Santa Fe County, New Mexico

Sustainable Land Development Plan

Volume II-A: Plan Elements

Systems and Settings of Santa Fe County

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SUSTAINABILITY

"... the deliberate effort to ensure that community development not only enhances the local economy, but also the local environment and quality of life."

- *Center of Excellence for Sustainable Development*

"Sustainable communities are defined as towns and cities that have taken steps to remain healthy over the long term. Sustainable communities have a strong sense of place. They have a vision that is embraced and actively promoted by all of the key sectors of society, including businesses, disadvantaged groups, environmentalists, civic associations, government agencies, and religious organizations. They are places that build on their assets and dare to be innovative. These communities value healthy ecosystems, use resources efficiently, and actively seek to retain and enhance a locally based economy. There is a pervasive volunteer spirit that is rewarded by concrete results. Partnerships between and among government, the business sector, and nonprofit organizations are common. Public debate in these communities is engaging, inclusive, and constructive. Unlike traditional community development approaches, sustainability strategies emphasize: the whole community (instead of just disadvantaged neighborhoods); ecosystem protection; meaningful and broad-based citizen participation; and economic self-reliance."

- *Institute for Sustainable Communities*

VISION

Santa Fe County is a place of sustainable communities, where:

- The County is a model for growth management, new urbanism, rural design, renewable energy, sustainability and smart growth;
- Community participation is ensured and diversity desired;
- Partnerships are valued and the County and its communities engage in a cooperative manner;
- Communities are linked, interconnected and integrated;
- Agriculture, farmland and food production are supported and maintained;
- Archaeological and cultural resources are preserved;
- History and heritage are respected;
- Private property rights are respected and protected;
- Water conservation is essential;
- Wildlife, habitat and natural resources are protected;
- Ecosystems provide the ability to sustain life for future generations;
- Open space, scenic vistas, parks and trails are protected, integrated and connected;
- Energy efficiency and renewable energy are incorporated into all development;
- Development takes advantage of sustainable technologies;
- Guiding principles for development include carrying capacity of ecosystems and self-sufficiency in energy, food and water; and
- Diversified and affordable housing choices are part of all communities.

2-1. Sustainable Growth

Sustainable development maintains or enhances economic opportunity and community well-being while protecting and restoring the natural environment upon which people, natural systems and economies depend. Sustainable development and activities seek to balance fiscal, social and environmental considerations, minimizing negative impacts to existing communities and the environment. Three components make up the heart of sustainable activities: environment (working with and protecting the environment and ensuring its continuance for future generations), social/community (equitably meeting the needs of diverse people and communities), and economy (developing economic opportunities responsibly).

The three interdependent components of sustainable development: environment, economy and community structure this Plan. The County recognizes an ecological imperative to protect the environment, a social imperative to create livable communities and an economic imperative to balance opportunities and production with responsible resource use.

Santa Fe County plays a vital role in promoting, supporting and affecting these relations in the sustainability equation. Efforts such as using local and regional materials, recycling and re-purposing, renewable energy solutions, conserving vital natural resources such as water and land, creating neighborhoods and communities with diversity, and encouraging sustainable economics are only a few of the considerable opportunities available to the County. Community members, individually and collectively, play an equally significant and symbiotic role in shaping and supporting the health of our communities. Local capacity building, renewal and conservation of resources - natural, human, economic - are therefore critical components to the accomplishment of community sustainability and viability.

Santa Fe County recognizes that global warming and climate change is impacting the landscape and the physical, social-economic fabric of the built environment. Fossil fuel use creates greenhouse gas emissions that contribute to global warming. The impact of global warming is compounded by a decreasing natural resource base. Forests, water, wildlife and productive farmland are diminishing. Along with the competition for resources, social inequities are growing. Providing equity in prosperity while improving environmental quality will be a core challenge in the implementation of this Plan. Critical environmental issues associated with climate change, increased greenhouse gas emissions and the loss of biodiversity create an incentive to implement more sustainable land use practices.

2-1.1. Pillars of Sustainability

2-1.1.1. Environmental Stewardship

Environmental sustainability applies to both natural and built environments, which are shaped by human impact. Humans decide how, where and when to build buildings, neighborhoods and infrastructure (the built environment). Humans burn fossil fuels, consume land and water, and use the earth's natural resources (the natural environment). Developing and implementing strategies and programs which encourage a sustainable approach to each of these environments is vital to achieving overall sustainability.

Encompassing the air, plants, water, wildlife and land around us, the health of the natural environment is inextricably tied to human health and welfare. Sustaining the natural environment in Santa Fe County means working to protect important natural resources like water, agricultural land and open space. It also means reducing pollution and using more renewable resources.

Santa Fe County is reaching a critical point with regard to population growth and the availability of land and water resources. The traditional historic communities in the northern part of the County are reaching full build out since they are surrounded by Tribal lands and have limited area for expansion. Most of the growth in this area will be infill and small family land divisions. Water and land management will be crucial for long term planning and maintaining the integrity of the environment and small scale agricultural economy.

The City of Santa Fe and metro fringe communities such as Edgewood and Espanola are growing rapidly, quickly consuming the open land and creating demands for water/wastewater services, roads and utility systems.

The majority of the growth and development in the County is currently occurring at the center of the County, the extreme north and south boundaries and around the edge of the City of Santa Fe. Land appropriate for development is becoming a scarce commodity and water is supplied by centralized water systems. The appropriation of available and projected future water sources will need to coordinate with existing platted lots and projected growth rates. Toward the southern part of the County the majority of land is mostly held in large parcels or ranch/range land with a limited amount of infrastructure and county services provided. To fully benefit the community, these areas should be maintained as conservation or agricultural related land uses. These lands are also home to numerous archaeological, cultural resources and environmentally sensitive areas that need to be evaluated for long term planning and conservation priorities to ensure their sustainability.

Building from the Past

The built environment encompasses everything from individual buildings to communities to infrastructure currently in place. Sustainability in the built environment means efficiency and using materials which promote conservation of the natural environment. From individually energy efficient buildings made from local materials, to communities designed to be "walkable", to infrastructure systems which promote public transit and responsible handling of waste, sustainability in the built environment can make a big difference in the places we create and occupy.

Santa Fe County has long served as an intersection of human cultures and populations. Before European contact the Galisteo Basin supported the highest density human settlement in northern New Mexico. The site planning and design of the pueblos exemplifies energy efficient design. The orientation, compact form, and use of locally based building materials created communities that were sustainable prior to drought conditions that forced abandonment of many of the pueblos. Evidence of these rich cultures is still found throughout the landscape. There are lessons to be learned from studying and analyzing the site environs, architectural form and configuration of localized building materials.

The selection and raw material processing of building materials is a large contributor to the consumption and destruction of natural resources and emission of carbon dioxide. Looking at the our historical precedents and learning from ancient and traditional building methods, modern builders can help alleviate the pressure on the environment by selecting materials that are less energy intensive in harvesting and processing. Using environmentally sensitive materials and designing structures that use natural conditioning methods or bioclimatic designs that tap into solar, wind, and other renewable energy systems will partially address the problem of global warming. Low embodied energy materials are easier to process, emit less carbon dioxide and can be atheistically pleasing, building code compliant and sustainable.

Early settlement building materials in Santa Fe County were sedimentary and igneous stone masonry, puddle earth, adobe and wood. The architectural form was pueblo style, featuring masonry walls, earth floors, and flat or low slope earthen roofs. As in the past, this style is still appropriate in arid climates and rural sites. The profile of low slope-earthen roof dwellings, coupled with the aesthetics of masonry type construction results in a built form that integrates harmoniously with the site while deriving passive solar energy for heating and wind currents for cooling. The design of Communities includes a pattern of diverse and mixed community land uses. Water courses emerging from the Sangre de Cristo Mountains and the Rio Grande provided water for agriculture. The surrounding landscape included agricultural lands coupled with a local subsistence economy structured on barter with surrounding villages from the region.

In the northern part of the County, Spanish colonialists settled small villages, grazed livestock, farmed, and harvested timber. The settlement patterns aligned themselves with the Spanish Laws of the Indies resulting in long lots platted perpendicular to water courses emerging from the watersheds of the Sangre de Cristo Mountains. *Acequias* serve as the irrigation systems for the agricultural fields. Community or common lands were appropriated for grazing, wood gathering and timbering. The buildings were constructed of adobe, wood and stone in small modules that later evolved into "L and U" –shapes forming compounds or *plazuelas* as the family grew in size. Many communities were linear settlements configured along roadways. Larger more centralized communities often had a central space or plaza. All communities, regardless of the scale and configuration, are connected to roads that are part of a greater network linked to other regional transportation systems. Other infrastructure essential for communities include water supply, wastewater disposal, utilities such as natural gas/propane, electricity and communications.

Renewable energy was employed in the early settlements and continues to the present. Before the advent of imported fuels such as oil, electricity, or propane wood was used exclusively for space heating and cooking. In the 1880s Santa Fe received its first electricity from a small hydroelectric plant located in the upper Santa Fe River. Shortly thereafter local utility companies were formed to bring electric, gas and water service to the communities. In 1926, FL&T Company established a coal fired generating plant and distribution system.

In 1958, Peter Van Dresser of Santa Fe built one of the first passive solar houses in the United States. Later, in the early 1970s during the energy embargo, solar and wind energy were introduced into northern New Mexico. Thousands of passive solar homes were built as well as solar water heaters, sunspaces and Trombe Walls (a thick masonry wall that absorbs heat during the day and radiates it during the night). Solar and wind energy technologies continue to be implemented in residential and commercial applications.

The County is in the process of implementing an energy conservation program for its facilities, and a water conservation plan for county facilities and new development applications is being drafted. As water is absolutely essential to sustainability, the County continues its work to ensure the highest levels of conservation and protection, including:

- Indoor water conservation measures such as requiring repairs to leaks on private water lines within a specified timeline and compliance with water conservation plumbing standards such as flow rate limits on faucets and showerheads and the installation of rain sensors on outdoor irrigation systems.
- Restrictions on the construction of new pools dependent upon water availability and supplemental use standards, requiring design components such as the integration of water capturing and use of automatic pool covers.
- Water harvesting requirements mandating use of rain barrels, cisterns or other water catchment basins to capture a minimum of 85% of the roof area drainage for landscape irrigation.

Environmental Stewardship

How we consume.

- **Reducing solid waste output and increasing recycling by examining the complete lifecycle of consumer goods.**
- **Reducing toxicity in what we consume and create.**
- **Reducing our carbon footprint through energy conservation and use of renewable energy sources.**

How we build.

- **Designing compact, mixed use places that reduce vehicle miles traveled by supporting multi-modal transportation.**
- **Directing growth to areas most efficiently served by public facilities.**
- **Adopting green standards for site design and building standards, building operations and maintenance.**

How we conserve.

- **Conserving water and protecting our water sources by reducing pollution from stormwater run-off and point sources, including industrial contaminants and septic systems.**
- **Protecting important open spaces and environmentally sensitive areas by limiting growth and development.**
- **Preventing further fragmentation of natural areas.**

How we restore.

- **Developing green infrastructure for the public use and enjoyment, including preserved open space, trails, community gardens and stormwater catchment systems.**
- **Retrofitting our buildings and infrastructure for energy and water conservation.**
- **Physical restoration of streamways and riparian areas.**
- **Clean up of brownfield sites and sensitive infill development.**
- **Preparation for climate change to reduce further impacts to the natural and built environment.**

2-1.1.2. Social Diversity & Equity

Social equity issues include access to socio-economic opportunities and environmental justice, and social diversity issues include impacts to the cultural make-up of the region and social, environmental and economic impacts to minority individuals and communities. A sustainable society provides a sufficient quality of life for all citizens, ensuring basic justice and equality among all persons. For Santa Fe County, a sustainable society is one which provides quality standard of living and respects the diverse needs and approaches of individual citizens and local communities.

To support social diversity and equity, the County must ensure that minority individuals and communities do not suffer disproportionately because of lack of access to health care, education, workforce development, and regional transportation, infrastructure and housing opportunities. Support for development of and access to sustainable food sources, especially local agriculture, is key to supporting local communities. Minority and low-income groups are typically most exposed and least able to protect themselves against the worst consequences of extreme weather events and natural disasters, and face higher costs and lower quality in supply for basic necessities like food, water and energy, which is exacerbated by limited access to regional markets and infrastructure as well in times of natural disasters or economic downturns.

The impacts of climate change are expected to impact local agriculture and historic agricultural communities. Agricultural communities will face drought conditions in some regions and flooding in others that could contribute to crop failures, and environmental, economic and social problems. New Mexico has already seen an extended growing season which leads to changes in crop selection and watering requirements. There have been increases in evaporation from reservoirs, decreases in snow packs, decreases in stream flows, greater drought severity and potential for permanent droughts that will also affect agricultural communities. Changing landscapes also could mean relocations and displacement of communities.

County support for community-based food production and sustainable agricultural and ranching practices can improve local micro-economies and improve quality of life for marginalized individuals and communities. Further, planning and implementation efforts can and should take advantage of the local workforce in a sustainable manner, looking first to resources that are readily available in this region. Promotion and support of targeted cluster industries in media/film, arts, culture and entertainment, eco-tourism, high technology, outdoor recreation, sustainable agriculture and ranching lead to regional benefits, the potential sharing and saving of costs, and the conservation of resources.

Maintaining and enhancing the integrity of the environment and health of the ecosystems should provide equal opportunities for all residents to access and work with the landscape, wildlife, recreational, creative and agricultural related activities. Further enhancing such initiatives as renewable energy, clean technology and local value-added food production will likely reduce the area's dependence on imported resources that are subject to volatile market changes.

Social Diversity & Equity

How we live and interact.

- **Providing permanently affordable housing for working families that is designed to limit operating and maintenance costs.**
- **Integrating affordable housing into neighborhoods.**
- **Designing neighborhoods and communities that support integration of household types, including individuals, couples, families and seniors.**
- **Reviving historic building techniques and traditional community forms as a regionally-based alternative to conventional development.**

How we enjoy.

- **Supporting public health through access to affordable health care and disease prevention.**
- **Designing places to encourage walkability.**
- **Providing access to outdoor recreation areas, trails and community centers.**
- **Providing educational and recreational opportunities for youth.**

How we support and maintain.

- **Coordinating with service providers, including institutions and schools.**
- **Practicing environmental justice in the siting of new development and in mitigation of past injustices.**
- **Protecting our cultural and historic resources.**
- **Protecting our historic and contemporary communities and neighborhoods.**
- **Protecting our agricultural areas and rural character.**

How we evolve.

- **Supporting capacity building and self-sufficiency in local communities.**
- **Reaching out to individuals and communities to find joint solutions and increase participation.**
- **Retaining young adults and recent graduates in our communities through enhanced opportunities and a high quality of life.**

2-1.1.3. Economic Strength & Opportunity

A sustainable economy provides opportunity for all residents and communities while maintaining responsibility for the impacts of development, protecting the natural environment and giving back to the social and built infrastructure. For Santa Fe County, a sustainable economy is one which encourages and supports its communities with fiscally sound and environmentally sensitive activities.

Many integrated socio-economic and environmental elements such as regional economic infrastructure development and alignment of employment opportunities with targeted sustainable industries play vital roles in supporting greater county community-based economic, workforce, and housing development initiatives. The lack of integration often results in disparate efforts and antithetical competition for limited resources and therefore impacts the economy, social fabric and the environment in an adverse manner.

Economic sustainability means that residents have choices of economically-supportable lifestyles, meaning affordable housing and industries with living wages. An annual index compiled by the Natural Resources Defense Council measures the effect of oil and gas price increases on people's incomes. The council's "Fighting Oil Addiction: Ranking States Oil Vulnerability and Solutions for Change. The study ranks states based on a simple income-to-gas-price ratio -- how much a family makes compared with what they're spending on fuel every year. New Mexico ranked 5th in the study, which reveals that the County is highly vulnerable to oil prices. When oil prices go up, citizens in vulnerable states are hit hardest. In New Mexico, the average consumer spent $2,177.51 or 6.79 % of their income on gas in 2008. When energy costs rise, other household expenses must be cut, reducing quality of life for those on the margins. The survey also ranked the states that are doing the most to promote alternative energy sources, promote clean-energy technologies and reduce dependence on oil. The State's ranking was much higher as New Mexico was rated fourth in the Country for doing the most to promote clean-energy technologies, following California Massachusetts, Washington.

Economic Strength & Diversity

How we produce.

- **Supporting local food production.**
- **Developing green products that minimize waste and toxicity to the environment.**
- **Promoting sustainable agriculture and eco-tourism.**

How we sustain.

- **Developing industries that support a living wage and a high quality work environment.**
- **Supporting community-based development.**

How we prepare.

- **Developing a green workforce with knowledge and experience to attract green business.**
- **Investing in large and small scale renewable energy infrastructure and development.**
- **Developing and educating the workforce.**
- **Providing the infrastructure and services necessary to attract high quality employers.**
- **Using our local natural and human resources wisely.**
- **Providing a workforce that is ready to take on new challenges through leadership and problem solving.**

2-1.2. Sustainability Mandates

Connection to the region and the global context are essential in order to understand and appreciate the overall impact of sustainable development. There are several Federal, State and local goals and mandates to increase our individual and collective sustainability.

Federal Executive Order

In January 2007, an executive order "Strengthening Federal Environmental, Energy, and Transportation Management" was signed, stating "It is the policy of the United States that Federal agencies conduct their environmental, transportation, and energy-related activities under the law in support of their respective missions in an environmentally, economically and fiscally sound, integrated, continuously improving, efficient, and sustainable manner." The Executive Order supports:

- Improved energy efficiency and reduce greenhouse gas emissions.
- Developing renewable energy from generation projects on agency property.
- Reduced water consumption.
- Green purchasing including bio-biased, environmentally preferable, recycled-content.
- Reduced use of toxic and hazardous chemicals and materials.
- Increased diversion of solid waste and maintain recycling.
- New construction and remodeling for high performance sustainable buildings.
- Reduced fleet consumption of petroleum products and increase use of hybrids.
- Energy efficient electronics.

H.R. 2454 American Clean Energy and Security Act of 2009 (pending)

American Clean Energy and Security Act of 2009 - Amends the Public Utility Regulatory Policies Act of 1978 (PURPA) to establish a combined efficiency and renewable electricity standard that requires utilities to supply an increasing percentage of their demand from a combination of energy efficiency savings and renewable energy (6% in 2012, 9.5% in 2014, 13% in 2016, 16.5% in 2018, and 20% in 2021-2039).

New Mexico Legislation

The State of New Mexico is addressing environmental sustainability with policies and programs with particular focus on clean energy and emission reduction. Executive Orders directing action on environmental sustainability include:

- EO2004-019 declaring New Mexico the 'Clean Energy State' and establishing the Clean Energy Development Council
- EO2005-033 establishing goals to reduce New Mexico's greenhouse gas emissions to 2000 levels by the year 2012, 10% below 2000 levels by 2020 and 75% by 2050.
- EO2005-049 entitled "Requiring the Increased Use of Renewable Fuels in New Mexico State Government"
- EO2006-01 entitled "State of New Mexico Energy Efficient Green Building Standards for State Buildings".
- EO2006-069 established the Climate Change Action Implementation Team

Local Legislation

Current local resolutions supporting sustainability:

- **Resolution 2005-61** - A Resolution Supporting the Implementation of Renewable Energy and Energy Efficiency in New Santa Fe County Buildings.
- **Resolution 2006-149** - A Resolution to Endorse the US Conference of Mayor's Climate Protection Agreement Adopting Higher Performance Energy Efficient Building Standards.
- **Resolution 2007-13** - A Resolution to Amend Resolution 2007-42-The Transportation Fuel Reduction and Alternative Fuel Vehicle Acquisition and Use Policy.

- **Resolution 2008-114** - A Resolution Calling for the Consideration and Implementation of Various Measures To Reduce Fuel Usage and Consumption
- **Regional Planning Authority Resolution 2008-3** - A Resolution Establishing an Advisory Task Force to the Santa Fe City and County Regional Planning Authority (RPA) to Study and Make Recommendations on Regional Energy Initiatives.
- **Resolution 2009- 126** A Resolution in Support of a Renewable Energy Improvement Financing District in Santa Fe County
- **Resolution 2009- 127** A Resolution in Support of the Solar Energy Improvement Special Assessment Act for Santa Fe County

2-1.3. Smart, Sustainable Growth and New Ruralism

Sustainable growth and development principles have evolved out of land use and community planning movements and concepts of the past forty years. Smart Growth, New Urbanism, Traditional Neighborhood Development (TND) and Transit Oriented Development (TOD) are significant, tested concepts that continue to be the keystone of successful of urban and regional planning initiatives. The essential motivation is to provide alternatives to inefficient, auto-oriented development to promote a higher quality of life and place in our cities, counties and regions. The well-documented effects of urban sprawl includes limitless traffic congestion, school overcrowding, air and water pollution, loss of open space, degradation of historic places and communities and rapidly accelerating public facilities costs.

These planning concepts have equal relevance in both rural and urbanizing landscapes and environments. In Santa Fe County, as the result of the 1999 Growth Management Plan, these concepts were instituted in a number of successful projects and geographic areas including the Community College District (Rancho Viejo and Oshara) and the Aldea project.

The Urban Land Institute, in its 2002 publication “Making Smart Growth Work” defines it in this way:

> “Growth means development. Smart growth means development that accommodates growth in smart ways, which is to say in economically viable, environmentally responsible, and collaboratively determined ways. Smart growth calls for building communities that are more hospitable, productive, and fiscally and environmentally responsible than most of the communities that have been developed in the last century.”

In general, Smart Sustainable Growth is the antithesis of sprawl and focuses on several shared key principles:

Smart Growth Principles:

- Compact, mixed-use development, including commercial, institutional and residential;
- Enhanced livability based on compact, safe and walkable neighborhoods;
- Range of housing opportunities and choices;
- Preserved open space, agriculture and ranch land, scenic areas, historic and archeological sites, and critical environmental areas;
- A variety of transportation choices including accessible public transit and multi-use trails;
- Distinctive, real communities built around the traditional design elements of plazas, main streets for crossroads that engender social and economic interaction;
- Sites and buildings that reduce the consumption of energy and non-renewable materials and limit the production of waste materials;
- Development directed towards existing communities and planned growth areas
- Efficient management and expansion of infrastructure as well as a focus of public investment on existing community assets;
- Infill, redevelopment and adaptive reuse in built-up areas; and,
- A variety of transportation choices
- Predictable, fair and cost-effective development decisions
- Stimulation of local economies;
- Community and stakeholder collaboration

In addition to these key principles, there is a strong preference in Santa Fe County to view development in a unique manner bringing attitudes about rural and alternative life style preferences into new, more urbanizing patterns. The idea of ***New Ruralism*** was created in Santa Fe County in 2000 with the development of the Community College District, a large 18,000 acre new community district south of the City of Santa Fe (The New Ruralism? by Michael Leccese, Urban Land, May 2003).

