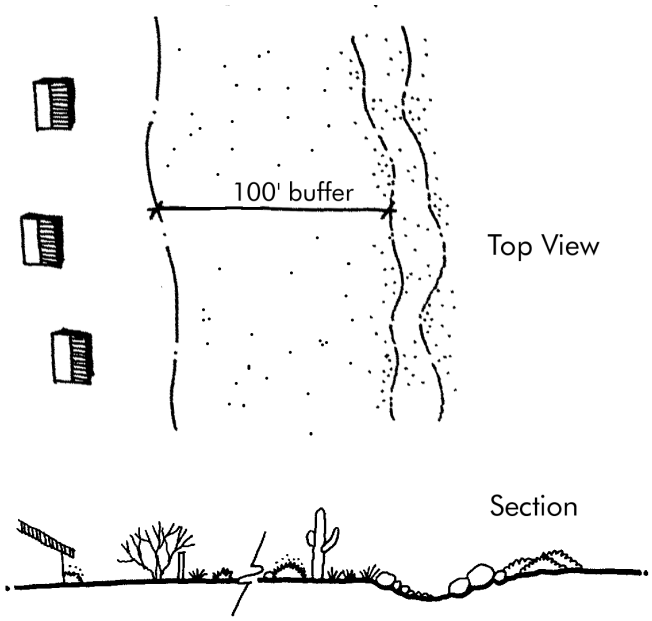
Road and utility crossings should be perpendicular or nearly perpendicular to washes.

Roads crossing large washes should be bridged. If culverts are used, they should be appropriately sized to prevent headcutting.

Development should occur outside the 100-year flood plain. Flood control structures should be limited to floodwalls at the edge of developed areas. Conserved wash corridors should be wide enough to accommodate natural braiding and changes in active channel location. Larger washes should not be artificially channelized. Banks of smaller washes can be stabilized only if no other option exists, by recontouring to no more than 3:1 native fill side slopes that are revegetated with Indigenous plants at natural species composition and densities.

Recreational use, such as hiking trails, should be placed in upland buffers adjacent to xeroriparian wash zones. Equestrian use should occur in wash bottoms, to prevent impacts to upland vegetation.

Buffer areas with natural landscape should be provided with a minimum development setback. In the Lower Sonoran Valley Floor areas, development should be setback from the top of bank of significant washes to appropriately buffer from adjacent development.



Limited access, such as passive trails along rivers and washes is encouraged along suitable washes, to ensure minimal impact, retain and protect open space character and the sensitive landscape and ground cover.

A limited number of wash crossings should be developed, in order to protect sensitive landscapes and permit natural, unimpeded storm water flows.

No formal access should be developed along minor delicate washes.

7.1 B 2. Sonoran Desert Vegetation (LCC-1):

Lower Sonoran vegetation that comprises this LCC is typically sparse and exhibits low diversity. Upland areas are dominated by monotypic or mixed stands of low shrubs such as creosotebush, bursage, and saltbush, with few trees and overall low vegetation volume and species richness (diversity). Vegetation along the washes is typically denser and more diverse in both species composition and structure. Vegetation along the washes includes both trees, such as mesquite, blue palo verde, and ironwood, and several layers of shrubs, which provide concentrated resources for wildlife and visual or scenic relief.

In upland areas, allow replacement of indigenous plants so that no net loss of habitat function or value occurs. Salvage of indigenous species encouraged, but not required. Salvaged trees should be placed in Buffer areas (see below). Plant palette should be based on development zones:

In **Oasis Areas** (enclosed backyards) use of Indigenous, Sonoran, Southwestern, and/or Arid Zone palettes encouraged, but use of Exotic palette and turf allowed.

In **Transitional Areas** (open backyards, commercial and public areas, streetscapes, common areas), turf, Exotic, and Arid Zone plants can make up no more than 50% of backyard areas, must be placed adjacent to residences, and cannot extend to lot boundaries (i.e. a buffer of Indigenous, Sonoran, and Southwestern plants must separate Turf and Exotic and Arid Zone plantings from lot boundaries). Plantings in common areas must be limited to no more than 50% turf, which must be separated from streetscapes and Buffer Areas with Indigenous, Sonoran, and Southwestern plants. Streetscapes will use only Indigenous, Sonoran, and Southwestern plants.

In **Buffer Areas** (open areas adjacent to preserved xeroriparian wash corridors and other natural open space), use only Indigenous palettes, provide a mix of shrubs and trees to extend the width of the xeroriparian corridor.

Permanent irrigation only for turf and Exotic. Temporary irrigation only for Indigenous shrubs. Permanent irrigation for Sonoran desert and arid zone trees and other shrubs, irrigation regime minimized.

In xeroriparian areas, no removal of indigenous plants, except for road and utility crossings. Trees that must be removed for road or utility crossings should be salvaged and replaced nearby in the same wash corridor, if feasible. Removal of unsalvageable trees should be compensated by replacement at a comparable plant density. Moved or replaced plants should be irrigated only during the establishment period (maximum five years) and should provide at least a comparable plant density after five years.

Native plant salvage, in the Lower Sonoran Valley Floor should transplant all trees, significant cacti, shrubs and ensure that more than 50% of the open space ground cover is replaced with native plants.
Existing natural vegetation need to be retained to protect open space character in the Lower Sonoran Valley Floor. Significant clusters or large contiguous buffer areas of natural vegetation should be protected, and native areas should be

contiguous. Native vegetation should follow existing wildlife corridors and washes. Natural planted buffer areas should be planted as a separation space between new development and wash corridors or conservation areas.

7.1 B 3. Scenic Resources (LCC-1):

The inherent characteristics of this LCC landscape include low vegetative density on near flat slopes commonly used for rangeland or located at the urban fringe. The foreground has seemingly little change until low hills and mountain ranges define the edge of the valley floor. This landscape creates a sense of openness in which the other landscape categories are placed.
The scenic quality of landscape can be described as common to the valley, flat and somewhat monotonous, traversed by powerlines, roads and occupied by scattered houses. Most of the current developed area of the county occurs within this landscape. The lack of vegetation provides little or no screening, but the flatness of the landscape means little is seen except for the immediate foreground (within 300 feet) and the horizon, if unobscured.

Scenic quality rated **moderately low**; therefore, except for other factors like proximity to the immediate foreground, conservation areas and significant washes, development of this landscape can be generally compatible with its scenic quality.

Encourage low profile development with a blend of one and two story buildings, with one story buildings adjacent to open space, DG to match soil colors.

Provide incentive for alternative building materials such as rammed earth, adobe, or straw bale/stucco to match landscape color;

Maintain immediate foreground intact with native or enhanced desert vegetation for screening

Apply stricter guidelines which account for proximity to conservation areas such as preserving existing vegetation, narrowing access ways to reduce disturbance and sense of intrusion

Apply set of guidelines for proximity to significant washes such a defined buffer area of native vegetation

7.1 B 4. Wildlife Habitat (LCC-1):

Wildlife habitat in this LCC is limited by the type, density, and distribution of vegetation. Sparsely vegetated upland areas support fewer wildlife species and individuals due to low amounts of cover for movement and shading/resting (i.e. thermal cover), food, and nesting or breeding sites. More heavily vegetated washes provide greater cover and more diverse and plentiful food resources and breeding areas. Wildlife use is disproportionately greater along washes due to higher resource availability and higher cover for thermal regulation and movement.

Disturbance to larger ephemeral washes should be limited to that required for road and utility crossings. Disturbed areas should be revegetated using indigenous vegetation so that no net loss of habitat function or value occurs. Revegetation areas will receive temporary mitigation area only and will be monitored to ensure success.

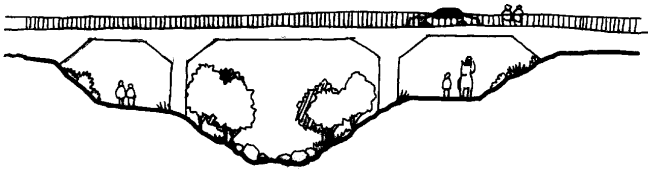
Wash conservation corridors should be created along ephemeral washes to preserve habitat with the greatest value for wildlife. These corridors will include estimated 100-year flood plains and an additional upland buffer to appropriately buffer the corridor from adjacent development. Trails will be permitted within the upland buffer, but no motorized vehicles will be permitted in the corridor.

Wash conservation corridors should be separated from residential, institutional, commercial, and

industrial areas by common areas, natural open space, and streetscape with predominantly Indigenous vegetation. Residential lots and subdivisions should be fenced or walled to minimize depredation of wildlife by domestic animals and to discourage the movement of larger vertebrate wildlife, such as coyotes and javelina, into these areas.

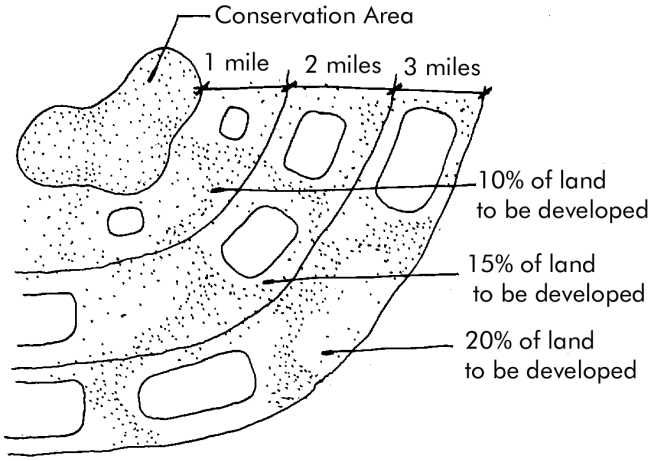
Linear utility lines should be placed parallel to but just outside the conserved wash and associated upland corridors to provide a more gradual transition to developed areas and to extend the functional width of the corridor. Utility lines should be buried if possible and revegetated using Indigenous plants so that there is no net loss of habitat function for value. Overhead electric transmission lines should be designed to prevent electrocution of larger birds.

Roads crossing large washes should be bridged and bridge width should be minimized to facilitate movement of wildlife.



Higher density cluster development should be encouraged, with patches of natural open space at least 2.5 acres in size, where property size permits, maintained in a network throughout developed areas. Distances between natural open space dispersed throughout developed areas should not exceed 1,000 feet where feasible. This will provide habitat and lateral movement opportunities primarily for avian wildlife and smaller reptiles, but not for other non-violent vertebrate wildlife.

Proportion developed area to open space should decrease with proximity to Conservation Areas:



7.1 B 5. Cultural Resources (LCC-1):

Cultural resources in this LCC include both prehistoric and historic sites. Site types may include residential/habitation, resource processing and/or procurement, agricultural, temporary residential, and others. Sites within the river valleys are larger and more expansive and may include large prehistoric settlements and agricultural features, as well as historic homesteads.

Cultural resource surveys should be completed for development projects, including tribal consultation, according to current Federal standards. Significant sites should be avoided or preserved where possible, and mitigated through data recovery otherwise.

Large archaeological sites should be developed with significant interpretive facilities and should be accessible to the general public. Vegetation surrounding these sites should be maintained in natural condition to retain original site context. Colors and textures of interpretive facilities and structures should be compatible with the site, but may introduce limited contrast for enhancement.

7.1 C. Development Activities (LCC-1):

This section includes guidelines for seven land development activities.

7.1 C 1. Agricultural Resources (LCC-1):

This landscape includes most of the land in agricultural production in the region. The land is formerly creosote flats, often with adjacency to rivers and canals. This low-lying land has been traditionally the agricultural base since the Hohokam people occupied the valley. The original vegetation has been gone for centuries. The land has been graded and smoothed over in successive seasons. However, its proximity to riparian areas means the land may also provide a potential wildlife corridor. Given its sheer volume, this LCC may also provide important buffers between communities, providing the separation desired to reinforce community integrity.

Determine where there is linkage between current agricultural areas and wildlife corridors. Establish permanent connections between these two uses in order to support wildlife and enhance open space character. These connections can be through conservation easements or agreements with property owners to protect the corridor.

Identify agricultural lands which help to establish buffers between communities.

7.1 C 2. Development Density / Type (LCC-1):

Development within this LCC should focus on providing development products that are appropriate to the specific site as well as to the surrounding context of the valley floor. Density and type of development must meet local municipal standards. All development should be sensitive to provide open spaces and linkages in the ESDA lands.

