# NATURAL ENVIRONMENT AND RURAL COMMUNITY



## Water Quality

The primary environmental concern in planning for development is protection of the shared aquifer. Ground water is the primary source of domestic water for all households in the South Valley and Southwest and Southeast Mesa whether they get water from their own wells, from shared wells or from municipal systems. The aquifer in the inner valley area is very susceptible to contamination because the water table is shallow. Depth to the seasonal high water table ranges from ten to thirty five feet over much of the inner valley. Depth to the aquifer on the mesa top varies from more than 300 feet near the eastern escarpment edge (ceja) to more than 1000 feet on the western edge of the Southwest mesa.

There are serious and widespread contamination problems within the valley floor, particularly in those areas with a very shallow depth to ground water. In the flood plain area, the upper portions of the aquifer have taste and odor problems that involve elevated levels of iron, manganese, salinity and hardness. Localized problems with potentially adverse health implications include contamination from petroleum products, organic solvents and pesticides, as well as contamination by nitrates, from both improperly maintained septic systems and sewer pipes . Attempts to address these issues have resulted in a revised Liquid Waste Ordinance, residential densities adjustments, and rigorous review of all platting action in these areas.

Elevated iron and manganese levels were detected in shallow ground water in an area encompassing one-third of the South Valley, primarily the inner valley west of the Rio Grande. Individual liquid waste disposal systems and localized decomposition of naturally occurring organic matter were identified as primary causes of anaerobic (oxygen-deficient) conditions which result in elevated iron and manganese concentrations in ground water. Iron and manganese do not pose a threat to health at the levels measured, but they are associated with unpleasant taste and smell in water and can cause staining of plumbing fixtures and laundry.

At least twenty incidents of ground water contamination with petroleum products have resulted from spills and leaking underground storage tanks in the South Valley.
These contamination problems are generally local in nature and occur primarily along Isleta Boulevard and Bridge Boulevard. Contamination of soil and ground water by petroleum products poses the added danger of explosion from accumulated gases affecting nearby dwellings, manholes, sewers and other underground structures. To prevent further ground water contamination, it is important to review all proposed subdivisions and to have a program of water quality monitoring in existing developed areas. This can assure that further contamination will not occur as a result of future development, and that each person has access to safe drinking water.

The Environmental Improvement Division recommended that a more restrictive lot size standard for on-site wells and individual liquid waste disposal systems be implemented due to the potential for further degradation of the ground water under present conditions. The County Environmental Health Department lot size standard of one dwelling unit per ¾ acre for individual wells and liquid waste disposal systems was changed in the 1988 SWAP for the A-1 land in the Southwest Area including a maximum density of one dwelling unit per one acre in the areas generally bounded by (1) Prosperity Road on the north, the river on the west, and Interstate 25 on the south and east, and (2) Bridge Boulevard on the north, the Isleta Pueblo boundary on the south, Coors Boulevard on the east and the 5050' elevation line on the west.

## Soils

Soil type must be considered when planning for development in the Plan area. The area west of Coors Boulevard is very porous. They also are highly erodible especially on the edges of the Southwest Mesa, its escarpment and upper slopes. The combination of highly erodible soils and steep topography create a very real potential for many tons of soil to erode through the action of wind and water and travel down the escarpment. These soils are then deposited on the lower mesa slopes, in the arroyos, and the Albuquerque Metropolitan Arroyo Flood Control Authority facilities west of Coors Boulevard. The same potential for high rates of erosion also exist in the Plan area west of the Southwest Mesa and west of the Southeast Mesa between I-25 and Second Street.

A study conducted by the U.S. Soil Conservation Service (Natural Resources Conservation Service) identified five zones by soil type within the area from the western edge of the Southwest Mesa to just west of Coors Boulevard (see soils Map 1).

**Zone 1** (Southwest Mesa top), the predominant soils belong to the Madurez-Wink Association. These soils have high wind erosion potential. However, of the five zones, this soil type is the most suited for development at varying densities if appropriate erosion control strategies are used.