New Ruralism might best be described as a rural attitude in an urban setting. It is, therefore, not only about densities and infrastructure but it is also about traditional Southwestern development patterns, environmental design features favoring solar orientations and social and cultural mechanisms fostering festivity and interaction that go back hundreds of years. It is a belief that countryside and cityscape can be inter-related. These features are evident in the neighborhoods of the City of Santa Fe as well as in the traditional communities throughout the County. It is a local belief that the past, present and future are intrinsically bound.

Certain design features such as central plazas, street design and community form can be traced back to 1573 and King Phillip of Spain's Law of the Indies. These principles apply to both small rural villages and larger city settings. But perhaps the most germane example of New Ruralism was offered by former Lieutenant Governor and musician, Roberto Mondragon, a number of years ago at a County workshop: "If you drive a pick-up, you're rural".

In order for Smart Growth to be realistic into the future it must be rooted in practical and desirable goals of Sustainability. While there are diverse notions of how sustainability might be understood, the most applicable definition for the purpose of Santa Fe County's Sustainable Land Development Plan is the following:

> "Sustainable development maintains or enhances economic opportunity and community well-being while protecting and restoring the natural environment upon which people, natural systems and economies depend".

A sustainable community, whether a city, a county or a region, therefore depends on the balance and compatibility of systems, both natural and human made, with the settings and landscapes upon which the systems are placed and are expected to function into the future.

2-1.3.1. New Ruralism Design Elements

The following key rural and community design elements should be considered in the design and siting of new development:

- **Distinct Villages.** Village-like development should be blended into the desert landscape. Communities should have a discernible center, with a main street-like environment, or a public space such as a plaza bordered by buildings. The villages should also have discernible edges, typically formed by natural features.
- **Housing Variety.** Neighborhoods should contain a variety of dwelling types and densities to accommodate a variety of people. Single-use "pods" of one house type or use type should be avoided.
- **Transportation Options.** Development should encourage multi-modal transportation, including walking, biking, transit and even golf carts or neighborhood electric vehicles (NEVs). Ideally, community centers should be within a ¼ mile radius of the community edges to encourage alternate transportation modes.
- **Street Types.** Create a diversity of context-sensitive street types that respond to a diverse built environment and also a sensitive natural landscape.
- **Screen Parking.** Where surface parking exists, screen it heavily with landscaping appropriate to the climate and context. Use sustainable design features in any substantial surface parking lots.
- **Connectivity.** Areas should have a connected network of streets, to disperse traffic and limit the need for over-sized arterial roadways. The use of cul-de-sacs should be limited to unique topographical situations. Trails and sidewalks should also be connected.
- **Trails.** Use of natural features, including arroyos, acequias and natural corridors can be used to link developed areas for pedestrians, cyclists and equestrians.
- **Outdoor Opportunities.** Encouragement of an active outdoor lifestyle, with the use of trails, quality public spaces, and the integration of cultural and educational opportunities into the overall site design
- **Desert Inspiration.** Use of desert formations in built elements. For example, continue the use of desert-inspired design in lighting, signage, pavement and site furniture.
- **Emphasize Community Heritage.** Highlight the history of the region in design elements.
- **Sun.** Consider sun angles in building placement, and in the design of public spaces.
- **Maintain Views.** Retain scenic vistas and views of natural features.
- **Sustainable Design.** Aggressively use sustainable design features, including green building and site design techniques. Given the desert landscape, the consideration for low-water usage is critical, as well as progressive measures to limit energy usage and create energy on-site.

2-1.3.2. Land Use / Transportation Linkage

Transportation is an important and costly component of a community's infrastructure base that has a profound influence on its land use patterns and rate of growth. Consideration of traffic demands is a critical aspect of an overall smart growth framework. Impacts to both local streets and neighborhoods and the region's arterials and highway system should be

considered. Traffic congestion increases the costs of doing business in the region, potentially discouraging new businesses from locating in the area. Pollution and congestion will have harmful affects on the quality of the natural environment and the area's quality of life if necessary transportation improvements are not funded as needed.

Transportation is inextricably linked to land use. County-wide development patterns and site specific lot design influence the availability and efficiency of various transportation modes. Development intensity/density, street lay-out, connectivity and access, and public improvement requirements are some of the many components that contribute to the viability of transportation options.

Moderate to high-density mixed use development is widely regarded as a land use that maximizes transportation options. The benefit of mixed use development and higher density residential include land conservation and increased mobility options, such as car pooling, biking/walking, bus or fixed-route transit since uses aren't artificially separated and population densities support viable ridership. Mixed uses allow people to live, work and shop in the same neighborhood, reducing their need to travel long distances in the course of daily living. Increased mobility options can reduce household transportation costs, reduce pollution and traffic congestion and increase interaction between neighbors.

Given increasing congestion and the likelihood of escalating energy costs, there will be an increased incentive to use modes other than single occupancy vehicles. It is important to avoid development typologies that would preclude transit options as they become more necessary in the future, such as large-lot residential development, non-contiguous growth and leap-frog development. Transit is neither cost effective nor convenient to use in very low-density neighborhoods. Generally, residential areas must be at a density of 8 or more units per acre to make transit a viable option.

2-1.3.3. Jobs / Housing Balance

The jobs / housing balance within a community or development area has implications for residents and employers as well as for service providers. A balanced community has employment options for residents, so that they can live and work in the same community; and an educated workforce for employers, so that they are able to hire employees who are vested in their community and in their job. Communities with an imbalanced ratio of jobs to housing are unsustainable for both residents and employers. Commercial uses generate more revenues for jurisdictions than residential uses, and therefore an imbalanced land use mix can also negatively impact the ability of service providers to maintain levels of service.

There is an opportunity for planned growth areas to develop with a balanced jobs to housing ratio from the outset to reduce traffic congestion, support revenue generation and provide a high quality of life for residents. While the build-out land use mix is ultimately most important, it will also be important to encourage jobs / housing balance during the phasing of development in growth areas.

Critical to the achievement of jobs / housing balance is the designation of appropriate sites for non-residential development on the Future Land Use Map (**Map 3**). The availability of appropriate sites, while necessary, isn't likely to induce economic growth on its own. However, the lack of appropriate sites is certain to limit economic growth.

2-1.3.4. Flexibility vs. Certainty

Over the course of an extended build-out horizon, the factors that influence development of growth areas continually evolve. From rapid technology advances to natural resource limitations to lifestyle preferences, innumerable factors will contribute to public and private decision-making over the planning period. The Sustainable Land Development Plan strives to create a framework of guiding principles to ensure economic, environmental and social sustainability while providing flexibility for the County to respond to changing market conditions and enhance its plans as it learns from the development process.

This Plan provides developers with flexibility, both in terms of the types and locations of projects, while establishing standards to prevent the worst forms of development. Inflexible plans and ordinances stifle creativity, preclude innovations in design and reduce all development to the same lowest common denominator. Conversely, an overly flexible plan can be unclear and therefore arbitrarily administered. Existing and new residents and businesses should be provided with the certainty they need regarding the planning and development process to continue to make informed investment decisions regarding their property.

The balance between flexibility and certainty is a key aspect of this Plan. Developers, neighbors, County staff and decision-makers can all perform their roles more effectively when they are certain of the Plan policies and development review process. The knowledge that the process will always occur in a predictable manner helps all participants remain focused on creating quality development rather than navigating a confusing and unpredictable process, while flexibility allows them to create the best-possible development without the burden of excessive regulation that stifles the ability to create a high-quality product.

2-1.4. Sustainable Development Alternatives

Many alternatives have evolved to the conventional development patterns that defined growth in the U.S. starting in the late 1940s. Conventional subdivision design is characterized by auto-dependent design and segregated land uses, resulting in suburban sprawl. Conventional "sprawl" development consists of of five main components, including: 1) housing subdivisions; 2) shopping centers, composed of single-use retail buildings, usually a single-story with exclusive parking areas; 3) office/business parks, also single-use and served by exclusive parking areas; 4) civic institutions, such as churches, schools and libraries, generally large and separated from other uses and served by exclusive parking areas; and 5) roadways, connecting these separated land uses and designed exclusively for the use of automobiles[i].

Conventional subdivision design is based on a hierarchical street pattern that channels local traffic onto collector roads in order to reach almost all destination points, increasing congestion and impeding non-auto access to typical daily destinations[ii]. In conventional suburban development, "adjacency" and "accessibility" have been defined as distinct concepts, and while typical daily destinations are oftentimes adjacent to one another, suburban design makes these destinations difficult to access directly, and makes walking an inefficient form of transportation[iii].

Alternatives such as traditional neighborhood development (TND) respond to this inefficient and costly separation of uses and auto-dependency as a development alternative that promotes "mixed-use, pedestrian-friendly communities of varied population, either standing free as villages or grouped into towns and cities[iv]."

As mentioned in the Smart Growth discussion, there are a number of alternative development forms similar to TND that have become prominent in recent years, including Neo-Traditional Development, New Urbanism, and pedestrian- and transit-oriented development. Many of these development forms share certain characteristics, although there are differences among them. Brief summaries of each of these development types are included below.

2-1.4.1. Traditional Neighborhood Development

Traditional Neighborhood Development (TND) is based on historical development patterns that defined development in the United States through World War II[v]. The traditional neighborhood development pattern is based on each neighborhood containing a clear center for commerce, culture and civic activity; compact development within a 5-minute walk of the center; a street networks based on small, connected blocks, generally in a grid layout; narrow, versatile streets; mixed-uses; and special sites for civic structures and buildings[vi]. Historically, places for living, working, and shopping were designed and built in close proximity simply because this was the most economic and convenient way to build. In times when transportation options were expensive, dangerous, dirty, and sometimes unavailable, supplying daily needs within a walking distance made sense to developers and consumers.

TND employs physical design concepts to achieve social objectives. The physical conventions include[vii]:

1. The neighborhood area is limited in size, with clear edges and a focused center.
2. Shops, workplaces, schools and residences for all income groups are located in close proximity.
3. Streets are sized and detailed to serve equitably the needs of the automobile and the pedestrian.
4. Building size and character is regulated to spatially define streets and squares.
5. Squares and parks are distributed and designed as specialized places for social activity and recreation.
6. Well-placed civic buildings act as symbols or the community identity and provide places for purposeful assembly.

The social objectives promoted through these concepts include[viii]:

1. The compact organization reduces the requirements for infrastructure, automobile use, and pollution, and facilitates public transit.
2. The full range of housing types and workplaces helps to integrate all age groups and economic classes.
3. The provision of comfortable public places allows residents to come to know each other and watch over their collective security.
4. The provision of most of the necessities of daily life within walking distance allows the elderly and the young to gain independence of movement.
5. Suitable civic buildings are intended to encourage democratic initiatives and the balanced evolution of society.

2-1.4.2. New Urbanism

Like TND, proponents of New Urbanism consider the major alternative to urban sprawl to be a return to mixed-use villages and centers that promote pedestrian and transit travel. This "new urbanism" challenges cities and developers to employ new concepts of transportation corridors and centers[ix]. These new planning concepts champion:

- Increased density along transit corridors,
- Locating residences, jobs, and retail destinations close to public transit facilities,
- Providing mixed use development within walking distance of residential areas,
- Development of a multi-modal, interconnected transportation network, and
- Development of urban design guidelines that encourage a more pedestrian and walkable community.

By establishing transportation corridors and concentrated urban centers, new urbanism accomplishes several public objectives:

- Encourages residents and workers to walk, ride bicycles or utilize public transit rather than the automobile as a means of transportation;
- Lowers congestion on surrounding roadways and reduces the concomitant detrimental effects on air quality; and
- Balances the distribution of land uses to concentrate development around transportation nodes within developed areas, thus preserving rural, open space, agricultural and environmental lands.

New urbanism promotes design principles as one means for addressing growth management issues, including "the balance of jobs and housing, school size and placement, and the equitable distribution of resources[x]."

2-1.4.3. Transit Oriented / Supportive Development

Transit-Oriented Development (TOD) is defined as a mixed-use community located within an average 2,000 feet walking distance of a transit stop and core commercial area[xi]. The goal of TOD is to create a mixed-use, pedestrian-friendly environment with access to a variety of transportation options, including walking, biking, transit or car. TODs can be located in a variety of settings, from newly urbanizing areas to infill sites, but they must have convenient (existing or planned) transit access and "their uses and configuration must relate to existing surrounding neighborhoods[xii]." TODs must include core commercial areas adjacent to the transit stop, residential areas within 2,000 feet (10-minute walk) of the transit stop, and civic and public uses, such as parks, schools, libraries, etc.

A brief overview of the guiding principles of TOD includes[xiii]:

- Site must be located on an existing or planned transit line, and land use patterns should lead transit service planning;
- Must be mixed-use and contain a minimum amount of public, core commercial and residential uses;
- Must provide a mix of residential densities, housing types, ownership patterns, and prices;
- Street system should be simple, connected, and pedestrian-friendly;
- Buildings should be oriented to the street, with parking to the rear and should be accessible on foot;

- Site should meet minimum size requirements to provide a mix of uses; and
- Project should adhere to a single "Specific Area Plan."

Much like transit-oriented design, transit supportive planning and development rethinks land use and development patterns so that communities may be effectively served by a balanced transportation system. Transit supportive development enables citizens to choose an alternative to the automobile for at least one or more of their daily trips between home, work, shopping, school or services[xiv]. This is accomplished primarily by simply designing communities so that walking, cycling, riding transit, and driving a car can work together to create a balanced transportation system[xv].

Transit supportive planning elements are included within modern transportation corridor plans. Communities that include transit supportive elements in their plans and design, even if they are not currently served by public transportation, are referred to as "transit-ready." The designs of these communities do not preempt transit, but are designed to accommodate possible transit service in the future. "Transit ready" communities may go through various stages of transit service over a period of many years — conventional bus service, bus rapid transit, and finally rail service.

Transit Supportive Design Elements[xvi]

Travel Connections

- Safe, Convenient and Direct Pedestrian Connections
- Pedestrian-Scale Blocks
- Interconnected Street Network
- Bicycle Circulation and Parking

Building Scale and Orientation

- Human Scale Architecture
- Buildings and Entrances Oriented Along the Street

Public Spaces

- Pedestrian-Friendly Streets
- Parks and Plazas as Community Gathering Spaces
- Quality Facilities for Transit Users

Parking

- Pedestrian-Friendly Parking Facilities
- Structured and Shared Parking

Land Use

- Mixed Use Buildings and Neighborhoods
- Increased Density in Neighborhood Centers

2-1.4.4. Hybrid Development Types

The TND/New Urbanist movement has spurred several hybrid-type development classifications that use selective elements of new urbanism, while adhering to a principally conventional development pattern. For instance, a community might be designed with the design elements of TND, such as front porches, narrow streets and pedestrian orientation, but be built at typical conventional densities with no mixed uses. While this might be preferable to pure conventional subdivision design,

this type of development does not truly meet the objectives of traditional neighborhood development, and does not provide the social, environmental and economic benefits of true TND.

2-1.4.5. Design Principles

The heart of the development patterns discussed above, including TND, New Urbanism and TOD is in the design of neighborhoods[xvii]. The following discussion of design elements pulls upon the literature available on all of these related development forms, which are characterized by the following elements:

Size.

A Traditional Neighborhood District consists of an area of not less than approximately 40 contiguous acres and not more than approximately 250 contiguous acres. The majority of dwelling units are located within a five-minute walk of the neighborhood center, which is roughly 2,000 feet.

Areas Within Traditional Neighborhood Districts.

The neighborhood is divided into at least two types of areas, and each type of area has different land use and site development regulations. A Traditional Neighborhood District must have one neighborhood center area and at least one mixed residential area. The neighborhood may also have a neighborhood edge area, a workshop area or an employment area[xviii]. Within each neighborhood district there should be shops and offices of that can supply the basic weekly needs of a household.

Neighborhood Center Area.

This area serves as a focal point for the Traditional Neighborhood District, containing retail, commercial, civic, and public services to meet the daily needs of community residents. A neighborhood center area is pedestrian-oriented and it is designed to encourage pedestrian movement between a mixed residential area and a neighborhood center area. A square is required with retail and commercial uses generally located adjacent to the square. Neighborhood center uses include retail shops, restaurants, offices, banks, hotels, post offices, government offices, churches, community centers, and attached residential dwellings. A transit stop should be located at the center.

Mixed Residential Area.

Mixed residential areas include a variety of residential land uses including single- family residential, duplex, townhouse, and multi- family. The objective is to provide appropriate living spaces so that younger and older people, singles and families, the poor and the wealthy may find places to live within the neighborhood.

Residential scale retail and commercial uses are permitted within a mixed residential area with strict architectural and land use controls. Accessory use buildings are permitted in backyard areas to be used as a rental unit or place to work (e.g., office or craft workshop).

Neighborhood Edge Area.

This area is the least dense portion of the Traditional Neighborhood District, with larger lots and greater setbacks than the rest of the neighborhood with only single family residential dwellings permitted.

Workshop and Employment Center Areas.

Such an area is utilized for commercial and light industrial uses that are not appropriate for the aforementioned areas but which serve the local residents.

Civic Uses.

Civic uses are essential opponents of the social and physical fabric of the Traditional Neighborhood District. Special attention should be paid to the location of libraries, government offices, museums, schools and other prominent public buildings to create focal points and landmarks for the community[xix].

An elementary school is close enough so that most children can walk from their home.

Open Spaces.

Open spaces are vital aspects for the Traditional Neighborhood District as they serve as areas for community gatherings, landmark, and as organizing elements for the neighborhood[xx]. There are small playgrounds within a tenth of a mile of most

residential units, and larger open spaces within the neighborhood for more intense recreation uses, such as sports fields and pools.

Streets and Alleys.

A Traditional Neighborhood District is designed to be pedestrian oriented. To accomplish this goal, street pattern and design is used to reduce vehicle travel speeds and encourage pedestrian activity[xxi]. The streets are narrow, and form an interconnected network that connects the neighborhood to surrounding communities. Homes and buildings are located close to the street to define the public space, and parking areas and garages are not oriented to the street, but are located to the side or rear of buildings, usually accessed by alleys. Importantly, "new street networks connect whenever possible to existing streets, to become part of a regional network"[xxii].

2-1.4.6. Planned Communities

Planned communities are essentially "new towns," where most aspects of the development are planned before construction takes place. Generally, a master developer determines the mix and layout of land uses and is responsible for the construction of new infrastructure to serve the new community. A master builder can be in charge of the on-site construction, or, individual builders can purchase tracts of land from the master developer to build out, in accordance with the master plan. A town architect is usually engaged to provide design guidelines and set architectural standards for the entire community.

Planned communities typically range from 500 to 3,000 acres in order to include the various elements that create a functioning community, such as homes, schools, neighborhood-oriented commercial development, an employment center and community gathering places. This scale, in conjunction with elements such as these, is necessary in order to achieve the various social and economic benefits that are the goal of planned communities. Additionally, a development area of 500 to 3,000 acres allows a long horizon for planning and build-out. With this flexibility, the developer can respond to changing market conditions by adjusting the mix of land uses or housing types as the initial stages of the development mature.

Benefits Include:

- Adequate public facilities are ensured through the use of a development agreement;
- The developer and new residents of the community absorb the costs of necessary infrastructure;
- Existing community residents are not forced to underwrite the costs of new development;
- Development occurs in accordance with master plan and set design guidelines to maintain appeal and functionality of community;
- Ensures minimum jobs/housing balance (i.e. not entirely residential);
- Additional public benefits including amenities such as trails or open space can be included as part of development agreement; and
- Phasing allows plan to be tweaked as market conditions dictate and to respond to community preferences.

Planned communities are an advantageous approach to use when development is considered for a large site with some type of historical or natural resources that are beneficial for both the existing communities nearby and the potential new residents.

There are many successful examples of planned communities that have been built over the past twenty to thirty years that incorporate a mixture of uses, open space preservation and infrastructure provision. By planning for new development and establishing desired development patterns within a region, communities can enhance established areas and prioritize new development in economic and residential growth corridors, centers and areas. Through planning, communities can ensure that growth happens in areas with adequate public facilities, and in a way that diminishes sprawl and wasteful conversion of open space and agricultural land.

2-1.4.7. Conventional Development / TND Comparison

To clarify the most important differences between convention subdivision design and traditional neighborhood development, **Figure 2-1** compares components of each development type. **Figure 2-2** is a checklist for evaluating new community design.