Utilize grading techniques, such as terracing, that respect the topography of the site. Discourage the use of mass grading. Areas that are not feasible as building sites should be utilized as open space zones.

Higher density residential and smaller lot development is appropriate within the Valley Floor landform. Techniques such as clustering and concentrating development in small pockets can help minimize the impact on the fragile Lower Sonoran desert environment.
Development within this LCC should be planned to protect major washes and significant areas of vegetation, utilizing these zones as dedicated open space.

Higher density residential projects should provide a mix of one story and two story homes to minimize the impact of the development within the landscape. Techniques such as varying the widths of front yard setbacks can help to minimize the impact of the homes at the streetscape level. New development should utilize colors and materials that blend into the surrounding landscape. Field colors shall have a low light reflective value. Color diversity should be encouraged and homogeneous color schemes that contribute to monotonous appearance of man-built structures should be discouraged. Higher density projects should provide a color palette that includes several options to provide visual interest and variety.

New development should minimize the widths of new roads and streets where possible to create wider landscape buffers.

Higher density projects should provide wider landscape easements in addition to dedicated

right-of-way along major road frontages to provide a visual buffer and screening.

New development should be integrated with community uses, including existing housing, shops, work places, schools, parks and civic facilities. Pedestrian linkages and trails, though developed open space corridors, should be included to link new development with existing facilities within the Valley Floor.

New communities should be planned around an open space system that provides convenient pedestrian routes and community facilities and transit within reasonable walking distance.

New communities should be designed with central open spaces and gathering areas for community activities and events.

7.1 C 3. Grading / Drainage (LCC-1):

Master grading plans should respect the sensitive natural features of the Lower Sonoran Desert vegetation of the Valley Floor.

Total mass grading of large tracts of land should be prohibited, especially in areas of sensitive vegetation.

Preserve open space along edges and streets.

Total mass grading should be avoided across large sensitive and visually exposed areas of the Valley Floor. Site grading may be appropriate in LCC-1, in smaller lot developments, when the site is not visually exposed.

Innovative grading solutions and terrace grading techniques are encouraged to minimize retaining walls and steep banks. Cut and fill solutions should balance earth moving. The shape of new grades should be smooth, especially at development edges that need to blend into the natural topography of the gently rolling Valley Floor.

Large turfed areas in public open spaces are discouraged, in order to minimize water consumption. However, turfed detention basins are acceptable but should supplement park turfed recreation and green space areas. Turf drainage spaces are not considered in lieu of recreational turf areas.

7.1 C 4. Recreation (LCC-1):

Recreational development within this LCC should focus on large scale well lighted active recreational facilities for community use and encourage connectivity to secured open space and conservation areas. Recreational venues within this area that are in close proximity to urban areas, existing land uses and existing resources should be developed to enhance open space connections, linkages and buffers where appropriate.

The planning of new recreational facilities within this LCC should be directed towards large scale, high volume, active, multi use facilities. Where possible other municipal facilities should be developed in conjunction with the recreational facility. Fire stations, schools, youth centers, adult centers, community centers are some examples of the multi use possibilities that should be encouraged.

Grading should maximize the recreational uses and where possible encourage progressive grading techniques that can minimize maintenance expenses.

Water harvesting, use of turf areas for storm water that reduce maintenance expenses. Retention, ADA accessible landforms are all examples of progressive techniques.

All facilities should be well lighted for evening use and to the required levels of league play.

Any facility that incorporates turf should be encouraged to use non-potable water. If not available at the time of construction it should be planned to accommodate it in the future.

ADA access to all facilities should be required.

7.1 C 5. Resource Rehabilitation (LCC-1)

Sensitive natural resources that have been degraded due to adverse impacts in the Valley Floor should be rehabilitated.

Infill development should be encouraged with rehabilitation of this LCC.

See general guidelines, for all LCC's in Section 7.

7.1 C 6. Infrastructure Impact (LCC-1):

Sensitive environmental factors in the Lower Sonoran Valley Floor include the slow recovery rate to rehabilitate plants and ground covers, which can be easily damaged by construction of roads and utilities.

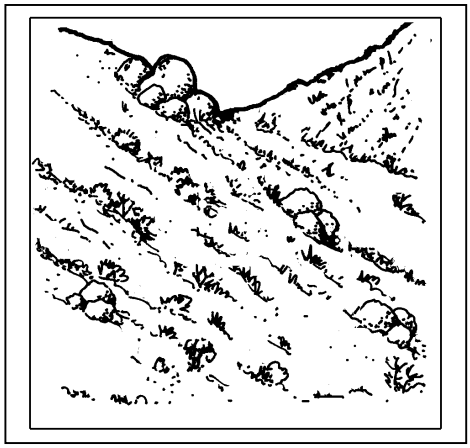
See general guidelines, for all LCC's in Section 7.

7.1 C 7. Planning Coordination (LCC-1):

Planning Coordination in this Lower Sonoran Valley Floor LCC should consider open space linkages and open space buffers between existing development areas and proposed development. Communication between adjacent land owners is important to coordinate site issues, including drainage and open space linkages and corridors.

See general guidelines, for all LCC's in Section 7.

7.2 LCC–2: Lower Sonoran – Bajada



7.2 A. Guidelines (LCC-2):

Guidelines are specific to Land Classification Category 2 - Lower Sonoran - Bajada. The Lower Sonoran Vegetation includes creosotebush, bursage, saltbush associations. The Bajada Landform includes 3-6% slopes. This land classification category comprises about 6% of the Environmentally Sensitive Development Area.

Techniques that will help ensure protection of natural systems include proper planning for sensitive development of the Bajada landform, that respects existing natural resources, desert vegetation and site grading. Special care should be given to protect the ground cover on the sensitive slopes, avoid creating visual scars and avoid disrupting natural drainage patterns that creates erosion in LCC-2. Biological assessment techniques, priority land character mapping and planning should be done to ensure natural resources are sustainable. Other techniques include land acquisition, easements and density transfer from sensitive lands to more suitable development parcels.

The overall guidelines at the beginning of Section 7 shall apply to all LCC's, in addition to the following guidelines that are specific to this LCC.

7.2 B. Land Resources (LCC-2):

This section includes guidelines for five land resources.

7.2 B 1. Rivers & Washes (LCC-2):

Characteristics of rivers and washes in this LCC are variable. Large rivers are generally absent in this LCC, although ephemeral drainage and a few intermittent streams occur. The large majority of drainages is ephemeral and receives storm water from precipitation in the foothills above them. Washes along the lower portions of the bajada are similar to those in the Valley Floor, with wide floodplains and dynamic braided channels. Washes in the upper part of the bajada are smaller, with flows generally confined to an incised channel. Vegetation density and diversity is concentrated along the washes, resulting in disproportionately higher wildlife resource values than adjacent upland and sparsely vegetated areas.

Guidelines same as under Lower Sonoran-Valley Floor, except:

Wash conservation corridors should include an upland buffer an average of 50 feet wide (15 meters). Trails will be permitted within the upland buffer, but no motorized vehicles will be permitted in the corridor. Equestrian use limited to designated larger washes with wide sandy streambeds.

Washes can be crossed by bridging, placement of appropriately sized culverts, or construction of low flow channels.

7.2 B 2. Sonoran Desert Vegetation (LCC-2):

Lower Sonoran vegetation is typically sparse with low diversity. Upland areas are dominated by monotypic or mixed stands of low shrubs and few trees and have relatively low vegetation volume and species richness. Vegetation along the washes is typically denser and more diverse in species composition and structure. Vegetation along the washes includes both trees and several layers of shrubs, which provide concentrated resources for wildlife and visual or scenic relief.

Guidelines are the same as LCC-1 and LCC-4, except:

In **Oasis Areas**, Turf, and Exotic and Arid Zone plants should cover a total area no greater than one-half the size of the building or structure, should be located immediately adjacent to it, and should be separated from lot boundaries by Indigenous and Sonoran plantings which comprise the remainder of the lot.

In **Transitional Areas**, Turf, Exotic and Arid Zone plants should make up no more than 20% of backyard areas, should be placed adjacent to structures, and cannot extend to lot boundaries. Buffers separating Exotic plantings and turf from lot boundaries restricted to Indigenous and Sonoran palettes. Plantings in common areas should be limited to no more than 20% turf, which should be separated from streetscapes and Buffer Areas only by Indigenous and/or Sonoran plants. Streetscapes should use only Indigenous and Sonoran.

In **Buffer Areas**, use only Indigenous palette, provide a mix of shrubs and trees, all larger shrubs, trees, and saguaros salvaged from other areas should be replaced here.

7.2 B 3. Scenic Resources (LCC-2):

The inherent characteristics of this landscape include low vegetative density on gently sloping terrain (3-6%) commonly used for rangeland. Scattered houses, subdivisions, and power lines also prevail in some areas. The foreground has little vegetation over 15 feet, growing on alluvial fans stretching into the valley from the foothills. Some scattered low hills occur as well as small arroyos and rock outcrops, with mountain ranges defining the horizon.

The landscape can be described as common to the valley, predominately long slopes with many small washes supporting thin lines of trees, traversed by powerlines, roads and occupied by scattered houses or expanses of roof tiles. The scarcity of trees and larger shrubs to provide screening and the increased slope exposes foreground and middleground views. Without the vegetation, there is a high degree of contrast associated with most intrusions into the landscape.

Scenic quality rated **moderately low** due to the generally sparse vegetation and monotony in the landscape. Proximity to conservation areas, significant washes and a greater visual exposure will increase this landscape's sensitivity to development. Development of this landscape is a challenge due to the limited vegetation which creates high contrast

- Encourage low profile with a blend of 1 and 2 story development, natural desert palette, DG to match soil color, underground utilities, incentive for alternative building materials such as rammed earth, adobe, or straw bale/stucco
- Maintain immediate foreground intact with native or enhanced desert vegetation for screening; maintain all existing trees and cacti in place or replace at same original density and species distribution
- Apply stricter guidelines which account for proximity to conservation areas such as

preserving existing vegetation, narrow access ways such as roads to reduce disturbance and sense of intrusion
- Apply set of guidelines for proximity to significant washes such as a defined buffer area of native vegetation; maintain existing trees and cacti in place; protect from construction
- Encourage low sloping roof lines due to lack of trees;

7.2 B 4. Wildlife Habitat (LCC-2):

Sparsely vegetated uplands in this LCC support fewer wildlife species and individuals due to low cover for movement and shading/resting, food, and nesting or breeding sites. More heavily vegetated washes provide more concentrated wildlife resources. Consequently, wildlife use and movement are disproportionately greater along washes than adjacent uplands.

Guidelines same as under LCC-1, except:

Building envelopes are encouraged. Linkage or continuity should be maintained between Transitional, Buffer, and wash and other natural open space areas. Patches of natural open space of a reasonable size should be maintained in a network with distances between patches not exceeding 1,000 feet where feasible.

Wash crossings should be bridged, or crossed with oversize culverts or low flow crossings to facilitate wildlife movement.

7.2 B 5. Cultural Resources (LCC-2):

Prehistoric and historic site types in this LCC may include residential/habitation, resource processing and/or procurement, agricultural, temporary residential, and others.. Expansive, agriculture-based sites are less common or absent in this LCC. Greater distance from the rivers also results in lower historic use. Cultural resources in this area are likely to reflect more transient use.

Guidelines same as under LCC-1, except:

Interpretive facilities should be a mix of highly developed sites for significant public use and less developed sites with limited interpretive facilities.

Colors and textures of interpretive facilities should adhere strictly to those occurring naturally.

7.2 C. Development Activities (LCC-2):

This section includes guidelines for seven development activities.

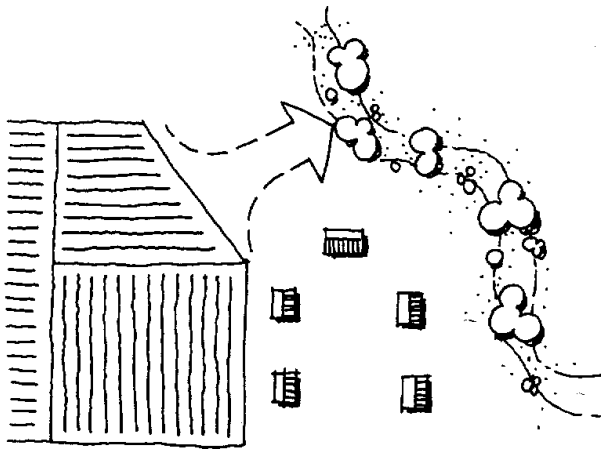
7.2 C 1. Agricultural Resources (LCC-2):

The landscape of this LCC is located on the long slopes of the valley. Less accessible to traditional water delivery systems, this land typically supports agriculture by water from canals and groundwater pumping. The original desert vegetation is typically damaged or by past use, except for some major washes, which pose difficulties in soil cultivation, in which case a line of mesquites may persist.