**Zone 2**, (including the mesa edge/ceja) is located between the eastern ceja and 500 feet west of that edge. Latene Sandy Loam Soils are found on the ceja and consist of a thin (approximately eleven inch deep) topsoil covering a pink gravelly loam high in lime content and are extremely susceptible to wind erosion. Preserving a portion of this area above the ceja as open space would be less destructive to Zones 3, 4 and 5 which lie below on the mesa escarpment and slopes than if the top of the mesa adjacent to the ceja were developed.

Because of the very porous soils, individual liquid waste disposal systems, unlined sewage lagoons, and storm water runoff holding ponds should not be constructed within 200 feet of the ceja. Care must also be taken to direct water runoff away from the ceja to prevent serious damage to the edge and more deposition of soils on the escarpment and slopes of the mesa.

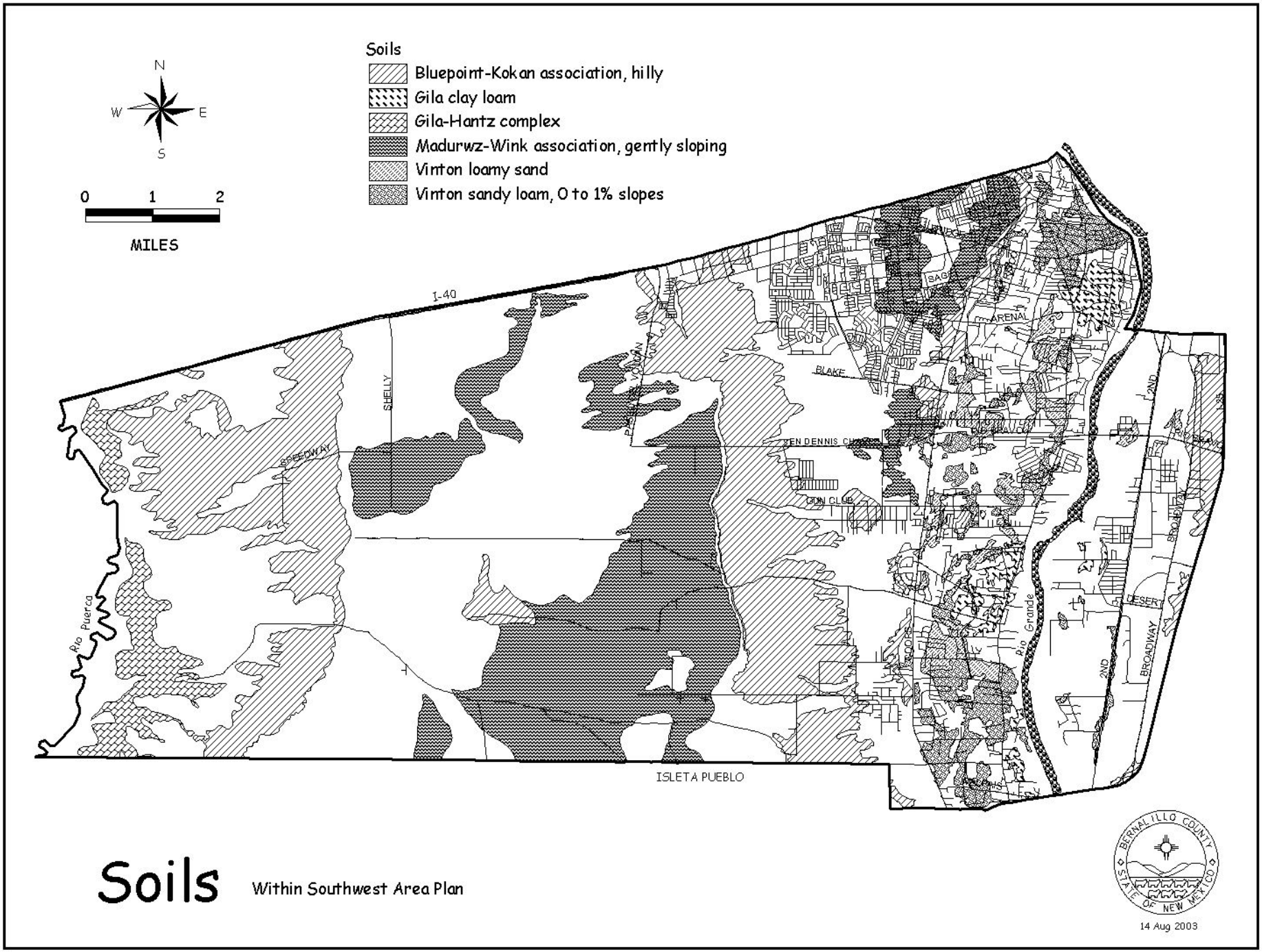
**Zone 3**, located on the steepest portion of the Southwest Mesa escarpment is a sand escarpment with predominately Bluepoint-Kokan Soils. These soils generally have poor suitability for growing vegetation, high soil erosion potential, and are not suited for individual liquid waste disposal systems due to their poor capacity for holding water. Due to the soil type, (1) limited development will be allowed to occur on the ridges and slopes away from runoff areas; (2) extreme care should be taken to hold soil in place during development and restrict soil disturbance within building envelope in an effort to avoid severe blowing and soil erosion; (3) naturalistic erosion and water control measures should be taken in the area from the top of the small watershed downward to reduce the rate and volume of runoff and help hold the soils in place; (4) lot sizes should be no smaller than one net acre per dwelling unit unless centralized community or municipal sewage systems are used.