Figure 2- 1: Neighborhood Design Comparison Chart[xxiii xxiv]

	Conventional Development	Traditional Neighborhood Development
Orientation	▪ Designed to emphasize privacy	▪ Designed to offer opportunities for community interaction
	▪ Homes and buildings set back from the street at minimum distances	▪ Build-to lines that move homes and buildings closer to the street and create a more defined streetscape
	▪ Designed as independent "pod", without true linkages to surrounding development	▪ Designed to enhance community and to be a long-term asset, connected to surrounding development
	▪ Private orientation, with indoor and outdoor living areas located to the rear of the home	▪ Public orientation, with porches and living areas located at the front of the home
Land Uses	▪ Separation of uses, no neighborhood-based commercial or employment opportunities within walking or biking distance	▪ Mixed uses, including neighborhood-based commercial uses and live-work options
	▪ Maximum densities that do not support transit as a viable option	▪ Minimum densities that support transit and nearby commercial uses
	▪ Does not efficiently use infrastructure	▪ Designed to efficiently use infrastructure
	▪ Does not create any jobs/housing balance	▪ Provides employment opportunities and strives to create jobs/housing balance
Street Network & Parking	▪ Street standards designed for cars, with wide lanes and minimal streetscape standards	▪ Street standards designed for all users, including bikes and pedestrians, with narrow lanes and defined streetscape standards
	▪ Curvilinear and cul-de-sac streets, with poor connections to adjacent neighborhoods and commercial areas	▪ Interconnected street network with good connections to adjacent neighborhoods and commercial areas
	▪ Minimum parking requirements, with garages and parking areas located at the front of the homes	▪ Maximum allowable parking areas, with garages and parking areas located to the side or rear of homes, sometimes along alleys
	▪ Shared parking is not an option	▪ Shared parking is encouraged, especially among commercial uses with different peak parking demands
	▪ Auto-dependent	▪ Supports a variety of transportation options, including cars, mass transit, walking and biking
Environment	▪ Privately owned and maintained open space and yards, fewer opportunities for public gathering spaces	▪ Shared open space and parks generally maintained by a property owner's association, open space designed for active and passive uses
	▪ Minimum parking requirements, with garages and parking areas located at the front of the homes	▪ Maximum allowable parking areas, with garages and parking areas located to the side or rear of homes, sometimes along alleys
	▪ Regional environmental concerns not as important	▪ Supports regional environmental initiatives
Housing	▪ Homes are of similar form, size and selling price, encouraging residents of similar demographic characteristics	▪ Homes are of a variety of sizes, forms and prices, including affordable/attainable housing options, in order to encourage residents of varying backgrounds
	▪ Larger building lots	▪ Smaller building lots

Figure 2- 2: Checklist for Applying the National Governors Association (NGA) Evaluation Criteria for New Community Design [xxv]

NGA Principle for Better Land Use	Criteria Questions
Strengthen and encourage growth in existing communities	1. Is the location in an already-developed area? *The key need is to see if public services and infrastructure have already been created for the location.*
Include mixed land uses	2. Is there a mix of housing, office space with significant employment opportunities, schools, retail shopping, outdoor recreation areas, and civic/public spaces and buildings? *For infill projects, it may be necessary to consider what is available in neighboring areas.*
Create a range of housing opportunities and choices	3. Does the housing include different types of homes, such as single-family detached, multifamily apartment buildings, and condos for purchase or renting; and do they cover a range of prices to address a full spectrum of income levels, including affordable housing? *For infill projects, it may be necessary to consider what is available in neighboring areas. Distributed affordable housing in the 10-percent to 15-percent range is feasible.*
Preserve open space, farmland, natural beauty, and critical environmental areas	4. Does the project avoid converting working lands, such as farms and ranches, into development? *Former working lands that are no longer being used and that are zoned for development are acceptable.* 5. Does the project avoid fragmenting existing green space, especially natural habitats and forests? *The need is to understand the original environmental setting and whether development will cause harm by isolating green spaces and block the ability of species to remain healthy.* 6. Does the project design protect the local watershed? *Water runoff and other factors should be examined to determine whether the development is harming the watershed. To minimize water runoff, the fraction of land paved over for streets and parking typically should not exceed 20 percent to 30 percent.* 7. Does the project location avoid increasing the risk or negative impacts of natural disasters? *Consideration should be given to what kinds of periodic natural hazards exist for the site and whether even the best forms of NCD would be inappropriate for a specific location that is vulnerable, for example, to flooding, wildfires, mudslides, beach erosion, or high winds.* 8. Does the project use compact design to minimize the amount of land per dwelling unit? *The average number of housing units per residential acre is the appropriate measure. The best greenfields NCD projects will have densities in the range of at least five units to 10 units per acre, and often much higher. Infill projects will usually have at least 20 units per residential acre. Much depends on the mix of housing; if only single-family detached homes are included, lower densities will prevail.*

NGA Principle for Better Land Use	Criteria Questions
	9. Does the project maintain or create green spaces throughout the new community for public and recreational uses, including continuous green pathways for biking and walking and pocket parks in neighborhoods? *The best greenfields NCD projects will have 20 percent to 50 percent of the total land area as diverse and well-dispersed green spaces. Infill projects may have as little as 5-percent green spaces.* 10. Does the project use energy-efficient designs and green building methods to reduce offsite land use? *The goal is for construction materials and home design to be consistent with the highest energy efficiency standards, and not just for inside appliances.*
Provide a variety of transportation choices	11. Does the project provide convenient access to public transit? For larger projects, does transit operate within the community? *Any form of public transit is acceptable. Convenience means that residents can walk to public transit within about 10 minutes to 15 minutes. Housing densities above 15 units per residential acre aid use of transit. The difficulty in having transit options for greenfields NCD projects places even more importance on the mixed-use criterion, particularly with respect to employment opportunities.* 12. Does the street layout or grid provide multiple access points to and from the surrounding areas as well as multiple paths for travel through the community by vehicles and bikes? *The measure is connectivity of streets and greenways throughout the community, so people can have convenient access to all parts of the community by walking, biking, or driving. Cul-de-sacs should not be part of the street design. Only one way into and out of the community is not desirable, because it will cause traffic congestion.* 13. Is teleworking facilitated by broad-band capabilities in homes? *Today, most telework opportunities require more than the use of the phone and mail. High-quality Internet connections are needed. Home designs now can include special attention to work areas. This complements the presence of employment opportunities and works toward the goal of minimizing dependence on cars.*
Foster walkable, close-knit neighborhoods	14. Do the design and layout of buildings and streets promote one or more real neighborhoods by facilitating interactions among residents, including diverse gathering places? *The best NCD projects take every conceivable opportunity to promote neighborly interactions. Front porches and garages behind houses are hallmarks of NCD. Community centers, public spaces, benches on sidewalks in commercial areas and in green areas, pocket parks, and trails are key features.* 15. Have the streets been designed with sidewalks, appropriate lighting, and connectedness, to promote easy and safe walking?

NGA Principle for Better Land Use	Criteria Questions
	Any design that lacks sidewalks on all streets is inconsistent with NCD. In the best NCD projects, landscaping along sidewalks makes them comfortable and attractive. Residential street widths are often in the 20-feet to 22-feet range (compared to conventional streets of 36 feet), and a 600-foot grid size is often preferred to reduce vehicles per day.
Take advantage of existing community assets	16. Does the project blend in with the environmental setting and cultural features of surrounding areas? *Good NCD design honors the original natural setting of the location and incorporates environmental assets into the design, in contrast to giving priority to using land for construction. From a visual and aesthetic perspective, the NCD place should blend harmoniously with the surrounding area, in both physical and cultural terms. Architectural features should be consistent with the surrounding community.* 17. Has the project considered the use of existing brownfields or grayfields sites for some or all of the needed land? *The goal of more efficient land use requires that NCD projects give serious consideration to using land that is abandoned or greatly underused because of environmental or other reasons. For brownfields sites, this requires attention to any cleanup requirements for using the land for residential purposes, unless the contaminated area is small enough to accommodate some nonresidential component of the project.*
Promote distinctive, attractive communities with a strong sense of place, including the rehabilitation and use of historic buildings	18. Do the design, layout, and mix of land uses provide a distinctive style and feel to the place, with all elements blending together harmoniously? *This is a qualitative judgment. In the best NCD projects, the designers and planners have carefully considered all the mixed uses and how their layout and architectural features conform to a well-conceived style of the community. The chosen style is often linked to the history of the site and surrounding areas, or to the style of the surrounding community in the case of an infill project. This does not at all imply dull consistency among homes. In good design, there is diversity within a consistent style.* 19. Has the project committed to using older and historic buildings on the original site? *For both infill and greenfields projects, the best NCD developers make creative and effective use of structures on the original site, especially ones with historic and architectural significance.*
Encourage citizen and stakeholder participation in development decisions	20. Have the developer and local government agencies used the best techniques to fully engage all categories of local stakeholders in meaningful activities to guide the design of the community?

NGA Principle for Better Land Use	Criteria Questions
	The best NCD developers do not bring a fully worked-out community design to the public or government officials. Today, the best practice is to use new and advanced forms of digital technology tools, visual preference surveys, and highly interactive meetings that solicit local input in a collaborative design process. Meaningful activities are ones that provide for true participation in the development of the community design, not merely an opportunity for people to react to a developer's design.
Make development decisions predictable, fair, and cost-effective	21. Has the local government adopted zoning codes that give as much support for a mixed-use community as for a typical single-use project (e.g., a sprawl housing subdivision, strip mall, or office park)? *Developers and others who are advancing an NCD project need to take some responsibility for improving local codes that do not support NCD. Many NCD developers have been successful in obtaining new parallel or overlay codes that remove the need for obtaining high-cost variances from codes that do not by right support NCD.* 22. Does the appropriate authorizing or regulatory agency have a process that prevents lengthy and unpredictable delays for developers? *Here too, developers and others supportive of NCD can work for improvements in local ordinances and procedures, such as giving priority to NCD applications and guaranteeing decisions within a short time.* 23. Has the developer made clear how the project may be constructed in different phases over extensive time periods, yet be mixed-use, and is it clear how the original plan will be followed? *The best NCD developers make clear exactly how a project will be executed over time and how market uncertainties will affect decisions to implement the original community design and plan. It is important to be concerned about significant periods when there may be no authentic mixed uses or diverse housing.* 24. Will impact fees or other measures reduce uncertainties about the ability or willingness of local government to pay for all needed public services and infrastructure? *Careful attention should be given to whether the local government is empowered to levy some form of impact fee; whether any such imposed fees will cover all public services and infrastructure; and if those fees will match future costs. The major concern is that some public services and infrastructure, particularly schools, may not be provided for a new development, reducing the quality of life for residents and jeopardizing full build-out of all components of the original community design.*

2-1.5. Renewable Energy

Energy sources which are not renewable, such as fossil fuels, not only have a limited supply but contribute detrimentally to the environment. Coal, oil and natural gas, the three most common energy sources today, each contain carbon. When burned, these energy sources release carbon into the atmosphere, contributing more than half of all greenhouse emissions. These emissions cause irreversible harm to the environment, polluting the air and contributing to climate change.

Alternative, renewable sources of energy like the sun and wind present cleaner, "greener" opportunities to obtain energy for our lives. Santa Fe County, with a history of sustainable thinking and building in the community, is in a unique position to take advantage of renewable energy sources. With environmental resources like solar energy, wind, biomass, and rainfall available for harvesting the County is poised to be a leader in the nation's search for energy independence.

In order to guide future development and create more livable communities it will be essential to acquire more information and data about County-wide greenhouse gas emissions. An analysis of the distribution of County-wide greenhouse emissions by sector will be a starting point. Transportation, industrial, commercial, residential, and agricultural sectors, along with the waste associated with these land uses will provide a baseline inventory for illustrating greenhouse gas emission quantities where changes and reductions need to occur against which the efficacy of the measures in this plan can be measured.

The integration of renewable energy initiatives and policies such as renewable energy (solar, wind, biomass, geothermal, etc.) generation for power sources and distribution; energy efficiency; water conservation; and sustainability systems are vital for the development of a sustainable community. Santa Fe County's efforts such as these will go a long way towards reducing the County's Carbon Footprint and meeting global climate change challenges. Additionally, these very same efforts will help the County in its effort towards energy independence through the development of a local green workforce and long term community and resource sustainability.

There are already resources, training and examples available in Santa Fe County to support renewable energy. There are a dozen solar energy equipment companies located in Santa Fe offering solar design, solar equipment, system services and repair. Educational institutions are developing training programs in alternative energy and green jobs. Santa Fe Community College is building a Trades and Advanced Technology Center that will be home to the Sustainable Technologies Center, a cutting-edge educational and training facility for alternative energy and green jobs integrating 21st century trades with advanced technologies and green curricula to promote a sustainable economy. There is a Sustainable Degree Program and biomass plant at SFCC, and a SFPS geothermal system for the Amy Biehl Elementary School in Rancho Viejo. These efforts provide a starting point for more intensive investment in green technologies and energy.

2-1.6. Green Development

2-1.6.1. Leadership in Energy and Environmental Design

The *Leadership in Energy and Environmental Design (LEED) Green Building Rating System* is one of many nationally accepted benchmarks for the design, construction and operation of high performance green buildings[xxvi]. According to the U.S. Green Building Council, "LEED promotes a whole-building approach to sustainability by recognizing performance in five key areas of human and environmental health: sustainable site development, water savings, energy efficiency, materials selection and indoor environmental quality." Currently there are adopted LEED standards for new construction, existing buildings, commercial interiors, core and shell, schools, retail, healthcare, homes and neighborhood development. According to the LEED standards, "green design not only makes a positive impact on public health and the environment, it also reduces operating costs, enhances building and organizational marketability, potentially increases occupant productivity, and helps create a sustainable community."

The LEED for Neighborhood Development pilot program, during which nearly 240 pilot projects tested a pilot version of the rating system, began in the summer of 2007 and final standards are nearing adoption in fall 2009. The program seeks to create a "national set of standards for neighborhood location and design based on the combined principles of smart growth, new urbanism and green building." There is no minimum or maximum size requirement for a neighborhood to become LEED certified, instead a neighborhood development must earn at least 40 points out of 106 and include all nine

criteria required for certification. Although the pilot program is currently closed, the post-pilot program is scheduled to launch in early 2009.

Checklists for LEED project certification for buildings and neighborhoods are included in the **Appendix.**

2-1.6.2. Other Model Codes

There are a variety of model codes used by various jurisdictions and agencies to further sustainability in terms of requiring energy efficiency, renewable energy use, reduced water useage and water recycling, reducing waste streams, and using recycled, renewable and non-toxic materials, including:

- CalTran's Smart Mobility Screening Tool
- NACo Green Government Initiative
- EPA Smart Growth Research
- Building Codes Assistance Project
- International Energy Conservation Code
- EnergyStar (IECC +15-30%)
- LEED Neighborhood Development Rating System (IECC + 15% or more)
- ASHRAE - American Society of Heating, Refrigerating and Air-Conditioning Engineers (IECC + 20-30%)
- NBI (New Buildings Institute) Core Performance (IECC +30%)
- USDOE – Building America (IECC + 50%)
- Net-Zero – ASHRAE sponsored energy objective

2-1.7. Demographics

2-1.7.1. Population

Santa Fe County is the 3rd largest county in New Mexico, behind Bernalillo and Dona Ana. The population for Santa Fe County was 147,741 in 2008. The County includes the City of Santa Fe, portions of the City of Espanola and the Town of Edgewood. Historical Population trends reveal that the population density has increased from less than 7 persons per square mile in 1900 to almost 77 persons per square mile in 2008. Current Population growth has averaged 1.3 % from 2000 through 2008.

2-1.7.2. Geography

Santa Fe County has a total area of 1,911 square miles. Approximately 1,909 square miles of it (99.92%) is land and 2 square miles of it (0.08%) is water. The highest point in the County is the summit of Santa Fe Baldy (12,622 ft.).

2-1.7.3. Race and Ethnicity

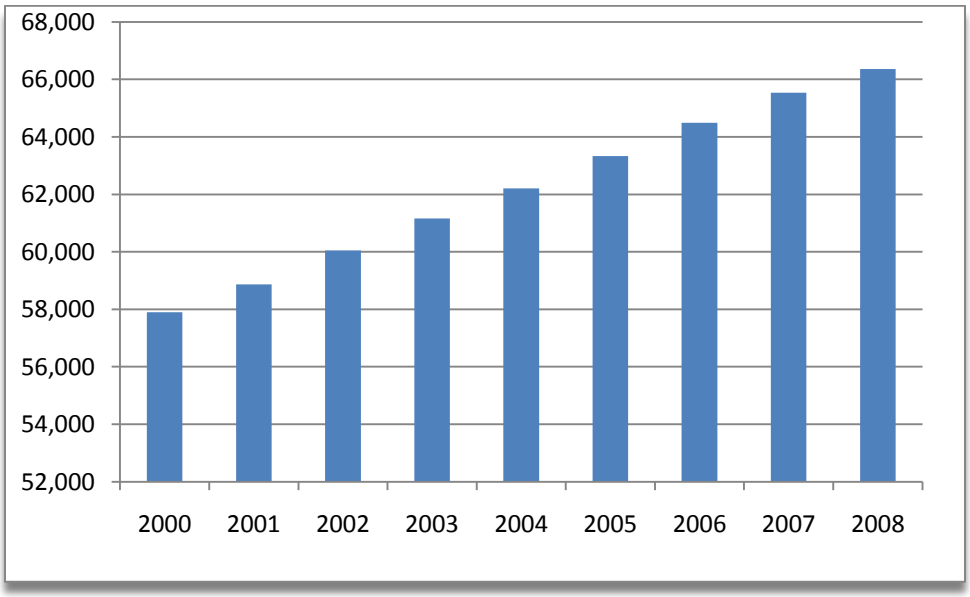
Figure 2- 3: Population by Race and Ethnicity

	2000	2008
White persons, percent	74%	92.4%
Black persons, percent	1%	1.3%
American Indian and Alaska Native persons, percent	3%	3.4%
Asian persons, percent, 2008	1%	1.2%
Persons Reporting Other Race	19%	0.1%
Persons Reporting Two or More Races persons, percent	4%	1.5%
*Persons of Hispanic or Latino origin persons, percent	49%	50.1%
*White persons not Hispanic, percent	n/a	44.4%

Source: U.S. Census Bureau.
**Race and ethnicity were considered separate and distinct identities, with Hispanic or Latino origin asked as a separate question.*

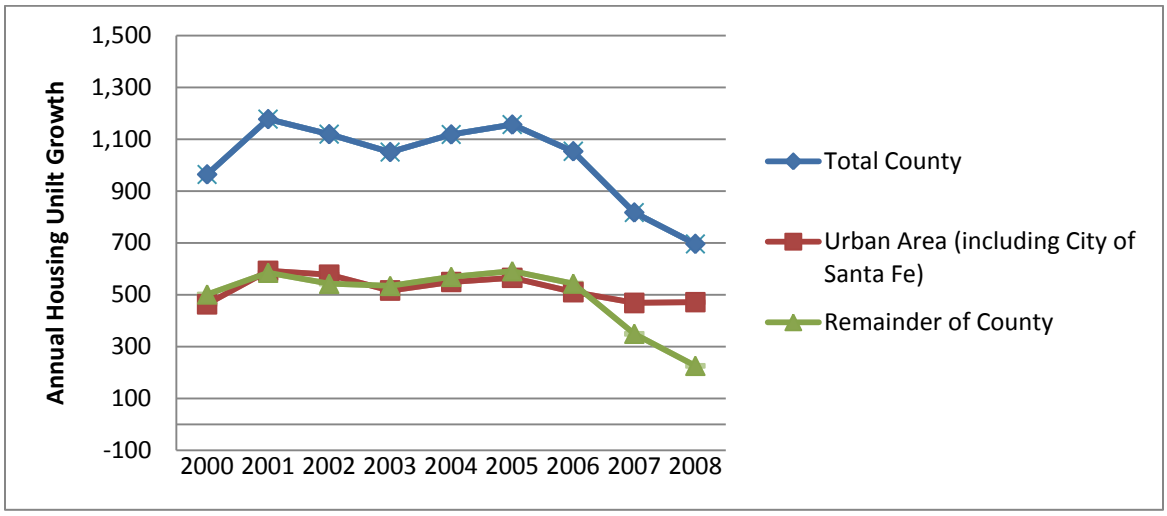
2-1.7.4. Housing

Figure 2- 4: Santa Fe County Housing Units 2000-2008



Housing growth from 2000 through 2006 was generally evenly split between the Urban Area including the City of Santa Fe and the remainder of the County. During the current recession, housing unit growth has remained steady in the Urban Area while the remainder of the County has decreased from 543 units in 2006 to 225 units in 2008.

Figure 2- 5: Annual Housing Unit Growth 2000-2008



Source: Regional Housing and Population Projections 2000-2050 for Santa Fe County, by Al Pitts

The average housing growth for the County from 2000-2005 was 1.73% and is projected to be 1.42% from 2005-2010. Average household size in decreased slightly from 2.42 in 2000 to 2.39 in 2008. The number of vacant housing units was 5, 998 in 2008, with approximately 60 % of the vacant units in the Urban Area and 40% in the remainder of the County.

2-1.7.5. Family

There were a total of 60,358 households in 2008. Approximately 30% had children under the age of 18 living with them, 45 % were married couples living together, 12% had a female householder with no husband present, and 38% were non-families. Approximately 29% of all households were made up of individuals and 7% had someone living alone who was 65 years of age or older. The average family size was 3.01.

2-1.7.6. Age and Gender

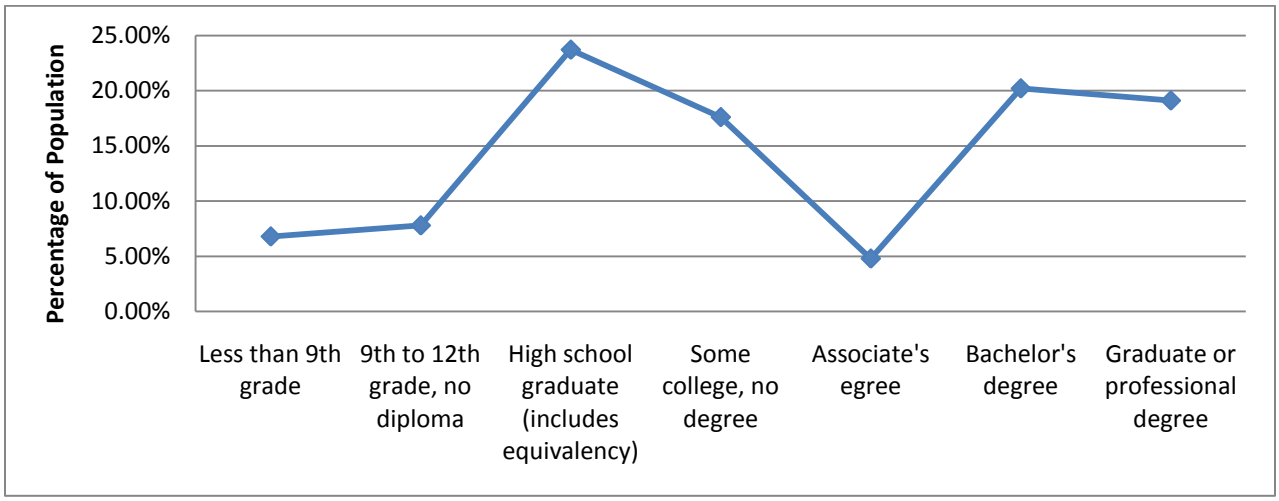
As of the census of 2000, the county the population was spread out with 24.1% under the age of 18, 8.1% from 18 to 24, 29.7% from 25 to 44, 27.3% from 45 to 64, and 10.8% who were 65 years of age or older. The median age was 38 years. For every 100 females there were 95.8 males. For every 100 females age 18 and over, there were 93.4 males.