This landscape, if already in developed agriculture, has lost its original Upper Sonoran Desert character. Cropland must be terraced due to the increased slope. Some of the land is grazed by livestock. The land is more likely to be adjacent to conservation areas, in which case it can provide an important transition from urban to natural landscapes.

General Guidelines

- Determine where there is linkage between current agricultural areas and wildlife corridors. Establish permanent connections between these two uses in order to support wildlife and enhance open space character. These connections can be through conservation easements or agreements with property owners to protect the corridor.



- Identify agricultural lands which help to establish buffers between communities.
- Where LCC-2 is adjacent to conservation areas, and currently in agricultural production, steps should be taken to review the agricultural character for its potential to retain open space character. Property owners will be included in the public review process.

7.2 C 2. Development Density / Type (LCC-2):

Development within this LCC should focus on providing a product that is appropriate to the specific site as well as to the surrounding context of the valley floor. Planning techniques that protect existing vegetation and landforms should be explored.

Development should be appropriate to protect the landscape character and sensitivity of the Lower Sonoran Bajada. An open space plan must be considered to guide the planning framework and integrate a proposed development.

Vegetation impact and ground disturbance should be carefully addressed to integrate new development into the sensitive natural Lower Sonoran bajada landscape. Utilize grading techniques, such as terracing, that respect the topography of the site. Discourage the use of mass grading. Areas that are not feasible as building sites should be utilized as open space zones.

Medium density residential development is appropriate within the Lower Sonoran Bajada landform. Techniques such as clustering and concentrating development in small pockets can help minimize the impact on the fragile Lower Sonoran desert environment.

For single family residential development, building sites shall be within designated building envelopes.

Development within this LCC should be planned to protect major washes and significant areas of vegetation, utilizing these zones as dedicated open space.

Residential projects should provide a mix of one story and two story homes to minimize the impact of the development within the landscape. Techniques such as varying the widths of front yard setbacks can help to minimize the impact of the homes at the streetscape level.

New development should utilize colors and materials that blend into the surrounding landscape. Field colors shall have a low light reflective value. Residential projects should provide a color palette that includes several options to provide visual interest and variety. Color diversity should be encouraged and

homogeneous color schemes that contribute to monotonous appearance of man-built structures should be discouraged.

New development should minimize the widths of new roads and streets where possible to create wider landscape buffers.

New communities projects should provide wider landscape easements in addition to dedicated right-of-way along major road frontages to provide a visual buffer and screening.

New development should be integrated with community uses, including existing housing, shops, work places, schools, parks and civic facilities. Pedestrian linkages and trails, through developed open space corridors, should be included to link new development with existing facilities within the Valley Floor.

New communities should be planned around an open space system that provides convenient pedestrian routes and community facilities and transit within a reasonable walking distance.

New communities should be designed with central open spaces and gathering areas for community activities and events.

7.2 C 3. Grading / Drainage (LCC-2):

Discourage total mass grading of large tracts of land, especially in this LCC-2 with Bajada slopes and Lower Sonoran vegetation.

Master grading plans should respect the sensitive natural features of the Bajada topography and the sensitive Lower Sonoran Desert vegetation.

Total mass grading should be avoided across large sensitive and visually exposed areas of the Bajada lands. Site grading may be appropriate in LCC-2, in smaller lot developments, when the site is not visually exposed.

Innovative grading solutions are encouraged to minimize large retaining walls and steep banks. Cut and fill solutions should balance earth moving. The shape of new grades should be smooth, especially at development edges that need to blend into the natural Bajada topography and slopes. Special care should be given to protect and enhance the sensitive Lower Sonoran Desert Vegetation in this topography, especially for site gradients above 5%.

Developers are encouraged to propose split level buildings, as a technique to reduce grading impacts. Grading carefully integrate the natural slopes with new grades. Design of paths and walks must conform to local and federal accessibility requirements. Gradients above 5% provide unique challenges in this Bajada landform. Drainage changes should carefully integrate grading and drainage routes, especially at development edges where storm water drainage discharges into existing washes and channels. The shape of drainage channels should be natural smooth curves, with natural materials such as rocks and boulders. Straight hard surfaced channels should be discouraged. Techniques such as energy dissipaters should be considered, to reduce flow rates from man-made channels or culverts to natural areas. Storm water flow rates should be reduced to help mitigate erosion of sensitive channel side slopes and protect the sensitive Lower Sonoran vegetation edges along these natural Bajada lands.

Creative storm water-harvesting and small detention ponds should be considered, in appropriate areas of this LCC-2, to reduce increased storm water flows and provide the opportunity to allow storm rain-water to enhance growth of the existing Lower Sonoran desert plant material. These water-harvesting areas should be designed with a naturally graded shape to match

the existing topography and provide for a higher intensity of Lower Sonoran plant material.

7.2 C 4. Recreation (LCC-2):

Recreational development within this LCC should focus on medium scale well lighted, passive recreational facilities, with limited active recreational uses and facilities for community use and encourage connectivity to secured open space and conservation areas. Recreational venues within this area that are in close proximity to urban areas, existing land uses and existing resources should be developed to enhance open space connections, linkages and buffers where appropriate. Within this LCC we need to preserve the inherent open space character including views, plant densities, wildlife corridors, and cultural resources.

The planning of new recreational facilities within this LCC should be directed towards medium scale active and passive recreational uses that may not be as appropriate in more sensitive and (mountainous) areas.

Where possible other smaller scale municipal facilities should be developed in conjunction with the recreational facility. Fire stations, elementary schools, youth centers, adult centers, community centers are some examples of the multi use possibilities that should be encouraged.

Grading should be minimized to include only what is necessary to incorporate the active recreational uses. Where possible encourage progressive grading techniques that can minimize maintenance expenses. Cut and Fill balances should be sought.

Links to any existing or proposed trail systems should be considered and incorporated.

All facilities should be lighted for evening use. The night sky ordinances need to be followed.

Facilities should be lighted to community standards. Facilities should not be lighted to accommodate large group play or organized sporting events in this LCC.

Any facility that incorporates turf should be encouraged to use non-potable water.

ADA Access should be required for all facilities. Alternate routes may be required to reduce grading impacts.

Municipal onsite parking requirements should be reduced to encourage neighborhood use through neighborhood trails and walks.

7.2 C 5. Resource Rehabilitation (LCC-2):

Sensitive natural resources that have been degraded due to adverse impacts in the Bajada slopes should be rehabilitated.

Small clustered Infill development should be encouraged with rehabilitation of this LCC.

See general guidelines, for all LCC's in Section 7.

7.2 C 6. Infrastructure Impact (LCC-2):

Sensitive environmental factors in the Lower Sonoran Bajada include the slow recovery rate to rehabilitate plants and ground covers, which can be easily damaged by construction of roads and utilities.

The construction impact of infrastructure on the hillside grading and landscape should be carefully restored to match the existing natural conditions.

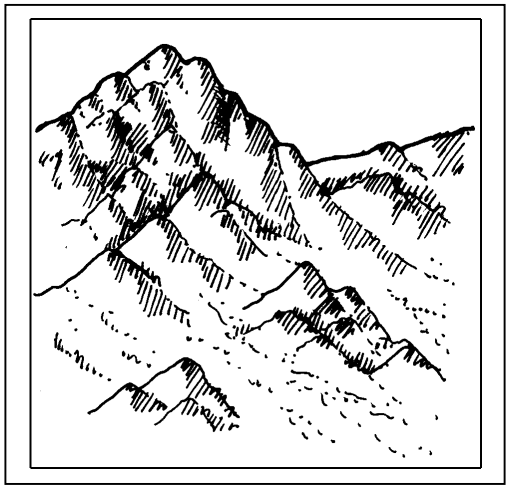
See general guidelines, for all LCC's in Section 7.

7.2 C 7. Planning Coordination (LCC-2):

Planning Coordination in this Lower Sonoran Bajada LCC should consider open space linkages and open space buffers between existing development areas and proposed development. Communication between adjacent land owners is important to coordinate site and hillside issues, including topography, drainage, open space linkages and corridors.

See general guidelines, for all LCC's in Section 7.

7.3 LCC – 3: Lower Sonoran, Foothills



7.3 A. General Guidelines (LCC-3):

Guidelines are specific to LCC-3 - Lower Sonoran - Foothills. The Lower Sonoran Vegetation includes creosotebush, bursage, saltbush associations. The Foothills Landform includes 6%+ slopes. This land classification category comprises about 4% of the Environmentally Sensitive Development Areas.

Techniques that will help ensure protection of natural systems include proper planning for sensitive development of the Foothills, that respects existing natural resources, desert vegetation and site grading. Biological assessment techniques, priority land character mapping and planning should be done to ensure natural resources are sustainable. Other techniques include land acquisition, easements and density transfer from sensitive lands to more suitable development parcels.

The overall guidelines at the beginning of Section 7 shall apply to all LCC's, in addition to the following guidelines that are specific to this LCC.

7.3 B. Land Resources (LCC-3):

This section includes guidelines for five land resources.

7.3 B 1. Rivers & Washes (LCC-3):

Large rivers are absent from this LCC, although ephemeral drainages and a few intermittent streams occur. Most drainages are ephemeral in nature and support surface water only during or immediately following significant precipitation events. Storm flows are confined to a high number of narrow, incised channels. Relatively high slope results in high flow velocities in these washes. Vegetation density and diversity and wildlife use is concentrated along washes.

Guidelines for this LCC would be the same as those described for LCC-2, except:

Wash conservation corridors should include an upland buffer to appropriately buffer the corridor from adjacent development. Trails will be permitted within the upland buffer, but no motorized vehicles will be permitted in the corridor. Equestrian use permitted only in designated upland areas outside of wash floodways and associated xeroriparian zones.

Washes should be crossed only with low flow crossings to facilitate wildlife movement.

7.3 B 2. Sonoran Desert Vegetation (LCC-3):

Lower Sonoran vegetation is typically sparse with low diversity. Upland areas are dominated by monotypic or mixed stands of low shrubs and few trees and have relatively low vegetation volume and species richness. Vegetation along the washes is typically denser and more diverse in species

composition and structure. Vegetation along the washes includes both trees and several layers of shrubs, which provide concentrated resources for wildlife and visual or scenic relief.

In upland areas, vegetation removal limited to that required for construction within and immediately adjacent to the building envelope. Areas outside construction zones should be protected by fencing. Indigenous plant that must be removed should be salvaged and replaced so that no net loss of habitat or function will occur. Plant palette should be based on development zones:

In **Oasis Areas**, Turf, and Exotic and Arid Zone plants should cover a total area no greater than one-quarter the size of the building or structure, should be located immediately adjacent to it, and should be separated from lot boundaries by Indigenous plantings which comprise the remainder of the lot.

In **Transitional Areas**, only Indigenous species should be allowed.

In **Buffer Areas**, use only Indigenous species, provide a mix of shrubs and trees to extend the width of the xeroriparian corridor.

In xeroriparian areas, avoid removal of indigenous plants, particularly trees. Trees that must be removed should be salvaged and replaced nearby in the same wash corridor if feasible. Removal of unsalvageable trees should be compensated by replacement using only indigenous species with no net loss of habitat value or function. Moved or replaced plants should be irrigated only during the establishment period (maximum of three years) at least 1:1 ratio.

7.3 B 3. Scenic Resources (LCC–3):

The inherent characteristics of this landscape include low vegetative density on sloping terrain (over 6%) which are typically state lands, national forest, and BLM lands. The landscape is often rangeland with some scattered houses in the foreground and middleground. Transmission lines crisscross parts of the landscape, with microwave towers, mining excavations, and road cuts evident on the slopes and skyline.