**Zone 4,** located on the upper east slope, contains five to fifteen percent slopes and extensive Bluepoint-Kokan Soils. This area is suitable for a wider range of residential densities than previous zones. However, erosion and water control measures should be developed throughout the area as a prerequisite to the approval of development in order to retard runoff and limit the amount of soil erosion which impacts Zone 5.

The Bluepoint-Kokan Soils support little vegetation and holds little water. Native or naturalized landscaping should be used or retained during development. Due to the soil type, (1) provisions for controlling runoff should be made from the top downward through a regularly scheduled program of drainage management and enhancement due to the relatively steep slopes and broken topography; (2) roads and development should respect the natural contour of the terrain; (3) roads should use all weather crossings of arroyos to minimize concentration and acceleration of runoff with resulting erosion downstream from the crossing; (4) larger lot sizes should be required when individual liquid waste disposal systems are used, otherwise, centralized community systems, or municipal sewer systems should be used to prevent surface seepage; (5) native or naturalized landscaping should be planted as a soil retention requirement to reduce the use of water and fertilizer.

**Zone 5**, located on the far east slope, extends almost to Coors Boulevard and contains large areas of Bluepoint-Kokan Soils. This is the deposition area for the sediment, which erodes from the up slope zones. To fully realize Zone 5 development potential of mixed densities, the recommendations for erosion and water control measures in Zones 3 and 4 should be implemented.

The use of contoured north/south cross slope roads and ridge located east/west access roads with gabion step channel or other water infiltrating arroyo treatments will help protect development in this zone from sediment deposition and flooding.




# Soils

Within Southwest Area Plan

BERNALILLO COUNTY STATE OF NEW MEXICO

14 Aug 2003

## Open Space

The Albuquerque/Bernalillo County Comprehensive Plan designates which land is suitable for Major Public Open Space and public easements.

Bernalillo County has acquired the Durand property (10.5 acres) and the Beck property (15 acres) as agricultural open space. The County has also acquired the Hubbell House which is a 150 year-old adobe hacienda situated on 10 acres of cultivated farmland. The management of the newly acquired County open space has not been determined. A Joint Powers Agreement or similar agreement with the City Open Space Division is the most logical way to program and plan for the use of and access to these properties.