Median age has increased from 29 in 1980, to 34 in 1990, to 38 in 2000. Census estimates indicate that at the end of 2008, 25 % of the population was under 18. The percentage of residents over the age of 65 increased from less than 11% in 2000 to almost 14 % in 2008.

2-1.7.7. Education

The educational attainment of an area's population may have an impact on the types of employers and industries that will be attracted to an area. In Santa Fe County, 85% of the population 25 years and over has at least a high school education, slightly above the national level, while 39% has a bachelor's degree or higher, which is 12% higher than the national level.

Figure 2- 6: Educational Attainment

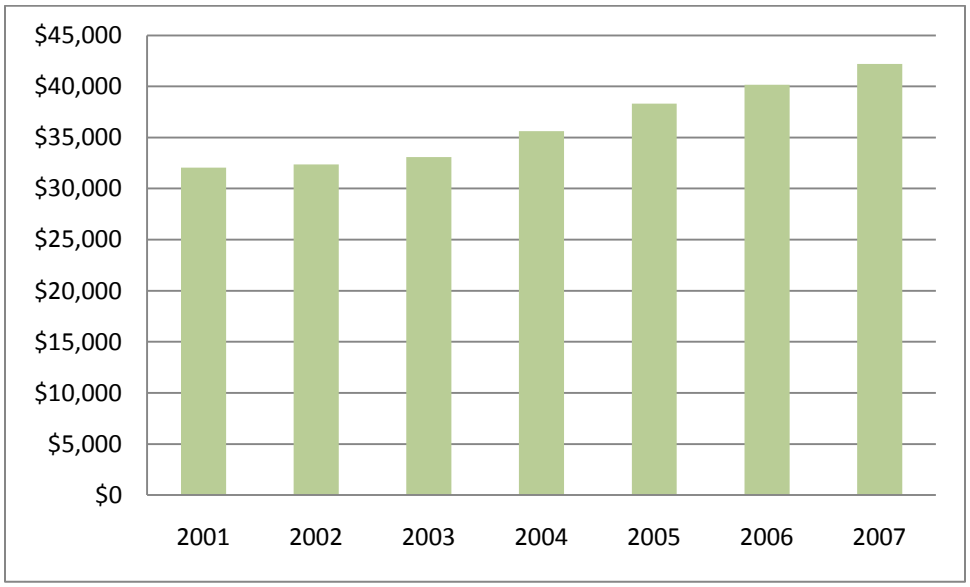


Source: U.S. Census Bureau, 2005-2007 American Community Survey

2-1.7.8. Income

According to the U.S. Census Bureau 2005-2007 American Community Survey, the median income for a household in the County was $ 51,601 in 2007, a 2% annual increase from $42,207 in 1999. The per capita personal income for the County also increased from $32,065 in 2001 to $ 42,184 in 2007. The same survey showed that approximately 8.7 % of families and 13.9 % of individuals were below the poverty line during this period.

Figure 2- 7: Per Capita Personal Income



2-2. Land Use

2-2.1. Existing Land Use Trends

2-2.1.1. Existing Residential Land Use

While the County includes a substantial urban area, most of the County still consists of undeveloped or sparsely populated land. Within the unincorporated portion of the County, residential densities are very low and consist mainly of large-lot (2.5- to 40-acre) development. In 2008, approximately 91 percent of the entire County consisted of undeveloped or sparsely populated land; within the unincorporated portion of the County, this percentage was almost exactly the same (92 percent). **Figure 2-12** shows the distribution of existing land uses in the County in 2008, and **Map 6** shows the location of these land uses.

Residential development, defined as development at densities of at least 1 dwelling per 40 acres, currently occupies about 66,842.8 acres in the unincorporated County, or about 6.1 percent of the 1,088,678.2 acres that are subject to the County's zoning jurisdiction (this excludes municipalities and pueblo lands).

Residential densities in the unincorporated County are low compared to typical suburban densities, and in comparison to the densities found in the County's three municipalities. The average gross density in the unincorporated County (meaning dwellings per total development project site area) was about .37 dwellings per acre (1 dwelling per 2.72 acres) in 2008. By comparison, the average gross density in the County's municipalities is about 2.34 dwellings per acre – about 6 times the average density in the unincorporated County.

There is considerable variability between the four growth management areas (GMAs) as to the average gross development density: In the El Norte GMA, where fairly dense acequia-based communities are the predominant form of development, the average gross density is 1.3 acres per dwelling; in the El Centro GMA, which consists mainly of suburban development surrounding Santa Fe, the average gross density is 1.96 acres per dwelling. The Galisteo and Estancia GMAs exhibit more extensive rural large-lot development compared to the two northern GMAs: In the Galisteo GMA, the average gross density is 4.35 acres per dwelling, and in the Estancia GMA, the average gross density is 2.78 acres per dwelling.

Another way of viewing the character of residential development is to examine the distribution of developed lot sizes (i.e., net density). **Figure 2-13** shows the distribution of developed lot sizes in the unincorporated County in 2008. About 32 percent of all dwellings in the unincorporated County are located on lots of greater than 2.5 acres, and 64 percent are located on lots of greater than 1 acre. Only 36 percent of dwellings in the unincorporated County consist of net densities of 1 dwelling per acre or higher.

Multiple-family housing (apartments, condominium, townhouses, and duplexes) comprised about 23 percent of the housing stock County-wide in 2000 (US Census), but only about 7 percent of the housing stock in the unincorporated County. Consequently, multiple-family housing occupies only about 400 acres out of the total 67,000 acres in the unincorporated area that are developed for residential uses. Most of the land that is currently developed for multi-family housing in the unincorporated County are located in the City of Santa Fe annexation area.

The existing zoning in the unincorporated County, which is largely based on estimated groundwater availability, could accommodate from 42,125 to 83,043 new dwellings, depending on the amount of potential bonus densities applied over the base densities, as shown in **Figure 2-8.** Based on population projections, this amount of residential development could accommodate growth for between 53 and 110 years. There are an estimated 11,395 vacant parcels and platted lots currently in the unincorporated County (see **Figure 2-14**), which could accommodate about 15.9 years of growth, based on the projected demand for single-family housing. If vacant parcels greater than 40 acres are not considered, the number of vacant lots would be 10,061, which corresponds to a 14.0-year supply. Typically, the supply of vacant lots in an urban county does not exceed a 5-year supply. However, land development costs are generally low in unincorporated Santa Fe County, since most residential development is served by unpaved roads and is not served by central water or sewer. Where development costs are minimal, speculative development tends to occur, which leads to an oversupply of vacant lots. Such an oversupply is problematic because the wide geographic distribution of possible and likely development sites precludes compact, rational growth that can be efficiently served by facilities and services.

Figure 2-8 summarizes the densities that are currently allowed by the County's zoning regulations, as well as the bonus densities that may be allowed.

Figure 2- 8: Residential Zoning Densities in Unincorporated Santa Fe County

Hydrologic Zone	Base Minimum Lot Size (Acres)	Bonus Minimum Lot Size* (Acres)	Density Adjustments Based on Central Water and/or Central Sewer Provision (Acres)		
			Central Water	**Central Sewer**	**Central Water and Sewer**
Basin	**10**	**2.5**			
Basin Fringe	**50**	**12.5**			
Mountain	**80**	**20**			
Homestead	**160**	**40**			
Metro-Basin	**4**	**2.5**	**1**		
Metro-Basin Fringe	**20**	**5**	**2.5**		
Metro-Mountain	**80**	**20**	**5**		
Santa Fe and Espanola Urban Areas	**2.5**	**N/A**	**1**	**1**	**0.5**
Traditional Community	**0.75**	**N/A**	**0.75**	**0.75**	**0.33**

* Based on proving water availability and employing water conservation.

For traditional and contemporary communities that have zoning regulations that are specifically adopted for the particular community, the zoning densities may vary from the table above, generally being more dense to be compatible with the traditional or new-traditional development patterns in place. Additionally, the County's existing zoning regulations allow densities of up to 1 dwelling per 2.5 acres anywhere in the County, where water to serve the development is imported or with a hydrologic study showing a 100 year water supply .

2-2.1.2. Existing Commercial Land Use and Zoning

Based on the Property Appraiser's parcel data and the County's building structure data, there are 2,659.7 acres of existing commercial land in unincorporated Santa Fe County; however, from an examination of building types (from aerial photographs), it appears that about 258.6 acres of this commercial land actually consists of industrial or warehouse development that has been misclassified in the parcel or building structure data. Therefore, the number of existing commercial acres is more likely about 2,402.1 acres. This is equivalent to about 36.9 acres of commercial land per 1,000 population in the unincorporated area. However, this ratio is still somewhat misleading since much of the land in the unincorporated area classified as "commercial" for taxation purposes is actually undeveloped land on the same parcel as land that ***is*** physically developed for commercial uses.

A more accurate indicator of the current ratio of existing commercial land to population is the ratio within the City of Santa Fe, where most of the land which is classified as "commercial" in the parcel data is solidly developed. In the City of Santa Fe, the ratio of commercial land per 1,000 people is 18.9 acres per 1,000 people. Since the City of Santa Fe serves as a commercial center for the entire County, it is likely that the existing ratio County-wide and in the unincorporated area is about 15 acres of commercial land per 1,000 people. These ratios are significant in that the amount of land allocated for commercial land on the Future Land Use Map and zoning map should be largely based on the projected demand, using the expected ratio of commercial land per 1,000 people projected.

Much of the existing commercial land in the unincorporated County is located within traditional communities, rather than within large conventional shopping centers or office complexes. Large shopping centers (i.e., those that include supermarkets or department stores) and large office complexes tend to be located within the municipalities in Santa Fe County and in the proposed City of Santa Fe annexation area. Commercial land uses in the unincorporated area tend to consist mainly of neighborhood-serving stores and services located in traditional communities and some of the larger subdivisions. The main concentration of community- and regional-level commercial uses in the unincorporated County is along State Road 14, in the vicinity of Interstate 25. There are also community-level shopping centers located in the Eldorado development, and along U.S. 285, immediately south of Pojoaque (on Pojoaque Pueblo land).

There are currently about 1,316.9 acres of land available for commercial land uses in the unincorporated County, based on the existing zoning. Of these 1,316.9 acres, about 446.0 acres are located in Traditional Communities, 221.8 acres are located in the Santa Fe Community College District, and 649.1 acres are located elsewhere. Within the Traditional Communities that allow commercial uses in an extensive portion of the community, the amount of available commercial land in the community was based on the number of acres needed to serve the projected build-out population of the particular community.

Since commercial land serves not only neighborhood- and community-level markets, but also, regional and sub-regional markets, it is desirable to examine the total amount of commercial land available not only in the unincorporated County, but also in the municipalities and pueblos. **Figure 2-9** summarizes the amount of land available for commercial development County-wide, including the municipalities and Pueblos.

Figure 2- 9: Commercial Zoned Land (County-wide)

Jurisdiction	Commercial Zoned Acres Available (6/16/09)
Unincorporated Santa Fe County	1,316.9
City of Santa Fe*	2,385.6
City of Espanola**	222.5
Town of Edgewood**	1,533.8
Pueblos	205.0
TOTAL	**5,663.8 acres**

*Including proposed City of Santa Fe annexation area.
** Portion of municipality in Santa Fe County only.

The amount of commercial land that is typically needed in a jurisdiction ranges from a minimum of 10 acres per 1,000 population in jurisdictions with minimal tourism and modest incomes, to a maximum of 20 acres per 1,000 population in jurisdictions with a large tourist economy and high incomes. Based on the current estimated ratio of developed commercial land in the County, a ratio of about 15 acres per 1,000 population is a reasonable number to use for Santa Fe County. The current commercial zoning in the entire County could accommodate a population of 377,587 at rate of 15 acres per 1,000 population, whereas the projected 2030 population for the entire County is 202,512. Therefore, the supply of commercial land appears to be more than adequate through the year 2030 on a County-wide basis. The current commercial zoning in unincorporated County could accommodate population of 87,791 at rate of 15 acres per 1,000 population, whereas the projected 2030 population for the unincorporated County is 99,738. An additional 179.2 acres commercially-zoned land is therefore be needed in the unincorporated County.

County-wide there appears to be an ample supply of commercial land through the year 2030, based on existing zoning, however, there is a geographic imbalance of commercial zoning in the County, with much of the residential development in the unincorporated portion of the County being poorly served by neighborhood- and community-level commercial uses. The result is that long drives into the municipalities are often required, in order to satisfy daily shopping needs for rural

residents. This geographic imbalance is expected to worsen as the proportion of development occurring in the unincorporated area is projected to increase over the next 20 years. Therefore, the County should make an effort to direct new residential growth near to new and existing neighborhood- and community-level commercial uses. Co-location of residential uses with major employment centers in compact sustainable growth centers will result in shorter shopping and employment trips for residents of the unincorporated area, which would not only lower household transportation costs, but also, decrease road congestion and emission of greenhouse gases. Co-location of commercial and residential uses requires sensitive siting and design of commercial uses, however, to prevent land use compatibility conflicts and to minimize negative impacts to existing rural neighborhoods. The County should limit commercial zoning to well-defined centers to avoid protect rural character, improve traffic safety and congestion problems, and avoid poorly planned highway strip commercial development that can result in long-term blight and loss of character.

2-2.1.3. Existing Industrial Land Use and Zoning

Based on the Property Appraiser's parcel data and building structure data, there are only 11.0 acres of existing industrial land in unincorporated Santa Fe County; however, from an examination of building types (from aerial photographs), it appears that about 258.6 acres of "commercial" land actually consists of industrial or warehouse development which has been misclassified in the parcel or building structure data. Therefore, the number of existing industrial acres is more likely to be about 269.6 acres. This is equivalent to about 4.1 acres of industrial land per 1,000 population in the unincorporated area. Much of the existing industrial land in the unincorporated County is located along State Road 14, in the vicinity of Interstate 25, within or close to the Santa Fe Community College District.

There are currently about 989.0 acres of land available for industrial land uses in the unincorporated County, based on the existing zoning. All of this industrial-zoned land is located in the Santa Fe Community College District (SFCCD), within the "employment centers" (including the Media District) that are identified on the SFCCD master plan. The commercial zoning districts in Santa Fe County also allow limited small light industrial uses, however, it is not possible to determine how much of this commercially-zoned land should be considered to be available for industrial development.

Since industrial land tends to serve mainly regional, sub-regional, and community-level markets, it is desirable to examine the total amount of industrial land available not only in the unincorporated County, but also in the municipalities. **Figure 2-10** summarizes the amount of land available for industrial development County-wide, including the municipalities.

Figure 2- 10: Industrial Zoned Land (County-wide)

Jurisdiction	Industrial Zoned Acres Available (6/16/09)
Unincorporated Santa Fe County	989.0
City of Santa Fe*	1,674.1
City of Espanola**	0.0
Town of Edgewood**	0.0
Pueblos	0.0
TOTAL	**2,663.1 acres**

*Including proposed City of Santa Fe annexation area.
**Portion of municipality in Santa Fe County only.

The amount of industrial land that is typically needed in a jurisdiction ranges from 10 to 20 acres per 1,000 population, with an average of 12.5 acres of industrial development per 1,000 population. While Santa Fe County has only minimal industrialization, the Albuquerque area is expected to be a major center for the growth of high-tech industry in the next 20 years, which may impact the greater commuter-shed, including Santa Fe County. In addition, Santa Fe County is emerging as a center for movie production, which will also increase the demand for supporting industrial uses.

Since the existing industrial development of 4.1 acres per 1,000 population is likely to be unsustainable low to provide adequate employment opportunities for new residents, the average of 12.5 acres per 1,000 population is used in this analysis. The current County-wide industrial zoning could accommodate a population of 213,047, whereas the projected 2030 population for the entire County is 202,512. Therefore, the supply and future demand for industrial land appears to be only slightly less than adequate.

The current industrial zoning in unincorporated the County can accommodate a population of 79,116, at rate of 12.5 acres per 1,000 population, whereas the projected 2030 population for the unincorporated County is 99,738. An additional 257.8 acres industrially-zoned land would therefore be needed in the unincorporated County, based on the ratio of 12.5 acres/1,000 population. ***County-wide*** there appears to be an ample supply of industrial land through the year 2030, based on existing zoning, however, there is a lack of sufficient sites in the County for medium to large manufacturing plants and distribution centers (from 20 to 100 acres in size). Furthermore, much of the industrially-zoned land in the County is poorly located with respect to freeway access. Large manufacturing plants and distribution centers typically require easy access to the freeway system, which is also desirable from the standpoint of minimizing truck traffic through residential areas.

In order to provide adequate sites for large manufacturing plants and distribution centers, it is recommended that the County provide at least 250 additional zoned acres to accommodate development of individual industrial sites of 20 to 100 acres with easy highway access. Provision of available zoned land with adequate services including central water and sewer is essential to attracting major manufacturing or distribution center employers to the County. One potential site that meets these criteria is the proposed Airport District, located north of the Santa Fe Municipal Airport and southwest of Tres Arroyos. Locating industrial uses at this location would also avoid the creation of potential conflicts between residential uses and flight traffic. Another potential location for large-scale manufacturing plants and distribution centers would be along State Road 14, south of the Santa Fe Community College District and north of the San Marcos community.

2-2.1.4. Existing Public, Institutional, and Utilities Land Use and Zoning

There are approximately 4,948.3 acres of land in the unincorporated County that are developed for public, institutional, and utilities uses. Among the largest developed sites in this category are the state prison site (650.6 acres) and the National Guard Amory (349.5 acres) located on State Road 14, south of the Interstate 25 interchange. Another major development in this category is the Glorieta Conference Center, which is located on 2,172.6 acres along Interstate 25, to the east of Glorieta Pass. The Glorieta Conference Center is operated by a religious organization. The single major utilities development is the City/County landfill site, located on about 160 acres, to the west of Tres Arroyos and adjacent to the Caja del Rio unit of Santa Fe National Forest. The remaining land in this category of uses consists mainly of federal, state, and county offices, community centers, schools, and places of worship.

The County's zoning regulations allow for the location of public, institutional, and utilities in a broad range of zoning districts (mainly as "community service facilities"), so the adequacy of the supply of land for such uses is not a concern. The main challenges with the location of these uses are:

- Encouraging the location of schools, community centers, government offices, places of worship, and other institutional uses within communities, where they can serve as a focal point for the community and afford easy access to residents; and
- Ensuring that potential land use compatibility and environmental conflicts are taken into consideration in the location of utility uses, such as landfills, solid waste transfer stations, wastewater treatment plants, power lines and substations, and solar- or wind-power generation sites.

2-2.1.5. Existing Agricultural Land Uses and Zoning

It is difficult to quantify the exact acreage of agricultural land use and the acreage currently devoted to specific types of agriculture in Santa Fe County, however, an approximate number of acres can be derived or inferred from GIS data that has been collected in the past. Agricultural land uses in the County can be grouped into three major categories:

1) Traditional agriculture that employs acequia irrigation and is located in the valleys of the northern and central portions of the County. Based on the acreage identified as consisting of "Traditional Irrigated Valley[xxvii]", there are about 8,483.0 acres of traditional agriculture in Santa Fe County. Much of this agriculture consists of the growing of vegetables, fruit, and specialty crops.

2) Modern agriculture that employs pivot (groundwater) irrigation, mainly located in the southern end of the Estancia Basin. Based on the acreage identified as consisting of "Agriculture" in the Estancia Basin in the vegetative land cover data compiled as a part of the New Mexico ReGAP habitat study[xxviii], there are about 8,696.7 acres of modern agriculture in Santa Fe County. Generally, modern agriculture in Santa Fe County consists of the growing of feed crops (*i.e.,* hay and alfalfa).
3) Ranching and grazing uses are located in all parts of the County, but mainly in the Galisteo and Estancia Basins. Livestock grazing potentially occupies up to about 520,514.4 acres of private land in the unincorporated County, based on the area of parcels that are either (a) vacant and over 40 acres in size, or (b) developed for a single dwelling and located on parcels of over 160 acres in size. In addition, an estimated 157,515.9 acres of vacant federal land and 79,562.8 acres of vacant state land are potentially used for grazing, based on the area of parcels that are either (a) Owned by the Bureau of Land Management, (b) Owned by the New Mexico State Land Office, or (c) located in the Caja del Rio and Glorieta Mesa units of Santa Fe National Forest. Furthermore, there are about 85,637.3 acres of undeveloped land in the pueblos that are largely used for grazing. Altogether, there are about 843,230.3 acres in the unincorporated County that are potentially used for grazing. The exact number of acres currently used for grazing is unknown, and depends on the availability of forage, the market for livestock products, and state and federal policies with respect to grazing on public lands.

The U.S. Department of Agriculture Census of Agriculture provides more detailed and accurate data regarding agricultural uses in Santa Fe County for the year 2002. According to the USDA Census, there were 16,799 acres of harvested cropland in Santa Fe County in 2002, of which 16,627 acres were irrigated. Of these 16,799 acres of cropland, 6,839 acres were used for growing feed crops; the remaining 9,960 acres were used for growing crops for human consumption. There were 19,599 acres devoted to improved pasture in 2002, of which 2,165 acres were irrigated. The total amount of land used for livestock production (both rangeland and improved pasture) was 605,704 acres in 2002; however, this figure does not include public lands that are used for livestock grazing.

The County's zoning regulations allow for the agricultural land uses in all zoning districts, so agriculture can always function as a "default" land use on undeveloped parcels. Protection of agricultural uses, particularly the high-value agriculture typically found in traditional agricultural areas, from encroachment by development is a challenge of land use planning and regulation in the County. The subdivision and development of land in rural areas tends to fragment agricultural lands, which reduces the long-term viability of the agricultural economy, and also leads to compatibility conflicts between development and agricultural uses.

2-2.1.6. Existing Conservation Land Uses and Zoning

Santa Fe County has a considerable percentage of its land area devoted to conservation uses, largely due to the acreage that is occupied by the Santa Fe National Forest, as shown in **Figure 2-11**. Currently, there about 278,210.6 acres of public and private conservation lands in the unincorporated County, which occupy 25.6 percent of the 1,088,678.2 acres that are under the County's land use and zoning jurisdiction.