The foreground has sparse vegetation up to 15 feet in height. The landform is foothills sloping to larger mountain ranges. Soils are generally rocky and shallow with limited depth to bedrock. Scattered low hills, deep arroyos, and numerous boulder outcrops are common, with mountain ranges defining the horizon. The landscape is exemplary Southwestern with several species of cacti unique to this region represented. The scarcity of trees and larger shrub species and the increased slope exposes foreground, middleground, and background views. Without the vegetation, there is a high degree of contrast with most intrusions in the landscape.

Scenic quality is rated **moderately high** due to the high degree of visual exposure of this LCC. Even though the vegetation is generally sparse, the species represented are unique to the region and are in combination with geologic features. Due to proximity to conservation areas and significant washes, development of this landscape will be evident and contrast greatly with the landscape. This landscape is, therefore, the most sensitive to intrusion and the most difficult to maintain compatibility with its scenic quality.

- Encourage low profile development with a blend of 1 and 2 story structures. Use rock outcrops to screen, where feasible,
- Encourage a natural desert palette, native seeding and desert pavement to minimize DG, match soil color,
- Encourage alternative sources of energy such as passive solar, natural daylighting and ventilation, screened and painted propane and water tanks, and organic sewage treatment

such as Clivos Multran due to the visual cost of bringing utilities to the site overhead and placing underground
- Provide incentives for alternative building materials such as rammed earth, adobe, or straw bale/stucco which match the landscape in color and form
- Maintain immediate foreground intact with native or enhanced desert vegetation for screening; maintain all existing trees and cacti in place or replace at same original density and species distribution
- Maintain existing geologic features such as boulders and rock outcrops in place; encourage rock staining to natural weathering color;
- Encourage stepped foundations to accommodate slopes rather than slab on grade;
- Apply stricter guidelines which account for proximity to conservation areas such as preserving existing vegetation, narrowing access ways such as roads to reduce disturbance and sense of intrusion
- Apply set of guidelines for proximity to washes such as maintaining most of the smaller washes with a defined buffer area of native vegetation; maintain existing trees and cacti in place; protect from construction
- Determine key geologic features to preserve within this LCC which may have been missed due to small scale from consideration as Conservation Areas

7.3 B 4. Wildlife Habitat (LCC-3):

Sparsely vegetated uplands support fewer wildlife species and individuals due to low cover for movement and shading/resting, food, and nesting or breeding sites. More heavily vegetated washes provide more concentrated wildlife resources. Consequently, wildlife use and movement are disproportionately greater along washes.

Guidelines same as under LCC-2, except:

Building envelopes and cluster development are encouraged. Linkage or continuity should be maintained between Transitional, Buffer, and wash and other natural open space areas. Discourage walls or fences unless designed to allow wildlife movement between building envelopes.

Washes should be crossed only with low flow crossings to facilitate wildlife movement.

The proportion of developed area to open space should decrease with proximity to Conservation Areas.

7.3 B 5. Cultural Resources (LCC-3):

Prehistoric and historic site types may include residential/habitation, resource processing and/or procurement, agricultural, temporary residential, quarry/mine and others. Cultural resource sites in this LCC include smaller settlements, transient use areas, and may include communication (rock art), and ceremonial types. Historic mining sites may occur in this LCC.

Guidelines same as under LCC-2, except:

Interpretation of sites should be localized and limited, such as interpretive signage along trails or roads. Minimal disturbance of vegetation and natural colors and textures only.

7.3 C. Development Activities (LCC-3):

This section includes guidelines for seven development activities.

7.3 C 1. Agricultural Resources (LCC-3):

This landscape represents the foothills of the valley. Not typically accessible to traditional water delivery systems, this land typically supports cultivated agriculture by water from canals and groundwater pumping. Cropland must be terraced due to the increased slope. This landscape is most likely used for grazing of livestock. The desert vegetation may be diminished in diversity due to trampling and continuous grazing.

The landscape character is likely to be desert vegetation, with less vegetative diversity due to climatic conditions. However, if cultivated, vegetation has been removed. The land is most likely to be adjacent to conservation areas, in which case it can provide an important transition from urban to natural landscapes. This landscape is less likely to be able to play a role in providing a buffer between communities, since the landscape is approaching national forest and BLM lands.

General Guidelines

- Determine where there is linkage between current agricultural areas and wildlife corridors. Establish permanent connections between these two uses in order to support wildlife and enhance open space character. These connections can be through conservation easements or agreements with property owners to protect the corridor.
- Identify agricultural lands which help to establish buffers between communities.
- Where LCC 3 is adjacent to conservation areas, and currently used for agriculture, steps should be taken to review the agriculture use for its potential to retain open space character.
- If the land is currently used or proposed for livestock grazing, the landscape should be evaluated as to the affect that use is having or may have on water quality and vegetative diversity.
- Grazing permits should be set based on market value and tied to the potential damage grazing may have to that specific parcel with regard to water quality and vegetative diversity. This LCC should carry the highest market value since the land has the least ability to recover from heavy grazing but is most likely to be adjacent to conservation areas.
- Recommendations on appropriate best management practices in agriculture such as stock rotation and stock limits should be part of the evaluation.

7.3 C 2. Development Density / Type (LCC-3):

Development within this LCC should focus on providing a product that is appropriate to the specific site as well as to the surrounding context of the foothills. Planning techniques that protect existing vegetation and landforms should be explored.

Development should be appropriate to protect the landscape character and sensitivity of the Lower Sonoran Foothills. Low intensity development such as single family residential projects is appropriate for this LCC.

Vegetation impact and ground disturbance should be carefully addressed to integrate new development into the sensitive natural Lower Sonoran Foothills landscape. Utilize grading techniques, such as terracing, that respect the topography of the site. Mass grading, except within the development envelope, should be discouraged. Areas that are not feasible as building sites should be utilized as designated natural area open space.

Single Family residential development is appropriate within the Lower Sonoran Foothills landform.

Single family residential development should be limited to building envelopes or cluster developments.

Development within this LCC should be planned to protect major washes, landforms and existing areas of vegetation, utilizing these zones as dedicated open space.

Residential projects shall be split level homes to minimize the impact of the development within the landscape.

New development should utilize colors and materials that blend into the surrounding landscape. Field colors shall have a low light reflective value. Color diversity should be encouraged and homogeneous color schemes that contribute to monotonous appearance of man-built structures should be discouraged.

New development should minimize the widths of new roads and streets where possible to create wider landscape buffers.

New communities projects should provide wider landscape easements in addition to dedicated right-of-way along major road frontages to provide a visual buffer and screening.

New development should provide pedestrian links to existing community uses, including existing housing, shops, work places, schools, parks and civic facilities where possible.

7.3 C 3. Grading / Drainag (LCC-3):

Site grading should be sensitively designed in this LCC-3 Foothills landform. Mass grading is discouraged in the Foothills.

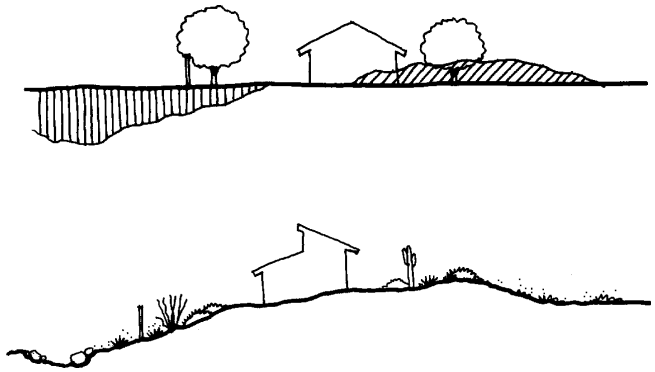
Master grading plans should respect the sensitive natural features of the Foothills topography landform and the visually important coverage and texture of the Lower Sonoran Desert vegetation.

Grading in the Foothills should be limited to areas within building envelopes, except for appropriate clustered development. Site grading may be appropriate in LCC-3, in smaller lot developments, when the site is not a visually exposed, and strong vegetation buffers are integrated with the grading plan to blend into the existing landform.

Innovative grading solutions are encouraged to minimize large retaining walls and steep banks. Cut and fill solutions should balance earth moving, in order to create a sensitive transition and blend with the existing topography. The shape of new grades should be smooth, especially at development edges that need to blend into the natural Foothills topography and slopes. Special care should be given to protect and enhance the sensitive Lower Sonoran Vegetation in this topography.

Developers are encouraged to propose split level products, as a technique to reduce grading impacts. Grading should carefully integrate the natural slopes with new grades. Design of paths and walks must conform to local and federal accessibility requirements. Gradients above 6% in this Foothills landform are critical. All development should carefully consider soft gently grades that transition man-made features into the adjacent natural landscape at development edges. Slopes at the edge of all development should be designed with soft flowing lines, avoid straight earth berms and side slopes should not exceed 1:5. Slope edge will require appropriate Lower

Sonoran plant material to soften edges adjacent to existing natural areas.



7.3 C 4. Recreation (LCC-3):

The planning of new recreational facilities within this LCC should be directed towards smaller scale active and passive recreational uses that are appropriate in the more sensitive and mountainous areas.

Any proposed recreational facility should attempt to preserve as much of the existing vegetation and habit as possible. See Sonoran Desert Vegetation.

Grading should be minimized to facilitate the recreational use and encourage progressive techniques such as water harvesting.

Links to any existing or proposed trail system should be considered and incorporated. Where possible the master planning should establish trail systems for passive and active uses.

All facilities should be lighted for evening use. Lighting needs to be sensitive to the Night Sky Ordinances.

Turf should be discouraged with in this LCC. ADA Access may not be available to all activities. Every effort should be made to facilitate the use with out adversely affecting the experience.

Municipal onsite parking requirements should be removed to encourage neighborhood use and pedestrian access.

7.3 C 5. Resource Rehabilitation (LCC-3):

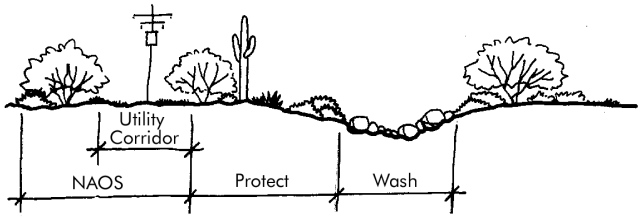
Sensitive natural resources that have been degraded due to adverse impacts in the Lower Sonoran Foothill slopes should be rehabilitated.

See general guidelines, for all LCC's in Section 7.

7.3 C 6. Infrastructure Impact (LCC-3):

Infrastructure impact in this LCC should carefully evaluate the impacts of extending roads and utilities into undeveloped areas. Infrastructure should only be permitted when local and regional open space plans identify techniques to protect sensitive environmental factors. Sensitive environmental factors in this LCC include the slow recovery rate to rehabilitate plants and ground covers, which can be easily damaged by construction of roads and utilities.

Planning and design for utility corridors should rehabilitate and salvage existing plant material to mitigate impacts. A maintenance program should be developed to care for the sensitive vegetation within utility corridors and protect the sensitive lower Sonoran Desert vegetation in this LCC.

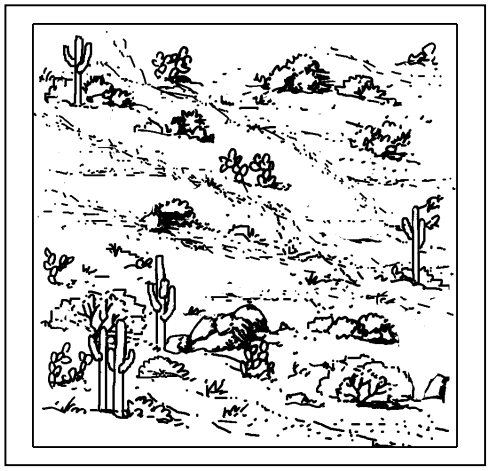


7.3 C 7. Planning Coordination (LCC-3):

Planning Coordination in the Lower Sonoran Foothills LCC should consider open space linkages and generous open space buffer spaces between hillside development areas.

See general guidelines, for all LCC's in Section 7.

7.4 LCC – 4: Upper Sonoran – Valley Floor



7.4 A. Guidelines (LCC-4):

Guidelines are specific to Land Classification Category 4 – Upper Sonoran Valley Floor. The Upper Sonoran Vegetation includes Palo Verde, mixed cacti associations. The Valley Floor Landform includes 0-3% slopes. This land classification category comprises about 28% of the Environmentally Sensitive Development Areas.