## The Hubbell Oxbow

The City of Albuquerque recently purchased the Hubbell Oxbow. Currently, there are no specific plans for the property other than to keep it in agricultural use. The Albuquerque Metropolitan Arroyo Flood Control Authority maintains a portion of the southern end of the Hubbell Oxbow as part of a detention dam. The Hubbell Oxbow facility is designed to control floodwaters at runoff rates equal to the 100-year storm. City Open Space acquired the northern 2/3 of the Oxbow and has been farmed for many years. Residents of the South Valley have a strong desire to see it remain in agricultural use, as parkland or open space.

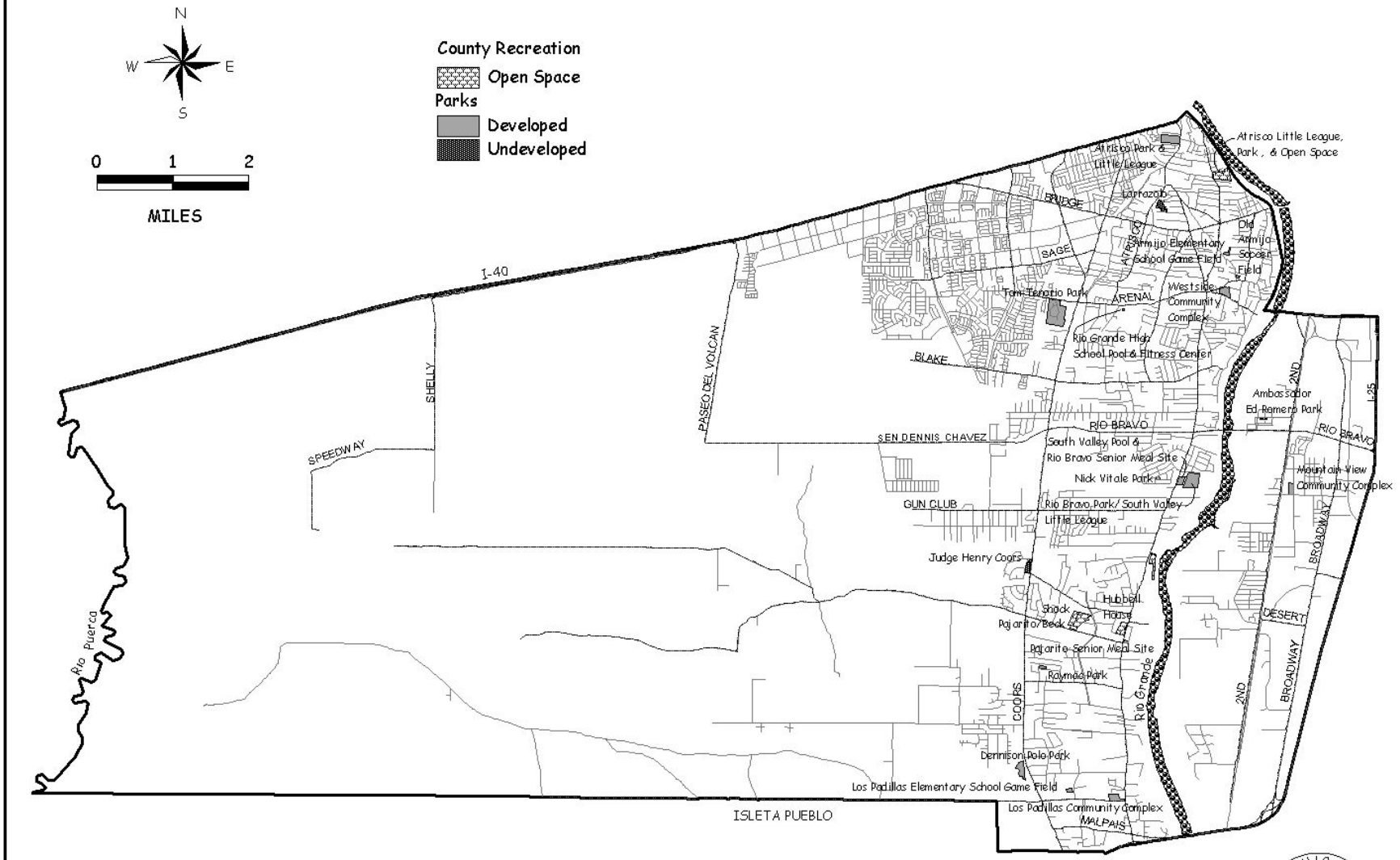
## Playa Lakes

Playas are low-lying areas that are intermittently flooded and act as a natural drainage outlet. To avoid the cost of constructing outfall structures and providing maintenance for the playas, development densities on the large nearly flat area on top of the Southwest Mesa, should be limited around the playas. The playas serve as important water recharge areas and should be retained in an undeveloped state. A drainage management plan for the entire Southwest Mesa should be completed so that flooding does not occur below the escarpment and to avoid costly flood control measures. The City of Albuquerque Open Space Division is currently working with Mesa del Sol to designate on-site "open space" through the Playa Lakes. They are proposed to be a part of open space only as a trail link or other similar purposes. At this point, the Playa Lakes are not being considered for purchase as Major Public Open Space.

## Rio Puerco

The Rio Puerco escarpment lies on the far western extent of the West Mesa on the eastern edge of the Rio Puerco Valley, south of I-40 to the Isleta Pueblo boundary. This area has gained the attention of archaeologists as an area rich with the evidence of past cultures, containing landforms, habitat, viewshed and fossil deposits. This property is designated in the Comprehensive Plan and is partially listed on the Open Space Advisory Board Acquisition Priority List.

**The Eastern Ceja Parks**




# County Parks and Open Space

Within Southwest Area Plan

BERNALILLO COUNTY STATE OF NEW MEXICO

14 Aug 2003

## Parks

Additional parks are needed within the boundaries of the Southwest Area Plan (SWAP). Recently, a number of parks and community centers have been upgraded either by facility expansion or by adding new amenities.

A unique opportunity exists within the plan area to establish a comprehensive network of jogging/walking, bicycle and equestrian trails adjacent to several of the arroyos, drains and ditches which traverse the entire area. A network of these multi-use open space trails has been identified for the plan area. The east/west trails will link the Southwest Mesa escarpment and the proposed industrial corridor/enterprise zone east of the Rio Grande with the bosque of the Rio Grande Valley State Park. Trail links also will exist between the historic village centers. The trails will play an important role in the permanent preservation of the quality of life that people in the South Valley can continue to enjoy.