Figure 2- 11: Conservation Land Uses (2009)

Existing Conservation Uses	Acres
U.S. National Forest Service Land	241,368.
U.S. National Park Service Land	1,068.7
U.S. Federal Dam and Reservoir Sites	2,115.8
New Mexico State Parks	349.5
Santa Fe County Open Space*	5,203.4
City of Santa Fe Open Space*	324.3
Private Conservation Organization Land**	11,527.5
Natural Open Space Tracts in Private Development Projects	16,253.3
TOTAL:	**278,210.6 acres**

*Within unincorporated Santa Fe County
**Acquired by the Nature Conservancy or Audubon Society – much of this land consists of property for which conservation easements have been acquired by these organizations, rather than fee-simple ownership.

Conservation uses are not specifically addressed by the County's Land Development Code; however, since these uses typically do not involve private development, such uses generally would not be prohibited. Furthermore, development that occurs on Federal reservations (including National Park and National Forest Service lands) is generally not subject to local government zoning or other land development regulations. Local government open space uses are arguably allowed in all zoning districts as "community service facilities" under the County's land development code. Also, within private development projects, preservation of open space areas are often required by the County's land development code, in order to protect environmentally sensitive areas such as floodplains, wetland and riparian areas, steep slopes, and ridge tops. The need to protect areas of high scenic value or environmental sensitivity by limiting development is a key challenge of land use planning and regulation in the County.

2-2.2. Challenges to Sustainable Land Use

Sustainable land use planning results in compact, mixed-use development served by adequate facilities and services that minimizes impacts on the environment and supports land and resource conservation. While the County has a variety of good traditional and contemporary communities that promote principles of sustainability, the vast majority of land use and development patterns are resource-intensive, expensive to serve, overly consumptive of land, and result in excessive vehicle miles traveled. While rural, large lot development is a popular lifestyle option, the public and private costs of such development are excessive and do not position the County or its residents to attain sustainability. Existing rural residential development does contribute to the character of the County, however the long-term continuation of such development patterns will actually erode that character as development infringes on historic ranches and agricultural land as well as in scenic and environmentally sensitive areas. Continued development that damages natural and cultural resources and lacks a desirable "sense of place" will erode the County's appeal as a tourist destination, further impacting the quality of life and economic opportunity. There are many causes of this sprawl that challenges responsible and sustainable land use patterns:

Zoning and regulatory controls fail to limit large lot development. The extreme over-supply of land available for residential development exacerbates urban sprawl, and the allowance of development at 1 dwelling unit per 2.5 acres using non-local water supply results in inappropriately located higher-density development within rural areas of the unincorporated County. The use of non-local water supplies also threatens the long-term sustainability and value of development.

Base densities of 1 dwelling per 10 acres and bonus densities of 1 dwelling per 2.5 acres in the Basin hydrologic zone have created a pattern of sprawling large-lot development that blurs the distinction between communities

and rural areas. Base densities of 1 dwelling per 160 acres and bonus densities of 1 dwelling per 40 acres in the Homestead hydrologic zone have done a fairly good job of controlling large-lot sprawling development in this area; however, requiring clustering in order to obtain the bonus densities would provide superior protection of habitat, scenic resources, and agricultural lands.

The density exemptions for "family transfers" (down to 50 percent of the lot size that would otherwise be required) has allowed for extensive development at inappropriately high densities (based on land use compatibility and groundwater availability), in some areas of the County.

Overuse of variances and loopholes in the land development regulations undercut comprehensive growth management and promote uncertainty and mistrust among residents and developers. Inappropriate strip commercial development, spot zoning, inadequate water and services and threats to sensitive environmental and agricultural areas result.

Water availability and safe wastewater treatment are not adequately linked to development review and regulation. Existing over-reliance on private wells and septic tanks leads to surface and groundwater contamination and supply diminishment. Water to supply development is not always available, even at the base densities established by the County's existing hydrologic zoning scheme.

Existing large lot, low density development precludes rational extension of facilities and services and the feasibility of mass transit. Residential land uses in much of the unincorporated County are highly segregated from shopping, civic, and employment uses, resulting in high transportation costs, traffic congestion on highways, and high emissions of greenhouse gases for shopping and commuting trips. Misconceptions about the character of higher density development and the provision of internal open spaces and amenities within clustered development serves as a barrier to public acceptance. However, the County does have successful examples of traditional and contemporary communities and developments that strive to include compact, mixed-use development with a jobs/housing balance. Parcels are available to promote this type of development, and infill opportunities can be promoted as models for more sustainable development patterns.

Unbalanced development requires long commutes and limits economic opportunity. There is a lack of industrial land that is suitable for medium- to large-scale manufacturing plants and distribution centers. The need to provide suitable sites with adequate facilities, services and access is essential to ensuring long-term economic opportunity.

Figure 2- 12: Existing Land Use

Figure 2- 13: Distribution of Residential Parcels

Figure 2- 14: Distribution of Vacant Parcels for Potential Residential Use

EXISTING LAND USES IN SANTA FE COUNTY (ACRES), MAY 2008
UPDATED AND CORRECTED BASED ON STRUCTURE GIS DATA FROM SEPTEMBER 2008

EXISTING LAND USE	GROWTH MANAGEMENT AREA EL NORTE Acres	EL NORTE Percent	ELCENTRO Acres	ELCENTRO Percent	GALISTEO Acres	GALISTEO Percent	ESTANCIA Acres	ESTANCIA Percent	TOTAL COUNTY Acres	TOTAL COUNTY Percent
RESIDENTIAL DEVELOPMENT*										
Single-Family Residential, Very Low Rural Density, Greater Than 40.0-Acre Lots	2,323.9	1.04	7,500.2	2.37	169,578.9	43.31	86,522.0	29.54	265,925.0	21.72
Single-Family Residential, Low Rural Density, 10.01- to 40.0-Acre Lots	1,390.7	0.62	5,259.4	1.67	12,558.2	3.21	4,750.4	1.62	23,958.7	1.96
Single-Family Residential, Estate Density, 2.51- to 10.0-Acre Lots	3,611.8	1.61	10,894.4	3.45	8,191.3	2.09	4,968.3	1.70	27,665.8	2.26
Single-Family Residential, Very Low Urban Density, 1.01- to 2.5-Acre Lots	1,874.1	0.84	4,299.2	1.36	4,699.8	1.20	1,248.4	0.43	12,121.6	0.99
Single-Family Residential, Low Urban Density, 0.25- to 1.0-Acre Lots	1,090.5	0.49	716.4	0.23	222.7	0.06	195.9	0.07	2,225.4	0.18
Single-Family Residential, Moderate Urban Density, Less Than 0.25-Acre Lots	63.8	0.03	392.7	0.12	18.7	0.00	0.2	0.00	475.4	0.04
Multi-Family Residential Developed (Including Rental Mobile Home Parks)	38.7	0.02	338.3	0.11	18.9	0.00	0.0	0.00	395.9	0.03
All Residential Developed in Unincorporated Area (40-Acre Lot Size or Less)	8,069.6	3.60	21,900.4	6.93	25,709.6	6.57	11,163.2	3.81	66,842.8	5.46
NON-RESIDENTIAL DEVELOPMENT										
Commercial Developed	420.5	0.19	1,571.9	0.50	602.7	0.15	64.5	0.02	2,659.7	0.22
Industrial Developed	0.0	0.00	11.0	0.00	0.0	0.00	0.0	0.00	11.0	0.00
Utilities Developed	0.0	0.00	175.9	0.06	1.9	0.00	0.0	0.00	177.9	0.01
U.S. Government Developed	117.3	0.05	12.5	0.00	15.7	0.00	4.9	0.00	149.0	0.01
State of New Mexico Developed	1.8	0.00	1,060.2	0.34	15.7	0.00	0.0	0.00	1,077.7	0.09
Institutional, Educational, and Local Government Developed	247.0	0.11	962.7	0.30	2,251.2	0.57	82.8	0.03	3,543.7	0.29
Open Space Tracts, Urban Parks, Golf Courses, and Community Assoc. Property	64.2	0.03	2,126.0	0.67	4,869.8	1.24	36.3	0.01	7,095.3	0.58
Right-of-Way (Both Improved and Unimproved)	578.3	0.26	4,964.9	1.57	2,847.7	0.73	267.9	0.09	8,658.80	0.71
Miscellaneous Developed - Type Unknown	3.9	0.00	20.1	0.01	11.3	0.00	202.1	0.07	237.4	0.02
All Non-Residential Developed in Unincorporated Area	1,433.0	0.64	10,905.2	3.45	10,616.0	2.71	658.5	0.22	23,610.5	1.93
All Developed Land in Unincorporated Area (Excluding Residential Development on Lots Greater than 40 Acres)	9,502.6	4.24	32,805.6	10.39	36,325.6	9.28	11,821.7	4.04	90,453.3	7.39
VACANT AND UNDEVELOPED LAND										
Miscellaneous Vacant Private Land	21,734.9	9.71	49,843.9	15.78	131,709.9	33.64	122,605.5	41.86	325,894.2	26.62
Residential Vacant	77.3	0.03	502.8	0.16	637.4	0.16	908.7	0.31	2,126.3	0.17
Commercial Vacant	7.4	0.00	162.8	0.05	15.4	0.00	0.0	0.00	185.6	0.02
Santa Fe County Open Space	125.2	0.06	968.4	0.31	4,062.4	1.04	47.3	0.02	5,203.4	0.43
U.S. Government Vacant	107,261.6	47.91	181,788.9	57.56	20,943.4	5.35	4,731.4	1.62	314,725.6	25.71
U.S. Government Dam and Reservoir	0.0	0.00	0.0	0.00	2,115.9	0.54	0.0	0.00	2,115.8	0.17
State of New Mexico Vacant	3,620.8	1.62	7,580.2	2.40	23,001.8	5.87	44,407.9	15.16	78,610.7	6.42
Institutional, Educational, and Local Government Vacant	804.6	0.36	2,166.6	0.69	67.4	0.02	399.8	0.14	3,438.3	0.28
All Undeveloped Land in Unincorporated Area (Excluding Municipalities and Pueblo Lands), **Plus** Residential Development on 40+ Acre Lots	135,955.7	60.73	250,513.8	79.32	352,132.5	89.94	259,622.6	88.64	998,224.9	81.55
All Land in Unincorporated Area (Excluding Municipalities and Pueblo Lands)	145,458.3	64.98	283,319.4	89.71	388,458.1	99.22	271,444.3	92.68	1,088,678.2	88.94
LAND NOT SUBJECT TO COUNTY LAND USE AND ZONING JURISDICTION										
Pueblo Lands	76,549.0	34.20	6,754.4	2.14	3,067.6	0.78	0.0	0.00	86,370.9	7.06
	(703.8 ac. developed)	0.31	(29.8 ac. developed)	0.01	(0 ac. developed)				(733.6 ac. developed)	0.06
Municipalities	1,853.0	0.83	25,750.3	8.15	0.0	0.00	21,434.9	7.32	49,038.2	4.01
	(596.5 ac. developed)	0.27	(14,885 ac. developed)	4.71			(6,563.4 ac. developed)	2.24	(22,044.9 ac. developed)	1.80
All Land Not Subject to County Land Use and Zoning Jurisdiction	78,402.0	35.02	32,504.7	10.29	3,067.6	0.78	21,434.9	7.32	135,409.1	11.06
All Undeveloped Land, All Jurisdictions	213,057.4	95.17	268,103.7	84.89	355,200.1	90.70	275,747.9	94.15	1,110,855.2	90.75
All Developed Land, All Jurisdictions	10,802.9	4.83	47,720.4	15.11	36,395.6	9.30	17,131.3	5.85	113,231.8	9.25
Total, All Land Uses, All Jurisdictions	223,860.2	100.00	315,824.3	100.00	391,524.1	100.00	292,879.2	100.00	1,224,087.8	100.00

Source: Santa Fe County Growth Management Department, based on Santa Fe County Assessor's parcel GIS data, May 2008, and Santa Fe County GIS Division structure data, September 2008

Santa Fe County Growth Management Dept./Planning and Development Division, May 19, 2009

* "Single-Family Residential" includes mobile/manufactured homes on individually-owned lots, but do not include rental mobile home parks

Note: Numbers may not add up in all cases, due to rounding

Entire County, All Hydrologic Zones
Distribution of Existing Developed Residential Parcels, by Lot Size, in Unincorporated Santa Fe County
For Lots of 40 Acres or Less (based on 2008 parcel data)

Dwelling Unit Type	Parcel Size Range	Number of Parcels Parcels	Total Area of Parcels (in acres)	Number of Dwellings	Percent of Dwellings	Percent of Developed Residential Area
Single-Family Detached*	10.01 to 40 acres	1,413	23,995.5	1,413	6.0	35.9
Single-Family Detached*	2.51 to 10 acres	6,185	27,668.6	6,185	26.4	41.4
Single-Family Detached*	1.01 to 2.5 acres	7,340	12,119.9	7,340	31.3	18.1
Single-Family Detached*	0.25 to 1.0 acres	3,508	2,223.7	3,608	15.4	3.3
Single-Family Detached*	Less than 0.25 acres	3,355	474.0	3,355	14.3	0.7
Multi-Family** (includes apartments, condos, and townhouses)	Generally, less than 0.25 acres per dwelling unit	180	395.4	1,557	6.6	0.6
Total, All Dwelling Unit Types	All parcel sizes	21,981	66,877.1	23,458	100.0	100.0

* Includes mobile/manufactured homes.

** Estimated from percent increase in number of households in County from 2000 to 2006, multiplied by number of multi-family dwellings in unincorporated County, based on year 2000 U.S. Census.

Average net density, for single-family detached dwellings (including mobile/manufactured homes) = 1 dwelling per 3.05 acres (gross density = 1 dwelling per 2.9 acres)
Average net density, for all dwelling unit types = 1 dwelling per 2.86 acres (gross density = 1 dwelling per 2.72 acres)

Entire County, All Hydrologic Zones, Excluding City of Santa Fe Annexation Area (Revised 1/13/09)
Distribution of Vacant Lots and Parcels that can Potentially be Developed for Residential Use, by Parcel Size, in Unincorporated Santa Fe County (based on 2008 parcel and structure GIS data)

Parcel Size Range	Number of Parcels	Total Area of Parcels (in acres)	Percent of Parcels	Percent of Area of Parcels	Parcels 40 Acres or Less	Percent of Parcels 40 Acres or Less
Greater than 40 acres	1,334	269,476.0	11.7	83.3		
10.01 to 40 acres	1,695	32,901.3	14.9	10.2	1,695	16.8
2.51 to 10 acres	3,240	15,949.7	28.4	4.9	3,240	32.2
1.01 to 2.5 acres	2,356	3,996.7	20.7	1.2	2,356	23.4
0.25 to 1.0 acres	1,438	886.8	12.6	0.3	1,438	14.3
Less than 0.25 acres	1,332	174.8	11.7	0.1	1,332	13.2
All parcel sizes	11,395	323,385.3	100.0	100.0	10,061	100.0

Average parcel size = 28.38 acres
Average parcel size (parcels of 40 acres or less only) = 5.36 acres

2-2.3. Alternative Future Growth Scenarios

Overall growth trends in Santa Fe County can be quantified in terms of two major variables: (a) The amount of land consumed per capita; and (b) The degree of dispersion (i.e., scattering) that characterizes the pattern of development. Alternative future growth scenarios can then be generated by varying the amount of land consumption per capita and the degree of dispersion that are assumed over the next 20 to 40 years. In order to create alternative future scenarios based on growth trends, it is first necessary to create a baseline scenario by extrapolating current trends into the future. **Map 7**, which is titled "Most Likely vs. Worst Case (Maximum Sprawl) Year 2050 Development", shows the extent of existing (Year 2008) developed land in the County, with the brown-shaded areas. Currently, there are about 1.31 acres of developed land per capita in the unincorporated portion of the County. **Figure 2-15** shows the current developed acres per capita in the unincorporated County and the four growth management areas (GMAs), as well as within the three municipalities. Land consumption per capita ranges from a low of 0.48 acres per capita in the El Norte GMA to a high of 2.55 acres per capita in the Galisteo GMA. Within the municipalities, land consumption per capita is about 0.24 acres per capita, which is only about 18 percent of the consumption rate in the unincorporated County. These land consumption rates were used to project the total amount of land that is projected to be consumed by development in each of the GMAs, under alternative development scenarios (**Figure 2-15).**

2-2.3.1. Baseline Case Scenario for Future Development

("Business as Usual")

Based on current land consumption rates, the total amount of developed land in the unincorporated County would increase from 85,964 acres in 2008 to about 204,497 acres in 2050 – an increase of 118,533 acres. The extent of this additional developed land (for Year 2050) is shown with the combined pink and orange shading on **Map 7**, titled "Most Likely vs. Worst Case (Maximum Sprawl) Year 2050 Development". This additional developed land, as it is shown on the map, has the amount of land consumption per capita and the same degree of dispersion (i.e., scattering) that characterizes existing developed land in the Year 2008. "Dispersion" or "scattering" is measured by the ratio of the perimeter of the developed area to the number of square miles in the area: The more perimeter there is per unit of area, the more irregular the boundary of the area is, and thus, the higher the degree of dispersion.

The spatial allocation of land on this map (as well as the other scenarios) was based on a set of suitability indicators that would typically govern the market location of development: Factors such as proximity to roads and schools were included; however, environmental factors such as habitat value and aquifer contamination vulnerability were not included. Consequently, the pink- and orange-shaded areas constitute a "most likely" or "baseline case" scenario for the extent and distribution of development in the Year 2050. This is the most likely extent and spatial distribution of land that would occur if existing trends were allowed to continue.

2-2.3.2. Scenario-Defining Policies

Alternative scenarios for future growth can be defined based on the policies that are assumed regarding the overall pattern of development that is desired; and also, policies regarding the provision of public facilities, particularly, transportation facilities and central water and sewer facilities.

The overall pattern of development, as defined by a scenario, is largely a function of the following types of policies:

1. Policies regarding the maximum development densities that are allowed, and the minimum densities that are required. It is important, however, to distinguish between gross densities (i.e., development rights) and net densities (i.e., physical development), in any discussion of densities;
2. Policies regarding the degree of dispersion (i.e., scattering) of development across the landscape that is allowed. This is largely a function of the supply of land for development that is allowed by the local governments zoning map (in terms of number of years growth that can be accommodated), compared to the projected demand for land, and also, the densities that are assumed in calculating the future supply and demand for land;
3. Policies regarding the degree to which different land uses (i.e., residential, commercial, industrial, civic uses) are to be geographically segregated or desegregated;

4. Policies regarding the degree to which pedestrian- and mass-transit oriented community design is employed, as opposed to automobile-oriented design;
5. Policies regarding the degree to which environmentally sensitive, hazardous, and scenic areas are to be avoided in the zoning or development of land.

The provision of public facilities, as defined by a scenario, is largely a function of the following types of policies:

(1) Policies regarding the provision of central water and sewer facilities, and requirements for development to connect to same; and

(2) Policies regarding the development of the transportation system, specifically:

(a) Connectivity requirements for the road network – more connectivity of lower-level roads in the network (local and collector road) allows for greater dispersion of traffic through the network, and thus, less congestion on higher-level roads (i.e., arterials and freeways);

(b) The capacity of roads at different levels in the system (local, collector, arterial, and freeway) compared to traffic levels, and thus, the level of congestion that is tolerated; and

(c) The availability of alternative transportation modes (commuter rail, bus, pedestrian, and bicycle).

2-2.3.3. Interrelationship of Scenario-Defining Policies

The types of policies listed above are interrelated, and these interrelations are important in defining and evaluating alternative scenarios. For example:

- Higher densities are required in order for central water and sewer to be feasible. Generally, central water and sewer systems are not feasible at densities of less than 1 dwelling per acre;
- Higher densities are required in order for mass transit to be feasible. Generally, bus transit is not feasible at densities of less than 3 dwellings per acre;
- People generally will not walk more than ¼ mile to a bus stop; consequently, through-streets should be spaced at intervals of not more than ½ mile in communities where bus transit is intended to be available.
- Greater connectivity of local and collector roads reduces traffic congestion on arterial and freeway roads, and thus, the need for road capacity (i.e., additional lanes) on arterials and freeways;
- Higher densities, desegregated land uses, and greater connectivity of roads allow pedestrian and bicycle transportation to be feasible and encourage their use;
- Placing shopping and employment areas in a node rather than a strip configuration will encourage transit use and will encourage pedestrian traffic from surrounding neighborhoods;
- Desegregation of land uses, coupled with greater connectivity of local and collector roads, reduces travel miles for commuting and shopping trips, and thus, reduces the need for road capacity on arterial and freeway roads;
- Pedestrian-oriented community design, which includes traditional architectural styles and greater surveillance of public areas, allows for greater desegregation of land uses;
- Higher gross densities and more compact development (i.e., less dispersion) means less development of significant habitat, wildfire-prone areas, and agricultural areas, and less development in scenic areas; and
- Clustering development (i.e., higher net densities) allows for greater protection of environmentally sensitive, hazardous, and scenic areas on individual development sites.

2-2.3.4. Worst-Case Scenario for Future Development

("Maximum Sprawl")

The current zoning regulations in the unincorporated County could accommodate approximately 54 years of growth at the base densities, and up to 100 years of growth if bonus densities are considered. This is a virtually unrestricted supply of land: The typical number of year's growth that is recommended for local government growth management plans is about a

20-years supply of growth, since a 20-year supply limits the scattering of development, but is still sufficient land to avoid unduly restricting supply (and thus increasing land and housing costs).

Since the supply of land for development is virtually unrestricted in the unincorporated County, the dispersion of development could be become greatly exacerbated, if market preferences shift to favoring larger lots and locations that are further out on the periphery of existing urban areas. Increasing fuel costs indicate that market preferences will most likely shift in the opposite direction (to more compact development with lower commuting costs). On the other hand, the "baby boom" generation is going to be retiring in large number in the next two decades, and retirees commonly prefer to live in locations that are further out on the periphery of urban areas than persons who are currently in the workforce (and thus have to commute). In areas that are attractive retirement destinations (such a Santa Fe County), the overall trend of market forces may therefore lead to more scattered development in outlying areas within the next two decades.

The extent of additional developed land (for Year 2050) for the Worst-Case Scenario is shown with the combined orange and yellow shading on **Map 7**, titled "Most Likely vs. Worst Case (Maximum Sprawl) Year 2050 Development". This additional developed land, as it is shown on the map, has the same area, but has a 33% higher degree of dispersion (i.e., scattering), compared to the Most Likely/Baseline Case Scenario.