Techniques that will help ensure protection of natural systems include proper planning for sensitive development of the Valley Floor, that respects existing natural resources, desert vegetation and site grading. This would include careful salvaging of existing plant materials, where development is planned in LCC-2. Biological assessment techniques, priority land character mapping and planning should be done to ensure natural resources are sustainable. Other techniques include land acquisition, easements and density transfer from sensitive lands to more suitable development parcels.

The overall guidelines at the beginning of Section 7 shall apply to all LCC's, in addition to the following guidelines that are specific to this LCC.

7.4 B. Land Resources (LCC-4):

7.4 B 1. Rivers & Washes (LCC-4):

Characteristics of rivers and washes in this LCC are generally similar to those described for LCC-1 (Lower Sonoran, Valley Floor). Rivers and smaller drainages are primarily ephemeral in nature, receiving only storm water from ephemeral washes draining bajada and foothills areas, and upper portions of the watershed. Washes are typically either large, braided, and connected to the rivers, or small runnels that do not connect to the downstream watershed. Larger washes convey high volumes of storm water through a wide flood plain and a system of braided channels. Vegetation density and diversity is greater along washes. However, higher upland plant density and diversity results in reduced contrast between the upland and wash areas. Wildlife resources are more dispersed between uplands and washes, rather than more strictly concentrated along the washes, as under LCC-1.

Guidelines for this LCC would be the same as those described for LCC-1.

7.4 B 2. Sonoran Desert Vegetation (LCC-4):

Upper Sonoran vegetation that comprises this LCC is typically denser and more diverse than Lower Sonoran vegetation. Upland areas support monotypic or mixed stands of low shrubs, in addition to a mix of cacti and trees, particularly foothill palo verde and ironwood. Vegetation along the washes is typically denser, but supports many of the same species as the uplands. As such, visual contrast between wash and uplands is reduced and overall visual character is enhanced. Wildlife resources are more dispersed over the landscape.

In upland areas, trees, larger shrubs, and saguaros should be retained in place and protected by fencing during construction activities. Trees and saguaro that must be moved should be salvaged and replaced on site, equally distributed between Transitional and Buffer Areas. Trees, shrubs, and saguaros that cannot be salvaged should be replaced using indigenous vegetation at a comparable pant density, so that no net loss of habitat function or value occurs. Moved or replaced plants should be irrigated only during the establishment period (maximum five years). Plant palette in development zones, irrigation regimes, and guidelines for xeroriparian areas are the same as under LCC-1.

7.4 B 3. Scenic Resources (LCC-4):

The inherent characteristics of this landscape include high vegetative density on near flat slopes (0 – 3%) commonly used for rangeland or located at the urban fringe. The foreground has desert trees with some cacti as the vertical elements, 20 to 30 feet in height, with seemingly little change until low hills and mountain ranges define the edge of the valley floor.

The scenic quality of landscape can be described as common to the valley, flat and somewhat monotonous, traversed by powerlines, roads and occupied by scattered houses. The amount of trees and other species provides screening, along with the flatness of the landscape. This means little of the overall landscape is seen except for the immediate foreground (within 300 feet). The foreground view, therefore, is critical to maintaining scenic quality.

Scenic quality rated **moderately low** due to the flatness and monotony of the landscape; therefore, except for other factors like proximity to features such as the immediate foreground, conservation areas and significant washes, development of this landscape can be generally compatible with its scenic quality.

Scenic value is greater than LCC-1 in the Valley Floor, due to the Upper Sonoran vegetation.

- Encourage low profile development with a blend of 1 and 2 story structures, with 1 story adjacent to open space, natural desert palette, encourage desert pavement or native seeding to minimize DG, match soil color,
- Underground utilities,
- Provide incentive for alternative building materials such as rammed earth, adobe, or straw bale/stucco which match landforms and color of the landscape
- Maintain immediate foreground intact with native or enhanced desert vegetation for screening;
- Due to their scarcity, maintain all existing trees and cacti in place or replace at same original density and species distribution
- Apply stricter guidelines which account for proximity to conservation areas such as preserving or enhancing existing vegetation, narrowing access ways such as roads to reduce disturbance and sense of intrusion; reducing scale of development
- Apply set of guidelines for proximity to significant washes such a defined buffer area of native vegetation; maintain existing trees and cacti in place; protect from construction.

7.4 B 4. Wildlife Habitat (LCC-4):

Wildlife resources in this LCC are more dispersed between wash and upland areas compared LCC-1. Higher plant species diversity provides a greater array of resources for different wildlife species. Saguaros and other cacti provide important food and nesting or breeding resources for a number of wildlife species. Higher vegetation density in the uplands provides cover for thermal regulation and movement in these

areas. Wildlife movement patterns are more transverse across the landscape and less linearly concentrated along the washes.

Guidelines same as under LCC-1, except:

All trees, larger shrubs, and saguaros should be retained in place and protected by fencing during construction activities. Trees and saguaro that must be moved should be salvaged and replaced on site, equally distributed between Transitional and Buffer Areas. Trees, shrubs, and saguaros that cannot be salvaged should be replaced using indigenous vegetation at a comparable plant density ratio so that no net loss of habitat function or value should occur.

7.4 B 5. Cultural Resources (LCC-4):

Lands within this LCC are generally located away from the rivers. As with the previous category, prehistoric and historic site types may include residential/habitation, resource processing and/or procurement, agricultural, temporary residential, and others. Expansive, agriculture-based sites may be less common and smaller settlements more frequent

Guidelines same as under LCC-1, except:

Colors and textures of interpretive facilities should adhere strictly to those occurring naturally

7.4 C. Development Activities (LCC-4):

This section includes guidelines for seven development activities.

7.4 C 1. Agricultural Resources (LCC-4):

This LCC represents the next most common area usually under agricultural production. This LCC is slightly less desirable for agriculture than LCC-1, due to its higher elevation and distance from natural watercourses. This land typically supports agriculture which is fed by water delivery systems such as canals and groundwater pumping. The original desert vegetation is typically long gone, except for some major washes, which pose difficulties in soil cultivation, in which case a line of mesquites may persist.

This landscape, if already in developed agriculture, has lost its original Upper Sonoran Desert character. However, due to its sheer volume and strategic location between communities, this land area can play a significant role in helping to define communities. When conservation techniques are applied, this landscape can provide important buffer areas between communities.

- Determine where there is linkage between current agricultural areas and wildlife corridors. Establish permanent connections between these two uses in order to support wildlife and enhance open space character. These connections can be through conservation easements or agreements with property owners to protect the corridor.
- Identify agricultural lands which help to establish buffers between communities.

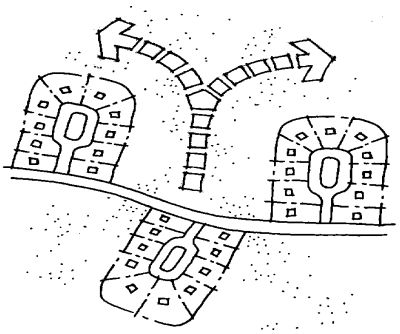
7.4 C 2. Development Density / Type (LCC-4):

Development within this LCC should focus on providing a product that is appropriate to the specific site as well as to the surrounding context of the valley floor. Planning techniques that protect existing vegetation and landforms should be explored.

Development should be appropriate to protect the landscape character and sensitivity of the Upper Sonoran Valley Floor. An open space plan should be considered to guide the planning framework and integrate a proposed development.

Vegetation impact and ground disturbance should be carefully addressed to integrate new development into the sensitive natural Upper Sonoran landscape. Utilize grading techniques, such as terracing, that respect the topography of the site. Discourage the use of mass grading. Areas that are not feasible as building sites should be utilized as open space zones.

Medium density residential development is appropriate within the Upper Sonoran Valley Floor landform. Techniques such as clustering and concentrating development in small pockets can help minimize the impact on the fragile Lower Sonoran desert environment.



Single family residential development shall be limited to building envelopes or cluster developments.

Development within this LCC should be planned to protect major washes and significant areas of vegetation, utilizing these zones as dedicated open space.

Residential projects should provide a mix of one story and two story homes to minimize the impact of the development within the landscape. Techniques such as varying the widths of front yard setbacks can help to minimize the impact of the homes at the streetscape level.

New development should utilize colors and materials that blend into the surrounding landscape. Field colors shall have a low light reflective value. Residential projects should provide a color palette that includes several options to provide visual interest and variety. Color diversity should be encouraged and homogenous color schemes that contribute to monotonous appearance of man-built structures should be discouraged.

New development should minimize the widths of new roads and streets where possible to create wider landscape buffers.

New communities projects should provide wider landscape easements in addition to dedicated right-of-way along major road frontages to provide a visual buffer and screening.

New development should be integrated with community uses, including existing housing, shops, work places, schools, parks and civic facilities. Pedestrian linkages and trails, through developed open space corridors, should be included to link new development with existing facilities within the Valley Floor.

New communities should be planned around an open space system that provides convenient pedestrian routes and community facilities and transit within reasonable walking distance.

New communities should be designed with central open spaces and gathering areas for community activities and events.

7.4 C 3. Grading / Drainage (LCC-4):

Discourage total mass grading of large tracts of land, especially in this LCC-4 with areas of sensitive Upper Sonoran vegetation.

Master grading plans should respect the sensitive natural features of the Upper Sonoran Desert vegetation of the Valley Floor.

Total mass grading should be minimized across large sensitive and visually exposed areas of the Valley Floor. Site grading may be appropriate in LCC-4, in smaller lot developments, when the site is not a visually exposed.

Innovative grading solutions are encouraged to minimize retaining walls and steep banks. Cut and fill solutions should balance earth moving. The shape of new grades should be smooth, especially at development edges that need to blend into the natural topography of the gently rolling Valley Floor. Special care should be given to protect and enhance the sensitive Upland Sonoran Desert Vegetation.

Developers are encouraged to propose split level products, as a technique to reduce grading impacts, when the Valley Floor gradients in this LCC have a gently rolling topography.

7.4 C 4. Recreation (LCC-4):

Recreational development within this LCC should focus on large scale well lighted active recreational facilities for community use and encourage connectivity to secured open space and conservation areas. Recreational venues within this area that are in close proximity to urban areas, existing land uses and existing resources should be developed to enhance open space connections, linkages and buffers where appropriate. Within this LCC we need to begin to preserve the inherent open space character that needs to be retained includes views, plant densities, wildlife corridors, and cultural resources.

The planning of new recreational facilities within this LCC should be directed towards large scale active playing fields and other large scale high volume uses. Multi use facilities should be encouraged. Where possible other municipal facilities should be developed in conjunction with the recreational facility. Fire stations, schools, youth centers, adult centers, community centers are some examples of the multi use possibilities that should be encouraged.

Since this LCC is in an Upper Sonoran vegetation, the size of facilities should be reduced and carefully designed to mitigate impacts on existing vegetation.

Grading should minimized to include only what is necessary to incorporate the active recreational uses. Where possible encourage progressive grading techniques that can minimize maintenance expenses. Cut and Fill balances should be sought.

Any proposed recreational facility should attempt to preserve as much of the existing vegetation and habit as possible. See Sonoran Desert Vegetation.

All facilities should be lighted for evening use and to the required levels of league play.

Any facility that incorporates turf should be encouraged to use non-potable water.

ADA access should be required to all facilities.

Where feasible onsite standard parking requirements should be modified to encourage pedestrian access to the park through a system of trails and sidewalks.

7.4 C 5. Resource Rehabilitation (LCC-4):

Sensitive natural resources that have been degraded due to adverse impacts in the Upper Sonoran Valley Floor should be rehabilitated.

Infill development should be encouraged with appropriate separation space, salvage of existing vegetation and rehabilitation of this LCC.

See general guidelines, for all LCC's in Section 7.

7.4 C 6. Infrastructure Impact (LCC-4):

Sensitive environmental factors in the Upper Sonoran Valley Floor include the slow recovery rate to rehabilitate plants and ground covers, which can be easily damaged by construction of roads and utilities.

The construction impact of infrastructure on the Valley Floor grading and landscape should be carefully restored to match the existing natural conditions. Plant salvage is important to mitigate construction impacts.

See general guidelines, for all LCC's in Section 7.