New Trails are present at the following locations:

- Riverside, between Bridge and Rio Bravo on the east side of the Rio Grande.
- Rio Bravo and the South Diversion Channel.
- The Atrisco Riverside Trail is programmed to be built on the west side of the river in 2000.

## Cejas and Escarpments

The major portion of Zone 2, the edge of the eastern escarpment of the Southwest Mesa, consists of soil particularly vulnerable to wind and water erosion. The Soil Conservation Service (Now known as the Natural Resource Conservation Service) calculated present soil loss in this zone between five and ninety tons per acre per year. The allowable soil loss is four tons per acre per year. The area has a surface topsoil of approximately eleven inches thick covering a pink gravelly loam high in lime content. Once the topsoil is eroded away by water or foot and vehicular traffic, the very light, limy substratum is highly susceptible to winds.

Based on the soil study conducted as part of the 1988 SWAP, a five hundred foot wide strip along the eastern edge of the Southwest Mesa shall be maintained as an area free of individual liquid waste disposal systems, unlined sewage lagoons and water runoff holding ponds, to be maintained in open

space through density transfer to more appropriate areas. This will help protect eastern mesa escarpment and slopes from seepage and erosion.

## Agriculture

For centuries, agriculture has been a traditional way of life for people of the flood plain of the Rio Grande. The South Valley maintained itself as a nearly self-sufficient agricultural community until the early 1940's. Many residents continue to appreciate the rural life style and are now concerned about the demise of large tracts of agricultural land in their area. Recently, the amount of agricultural acreage has declined due to the conversion of land from agriculture to residential, commercial and manufacturing uses. Less than 3% of land owners in the plan area own parcels of agricultural land that are larger than 40 acres. Most of these landowners are former commercial farmers or dairymen who found agricultural work economically unreliable and chose to quit working the land themselves. Many of those who lease land from these landowners to farm are also phasing out unless they have another reliable source of income. In general, these large landowners are selling their property so they can retire and provide some inheritance to their children, many of whom are not interested in farming.