Under this scenario, the Community College District (in the El Centro Growth Management Area) would be largely skipped over, and development would be pushed far into the center of the Galisteo Basin, and would also fill up much of the Glorieta Mesa (Oja de La Vaca), as well as the area to the west and south of Ortiz Mountains (i.e., to the north and east of the Golden community).

2-2.3.5. Reduced Land Consumption per Capita Scenario No. 1

(50% Reduction in Land Consumption per Capita/Doubling of Average Development Densities)

The extent of developed land can be reduced through a combination of restricting supply and by increasing both the maximum densities that are allowed and the minimum densities that are required. These types of measures would reduce land consumption per capita. On **Map 8**, titled "Baseline and Reduced Land Consumption Scenarios", the combined blue- and yellow-shaded areas show the extent of land needed for future development (through 2050), if land consumption per capita were to be reduced by 50 percent in the unincorporated area, from an average 1.31 acres per capita down to 0.65 acres per capita. Reducing per capita land consumption by 50 percent in the unincorporated County, would reduce the extent of development from the combined yellow + blue + red area to the combined yellow + blue area on the map. Average gross residential densities would be doubled under this scenario, from 1 dwelling per 2.72 acres in the entire unincorporated area.

The level of dispersion (i.e., scattering) has also been reduced by about 33 percent in "Reduced Land Consumption per Capita Scenario No. 1", compared to the baseline scenario.

A table showing the current number of developed acres, as well as the number of additional developed acres that would be needed to accommodate growth from 2008 to 2050, is included in this section (see **Figure 2-15**, "Projected Land Consumption for Development…"). This same table shows the number of additional acres that would be needed in each growth management area, as well as the County as a whole, if per capita land consumption were to be reduced by 50 percent and 82 percent, respectively, in the unincorporated area.

2-2.3.6. Reduced Land Consumption per Capita Scenario No. 2

(82% Reduction in Land Consumption per Capita/Increasing Densities to Current Average Density in Municipalities)

Land consumption could be further reduced in the County, to correspond to the average density of development that that is currently found in the three municipalities in the County (Espanola, Santa Fe, and Edgewood). Currently, the average development density in these three municipalities is 2.34 dwellings per acre, which is equivalent to 0.24 acres of developed land per capita. Land consumption per capita in the municipalities is currently about 18 percent of land consumption rate in the unincorporated County. Reducing land consumption in the unincorporated County to the current consumption rate in the municipalities would represent an 82 percent reduction from the baseline case.

On **Map 8**, titled "Baseline and Reduced Land Consumption Scenarios", the yellow-shaded areas show the extent of land needed for future development (through 2050), if land consumption per capita were to be reduced to 18 percent of the current consumption rate. Reducing land consumption per capita from 1.31 acres to 0.24 acres in the entire unincorporated area, would reduce the extent of development from the combined yellow + blue + red areas to the yellow area on the map. Average gross residential densities under this scenario would be increase by about 5.5 times the baseline densities, from 1 dwelling per 2.72 acres in the entire unincorporated area to 1 dwelling per 0.43 acres.

Under this scenario, development through the Year 2050 would be largely confined to the traditional communities and to infill areas adjacent to the municipalities.

2-2.3.7. Recommended Scenario

Reduced Land Consumption per Capita Scenario No. 1, Implemented through a Tier System

Both the Baseline and Worst-Case scenarios would continue or exacerbate the existing pattern of large-lot, scattered development in unincorporated Santa Fe County. There are a number of costs to the public (fiscal, economic, and quality-of-life) that would continue at unacceptably high levels under these two scenarios, including:

1. High commuting costs, high greenhouse gas emissions, and high levels of congestion on arterial roads and freeways, due to long commutes;
2. Lack of mass transit service and feasibility;
3. High road maintenance costs, since low-density development usually employs unpaved roads for access to lots;
4. Encroachment into high wildfire hazard areas, and an increase in the interface between development and wildfire-prone areas;
5. Long response times and inadequate access for emergency services (police, fire, and emergency medical);
6. High costs or lack of feasibility for central water and sewer systems, and the extremely high cost of eventually retrofitting development on well and septic tank with central water and sewer;
7. Groundwater and surface water contamination from septic tanks, and aquifer draw downs from concentrations of private wells;
8. Encroachment on and fragmentation of significant wildlife habitat, and increasing conflicts between humans and wildlife;
9. Encroachment on and fragmentation of scenic and open space areas, and degradation of the visual quality of these areas; and
10. Encroachment on and fragmentation of farming and ranching areas, disruption of the agricultural economy in rural areas, and the creation of urban-rural land use conflicts.

Reduced Land Consumption per Capita Scenario No. 2 (82% Reduction in Land Consumption per Capita) would increase densities in the unincorporated County to the current average density in the municipalities (2.34 dwellings per acre). At this average density, central water and sewer as well as mass transit would be unequivocally feasible for almost all future development in the unincorporated County. Encroachment into habitat, scenic areas, and agricultural lands would also be minimal.

The major drawback to "Reduced Land Consumption per Capita Scenario No. 2" is that it would constitute a drastic departure from the form of existing development in unincorporated Santa Fe County. Pursuing this scenario would require substantial public education about the benefits of such development patterns. Pursuing this scenario would also require stringent minimum density requirements, in order to ration land consumption so as to avoid pushing up land and housing costs.

2-2.3.8. Keys to Sustainability

Reduced Land Consumption per Capita Scenario No. 1 (50% Reduction in Land Consumption per Capita), would increase densities in the unincorporated County from the current 1 dwelling per 2.72 acres to an average of 1 dwelling per 1.36 dwellings per acre (for new development). This scenario would accomplish substantial benefits, insofar as reducing the public costs of urban sprawl (compared to the baseline scenario), but would not be such a drastic departure from the form of existing development. Therefore, it is recommended that the County's growth management strategy and land development regulations be amended to accomplish the reduced land consumption per capita that is assumed in this scenario.

The land use and zoning controls that would implement Reduced Land Consumption per Capita Scenario No. 1 should create two broad categories of areas for development of communities: (1) Community and growth area tiers, which would consist of areas of fairly solid development, with the exception of hazardous and environmentally-sensitive portions of development sites; and (2) A transition ("Rural") tier, where low rural base densities would be in effect, but higher densities could be attained, if large-scale development is clustered and/or central water and sewer service are provided. If development in the Rural tier were to be clustered on 25 percent of development sites, then the average gross density of 1 dwelling per 1.36 acres would translate into average net densities of 1 dwelling per 0.34 acres. At this density (which is equivalent to about 3 dwellings per acre), central water and sewer would be feasible, and if the developed portion of the site were located within ¼ of major roads, transit bus service would be feasible. At this density, well-defined communities with a sense of place could also be created, if community design controls are implemented. Protecting 75 percent or more of each development site would also preserve much of the habitat and scenic open space areas that occur on the site, which would preserve the environmental quality that many of the residents in the County value. As these transition areas become filled up and become closer in to the main mass of urban development, they could be converted to higher-density land use categories, on a case-by-case basis. This would allow some of the open space that has been preserved in the transition areas to be converted to new compact communities.

Map 2, titled "Proposed Growth Management Tiers Map", shows the recommended extent of these tiers. The general location and extent of these tiers is based on the development suitability maps that were produced as part of the Land Development Suitability Model [see **Maps 9, 10 and 11**, titled "Overall Location Suitability for Development", "Overall Environmental Suitability for Development", and "Total (Environmental + Locational) Suitability for Development"]. These suitability maps are built up from about 2 dozen different data layers related to both locational and environmental suitability, and are not limited to market suitability factors.

In order to create more regular boundaries for these tiers, development suitability was generalized to parcels and to quarter-sections. Existing communities, as well as infill areas within or adjacent to same, were placed the "Communities" tier. Areas where intensive development is currently allowed by the County's zoning and where central water and sewer facilities are generally available were placed in the "Primary Growth Areas" Tier. Areas where intensive development is intended to be allowed in the future and where central water and sewer facilities are planned were placed in the "Secondary Growth Areas" Tier.

Areas on the periphery of the Communities and growth areas tiers, which are characterized by existing large-lot development, or would be suitable for such development, were placed in the "Rural" tier. The remainder of the unincorporated County (that which is not included in the community, growth, or rural transition tiers) were placed in the "Agriculture" Tier or the "Conservation Lands" Tier. The proposed Conservation Tiers consists of existing public conservation and open space lands. The purpose of the Agriculture and Conservation tiers would be to limit development to very low density uses, in order to maintain the rural landscape and economy of the remainder of the County.

Sustainable Growth Tiers and Sustainable Development Areas are described in more detail in **Volume I,** and are shown in **Maps 1 and 2**.

Figure 2- 15: Projected Land Consumption …

Projected Land Consumption for Development* in Santa Fe County Municipalities and County Growth Management Areas, 2008 - 2050, Based on Current (2008) Land Consumption Per Capita, and 50%, 82% Reduction in Land Consumption Per Capita in Unincorporated County

	DEVELOPED ACRES/CAPITA 2008	AVERAGE GROSS RESIDENTIAL DENSITY (DWELLINGS/ACRE), 2008	TOTAL DEVELOPED LAND 2008 (ACRES)	ADDITIONAL DEVELOPED LAND, 2008-2050 (ACRES), BASE CASE (100% OF CURRENT LAND COMSUMPTION PER CAPITA)	ADDITIONAL DEVELOPED LAND, 2008-2050 (ACRES), WITH 50% REDUCTION IN LAND CONSUMPTION PER CAPITA **	ADDITIONAL DEVELOPED LAND, 2008-2050 (ACRES), WITH 82% REDUCTION IN LAND CONSUMPTION PER CAPITA **
City of Espanola	0.19	3.10	515	46	46	46
City of Santa Fe	0.17	3.79	14,864	375	375	375
Town of Edgewood	1.71	0.33	3,630	2,622	2,622	2,622
TOTAL, ALL MUNICIPALITIES	0.24	2.34	19,009	3,042	3,042	3,042
El Norte GMA Unincorporated	0.48	1.30	7,880	3,267	1,634	588
El Centro GMA Unincorporated	1.14	0.51	25,359	51,858	25,929	9,335
Galisteo GMA Unincorporated	2.55	0.23	38,396	56,320	28,160	10,138
Estancia GMA Unincorporated	1.57	0.36	14,330	7,087	3,544	1,276
TOTAL, UNINCORPORATED COUNTY	1.31	0.37	85,964	118,533	59,266	21,336
TOTAL, ALL OF SANTA FE COUNTY	0.73	0.66	104,973	121,575	62,308	24,378

* "Development" is defined as consisting of: All commercial, industrial, and civic uses, and utilities, with a building lot coverage of 5% or more; All residential uses with a net density of 1 dwelling per 40 acres or more; Golf courses, urbans parks, yards, and other improved open space or recreational facilities; Also, roads, driveways, parking areas, outdoor storage areas, and stormwater management facilities that are adjacent to and serve the above uses.

** Reduced land consumption per capita in unincorporated County only.

Santa Fe Growth Management Department, Planning and Development Division, September 16, 2008

2-2.4. Preferred Future Land Use Alternative

2-2.4.1. Sustainable Land Development Suitability Model

The Sustainable Land Development Suitability Model (SLDSM) is a Geographic Information Systems (GIS-based) land use model. The SLDSM was created to provide a consistent, technically defensible system for the evaluation of development proposal in the County. The model measures a wide variety of factors, such as distance to surface water, habitat value, distance to infrastructure and other environmental and community factors. Data was obtained from various local, State, Federal and Private entities. These factors are weighted in importance based on the relevance of the factor to the County's goals, objectives and policies. The model is intended to aid decision-making by assessing the impact of development on the County's natural, cultural, archaeological, economic, infrastructure and other community resources.

The underlying data of the model is raster, or a continuous grid of cells, all the same size, all lining up exactly on top of each other. Each raster layer represents a continuous area, such as in or out of a floodplain, and has over 21 million cells, each representing 32 square feet on the ground. Using raster math, each layer is summed to make the final raster layer, assigning a final score for the development suitability.

Model Maintenance and Updating

As expanded and improved datasets become available through enhanced public information, the development review process and other venues, the model should be updated to provide the fullest and most accurate information available. The model should be updated on an annual basis, or more often as necessary due to the availability of updated data. Through accurate and relevant data availability the County can make informed land use decisions.

A full description of the Model and a composite map is included in **Volume III: Sustainable Land Development Suitability Analysis.**

2-2.4.2. Sustainable Development Tiers and Sustainable Development Areas

Growth tiers allow similar policies and programs to be used in similar areas while distinguishing unique areas and using special policies to address their growth. The tier system structures growth management planning and implementation by geographic areas. It establishes a framework for determining which of many varied techniques should be used to achieve growth management objectives for different areas of the County. Each tier has specific strategies appropriate for the nature and extent of development in that tier.

The tiers concept recognizes that different areas of the County face different challenges related to growth and development. Thus, different levels of service and different funding mechanisms for such services apply in each tier. The tiers are structured to encourage appropriate (and discourage inappropriate) development patterns. While individual communities or areas may need specialized strategies for dealing with growth, they must still be viewed in terms of their interrelationships with the community as a whole.

The Tiers system is the first step in moving the County to a more reliable and functional land use scheme with a future land use and zoning map that will provide confidence to residents and businesses about future development expectations. Each Tier includes a broad mix of land uses that describe and identify preferred future development patterns. Tiers are not zoning designations – they are intended to guide local decisions on zoning, subdivision and other land use matters and reflect a future land use condition. Tiers are used to establish a framework for determining which growth management goals, policies and strategies should be used in different areas of the County, recognizing the uniqueness of each area and community, and to direct the location, timing and phasing of growth in order to achieve rational growth patterns, efficiently provide facilities and services and protect rural, agricultural, environmentally sensitive or other important open spaces from inappropriate development.

Tiers will lay the groundwork for a new County land use regulations, to be set forth in the Land Development Code update. While the County's hydrologic zoning scheme sets forth maximum densities throughout the County, the existing land development code still allows two and a half acre zoning. This creates the low-density subdivision pattern that is neither urban nor rural, a pattern that requires urban facilities and services but is not dense enough to fiscally support such services. The Tiers system defines areas of specific levels of service in order to efficiently direct growth and preserve the remaining rural character.

The Development Tiers include a Communities Tier, a Growth Areas Tier, a Rural Tier and a Conservation Tier. The Communities Tier is further divided into Incorporated Aras, Contemporary Communities and Traditional and Historic Communities. The Growth Areas Tier is further divided into Primary and Secondary Growth Areas.

The Sustainable Development Tiers Map for Santa Fe County is not a zoning map. The Map is conceptual and functions as a guide on which future land use decisions can be made. Future land uses are based on the goals and objectives set forth as short term and long term planning strategies in the Plan and its updates. Tools such as growth management programs, land use ordinances, transportation plans, and capital improvement plans all are used to implement the Sustainable Land Development Plan. Consideration should be given to the following:

- **Sustainable Growth Tiers are not zoning designations** -- they are intended to guide local decisions on zoning, subdivision and other land use matters.
- **Sustainable Growth Tiers reflect a future condition** -- uses designated on the map may be appropriate in 10 to 20 years, but currently may not be appropriate due to reasons of compatibility, availability of adequate public facilities, or proximity to services.
- **The Sustainable Growth Tiers Map is dynamic** -- as justified by changing conditions in the community, the Development Tiers should change. While map amendments should not be made frequently, periodic adjustments to better achieve community goals will help the community achieve its planning goals.
- **The Sustainable Growth Tiers Map and text of the Plan are to be used together** -- the text and maps of the Sustainable Land Development Plan will guide interpretation and implementation of the overall growth management strategy.

Development Tiers

The Santa Fe County planning area has been divided into four tiers, described below. The tiers allow similar policies and programs to be used in similar areas while distinguishing different areas and using special policies to address their growth. **Map 2** illustrates the Development Tiers for Santa Fe County.

- The **Communities Tier** is intended for most types of residential and non-residential development in the County. This development is planned in developing areas adjacent to the cities and in communities consistent with adopted community plans. This Tier also is composed of areas that are expected to provide a transition from urban- and suburban type development to the rural areas. The highest density and intensity development will be located in areas closest to the cities, where urban and suburban facilities are available; lower density and intensity development will be located at the edges of the Community Tier communities and developing areas.
- The County aims to preserve the **Rural Tier** for residents who enjoy a rural lifestyle, open spaces, and few neighbors. The County's policies are designed to retain this rural character rather than to support new urban development in these rural areas. Conservation subdivisions may be appropriate so long as that development is clustered, necessary facilities and services are provided by the conservation subdivision and adjacent agriculture, ranch and equestrian uses are protected from negative externalities from the new development.
- The County also recognizes the importance of an **Agriculture Tie**r to protect residents and lifestyles in the most rural areas of Santa Fe County, because they are engaged in agricultural, ranching and equestrian activities. The County aims to preserve this Tier for those who require or enjoy open spaces and very few neighbors. The County's policies are designed to retain this agricultural and ranching character rather than support encroachments of urban or suburban development in these very rural areas. Some agriculture-related or service commercial uses to meet the needs of local residents may be appropriate, including some home occupations and home industry. The Agriculture Tier offers the opportunity to preserve agriculture and open space while still allowing some development through the use of conservation subdivisions.
- The **Conservation Tier** identifies includes public parks and other land which, because of its environmental characteristics and importance to the regional ecosystem and open space, should experience little or no development. Much of the land designated in this Tier are federal and state lands, and includes public parks, floodplains and steep slopes. Development is not likely to occur, except low intensity recreational uses may be acceptable in these areas.

Sustainable Development Areas

The Sustainable Development Area (SDA) concept builds on the Tiers system by recognizing that different areas of the County face different needs and solutions related to growth and development. The SDAs establish future service areas, target and leverage public and private funding and investment to these priority growth areas, Identifying areas in which urban/suburban-level growth is expected to occur within the next 20 years. SDAs, with Tiers also serve as an incentive for compact development.

While individual geographical or functional areas may need specialized strategies for dealing with growth, they must still be viewed in terms of their interrelationships with other areas and with the County as a whole. The fundamental premise of SDAs (and Tiers) is that the County can be divided into geographical sub-areas based upon functional distinctions within the growth management system. The delineations of the tier system relate strongly to the goals and objectives to be achieved through the growth management system.

Improvement districts or impact fees may be instituted in one SDA or part of an SDA but not at the same level as in another SDA, which may already have water, sewer or road capacity. The need for, provision and timing for necessary public facilities and services will vary greatly from the Community Tier to the Agriculture Tier, as levels of service (LOS) depend on the density and intensity of a development, at its appropriate location. Facility and service requirements can be lower in the Rural Tier and much lower in the Agriculture Tier than in the Community Tier.

Santa Fe County has identified three Sustainable Development Areas to plan for and accommodate new development through 2030, shown on **Map 1**.

- **SDA-1** identifies where urban and suburban development is likely and reasonable to occur within the next 10 years. Infrastructure is either planned, budgeted or reasonably available. New infrastructure may be installed provided that there is required participation by new development to fund. These primary growth areas are largely developed, but include infill opportunities, though the supply of land available for infill is diminishing. Urban levels of service are generally available. Full urban services will be required for any development in SDA-1, including approved public water and wastewater systems, urban road improvements, and urban service levels for public safety, fire and emergency medical assistance. Service providers should plan and construct facilities in these areas to meet the needs of development at these urban intensities. County, and service provider, Capital Improvement Projects should be utilized for these primary growth areas first, before investment in SDA-2 areas.
- In **SDA-2**, urban and suburban development is likely and reasonable to occur in these areas over the next 10 to 20 years. Infrastructure may not be currently available, but it is planned and identified in short- or long-range Capital Improvements Programs. Infrastructure may be reasonably available (it may be close, in time or location) and funding alternatives may be identified, but participation by new development would be required. These secondary growth areas are not expected to develop at urban intensities until public facilities, primarily water, sewer and improved roads, are installed, which is not intended to occur until years 10 to 20 of the SLDP planning term. Clustering will be required, but some large lot development may be permitted provided that significant open space is provided and total development capacity occurs at the maximum density identified on the future land use map.
- In **SDA-3** areas, there are no plans to provide urban or suburban facilities and services. Infrastructure is not available or budgeted and any use that requires infrastructure to be provided solely at expense of new development. Urban and suburban development is not likely and reasonable to occur in more than 20 years, if at all. As this area contains ag and equestrian development, natural resources, wetlands, hillsides and areas identified as environmentally sensitive, lands will not be sewered nor receive other capital infrastructure.

In SDA-1 and SDA-2, the County can work cooperatively with the municipalities, communities and service providers to jointly review development applications and extend development standards. The County is committed to working with each of its municipalities to ensure that growth and development improves the quality of life. The SDAs are not intended to promote annexation; on the contrary, providing an assurance to municipalities that development standards will be extended into the SDAs may lessen some of the pressure felt by cities to annex developing lands.

The Green Line. The SDA system also includes a "Green Line" which identifies the growth boundary between developed/developing areas (located in SDA-1 and SDA-2) and the "green" agricultural, equestrian and conservation areas, as shown in the SDA map. The Green Line defines the outer boundary of undeveloped lands that should accommodate most of the County's future growth, though it may be revised when the land contained within them is developed and additional land is needed to accommodate growth. The Green Line promotes coordination between service providers and citizens in determining where urban services should and can be extended, creates an incentive to infill existing developed areas. UGBs provide certainty to developers in defining which areas will receive services, such as water, wastewater and improved roads in the near future. Combined with other tools, the Green Line may help Santa Fe County identify where growth should and should not occur and effectively guide development accordingly.

2-2.4.3. Future Land Uses

The Future Land Use (FLU) Map identifies the planned development patterns for the County. The map, together with the goals and policies contained in the SLDP, establishes the County's policy direction and acts as a guide for decisions affecting the County's future development. All development approvals, specific plans and development regulations zoning and subdivision regulations must be consistent with the SLDP. The table below describes the land use classifications used in the FLU Map, which is provided in **Map 3**. The classifications and graphical representation illustrate how the County may develop into the future.

The Future Land Use Map is not the County's official Zoning Map. It is a guide to future land use patterns. The SLDC and Zoning Map determine which specific development requirements apply to a particular property. The Zoning Map will be a component of the SLDC, which is a legal document that spells out the requirements for each category of land use. Each will have a specific set of requirements regarding the amount of a site that can be covered with buildings, how far the buildings must be set back from the street, the heights of the buildings, the amount of parking required, and the amount of landscaping or open space required.