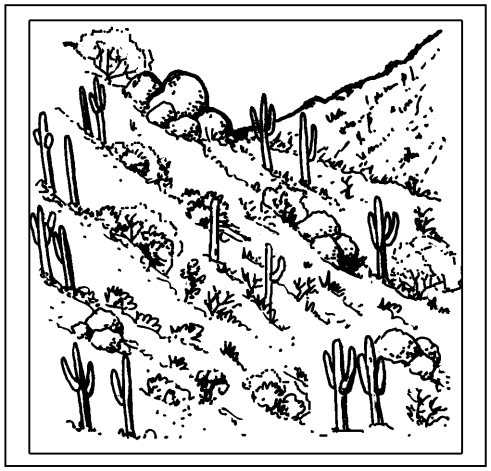
7.4 C 7. Planning Coordination (LCC-4):

Planning Coordination in this Upper Sonoran Valley Floor LCC should consider open space linkages, open space buffers and salvaging of existing desert plants between existing development areas and proposed development. Communication between adjacent land owners is important to coordinate site issues, including drainage and open space linkages, plant protection and salvage of existing plants.

See general guidelines, for all LCC's in Section 7.

7.5 LCC–5: Upper Sonoran, Bajada

7.5 A. Guidelines (LCC-5):



Guidelines are specific to Land Classification Category 4 - Upper Sonoran - Bajada. The Upper Sonoran Vegetation includes Palo verde, mixed cacti associations. The Bajada Landform includes 3-6% slopes. This land classification category comprises about 1% of the Environmentally Sensitive Development Areas.

Techniques that will help ensure protection of natural systems include proper planning for sensitive development of the Bajada, that respects existing natural resources, desert vegetation and site grading. Sensitive slopes and Upper Sonoran plant material should be protected, to help mitigate development impact.

Biological assessment techniques, priority land character mapping and planning should be done to ensure natural resources are sustainable. Other techniques include land acquisition, easements and density transfer from sensitive lands to more suitable development parcels.

The overall guidelines at the beginning of Section 7 shall apply to all LCC's, in addition to the following guidelines that are specific to this LCC.

7.5 B. Land Resources (LCC-5):

This section includes guidelines for five land resources.

7.5 B 1. Rivers & Washes (LCC-5):

Characteristics of rivers and washes in this LCC are generally similar to those described for LCC-2 (Lower Sonoran, Bajada). Large rivers are generally absent in this LCC, although ephemeral drainages and a few intermittent streams occur. Most drainages are ephemeral and receive storm water from precipitation in the foothills in upstream portions of the watershed. Washes along the lower portions of the bajada have wide flood plains and dynamic braided channels while washes in the upper part of the bajada are smaller, with flows generally confined to incised channels. Vegetation density and diversity is still higher along washes, but higher upland plant density and diversity results in reduced contrast between the upland and wash areas. Wildlife resources are more dispersed between uplands and washes.

Guidelines would be the same as those described for LCC-2.

7.5 B 2. Sonoran Desert Vegetation (LCC-5):

Upper Sonoran vegetation is typically denser and more diverse than Lower Sonoran vegetation. Upland areas support monotypic or mixed stands of low shrubs, in addition to a mix of cacti and trees. Vegetation along the washes is typically denser, but supports many of the same species as

the uplands. As such, visual contrast between wash and uplands is reduced and wildlife resources are more dispersed over the landscape. Guidelines the same as LCC-1 and LCC-4, except:

In **Oasis Areas**, Turf, and Exotic and Arid Zone plants should cover a total area no greater than the size of the building or structure, should be located immediately adjacent to it, and should be separated from lot boundaries by Indigenous and Sonoran plantings which comprise the remainder of the lot.

7.5 B 3. Scenic Resources (LCC-5):

The inherent characteristics of this landscape include high vegetative density on gently sloping terrain (3-6%) commonly used for rangeland or at the urban fringe. Scattered houses and power lines also prevail in some areas. The foreground has desert vegetation from 20 to 30 feet in height, on alluvial fans stretching into the valley from the foothills. Some scattered low hills occur as well as small arroyos and rock outcrops, with mountain ranges defining the horizon.

The landscape can be described as long slopes covered with trees and cacti with many small washes supporting dense lines of trees and other higher water loving plants, traversed by powerlines, roads and occupied by scattered houses or expanses of roof tiles. The presence of trees and other species screens most of what the increased slope exposes in foreground and middleground views. Within the scale of this vegetation, approx. 20 to 30 feet in height, the contrast is reduced for most intrusions in the landscape.

Scenic quality rated **moderate** due to the dense and diverse vegetation and presence of rocky outcrops and low hills. In proximity to conservation areas and significant washes, development of this landscape can be somewhat obscured by the vegetation. However, the screening ability of desert vegetation is limited. The added slope exposes development to view in the middleground making it a challenge to keep contrast to a minimum and maintain compatibility with scenic quality.

- Encourage low profile development with a blend of 1 and 2 story structures, encourage desert pavement or native seeding to minimize DG, DG to match soil color,
- Underground utilities,
- Incentive for alternative building materials such as rammed earth, adobe, or straw bale/stucco,
- Flat or low sloping roof lines pitched to match the degree of slope;
- Maintain immediate foreground intact with native or enhanced desert vegetation for screening; maintain all existing trees and cacti in place or replace at same original density and species distribution
- Maintain integrity of middleground by keeping intrusions small in scale and close to natural desert palette
- Apply stricter guidelines which account for proximity to conservation areas such as preserving existing vegetation, narrowing access ways such as roads to reduce disturbance and sense of intrusion
- Apply set of guidelines for proximity to significant washes such as a defined buffer area of native vegetation; maintain existing trees and cacti in place; protect from construction
- Maintain integrity of low hills and other geologic features intact with adequate buffer from development to intactness of the landscape, encourage rock staining to natural weathering color;

7.5 B 4. Wildlife Habitat (LCC-5):

Wildlife resources are more dispersed between wash and upland areas compared LCCs with

Lower Sonoran vegetation. Higher plant species diversity provides a greater array of resources for different wildlife species. Higher vegetation density in the uplands provides cover for thermal regulation and movement in these areas. Wildlife movement patterns are more transverse across the landscape and less linearly concentrated along the washes.

Guidelines same as under LCC-2, except:

Building envelopes and cluster development are encouraged. Linkage or continuity must be maintained between Transitional, Buffer, and wash and other natural open space areas. Patches of natural open space of a reasonable size should be maintained in a network with distances between patches not exceeding 1000 feet where feasible.

All trees, larger shrubs, and saguaros should be retained in place and protected by fencing during construction activities. Trees and saguaro that must be moved should be salvaged and replaced on site, equally distributed between Transitional and Buffer Areas. Trees, shrubs, and saguaros that cannot be salvaged should be replaced using indigenous vegetation at a comparable density ratio so that no net loss of habitat function or value should occur.

Wash crossings should be bridged, or crossed with oversize culverts or low flow crossings to facilitate wildlife movement.

The proportion of developed area to open space should decrease with proximity to Conservation Areas.

7.5 B 5. Cultural Resources (LCC-5):

Prehistoric and historic site types may include residential/habitation, resource processing and/or procurement, agricultural, temporary residential, and others. Cultural resource sites in this LCC include smaller settlements, transient use areas, and may include communication (rock art), and ceremonial types.

Guidelines same as under LCC-2.

7.5 C. Development Activities (LCC-5):

This section includes guidelines for seven development activities.

7.5 C 1. Agricultural Resources (LCC-5):

The landscape, located on the long slopes of the valley, was originally covered with desert trees and cacti. Less accessible to traditional water delivery systems, this land typically supports agriculture by water from canals and groundwater pumping. The original desert vegetation is typically long gone, except for some major washes, which pose difficulties in soil cultivation, in which case a line of mesquites may persist.

This landscape, if already in developed agriculture, has lost its original Upper Sonoran Desert character. Cropland must be terraced due to the increased slope. Some of the land may be grazed by livestock or used for feed lots. The land is more likely to be adjacent to conservation areas, in which case it can provide an important transition from urban to natural landscapes.

- Determine where there is linkage between current agricultural areas and wildlife corridors. Establish permanent connections between these two uses in order to support wildlife and enhance open space character. These connections can be through conservation easements or agreements with property owners to protect the corridor.
- Identify agricultural lands which help to establish buffers between communities.

- Where LCC-5 is adjacent to conservation areas, and currently in agricultural production, steps should be taken to review the agricultural character for its potential to retain open space character.

7.5 C 2. Development Density / Type (LCC-5):

Development within this LCC should focus on providing a product that is appropriate to the specific site as well as to the surrounding context of the valley floor. Planning techniques that protect existing vegetation and landforms should be explored.

Development should be appropriate to protect the landscape character and sensitivity of the Upper Sonoran Bajada. Low intensity uses such as single family development are appropriate within this LCC.

Vegetation impact and ground disturbance should be carefully addressed to integrate new development into the sensitive natural Upper Sonoran Bajada landscape. Utilize grading techniques, such as terracing, that respect the topography of the site. Mass grading should be discouraged. Areas that are not feasible as building sites should be utilized as open space zones.

Low density residential development is appropriate within the Upper Sonoran Bajada landform.

Single family residential development should be limited to building envelopes or cluster developments.

Development within this LCC should be planned to protect major washes, landforms and existing vegetation, utilizing these zones as dedicated natural area open space.
Residential projects should be limited to split level homes to minimize the impact of the development on the landform as well as within the landscape.

New development should utilize colors and materials that blend into the surrounding landscape. Field colors shall have a low light reflective value. Color diversity should be encouraged and homogenous color schemes that contribute to monotonous appearance of man-built structures should be discouraged.

New development should minimize the widths of new roads and streets where possible to create wider landscape buffers.

New communities projects should provide wider landscape easements in addition to dedicated right-of-way along major road frontages to provide a visual buffer and screening.

New development should provide pedestrian links through dedicated open space corridors to existing community uses, including existing housing, shops, work places, schools, parks and civic facilities within the valley floor where possible.

7.5 C 3. Grading / Drainage (LCC-5):

Discourage total mass grading of large tracts of land, especially in this LCC-5 with Bajada slopes and Upper Sonoran vegetation.

Master grading plans should respect the sensitive natural features of the Bajada topography landform and the visually important coverage and texture of the Upper Sonoran Desert vegetation.

Total mass grading is discouraged across large sensitive and visually exposed areas of the Bajada

lands. Site grading may be appropriate in LCC-5, in very smaller lot developments, when the site is not a visually exposed, and strong vegetation buffers are integrated with the grading plan to blend into the existing landform.

Innovative grading solutions are encouraged to minimize large retaining walls and steep banks. Cut and fill solutions should balance earth moving. The shape of new grades should be smooth, especially at development edges that need to blend into the natural Bajada topography and slopes. Special care should be given to protect and enhance the Upper Sonoran Desert Vegetation in this topography, especially for site gradients above 5%.

Developers are encouraged to propose split level products, as a technique to reduce grading impacts. Grading should carefully integrate the natural slopes with new grades. Design of paths and walks must conform to local and federal accessibility requirements. Gradients above 5% provide unique challenges in this Bajada landform.

7.5 C 4. Recreation (LCC-5):

Recreational development within this LCC should focus on small scale well lighted active and passive recreational facilities for community use and encourage connectivity to secured open space and conservation areas. Recreational venues within this area should be developed to enhance open space connections, linkages and buffers where appropriate. Within this LCC we need to preserve the inherent open space character including views, plant densities, wildlife corridors, and cultural resources.

The planning of new recreational facilities within this LCC should be directed towards smaller scale active and passive recreational uses that are appropriate in the more sensitive and hilly terrain.

Where possible smaller scale municipal facilities should be developed in conjunction with the recreational facility. Fire stations, youth centers, and adult centers, are some examples of the multi use possibilities that should be encouraged.

Grading should be minimized to include only what is necessary to incorporate the active recreational uses. Where possible encourage progressive grading techniques that can minimize maintenance expenses. Cut and Fill balances should be sought.

Links to any existing or proposed trail systems should be considered and incorporated.

ADA Access should be required for all facilities. Alternate routes may be required to reduce grading impacts.

All facilities should be lighted for evening use. Lighting needs to be sensitive to the Night Sky Ordinances. Facilities should not be lighted to League required play.

Any facility that incorporates turf should be encouraged to use non-potable water. Turf areas should be limited to useable areas only.

Municipal onsite parking requirements should be reduced to encourage neighborhood use.

7.5 C 5. Resource Rehabilitation (LCC-5):

Sensitive natural resources that have been degraded due to adverse impacts in the Upper Sonoran Bajada should be rehabilitated.