Historically, agriculture has also provided the economic base for South Valley residents, however, this is no longer true. Because agriculture has been a major element of the cultural heritage within the South Valley community, agricultural uses of the land should continue as long as the residents desire to maintain this tradition. Commercial agriculture has many challenges. There are collaborative efforts by many South Valley community groups to address these challenges so that viable, sustainable agriculture is carried on into the future. These proactive efforts include: creation of agricultural cooperatives, building existing farmers markets and expanding into new markets through value-added food products produced with the use of a commercial kitchen. By combining tradition with modern technologies and by promoting organic crops and herb production grown with drip irrigation methods, agriculture can continue in a way that is environmentally sound. These methods can contribute to future economic growth and meet the challenge of water conservation and local food production in the growing Albuquerque/ Bernalillo County area.

Since the rural quality of the South Valley is at risk, the Southwest Area Plan supports continued agricultural activities in the area. The need to preserve farmland in the South Valley is based on the numerous benefits agriculture provides. For example, farming provides for aquifer recharge for the middle Rio Grande valley and the production of locally grown produce. Agriculture also preserves the

open space and rural character of the region, as well as provides recreation and trails along the acequia system.

The dilemma of how to maintain the separate identities of the rural South Valley and preserve agricultural land became a major issue during the revision of the Southwest Area Plan. One major consideration has been the feasibility of the various farming techniques and crops used traditionally in the Valley, given the economic difficulties of farming for large commercial as well as smaller scale farmers. Of equal concern has been the appropriateness of these crops, the strong tradition of agriculture, and the unique cultural expressions of that tradition. Maintaining the rural scale of the Valley has also been a concern because the majority of South Valley farmers work small parcels of land, less than five acres. Most of these individuals work full time in non-agricultural jobs and maintain their ties to the land and tradition by farming small parcels on a part time basis.

## Current Agricultural Land Use Policies

### *Bernalillo County Greenbelt Assessment*

The agricultural policy that most directly impacts farmers and farmland in the study area is the preferential tax status for agriculturally productive land in Bernalillo County. The tax classification is referred to as the "Greenbelt Tax" assessment. The preferential assessment for agricultural property is based on the present use of the property rather than the potential developable or market value.

Preferential tax assessment currently allows the landowner in Bernalillo County who has at least one acre in agricultural use to pay a lower property tax rate.

A tax relief is based on the production of agricultural goods. The value of the land used primarily for agricultural purposes is determined on the basis of the lands capacity to produce agricultural products. The burden of demonstrating primary agricultural use is on the landowner who must produce objective evidence of legitimate agricultural use for the year preceding the year in which application is made for greenbelt assessment.

Three types of agricultural uses qualify for greenbelt tax. They are land uses that include: 1) irrigated farmland, 2.) dry farmland, and 3) grazing land. The tax for each of the three varies with irrigated farmland being taxed at a higher rate than grazing land or dry farm land.

## Development Approaches That Preserve Agriculture

A residential development prototype that could help promote agricultural preservation in the South Valley is a "cluster development" model. A cluster development pattern would allow developers to develop at a higher density while preserving the use of agriculture and the open space network within the valley floor area.

The "cluster" residential development model would be more conducive with surrounding environmental conditions than the "traditional grid" model of residential development. The "grid model" usually allows the developer to subdivide property into one-acre lots in the rural area. However, this model disrupts agricultural patterns and irrigation networks because the land is dissected into neatly uniform lots providing building envelopes for homes and accessory structures such as garages that may not fit the existing land areas.