The FLU Map is different from the SLDC text and Zoning Map in that the FLU Map depicts only general expectations rather than formal regulations and requirements. The FLU Map is a graphical representation of recommendations for future growth patterns in an area; it depicts where different types of development should occur.

The future land use map of the Plan is intended to guide the decision-making process for the County for development and subdivision proposals. A primary function of the future land use map is to help the Planning Commission and Board of County Commissioners make recommendations to approve or deny development and zoning proposals.

Future Land Use Categories

FLU	Density / Intensity (AVG)	Purpose / Intent
Rural Life:		
Ag / Ranch	160 acres	Agricultural, ranch and equestrian uses. Also may include eco-tourism and resource-based activities.
Agriculture	100 acres	Agricultural uses, such as the growing of crops and raising of livestock, along with equestrian and very large lot residential uses.
Rural Conservation	20 acres	Intended to allow for minimal residential development while protecting ag, areas and environmental that are inappropriate for more intense development due to their sensitivity. Review factors to be based on balance between conservation, environmental protection and reasonable opportunity for development.
Rural Fringe	5 acres	Rural homes on large lots, sometimes as part of rural subdivisions (a subdivision of only a few lots and very low densities). Provides intermediate steps in development density between more typical open space lands and low residential densities.
Community Life:		

FLU	Density / Intensity (AVG)	Purpose / Intent
Rural Estate	1.75 acres	Single-family rural large lot residential development, consistent with traditional community development. May include limited ag use secondary to residential. Primarily limited to existing traditional community planning areas.
Traditional Community	.75 acres	Single-family residential development, consistent with traditional community development. Primarily limited to existing traditional community planning areas.
Residential Low Density	2.5 DU/ac	Single-family residential suburban development. May serve to buffer more dense residential development from large lot and rural uses. Subdivisions with large lot sizes, but low densities. The smallest form of a neighborhood.
Residential Medium Density	8 DU/ac	Includes single family and planned residential developments with shared open space, recreation and other amenities. Intended to encourage development of a wide variety of dwelling unit types. The most common subdivision type, a few homes sharing each acre of land. The size of a traditional neighborhood.
Residential High Density	12 DU/ac	Allows for the greatest diversity of residential development, including attached single and multi-family dwellings. Most suitable for planned communities and affordable and senior housing, where smaller units and higher densities may be appropriate.
Activity Centers:		
Community Centers	0.2 FAR	Neighborhood scale shopping centers and personal and professional services conveniently located near residential areas. Typical sizes are 8 to 10 acres providing approximately 40,000 to 100,000 square feet of gross leasable floor area. Includes businesses which are agriculture and natural resource-based, such as co-ops, feed stores, *etc.* Intended to be designed aand integrated as part of mixed use / planned development.
Regional Centers	0.2 FAR	Larger, regional scale shopping centers, which may be anchored by department or home improvement stores or other large-scale anchors, and employment centers. Intended to be designed aand integrated as part of mixed use / planned development.
Opportunity Centers	0.2 FAR	Unique, site- or purpose-specific uses, not likely to be replicated in other locations, benefiting from locational attributes, such as wind, natural resources, viewsheds or recreational/environmental amenities. Non-residential uses range from energy, to eco-tourism, to supporting other economic development activities.

Mixed Uses

Mixed use development is integral to achieving appropriate land use and transportation goals and objectives. Mixed use allows for development providing for a variety of uses within traditional neighborhood and village type settings. Mixed uses bring flexibility into the development process, deviating from the typical single-use categories of future land uses or zoning districts to combine compatible uses in planned ways. Mixed use developments are often intended to capture specific benefits, such as reducing auto dependency by providing for walkable mixes of commercial and residential uses inclusion of sustainable development practices, and greater use of urban design.

For the purposes of this Element and the Future Land Use Map, five mixed uses are defined:

- **Neighborhood Centers** provide a mix of residential and commercial developments requiring minimum densities to support the commercial uses. Residential, educational, non-profit, public and private uses and commercial uses are developed within a radius, which should be easily accessible by multiple forms of travel, including pedestrian travel, biking, public transit and automobiles. Commercial uses in these centers primarily support nearby residential developments.

- **Village Centers** provide a mix of residential, commercial, and office uses, which are centered around a community core. Village Centers are larger in scale than the neighborhood center and emphasize the creation of a pedestrian-friendly environment through commercial uses which sustain both office and residential developments.

- **Business Centers** provide a mix of commercial, office, and non-intrusive light industrial uses. Commercial development in these centers primarily supports office uses, in addition to some public access.

- **Industrial Centers** provide a mix of office and light to heavy industrial uses. No residential or commercial developments are included in these centers. Transportation facilities should be readily accessible.

- **Recreational Centers** provide a predominantly residential environment that includes recreational amenities such as golf courses and other open space amenities. Some low scale commercial uses may be included if they directly support the residential and recreational uses.

2-3. Governance

2-3.1. Planning, Participation and Outreach

2-3.1.1. Community Planning Approach

The Sustainable Land Development Plan process is an outgrowth of the community planning process, which was created in order to assist community members in identifying and developing solutions to community problems and assist communities in developing strategies to achieve their vision.

Encouraging planning at a more local level, community planning allows residents to identify problems and solutions specific to their community. Each settlement area has a unique history, pattern of development and set of future goals. The community planning process is designed to include these characteristics, from a local perspective, in the future growth and development plans for community and the County. Community planning presents a unique opportunity for residents to plan for and address local community issues, regional issues and county-wide issues, including those which may be overlooked from a county-wide perspective.

The community planning program is intended to create a process whereby community members and the County jointly learn and document how development and growth both impact and can be directed to benefit communities throughout the County. The County has adopted ten Traditional and Contemporary Community Plans, with one pending completion. Two Highway Corridor Plans have also been adopted. Those documents have been incorporated into **Volume V: Community Planning**.

It is important to note that Santa Fe County community plans are not just about land use and adopting zoning regulations. They are also concerned about educating residents in governance, power sharing and community problem solving. Community plans are created through a consensus process and not by individual voting and, thus, they tend to take longer to finalize.

Existing Community Plans and Ordinances are a critical component of the growth management framework. However, these processes have focused on planning for small, defined environments. The Sustainable Land Growth Plan recognizes the need to plan on a larger, County-wide scale, recognizing that problems don't stop and start at our community boundaries, and neither should the solutions. **Map 12** shows the County's designated communities.

Additionally, the Sustainable Land Development Plan will set forth a legal, manageable and transparent role for community and area-based participation. A new community-involvement process that is more meaningful and efficient is defined through this Plan.

2-3.1.2. Community Planning Background

As unincorporated communities in Santa Fe County have experienced growth, community members have recognized that planning is necessary to address growth and development issues in a progressive manner. Santa Fe County established a Community Planning Process through the 1999 General Plan which outlined a process for conducting community plans and provided for County staff to assist communities in developing plans for communities. After approval by the Board of County Commissioners, an adopted Community Plan constitutes an amendment to the County Growth Management Plan.

The goal of the community planning program is to assist community members in identifying and developing solutions to community problems. The planning program is a process whereby community members and the County jointly analyze how development and growth impact and may be directed to benefit communities throughout the County. Community planning also considers a community's history and the ways that past planning efforts have shaped the area. Community Planning has included educating residents in governance, power sharing and community problem solving.

Community plans have been the result of communities collectively identifying a common set of concerns, creating goals that address these concerns, and creating policies to achieve the goals for future development in the community through a consensus process. Community planning is a way for communities to express a clear vision for the future. The Community Planning process has also become a mechanism for an "information exchange system" that encompassed multiple bodies of

knowledge. In addition, individuals who would typically not interact in the community were communicating and finding enough common ground to begin working on collaborative projects and efforts.

The community planning process has essentially created community collective action. Through this process, County residents have gotten to know each other and have worked to build community networks. In some cases, trust was established between community members and County staff, leading to better communication and effective relationships to address specific community interests and objectives.

2-3.1.3. Challenges of Community Planning

Although the community planning program has had success in empowering communities in problem solving and understanding of land use related issues and concepts, there have been challenges that have emerged from the community development advances.

Some of the deficiencies that have been identified since the inception the community planning program include the following:

Communities Change Over Time

The information and existing conditions at the time the plans were developed may need to be updated to reflect current conditions. In addition some of the projects and issues listed have since been completed or resolved. More specifically, there are new issues and opportunities that have been identified that need to be acknowledged and dealt with. Updating the current conditions for each of the Plans can only be effectively accomplished by community members with accurate, current information. Sustainable community development needs to consider the natural and economic resources, as well as the changes to the built environment.

Funding for Projects

There has not been a functional mechanism to fund projects and initiatives that the communities identified as priorities after plans were completed. Although some Infrastructure Capital Improvement Program (ICIP) funding has been identified in some areas for specific projects, it has not been an equitable or a consistent process that allows for the community projects outlined in the plans to be financed.

Implementation

There is no mechanism to follow up on issues stated in plans after the planning committee's complete their work. In addition, planning committees had no authority or mechanism to continue working on community-related issues to meet community needs.

2-3.1.4. Evolution of Community Planning

The community planning process has not been static and plans were intended to be amended as new conditions arose, allowing for the community plan to evolve over time as community changes occurred. Now that the County is moving into a new era of sustainable development, community planning and participation will also need to evolve and develop to fit the diverse needs of the communities in the County. A shift in community planning must occur in order to ensure a process that is not only inclusive, but representative of community members throughout the County.

County residents identified the need for a new process for meaningful community participation through the Sustainable Land Development Plan community input process. The new process for community participation and involvement includes the potential for communities to establish a "Community Planning Organization" and/or a "Registered Organization" to both participate and be informed of development and other issues in their communities.

Effective community planning should be firmly rooted in sustainability in the community, environment and economy. Principles for community sustainability include specific principles for sustainability as well as for community and development issues.

Keys to Community Sustainability:

- Meaningful opportunities for public participation.

- Recognition and integration of existing Community Plans and Ordinances.
- Recognition of the history, culture and environment of the various areas in the County.
- Recognition of communities' desire for self-sufficiency and independence.

2-3.1.5. Community Planning Organization (CPO)

A Community Planning Organization ("CPO") is a designated group of community representatives recognized by the Board of County Commissioners. The main purpose for establishing a CPO is for communities to have an improved public participation and planning process to meet community needs focused on the principles of Partnership, Information and Leadership and to review development projects and community development issues. Each CPO will also have the ability to determine their own geographic boundaries, to indicate how they will be represented and to decide what issues they want to address. The Board of County commissioners will recognize CPO's by resolution.

CPO Boundaries

Communities need to designate a geographic boundary for their CPO. Any community planning area, sub-areas, or established planning districts or corridors within the County are eligible to form a CPO. Boundaries may include Traditional Communities or any community that has an adopted plan or ordinance; or any other communities or planning areas that identify their CPO boundaries based on defined criteria, such as common geography, history, land uses or cultural activities. Communities or planning areas may periodically refine their boundaries.

CPO Representation Plan

In coordination with the County, each CPO Coordinating Committee will create a Community Representation Plan that describes the demographic composition of the resident population represented by the CPO and other member organizations. For example, there may be neighborhood or sub-area delineations that need to be identified within the overall Representation Plan. Representatives from each identified area or group will compose the Representation Plan.

Initial Statement of Purpose and Plans

CPO's may develop an initial statement of purpose and the type of plans and planning activities that the community wants to proceed with. CPO's may build on existing community efforts and planning processes.

CPO Organization and Coordination

CPOs must determine how they will organize themselves. This may include purpose statements, duties, membership, operating procedures, meetings, officers, committees and other operational items.

CPO Designation by the Board of County Commissioners

The Board of County Commissioners will officially recognize a CPO by Resolution after a recommendation by the County Planning Commission (CDRC). This will allow the County to support CPO's and will do so through staff support which may include a Communications Plan; a Community Projects Database; Education and Leadership Trainings; a CPO Strategic Work Plan; notification of development applications, and an annual Congress of Community Organizations event.

Community Plans and Strategic Work Plans

Each CPO may prepare a Community Plan and/or Strategic Work Plan that will identify and prioritize the issues they would like to address and the projects they plan to be involved in and help to implement. CPOs with existing Community Plans can create a Strategic Work Plan based on that existing plan. Some CPOs may want to do a more in-depth community plan while others may only want to develop a Strategic work Plan.

Priority projects will be coordinated through the Manager's office in conjunction with the appropriate County departments or divisions. Projects in the Strategic Work Plan may be included in the County Capital Improvements Plan process if it is a capital project.

Other CPO Functions and Responsibilities-Partnerships, Leadership, Information

The CPO process is an improved public participation process for planning and development review issues focused on the principles of Partnership, Information and Leadership.

A CPO may be an umbrella organization that coordinates among a variety of independent entities or organizations operating within the same geographic area. CPO's will be responsible for communicating with their members and sharing information provided by the County.

CPO's will participate with other CPO's and RO's annually through a process called a Congress of Community Organizations, whereby communities can learn from other communities as well as participate in Leadership Training and other trainings to be identified by the process. CPO's may also be involved in Town Hall Meetings, quarterly regional meetings; or other informational meetings.

CPO's as proposed include the following rights and responsibilities:

- the right to be notified of relevant issues; and
- the right to hold their own perspectives, and
- the right to pursue issues by mediation or in the courts, (should they find it necessary)

County Functions and Responsibilities to the CPO

The County will provide some administrative and planning support to the CPOs, including but not limited to the following:

- provide limited technical assistance and forms to persons desiring to create a CPO;
- conduct community education and leadership training sessions;
- establish a Community Projects Database to organize and track progress of desired community projects identified in the CPO Strategic Work Plans and CIP process;
- provide County technical staff support for specific planning projects;
- notify CPO's of developmental applications;
- conduct quarterly regional meetings;
- conduct the Annual Congress of Community Organizations at which CPOs can review and make recommendations on the CPO process and the CIP process.

2-3.1.6. Registered Organization (RO)

A Registered Organization ("RO") is any organization with a Charter or rules of organization that would like to be notified about development projects or other specific County activities. To become an RO, an organization must define its "area of influence." Each RO will be registered with the County Planning Division and given notice of discretionary applications affecting the organization's area of influence. Examples of groups which are eligible to register include homeowner associations, downtown or merchant associations, acequias, mutual domestics, and more.

An RO may develop boundaries which may be County-wide, within a CPO's boundary, cross CPO boundaries or may be a unique area (such as an area of environmental, cultural or economic significance, a service area, or a constituency area).

RO Functions and Responsibilities

RO's may work with CPO's to share information provided by the County. RO's may have standing to make recommendations. RO may participate with CPO's through a process called a Congress of Community Organizations, whereby communities can learn from other communities as well as participate in Education and Leadership Training.

Community Notification and Participation

CPO's may have the following role and privileges regarding participation and notification and review of development applications:

- Review and notice of all discretionary applications.
- Conduct pre-application meeting with developers, when required.

- Standing to appear before the Board or Planning Commission related to any discretionary development approval; or to request a rehearing of, or appeal from, a discretionary development approval to the Board or to any court with general jurisdiction;
- Participate in annual budget review and prioritization.
- Participate in annual capital improvement planning review and prioritization.
- Participate, as needed, as subcommittee with Planning Commission for special purpose issues.
- Participate in quarterly Town Hall meetings with County staff and department directors.
- Participate in annual leadership retreat and trainings.
- Participate in annual Congress of Community Organizations.
- Participate in the development of the Community Strategic Work Plan, planning studies for community, including but not limited to capital improvement plans, improvement / assessment districts, level of service assessments, etc.

RO's may have the following community participation roles:

- Notice of all discretionary applications for their area of influence.
- Participate in quarterly Town Hall meetings with County staff and department directors.
- Participate in annual leadership retreat and trainings.
- Participate in annual Congress of Community Organizations.
- Participate in the development of the Community Strategic Work Plan, planning studies for community, including but not limited to capital improvement plans, improvement / assessment districts, level of service assessments, etc.

2-3.1.7. General Community Notification

The County will continue to explore and incorporate opportunities for meaningful citizen input in County government. Stakeholders (private citizens, property owners, residents, business owners, etc) can be notified of planning and development issues through the County's website, local news organizations, e-mail notifications, announcements at public meetings, meetings with elected and appointed officials and quarterly regional meetings held by County staff.

2-3.2. Intergovernmental Cooperation

Many problems faced by local governments are regional in nature, including issues such as population growth, environmental preservation, growth patterns, and the adequacy of public facilities and services. The Sustainable Land Development Plan will strongly support partnerships between Santa Fe County, its municipalities and communities, Pueblos and tribal governments, institutions and non-governmental organizations and other service providers. These partnerships should focus on coordinated growth management and service provision strategies. **Map 16** shows public and tribal lands in Santa Fe County. **Map 13** provides an overview of the region.

In other communities, lack of intergovernmental coordination has resulted in the loss of population and economic development. Such losses undermine economic stability and reduce public facility and service efficiencies, thereby making it more costly for all County residents. This makes the County less attractive for major economic development that would benefit the entire planning area and the region. These adverse consequences can be avoided by: coordinated comprehensive planning; the adoption and implementation of key growth management goals, objectives and policies; and sustained monitoring of development over the planning period.

The Sustainable Land Development Plan lays the foundation for building more effective regional partnerships in the County. Intergovernmental cooperation is any arrangement by which two or more jurisdictions can communicate visions and coordinate plans, policies, budgets and capital improvement programs to address and resolve regional issues of mutual interest. Many issues in today's interdependent, complex society cross jurisdictional boundaries, affecting more than one community, with the actions of one governmental unit impacting others.

Increasingly, we have come to the realization that many vital issues are regional in nature – watersheds, air quality and other ecosystems, economic conditions, land use, service delivery, commuter patterns, housing, employment centers and

other growth impacts 'spill over' municipal or County boundaries and impact the region as a whole. Our communities are not islands. The problems a community faces do not begin and end at its borders, so why should its solutions? The health of Santa Fe County's communities, including Traditional Communities, Traditional Historic Communities, Contemporary Communities, the Pueblos, the incorporated municipalities, the rural areas of the County and the welfare of the region are interconnected.

The Sustainable Land Development Plan recommends that Santa Fe County and other local governmental units, which include other counties, cities, communities, Pueblos and service providers, coordinate their actions with each other. Since many issues cross jurisdictional boundaries, the activities of one level of government have extraordinary impacts beyond its jurisdictional boundary. Coordinated planning efforts will result in benefits to citizens of all communities in the region, such as:

- **Cost savings** - by increasing efficiency, avoiding unnecessary duplication and using area-wide cooperation and economies of scale to provide services that would otherwise be too costly, as well as to stabilize taxes by improving the performance and delivery of programs and services.
- **Quality of life –** use levels of service for transportation, police, fire, emergency, ambulance, sewer, water and environmental protection, to preserve lifestyle choices and maintain community character.
- **Environmental and cultural resources –** by protecting a 'critical mass' of environmentally sensitive areas and connecting protected areas to provide habitat corridors, which may include protecting adjacent areas in different jurisdictions, ecosystems throughout the region can benefit.
- **Economic development** - by enhancing economic growth by planning, funding and providing the infrastructure and services needed for sustainable community and regional growth, including requiring developments whose impacts on services and facilities cross the approving jurisdiction's boundaries to pay their fair share of the costs needed to mitigate the impacts generated by their growth and demand.
- **Early identification of issues** - to identify and resolve potential conflicts at an early stage, before public and private entities have established rigid positions, before the political stakes have been raised and before issues have become conflicts or crises.
- **Address regional issues** - by communicating and coordinating actions to address and resolve issues which are regional in nature.
- **Reduce conflicts** - by resolving issues before parties engage in litigation, resulting in diverting funds that could have been used to provide facilities and services, unwanted outcomes, and reducing tensions to improve the working relationships of local government, service providers and community organizations in the region.
- **Consistency and predictability** - of plans, development regulations, policies, implementation actions and development approvals between service providers and among neighboring jurisdictions, for residents, businesses and developers that establishes a framework of reasonable expectations and decision-making in the development process.
- **Jurisdictional cooperation –** established for the purpose of providing regional suggestions, standards and development review, it provides adjacent communities with the information necessary to make informed decisions regarding the regional impact of proposed development and encourages and supports the ability of service providers to adequately plan for the expansion of facilities and services, to meet the future needs of residents and development in the area.

2-3.2.1. Tribal Governments

Building on positive relationships with the Pueblos is key to achieving coordinated growth management and efficient service and facility provision. This Plan recommends the expansion of coordination and cooperation between the County and the Pueblos for mutual benefit, recognizing the benefits of information sharing and joint participation in a wide variety of projects that can benefit the community.

Background

Coexistence and cooperation between tribal and non-tribal communities in Santa Fe County was a common occurrence historically. Inter-community relationships occurred because there was a value placed on the sharing of resources and reciprocation to provide for the larger community.

Historically, Tribal governments have had to work with the federal government in order to accomplish their community goals, and there was less interaction with the local governments. As tribal governments became more self sufficient and increased their capacity building tools, the need to work with local governments became more apparent.

Likewise, County governments were insular in their thinking when setting policies and making decisions that had more long range and more regional impacts on the surrounding communities and tribal communities. In some cases, it was the local governments' perceptions that tribes and tribal concerns were the responsibility of the federal government.

There have been increasing efforts through the decades to improve the relationship and strengthen the communication lines between government entities.

Intergovernmental cooperation and communication has occured more frequently not only because communities and governments acknowledged they are geographically connected by the natural environment and landscape, but also because limited resources in the area make it necessary to develop a support system between governments to better serve their communities. In addition, economic development that has occurred by various tribes on tribal land has also had an impact on the way that local governments and tribal governments must work together to provide public services.

Today there are identified areas of mutual concern that will have impacts on the greater community areas. As a society, we are at the point where we need to build upon improved relationships and communication in order to provide for the greater community needs throughout the County, while trying to be as sustainable and resource-conscious as possible.

Existing Conditions

The first regional Intergovernmental Summit with municipal, County and Tribal government entities occurred in 2000 in order to address and solve issues in a regionally-minded manner. This event began to occur annually, with more government entities in the area attending, and Santa Fe County taking the lead as the annual host. Since the first Summit, intergovernmental cooperation was the goal sought. This cooperation would be made possible by creating Memoranda of Understanding (MOU) with the Tribal governments located within Santa Fe County. The first MOU was enacted in 2003 with the Pueblo of Nambe. In 2004 an MOU was created with the Pueblos of Tesuque, San Ildefonso, and Santa Clara. A MOU with the Pueblo of Pojoaque was then enacted in 2005. These MOUs were the impetus to create workgroups centered on complex issues affecting the region.