Small scale clustered Infill development should be encouraged with appropriate separation space, salvage of existing vegetation and rehabilitation of this LCC.

See general guidelines, for all LCC's in Section 7.

7.5 C 6. Infrastructure Impact (LCC-5):

Sensitive environmental factors in the Upper Sonoran Bajada includes the slow recovery rate to rehabilitate plants and ground covers, which can be easily damaged by construction of roads and utilities.

The construction impact of infrastructure on the Bajada grading and landscape should be carefully restored to match the existing natural conditions. Plant salvage is essential to mitigate impact in this LCC.

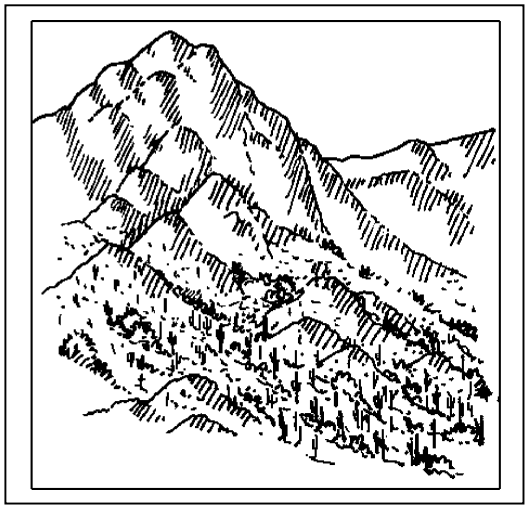
See general guidelines, for all LCC's in Section 7.

7.5 C 7. Planning Coordination (LCC-5):

Planning Coordination in this Upper Sonoran Bajada LCC should consider open space linkages, open space buffers and salvaging of existing desert plants between existing development areas and proposed development. Communication between adjacent land owners is important to coordinate site and hillside issues, including drainage and open space linkages, plant protection and salvage of existing plants.

See general guidelines, for all LCC's in Section 7.

7.6 LCC-6: Upper Sonoran, Foothills



7.6 A. Guidelines (LCC-6):

Guidelines are specific to LCC-6 - Upper Sonoran - Foothills. The Upper Sonoran Vegetation includes Palo verde, mixed cacti associations. The Foothills Landform includes 6%+ slopes. This land classification category comprises less than 1% of the Environmentally Sensitive Development Areas.

Techniques that will help ensure protection of natural systems include proper planning for sensitive development of the Foothills, that respects existing natural resources, desert vegetation and site grading. Biological assessment techniques, priority land character mapping and planning should be done to ensure natural resources are sustainable. Other techniques include land acquisition, easements and density transfer from sensitive lands to more suitable development parcels.

The overall guidelines at the beginning of Section 7 shall apply to all LCC's, in addition to the following guidelines that are specific to this LCC.

7.6 B. Land Resources (LCC-6):

7.6 B 1. Rivers & Washes (LCC-6):

Characteristics of drainages are generally similar to those described for LCC-3 (Lower Sonoran, Foothills). Large rivers are absent, although ephemeral drainages and a few intermittent streams occur. Most drainages are ephemeral in nature and support surface water only during or immediately following significant precipitation events. Storm flows are confined to a high number of narrow, incised channels. Relatively high slope results in high flow velocities in these washes. Vegetation density and diversity and wildlife use is concentrated along washes.

Guidelines for this LCC would be the same as those described for LCC-5.

7.6 B 2. Sonoran Desert Vegetation (LCC-6):

Upper Sonoran vegetation is typically denser and more diverse than Lower Sonoran vegetation. Upland areas support monotypic or mixed stands of low shrubs, in addition to a mix of cacti and trees. Vegetation along the washes is typically denser, but supports many of the same species as the uplands. As such, visual contrast between wash and uplands is reduced and wildlife resources are more dispersed over the landscape. Design guidelines the same as under LCC-3, except:

In **Oasis Areas**, Turf, and Exotic and Arid Zone plants should cover a total area no more than one-half the size of the building or structure, should be located immediately adjacent to it, and should be separated from lot boundaries by Indigenous plantings which comprise the remainder of the lot.

7.6 B 3. Scenic Resources

The inherent characteristics of this landscape include high vegetative density on sloping terrain (over 6%) which are typically state lands, national forest, and BLM lands. These lands may be directly adjacent to Conservation Areas, due to their slope. The landscape is often rangeland with some scattered houses in the foreground and middleground. Transmission lines crisscross parts of the landscape, with microwave towers, mining excavations, and road cuts evident on the slopes and skyline.

The foreground has dense vegetation from 20 to 30 feet in height. The landform is foothills to larger mountain ranges. Scattered low hills, deep arroyos, and numerous boulder outcrops are common, with mountain ranges defining the horizon. The landscape is exemplary Southwestern with several species of trees, cacti, and other plants unique to this region represented. The presence of unique cacti species and desert and the increased slope exposes foreground, middleground, and background views. With the vegetation, there is a less contrast with most intrusions in the landscape, except for skyline silhouettes of man made features.

Scenic quality rated **moderately high** due to the special quality of the vegetation, the high degree of visual exposure and geologic features in the landscape. Even though the vegetation is higher density and diversity, desert vegetation is limited in its screening ability. The proximity to conservation areas and significant washes is a special quality of this landscape. Development of this landscape will be evident and contrast greatly with the landscape, though mitigated somewhat by the vegetation. The soil is generally very rocky and depth to bedrock is shallow. This renders it the next most sensitive to intrusion, making it difficult to maintain compatibility with its scenic quality.

- Encourage generally low profile development, with a blend of 1 and 2 story structures. Use the presence of rock outcrops and vegetation to screen where feasible,
- Encourage a natural desert palette, DG to match soil color, encourage native seeding and desert pavement to minimize DG
- Encourage alternative sources of energy such as passive solar, natural daylighting and ventilation, screened and painted propane and water tanks, and organic sewage treatment such as Clivas Multran due to the visual cost of bringing utilities to the site overhead and placing underground
- Provide incentives for alternative building materials such as rammed earth, adobe, or straw bale/stucco which match the landscape in color and form
- Maintain immediate foreground intact with native or enhanced desert vegetation for screening; maintain all existing trees and cacti in place or replace at same original density and species distribution
- Maintain existing geologic features such as boulders and rock outcrops in place; if scarred in construction, encourage rock staining to natural weathering color;
- Encourage stepped foundations to accommodate slopes rather than slab on grade;
- Apply stricter guidelines which account for proximity to conservation areas such as preserving highly visible slopes approaching these areas, preserving existing vegetation, narrowing access ways such as roads to reduce disturbance and sense of intrusion
- Apply set of guidelines for proximity to washes such as maintaining most of the smaller washes with a defined buffer area of native vegetation; maintain existing trees and cacti in place; protect from construction
- Determine key geologic features to preserve within this LCC which may have been missed due to small scale from consideration as Conservation Areas

7.6 B 4. Wildlife Habitat (LCC-6):

Wildlife resources are more dispersed between wash and upland areas compared to LCCs with Lower Sonoran vegetation. Higher plant species diversity provides a greater array of resources for different wildlife species. Higher vegetation density in the uplands provides cover for thermal regulation and movement in these areas. Wildlife movement patterns are more transverse across the landscape and less linearly concentrated along the washes.

Guidelines same as under LCC-2, except:

Building envelopes and cluster developments are encouraged. Linkage or continuity should be maintained between Transitional, Buffer, and wash and other natural open space areas. Discourage walls or fences between lots to maintain wildlife movement.

Washes should be crossed only with low flow crossings to facilitate wildlife movement.

The proportion of developed area to open space should decrease with proximity to Conservation Areas.

7.6 B 5. Cultural Resources (LCC-6):

Prehistoric and historic site types may include residential/habitation, resource processing and/or procurement, agricultural, temporary residential, and others. Cultural resource sites in this LCC include smaller settlements, transient use areas, and may include communication (rock art), and ceremonial types. Historic mining sites may be expected in this LCC.

Guidelines same as under LCC-3.

7.6 C. Development Activities (LCC-6):

This section includes guidelines for five land resources.

7.6 C 1. Agricultural Resources (LCC-6):

This landscape represents the foothills of the valley, covered with trees and cacti. Not typically accessible to traditional water delivery systems, this landscape is most likely used for grazing of livestock. The desert vegetation may be diminished in diversity due to trampling and continuous grazing.

The land is the most likely to be adjacent to conservation areas, which can provide an important and critical transition from urban to natural landscapes. This landscape is less likely to be able to play a role in providing a buffer between communities, since the landscape is approaching national forest and BLM lands.

- Determine where there is linkage between current agricultural areas and wildlife corridors. Establish permanent connections between these two uses in order to support wildlife and enhance open space character. These connections can be through conservation easements or agreements with property owners to protect the corridor.
- Where LCC-6 is adjacent to conservation areas, and currently used for agriculture, steps should be taken to review the agriculture use for its potential to retain open space character. This landscape has the most potential to provide an important natural edge to conservation areas.
- If the land is currently used or proposed for livestock grazing, the landscape should be evaluated as to the affect that use is having or may have on water quality and vegetative diversity.

- Grazing permits should be set based on market value and tied to the potential damage grazing may have to that specific parcel with regard to water quality and vegetative diversity. This LCC should carry the next highest market value compared with LCC-3, since the land is most likely to be adjacent to conservation areas.
- Recommendations on appropriate best management practices in agriculture such as stock rotation and stock limits should be part of the evaluation.

7.6 C 2. Development Density / Type (LCC-6):

Development within this LCC should focus on providing a product that is appropriate to the specific site as well as to the surrounding context of the valley floor. Planning techniques that protect existing vegetation and landforms should be explored.

Development should be appropriate to protect the landscape character and sensitivity of the Upper Sonoran Foothills. Low intensity uses such as single family development are appropriate within this LCC.

Vegetation impact and ground disturbance should be carefully addressed to integrate new development into the sensitive natural Upper Sonoran Foothills landscape. Utilize grading techniques, such as terracing, that respect the topography of the site. Mass grading is discouraged. Areas that are not feasible as building sites should be utilized as open space zones.

Low density residential development is appropriate within the Upper Sonoran Foothills landform.

Single family residential development should be limited to building envelopes or cluster developments.

Development within this LCC should be planned to protect major washes, landforms and existing vegetation, utilizing these zones as dedicated natural area open space.

Residential projects should be limited to split level homes to minimize the impact of the development on the landform as well as within the landscape.

New development should utilize colors and materials that blend into the surrounding landscape. Field colors shall have a low light reflective value. Color diversity should be encouraged and homogenous color schemes that contribute to monotonous appearance of non-built structures should be discouraged.

New development should minimize the widths of new roads and streets where possible to create wider landscape buffers.

New communities projects should provide wider landscape easements in addition to dedicated right-of-way along major road frontages to provide a visual buffer and screening.

New development should provide pedestrian links through dedicated open space corridors to existing community uses, including existing housing, shops, work places, schools, parks and civic facilities within the valley floor where possible.

7.6 C 3. Grading / Drainage (LCC-6):

Site grading must be sensitively designed in this LCC-6 Foothills landform. Mass grading is discouraged.

Master grading plans should respect the sensitive natural features of the Foothills topography landform and the visually important coverage and texture of the Upper Sonoran Desert vegetation.

Mass grading is discouraged in the Foothills. Site grading may be appropriate in LCC-6, in small lot developments, when the site is not a visually exposed, and strong vegetation buffers are integrated with the grading plan to blend into the existing landform.

Innovative grading solutions are encouraged to minimize large retaining walls and steep banks. Cut and fill solutions should balance earth moving. The shape of new grades should be smooth, especially at development edges that need to blend into the natural Foothills topography and slopes. Special care should be given to protect and enhance the Upper Sonoran Vegetation in this topography.

Developers are encouraged to propose split level products, as a technique to reduce grading impacts. Grading must carefully integrate the natural slopes with new grades. Design of paths and walks must conform to local and federal accessibility requirements.

Gradients above 6% in this Foothills landform are critical. All development should carefully consider soft gently grades that transition man-made features into the adjacent natural landscape at development edges. Slopes at the edge of all development should be designed with soft flowing lines, avoid straight earth berms and side slopes must not exceed 1:5. Appropriate Upper Sonoran plant material should be used to soften slope edges adjacent to existing natural areas.

7.6 C 4. Recreation (LCC-6):

The planning of new recreational facilities within this LCC should be directed towards very small scale active and passive recreational uses that are appropriate in the sensitive foothills areas.