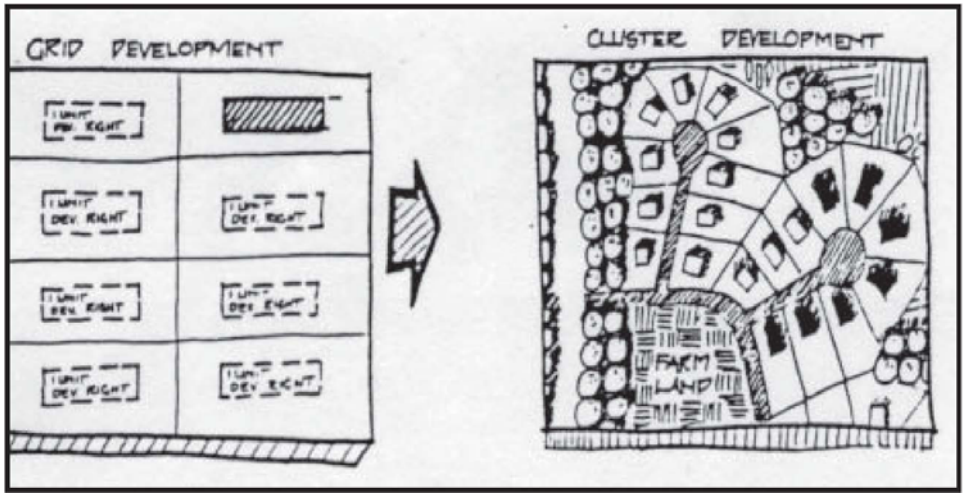
A thoughtful and balanced approach to rural type development serves to preserve the remaining farmland in the South Valley. Design guidelines for both large and small-scale developments achieve agricultural preservation. Rural development design guidelines allow higher density in cluster development areas.

### *Cluster Housing*

"Clustering" allows homes to be grouped together while the remaining land is reserved for open space. Such siting of homes allow for preservation of views, open space, and agricultural activities. This development pattern is similar to a pueblo or plaza type development. The pattern may allow for growth but also preserves irrigated land as well as irrigation infrastructure. Developers can be allowed to develop at a higher density as an incentive to develop cluster communities. Cluster development is identified in the Albuquerque/Bernalillo County Comprehensive Plan and the Albuquerque/Bernalillo County Extraterritorial Subdivision Ordinance as a technique for retaining agricultural and scenic qualities in the Rural, Semi-Urban, Established and Developing Urban areas. Clustering also allows the

developer to save on the cost of streets, water and sewer lines and other infrastructure because of the reduced distances between structures and lots.

Cluster housing may require formation of a homeowners association or other strategies to manage the open space or other areas owned in common. A cluster project that preserves and maintains open space or other features through a homeowners association is a type of "Common Interest Community" as defined by banks and lending institutions.



## *TRANSFER OF DEVELOPMENT RIGHTS*

Transfer of Development Rights (TDR) is a mechanism for transfer of the legal right to develop from one piece of property to another. This allows a landowner to sell his/her development rights on a parcel of property to another landowner who wants to develop a parcel in another location at a higher density. For example, if land owner "A" has the right to place one unit on his parcel due to the existing zoning on that parcel and the potential density allowable under SWAP is three units, under a TDR program, land owner "A" may acquire the development rights for three units from other land owners in a designated area as the basis for obtaining zoning approval, allowing three dwelling units on that acre. Thus, landowner "A" is able to place six units on his or her parcel.

A TDR program requires the designation of a preservation zone, as well as a transfer zone, which receives density transferred from the conservation zone. The application of TDR's is done administratively through the existing planning review process. TDR programs work best in urbanizing areas because a development market exists there and a shifting of densities is more commonplace. TDR's also work best when used in conjunction with other techniques of open space preservation.

Landowners in the South Valley who want to realize financial gain from their land without having to develop it can do so under a "TDR" program. With the use of this technique, property owners can realize the financial gain and can retain ownership of their property for agricultural purposes. Other benefits of a TDR program include directing development toward designated areas while retaining other land for open space and agriculture. With planned infrastructure, the development pattern can be more efficient and provide for higher densities in the served area.