Any proposed recreational facility should attempt to preserve as much of the existing vegetation and habit as possible. See Sonoran Desert Vegetation.

Grading should be minimized to facilitate the recreational use and encourage progressive techniques such as water harvesting.

Links to any existing or proposed trail system should be considered and incorporated. Where possible the master planning should establish trail systems for passive and active uses.

This will facilitate a coordinated overall strategy for recreational uses within the municipality. All facilities should be lighted for evening use. Lighting needs to be sensitive to the Night Sky Ordinances. Turf areas should not be incorporated.

ADA Access may not be available to all activities. Every effort should be made to facilitate the use with out adversely affecting the experience.

Municipal onsite parking requirements should be removed to encourage neighborhood use.

Recreation in this area should be considered resource based only and should be open from dawn to dusk. Only very limited areas should be lighted with vary low lighting levels.

7.6 C 5. Resource Rehabilitation (LCC-6):

Sensitive natural resources that have been degraded due to adverse impacts in the Upper Sonoran Foothills should be rehabilitated.

See general guidelines, for all LCC's in Section 7.

7.6 C 6. Infrastructure Impact (LCC-6):

Sensitive environmental factors in the Upper Sonoran Foothills includes the slow recovery rate to rehabilitate plants and ground covers, which can be easily damaged by construction of roads and utilities.

The construction impact of infrastructure on the Foothills grading and landscape should be carefully restored to match the existing natural conditions. Plant salvage is critical to mitigate impact in this LCC.
See general guidelines, for all LCC's in Section 7.

7.6 C 7. Planning Coordination (LCC-6):

Planning Coordination in the Upper Sonoran Foothills LCC should consider open space linkages, generous open space buffers and salvaging of existing desert plants between hillside development areas.

See general guidelines for all LCC's, in Section 7.

7.7 Map – ESDA Areas (Figure 1):

The fold-out map on the next page is Figure 1: Environmentally Sensitive Development Areas (ESDA) and distribution of predominant vegetation communities in Maricopa County.

In addition to showing the ESDA Areas and vegetation communities, this map also shows two other areas, as follows:

The existing development areas with Interstate highways and major roads, etc.

The Secured Open Spaces, designated Parks, Wilderness, and Wildlife Areas, as identified in the Desert Spaces Report. Areas are shown on the map with numbers on the legend.

7.8 Sketch – Prototypical Design Guideline (Figure 2):

The fold-out sketch, following the map, is Figure 2: Prototypical Design Guideline. This sketch shows proposed developments along a wash corridor on three landforms, Valley Floor, Bajada and Foothills.

8. RECOMMENDATIONS

In order to realize implementation of these Policies and Design Guidelines for the ESDA lands in Maricopa County, the on-going actions will be the responsibility of the Desert Spaces Sub Committee of Maricopa Association of Governments (MAG), local municipalities and local government agencies. The planning process of developing these policies and guidelines included input from these groups and stakeholders. The next step will include adopting these policies and guidelines.

8.1 MAG, Adopt Policies, Guidelines

The first step will be for MAG to adopt these policies and guidelines. This will set the planning framework for municipalities and local agencies to continue to coordinate.

This on-going coordination will be important to better understand the importance of protecting the ESDA lands both within and beyond municipal boundaries.

8.2 MAG, Coordinate with Municipality

Once these policies and guidelines are adopted by MAG, the next step will be to continue on-going coordination with the municipalities.

Each municipal member of MAG will have specific community values unique to their community, within the overall planning framework. This coordination will help the municipalities understand and refine this document.

8.3 Municipalities, Refine Policies, Guidelines

Based on the unique community values in each municipality, there should be the opportunity to refine these policies and guidelines to reflect these specific values.

Each municipality should adopt these policies and integrate them into their planning framework. When applications are received for new development in the ESDA lands, these policies and guidelines should be used to complement the existing municipal planning tools. These policies and guidelines should be a starting point to coordinate with developers.

8.4 Educational Workshops

The MAG Desert Open Spaces Sub Committee and local government representatives should organize educational workshops. Community leaders, stakeholders and developers could meet municipal representatives to explore issues and policies in the ESDA lands.

Workshops can help create a better understanding about the importance and benefits of protecting natural area open space. Workshops would provide stakeholders with adequate time to provide feedback and comments to the Policies and Design Guidelines, before they become incorporated into a local ordinance.

The results from workshops would help communities to develop local action plans and a model ordinance that can help protect the natural area open spaces in the ESDA lands.

8.5 Develop a Model Ordinance

Each municipality should consider using these policies and design guidelines as a planning framework tool. Since guidelines are not a mandatory requirement for developers, municipalities should consider development of an ESDA ordinance that reflects their unique community values.

A municipality should offer a developer incentives to develop according to these policies and design guidelines. Incentives would help achieve the goal of creating sensitive development and of protecting the natural area open spaces in the ESDA lands and discourage land development practices that do not reflect the environmental sensitivity of these lands.

Incentives may include streamlining the approval process, if the developer complies with these policies and design guidelines. A municipality could structure a development process for ESDA lands to expedite the approval process. This could be a powerful and valuable time saving opportunity for developers.

Other incentives may include changes to the existing urban/ suburban development standards. New standards should be developed to reflect the intent of these policies and design guidelines. One example could consider eliminating curb and gutter and allowing roads to have a more rural or natural cross section.

Creating appropriate development standards that are less urban and more sympathetic with the natural landscape and open space character of ESDA lands would benefit the developer, the municipality and the environment.

8.6 Assistance Programs

MAG should set up an assistance program, to help the smaller community members. The benefits of the program for an interested municipality, would include gaining access to support for educational programs, develop an update to the policies and guidelines, develop a planning overlay or to develop a model ordinance.

An assistance program could be set up in a similar way to the MAG Pedestrian Design Assistance Program. Municipalities could apply and have their needs matched with an appropriate consultant to provide planning services.

On-going assistance would be a valuable benefit to all municipalities, especially the smaller municipalities with limited resources, to help them to manage their ESDA lands.

9. APPENDIX

Glossary of Terms

A highlight of terms used in this document include the following:

Arroyos

Watercourses, dry creeks in an arid region. A water-carved gully or channel.

Biological inventory

An evaluation for the presence of significant biological resources in an area. This should include identification and mapping of vegetation communities to the association level, identification and mapping of special habitats such as wetlands or other aquatic habitats, an inventory of plants protected under the Arizona Native Plant Law, and species-specific surveys or habitat evaluations for special status species. Special status species include those listed, proposed, or candidates for listing by the U.S. Fish and Wildlife Service under the Endangered Species Act; species listed as Wildlife of Concern in Arizona by the Arizona Game and Fish Department; Highly Safeguarded plant species listed by the Arizona Department of Agriculture; and other species with special management status on lands with federal (National Forest, Bureau of Land Management) or local jurisdictions (municipalities, tribes).

Building Envelope

A planning technique that identifies a specific portion of a residential lot to be developed. The area for buildings, with developed outdoor areas and driveway could be concentrated within a portion of the total lot size. This developed area is referred to as the building envelope.

This technique is intended to minimize development impacts and lot disturbance beyond the building envelope, thereby protecting the existing natural area open space and the Sonoran Desert environment.

Clustering Development

Concentration of development on portions of a site or in smaller pockets is encouraged to help minimize sprawl and negative impact on open spaces. A clustering technique starts with a base density for an overall site area. Concentration of development permits an increase in the net density of specific and appropriate site areas, while maintaining the overall base density. Thus, cluster strategy allows development to achieve the overall base density while protecting natural area open spaces.

Community Values

The goals, objective and local visions held by municipal leaders and people in a particular community. These values provide local individuality and expression, within the overall regional framework. These values belong to each municipality, defining the spirit, personality and character of their community.

Construction Envelope

A construction envelope is the area within which grading and construction are allowed.

Conservation Areas

As defined in "The Desert Spaces Plan", Conservation Areas include Secured Open Spaces, Publicly and Privately owned lands with outstanding open space value. These areas are recommended for management as Conservation Areas, and to be protected from development. These areas are separate from the ESDA lands.

Density transfer

Density transfer is a technique to protect sensitive landscapes and open spaces. The technique can reduce development impact on a specific site by transferring the existing land use density to part of the site, creating a higher net density within the existing overall density. Existing site density can

also be transferred to another site location, thus protecting the natural qualities of one site and stimulates development on a more appropriate site. This technique can be beneficial to save sensitive landscapes but must be implemented in such a way that the design is compatible with the surrounding environment to support quality of life levels and values expected by the community.

Desert
The Arizona Sonoran Desert ecology and ecosystem that sets the regional framework for natural open space land in Maricopa County.

Development:
Includes land that is impacted by cultural man-made uses and features including buildings, roads, parking, and site and landscape development of land parcels.

Drainage Corridors
Include existing natural land areas with watercourse channels and arroyos. These surface watercourses carve gully or channels along a sloped landform. These natural drainage corridors vary in width and meander within a flood corridor.

Environmentally Sensitive Development Areas:
"The Desert Spaces Plan" referred to these ESDA lands as "Retention Areas". Lands include 759,100 acres of Publicly owned land, and 566,643 acres of Privately owned lands with high open space value, recommended for sensitive development regulations.

These ESDA lands are suitable for development; however, they have landscape characteristics that should be retained. Characteristics include Landforms and Vegetation Type. Landforms include: Valley Floor, with slopes from 0% to 3%; Bajada, with slopes from 3% to 6%; Foothills, with slopes over 6%. Only environmentally sensitive development should be permitted in these ESDA land areas.

The name Environmentally Sensitive Development Areas is a refinement from the name "Retention Areas" used in "The Desert Spaces Plan", because the name retention became confusing. The name was intended to retain and protect the integrity and character of undeveloped, environmentally sensitive lands, yet provide for appropriate development.

Landform
Hillside slope is part of landform, which affects soils, hydrology and visual sensitivity. Landform categories are based on three slope classes which represent the general landform characteristics of the study area. Types include: Valley Floor, 0 to 3% slope; Bajada, 3% to 6% slope; Foothills, steeper hillside lands with over 6% slope.

Landscape
The landforms of a region in the aggregate.

Natural Area Open Space (NAOS)
Natural area open space includes our existing Sonoran Desert in ESDA lands. These areas should be managed to maintain the integrity, natural resources and landscape character of undeveloped hillsides and ridge lines, rivers and washes, native vegetation, wildlife diversity, archaeological and historic sites.

Open Space
Undisturbed land without cultural development impact of buildings is open space. A recreational land with limited buildings is also open space. Lands with special natural resources, such as rivers and washes, native Sonoran Desert vegetation and Scenic Resources are an important part of natural area open spaces with high open space value.

Open Space Connections
Connections include pedestrian walks, trail linkages, and natural landscape spaces such as river washes that flow across the landform and landscape. Open space connections are natural

lands or resources that are protected and or integrated with sensitive development uses.

Retention Areas:
As defined in "The Desert Spaces Plan", "Retention Areas" include1,419,265 acres of Public and Private Lands with high open space value. Recommended for sensitive development regulations. This development is intended to retain the essential characteristics of the natural land resources. "Retention Areas" are herein called Environmentally Sensitive Development Areas (ESDA).

Secured Open Spaces:
The Desert Open Spaces Plan defines Secured Open Space as 645,798 acres of land, Designated Parks, Wilderness and Wildlife Areas.

Sensitive Areas:
Undeveloped lands that have fragile natural resources. They are highly susceptible and can be easily damaged. These special lands have an environmental and landscape character that must be protected.

Significant rivers and washes
Regionally significant rivers are large drainages with extensive flood plains and specifically include the Verde, Salt, New, Agua Fria, Hassayampa, and Gila Rivers.

Regionally significant washes are larger ephemeral drainages that connect to existing open space, including Cave Creek, Skunk Creek, and Centennial Creek.

Locally significant washes are those that fall under the jurisdiction of the U.S. Army Corps of Engineers under the federal Clean Water Act.

Site Grading
Mass Grading of large development sites is not encouraged, except as defined in the guidelines. The existing landform, topography and vegetation must be protected in the ESDA lands.

Rough site grading is limited within individual parcel boundaries, unless approved by the municipality.

Finish Grading provides a smooth and natural looking topography to match the existing adjacent landform.

Sprawl
The Sierra Club defines sprawl as development that occurs at the urban fringe and is low-density and automobile-dependent.