The principle goals for the creation of the MOUs with the above Tribal governments were to generate a commitment to establishing a positive government-to-government relationship. The primary intention of the MOUs has been:

- Meet together to ensure the intent of agreements are carried out;
- Work together to promote and support regional solutions to issues ;
- Achieve open sharing of information, objectives and desired outcomes of goals;
- Identify issues of mutual concern to the parties that have been developed through previous work sessions; and
- Enter into agreements that promote working together in a spirit of cooperation.

The following initiatives are existing examples where cooperation and the sharing of information occur between Santa Fe County and the Tribal governments through the existence of MOUs and other legislative initiatives:

- Cross Deputizing of Surrounding Local Law Enforcement Officers with County Sheriff's Office

- Configuration of Multi-community County-wide Public Transportation Plan
- Establishment of New Community Specific Voting Precincts
- Planning of New Water and Wastewater Utility Projects to Serve Multi-jurisdictional Areas
- 2009 NM Subdivision Act amendments to allow Tribal notification of subdivision applications
- Land Development Codes Configured in Alignment with Neighboring Governments' Codes
- Partnership Approach to Seek State Funded Projects
- Joint Introduction of State and Federal Legislation
- Establishment of Reoccurring Multi-government Regional Issues Discussion Assemblies

Issues and Opportunities

The following issues have been raised over a period of time, and are on-going issues related to cross-jurisdictional boundaries, relationship building, capacity building and creative problem solving:

- Environmental Protection, including wildlife protection
- Need for Regular Communication
- Prevention and clean-up of illegal dumping
- Roads – maintenance and private claims
- Easements through private and Pueblo lands
- Trespassing issues
- Notification of potential projects that border Tribal communities
- Mapping Issues – sharing data and resolving boundary issues
- Protection of Archaeological/Culturally sensitive areas
- Water/wastewater infrastructure
- Interest and protection of "downstream users"
- Regional agricultural protection
- Economic development
- Renewable Energy collaborations

Continued dialogue and collaboration efforts will need to occur to address areas of mutual concern and the challenges and opportunities that will present themselves in the future. The following are some of the goals that have been expressed as the key to taking a proactive approach to sustainable community development, preservation, and community collaboration in coordination with the Pueblos.

- Extension of high speed/broadband access to rural communities
- Obtain joint funding for emergency response service equipment, training and programs
- Obtain joint funding to assist in future water and wastewater systems in priority areas
- Specific coordination efforts to address DWI prevention and substance abuse.
- Create more community spaces with multi-purposes that both tribal and non-tribal communities utilize together
- Examine boundary issues with multiple parties, including private, Tribal, State, and County landholders
- Support the use of in-place Pueblo and County utilities and infrastructure for future community related uses and needs.

2-4. Adequate Public Facilities and Financing

2-4.1. Levels of Service

Levels of service ("LOS") standards define the County's role as a service provider, and in partnership with other service providers, defines public and private responsibilities for the provision of facilities. In its most simplistic terms, a level of service standard is a locally desired ratio of service and facilities demand to supply. One of the best definitions of LOS is found in the Florida Department of Community Affairs' Administrative Code, which reads,

> "Level of service" means an indicator of the extent or degree of service provided by, or proposed to be provided by, a facility based on and related to the operational characteristics of the facility. Level of service standards shall indicate the capacity per unit of demand for each public facility."[xxix]

Level of service standards for community facilities and services are most commonly presented in terms of the resident population served. Initially, LOS can be determined by investigating the existing levels of service that are provided to the existing resident population. Level of service indicators can be evaluated based on a service provider's LOS goals, performance data provided by other communities and/or professional standards. Levels of service typically are measured and projected in terms of service area population (*e.g.*, two police officers per 1,000 population). LOS also may be based on responses to calls for service. This measure frequently is used for police, fire and EMS services. Based on the level of service standards and the projected population to be served, costs can be projected for facility levels of service.

This concept applies to schools, public facilities, transportation networks, water and sewer, surface water discharge, police, fire, emergency response, parks and recreation, libraries, social services and any other public service provided by local governments. **Map 18** shows the location of existing community facilities.

Qualitatively, levels of service are indicators of the attractiveness of a community to existing and future residents and businesses. Adequate public safety provision, air quality, environmental preservation, recreational and cultural opportunities and accessible open space are just a few of the elements that the County influences that make Santa Fe County a desirable place to live. Counties that provide a high level of services project an image that attracts new residents and maintains property values, ensuring their ability to continue a high level of service provision.

The quantitative aspect of the relationship between levels of service and quality of life can be described in fiscal terms that can be proven empirically. For instance, levels of service for roadways would be described by traffic flow and measurable delays due to congestion. Traffic delays that make it difficult for employees to get to their jobs can result in a loss of productivity, making the region less desirable for workers and businesses alike.

2-4.2. Adequacy and Concurrency

A number of regulatory, fiscal and administrative techniques exist that, if properly employed, allow communities to ensure that development projects are timed, located, designed and financed without negatively impacting the community. "Adequate public facilities" and "concurrency" are two similar techniques that tie development pace and location to the availability of public facilities and services. Both terms refer to land use regulations that are designed to ensure that the necessary public facilities and services, at adopted levels of service required to support new development, are available and adequate at the time that development occurs. An Adequate Public Facilities Ordinance (APFO) establishes level of service (LOS) standards for selected facilities (e.g., road, water, sewer, drainage, parks, community facilities) or services (e.g., police, fire, EMT) that must be in place at suitable and adopted levels of service at the time that the development occurs, often with some phase-in component. Concurrency and adequate public facilities ordinances ensure that the service levels enjoyed by existing development are not diluted below the adopted LOS due to new development.

APFOs control the timing of new development. If infrastructure capacity is limited, an APFO will require phasing of the development until the facilities are available.[xxx] The major objectives of an APFO are:

- To link the provision of needed public facilities and services to the type, amount, location, density, rate and timing of new development;

- To ensure that new growth and development do not outpace the ability of service providers to accommodate such development at established level of service standards; and
- To coordinate public facility and service capacity with the demands created by new development.[xxxi]

Concurrency regulations should be accompanied by a fully funded and prioritized capital improvements program.[xxxii]

Similarly, mitigation measures for alleviating public facility and service inadequacy should also be considered. Phasing, timing or sequencing later permits to ensure they are not issued before roads, stormwater management, fire, police or emergency service needed to achieve the LOS standard are constructed is one such option. Impacts may also be mitigated through the provision of improvements such as pavement widening, turn lanes, access controls or traffic signalization that allow the road network to function more efficiently, adding sufficient capacity to the off-site road system. Concurrency must also be based upon an integrated and comprehensive general plan.[xxxiii]

2-4.3. Funding Facilities and Services

The fiscal implications of providing facilities and services to meet new development demands must be estimated and weighed against the anticipated revenues of areas proposed for development. Fiscal impact analysis should not focus solely on developments with positive cash flow to a particular community or jurisdiction. The negative fiscal impact on adjacent communities or providers, as well as health, safety, environmental or other factors, must be considered and must override project- or community-specific fiscal considerations, and where there are inordinate impacts to the region as a whole, development approval must assure both short-term financial and long-term results in the regional interests.

The quality of life in Santa Fe County is contingent on the County's continued ability to provide quality services at a reasonable cost to taxpayers. If development projects go forward without a plan for recouping increased service provider expenses, existing tax payers subsidize those expenses. To achieve equity and fairness in the funding and provision of public facilities and services, the Sustainable Land Use Development Plan recommends strategies to:

- Enhance the local property and sales tax bases more rapidly than the fiscal obligations for capital facilities, operations and maintenance;
- Ensure that new development funds the costs of capital facilities and services required to serve that new development; and
- Ensure that facilities and services are planned in a way that allows ongoing operations without significant increases in the costs to residents and businesses.

A key component of growth management techniques is maintaining fiscal responsibility and fiscal health. Fiscal stability is a cornerstone of a sustainable community. Existing residents should not suffer a decline in the quality of their services or be unduly burdened by costs of new growth. New residents and business should pay their fair share of the costs associated with extending infrastructure and urban services to new growth areas.

There are a wide variety of methods that can provide local governments with a greater financial capability to ensure the adequate provision of road construction and other infrastructure improvements required by new development. The following programs, which may be authorized under existing laws or may be established by amendments to state law, would help ensure that roads and other infrastructure are designed and constructed to serve development as it occurs. These strategies should be considered possible implementation tools for achievement of Plan goals, objectives and policies.

2-4.3.1. Transportation Improvement Districts

A major source of funding for transportation corridor improvements is the transportation improvement district. In addition, a wide variety of other techniques and districts may be created to fund road improvements or construction. These include neighborhood improvement districts, business improvement districts, special road districts, transportation corporations and special road and bridge taxes. All of these special districts and techniques involve the designation of a geographic area and have statutory powers to raise revenue or impose charges for facilities and services within the defined geographic area to fund road improvements and construction.

2-4.3.2. Special Assessments

Special assessments are fees collected from property owners for tangible public infrastructure improvements that a local government provides and that benefit the properties being charged. Special assessments are used to finance public facility improvements as well as public services.

Special assessments are revenue-raising devices designed to recover the cost of capital improvements that directly benefit properties within a designated "benefit area". They may be collected from development projects. Unlike impact fees and mandatory dedications imposed under a County's police and land use control powers, special assessments may be used to pay for improving existing infrastructure deficiencies.

For instance, in San Diego, special assessments and impact fees are integrated with the City's "tiered" growth management system in order to require new development within the "Planned Urbanizing Area" to participate in the financing of public infrastructure needs.[xxxiv] The tier system divides the City into three areas: (1) the Urbanized Area (UA), (2) the Planned Urbanizing Area (PUA), and (3) Future Urbanizing Areas.

The "Facilities Benefit Assessment" (FBA) is a special assessment applied to new development in the PUA that apportions the cost of traffic, park, library, school, fire and other facilities to each new unit of residential, commercial and industrial development. Payment of the FBA is postponed to the building permit stage and is enforceable by a lien on the property. The FBA was challenged on constitutional grounds and upheld in the California appellate courts.[xxxv] The utilization of the FBA from 1979 to 1983 resulted in a major shift in development to the Urbanized Area, thus achieving one of the major goals of the 1979 General Plan. A similar structure could be used in conjunction with Santa Fe County's tiered land use system, described in the Growth Management Element.

Special assessments are available for capital improvements that "directly benefit" property within a delineated benefit area.

2-4.3.3. Community Facility Districts

Community facility districts are a type of special assessment or special improvement district. Tax exempt bonds can be issued to pay the costs of the improvements, which would be secured by the real property in the area that benefited by the improvement. Properties benefiting from the road improvement would be assessed a fee to pay the principal and interest on the bonds.

2-4.3.4. User or Impact Fees

"Pay-as-you-grow" programs help protect existing residents from growth-related costs. These programs include a variety of techniques that allocate the public costs of development fairly and do not unduly burden existing residents, such as development impact fees and exactions, or provisions for financing infrastructure and services in development agreements.

Communities across the country, including Santa Fe County, have adopted some form of development impact fees pursuant to statute to mitigate the impacts of new growth and maintain consistent levels of service for both existing and future residents. Development impact fees are one-time charges against new development to raise new revenues to pay for new or expanded public facilities necessitated by new development. Impact fees are local efforts to fund the gap between money available to build or expand public facilities and the money needed to do so.[xxxvi]

A road user or impact fee is a payment that a local government requires to provide new or expanded capital facilities to serve a new development. Impact fees typically require the developer to make a cash payment before the development is completed and are based on the cost of the public facility and the nature and size of the development. Local governments use impact fees to finance off-site improvements that benefit the development. Impact fees for transportation improvements must be spent for improvements to the road network that benefit those paying the fees.

The objectives of impact fee programs include:

- to allow traditional general revenue funding to be used for service, maintenance and repair of the existing highway system;
- to spread financial responsibility equitably;

- to maintain planned levels of service; and
- to meet the needs for public facilities and services, the need for which was generated by new development.

2-4.3.5. Exactions and Dedications

Before approving development projects, the County may required the developer to dedicate rights of way for streets within the project and abutting it. Typically, right of way exactions are imposed at the time of zoning or subdivision approval. These mandatory dedications would not be limited to rights of way for local roads, but would include dedications of land for arterials and state highways.

In Dolan v. City of Tigard, 114 S. Ct. 2309, 2319 (1994), the US Supreme Court held that any requirement to dedicate land as a condition of discretionary development approval must be "roughly proportional" to the contribution that development makes to the need for new public facilities. The Court further held that the local government must make an "individualized determination" of the proportionality between the exaction and the impact on public facilities.[xxxvii] At a minimum, there must be some methodology to quantify the impact of the development and the land dedication required to offset that impact. As an alternative to dedicating land to the local government, a property owner may be given the option of paying the city or county a fee. Those funds can then be used for road improvements that benefit the property.

In *Nollan*[xxxviii] and *Dolan*[xxxix] the Supreme Court upheld the use of exactions. Taken together, these cases stand for the proposition that an exaction will be upheld if there is a rational nexus between the need for additional capital facilities generated by the new and development and if the expenditure of the funds collected benefits the new development. This standard has been referred to as the “dual rational nexus test.” In essence, there must be an essential nexus between the nature of the exaction and the stated purpose of the exaction,[xl] and the amount of the exaction must be roughly proportional to the impact that the exaction is intended to mitigate.[xli]

In the context of planning, Nollan and Dolan require that municipalities document the need for development exactions with studies that link the public purpose to be achieved with the nature and extent of the conditions imposed. This is most easily undertaken for on-site exactions, such as subdivision fee requirements and land dedications. The goal of providing adequate public facilities to serve a new development is a recognized valid purpose, and if the exactions will mitigate development impacts proportionally caused by the developer upon whom the exaction is levied, the Nollan/Dolan requirements will be met.

Where exactions are meant to fund off-site facilities called for by several development projects, both the remoteness and proportionality tests must be satisfied by studies 1) showing the future scope of growth, 2) naming the needed facilities, 3) defining facility costs allocated to new growth, and 4) specifying service units and service areas. The results of these studies are then inserted into a funded capital improvements program.

2-4.3.6. Development Agreements

A development agreement is a contract between a local government and a developer, whereby the developer promises to pay for certain on-site or off-site improvements or perform certain obligations for the local government in exchange for some form of discretionary approval by the local government. Development agreements are different from other public contracts because they are executed in conjunction with police power actions regulating the zoning, subdivision or development of private property. A development agreement may require payment for public road improvements or construction or obligate the developer to perform those improvements at its expense.

Development agreements are useful tools for a community because they:

- Provide a mechanism for the County and developers to form agreements, binding on all parties, regarding development, financing and land use of the development project;
- Promote land development regulation by allowing the County to adopt development agreements that include terms, conditions, and other provisions that may not otherwise be able to be mitigated or implemented without the use of a development agreement;

- Promote stability and certainty in development project regulation by providing for the full enforceability of such agreements by all parties;
- Provide a procedure for the adoption of such agreements that ensures the participation and comment of the public and elected officials; and
- Provide a partial mechanism for the financing of all capital facilities and public services as provided for in the Sustainable Land Development Plan and/or Capital Improvements Plan and/or other adopted plans.

2-5. Open Space, Trails and Recreation

While sustainability in terms of open space preservation is a simple and appealing concept, it is difficult to measure. Incremental losses of open space or habitat rarely have measurable or predictable impacts -- it is the cumulative impact of many decisions over time that has more profound effects. This, combined with the fact that developed land is rarely redeveloped as open space, increases the importance of ensuring that adequate land is set aside to maintain the community's environmental integrity.

While all undeveloped land can be considered "open space," this discussion centers on land that is desirable as permanently protected open space because it has certain characteristics that the community values over and above its development potential. For instance, its visual appeal, such as scenic vistas; public safety features, such as steep slopes or fire and flood protection; or cultural or environmental features, such as historic areas or wildlife habitat. As with other facets of planning, balancing the value of development with the value of open space preservation to the community is central to the design and implementation of an open space preservation program. Prioritization of important parcels for preservation should be monitored on an on-going basis.

Open Space is usually considered to be:

- **In a natural or primarily natural state.** Some development of limited intensity is appropriate in specific open space areas such as trailheads and access points for passive recreation or wildlife management purposes.
- **Containing significant features that warrant protection.** Such features should be determined by community values, but may include environmentally sensitive areas, wildlife habitat, migration corridors cultural/historical areas, scenic vistas, visual open space, important recreational areas, water re-charge areas, drainageways or other locally-determined features.
- **Permanently protected from development.** Undeveloped land is not open space unless it is permanently protected from development. The community must understand that private and publically-owned lands may be subject to development unless it takes steps to properly protect important land from development.

Varying degrees of protection apply to existing open space depending on the physical and regulatory development constraints effective on each parcel. For instance, while a parcel in a floodway may be permanently protected from development, some federally-owned lands are not permanently protected. Federal lands may be subject to certain kinds of development, such as mining or access roads, or may be transferred or sold in certain instances. A comprehensive plan to preserve open space in the County should identify the level of protection for existing open spaces, identify and prioritize desired open space, authorize potential tools for open space preservation and implement strategies to achieve multiple open space objectives. As Open Space is incorporated into the land use plan, the County must assume a variety of responsibilities for the management of that land, potentially including property negotiation/acquisition, construction and maintenance of improvements, environmental stewardship, and public safety/education. There are many tools and techniques that may by used to acquire and fund open space and trails, such as conservation easement, cluster development, deed restrictions/covenants, reserved life estate, cash purchase, donation or gift, land exchange, purchase of development rights (PDR), transferable development rights (TDR), estate planning, conservation subdivison development, and intergovernmental agreements (IGAs).

Santa Fe County's assets include abundant natural and cultural resources as well as incredible outdoor recreational opportunities. The open vistas and public lands, parks, trails, and scenic landscapes enhance the quality of life and economic value in the County. Open land and trails attract businesses and tourism and help strengthen communities by providing opportunities for residents to recreate and connect with the landscape and nature.

Within this remarkable setting, population growth and continuing urbanization threaten the County's distinctive landscapes and increase public demand for additional recreation opportunities. Increased population and land consumption can result in conflicts between development and land conservation, including increased demand from residents of growing urban areas for access to recreation and trails.

The Santa Fe County Open Land and Trails Program was created in 1998 and has focused primarily on preserving land in Santa Fe County through acquisition. The County Open Lands and Trails Planning Advisory Committee (COLTPAC), composed of citizens appointed by the Board of County Commissioners, has implemented this approach since 1998. Along with the land preservation and management work of other public and nongovernmental agencies, this effort has been highly visible, and has brought attention to the unique resources available in the County. Since 1998 the Program has moved within the County organization to the Community Services Department and is now called the Open Space and Trails Program.

The original Open Land and Trails Plan (2000) identified its mission "to create a network of cultural, historical, recreational and natural open spaces and trails throughout Santa Fe County to benefit current and future generations." The program aimed to develop open space and trails planning and management based on integration with existing regulations and requirements as well as cooperative efforts between private entities, non-profit organizations, and governmental agencies.

The Open Space and Trails Program mission is "**Connecting the people of our communities to the rural heritage and natural landscapes of Santa Fe County."**

2-5.1. Programming

Currently the Open Space program provides conservation services for approximately 5,600 acres in Santa Fe County, educational programs that connect the public with their environment, watershed and habitat protection, and trail-based recreation. The Open Space program maintains 24 properties ranging in size from 5 to 1,900 acres and assists in the management of 17 County Parks ranging in size from a fraction of an acre to 45 acres in size. In addition, the County maintains approximately 45 miles of built trails. **Figures 2-16 – 2-18** list existing properties, parks and trails. **Map 19** shows the locations of open space and trails.

Figure 2- 16: County Open Space Properties (2009)

Property	# Acres	Public Access	Location	Info
Arroyo Hondo Open Space	87	yes	Greater Santa Fe	
Cerrillos Hills Historic Park	1,113	yes	Cerrillos	Managed by NM State Parks
Edgewood Open space	30	no	Edgewood	
El Penasco Blanco	93	limited	La Cienega	Riparian Restoration Project
El Rancho	6	no	Pojoaque Valley	Protected Archaeological Site
Lamy Open Space	91	limited	Lamy	Docent Led Visits
Little Tesuque Creek	170	yes	Greater Santa Fe	
Los Potreros Open Space	40	no	Chimayo	Traditional Agricultural Use
Madrid Open Space	57	yes	Madrid	
Old Pecos Trail Open Space	5	no	Greater Santa Fe	
Ortiz Mountain Preserve	1,350	limited	Cerrillos	Managed by Santa Fe Botanical Gardens
Rio en Medio Open Space	121	yes	Greater Santa Fe	
South Meadows Open Space	22	yes	Greater Santa Fe	
Talaya Hill Open Space	291	yes	Greater Santa Fe	
Thornton Ranch Open Space	1,899	limited		
La Cieneguilla Open Space	151	limited	Greater Santa Fe	
Santa Fe River Greenway	93	yes	Greater Santa Fe	Includes San Ysidro Park, River at 599, Cerro Gordo, Siler

Figure 2- 17: County Trails (2009)

Trail	Length (in miles)	Info
Santa Fe Rail Trail	14	In use, design and reconstruction in progress
Spur Trail	3	Connects Rail Trail to Community College & Arroyo Hondo Trail
Cerrillos Hills Park	6	NM State Park Management
Talaya Hill	5	Connects to Dale Ball Trails
Arroyo Hondo	9	Easements and alignment completed, not built
Galisteo Basin Preserve	6	Re-routing and mapping easements
Ortiz Mountain Preserve	6	
Santa Fe River Trail	4	Land and Easement Acquisition Phase

Figure 2- 18: County Parks (2009)

Burro Lane County Park	Agua Fria Park
Edgewood Community Park	Chimayo Park
El Rancho Playground	Chupadero Park
Galisteo Community Park	San Ildefonso Ball field
Lamy Community Park	Pojoaque Park
Leo Gurule Park (a.k.a. Valle Lindo)	Cundiyo Park
Rio En Medio playground	Tesuque Pueblo Ball field
Pojoaque Tennis Court	South Meadows Open Space
La Puebla Park	Little Tesuque Creek Open Space
Sombrillo Tennis Court	Stanley Community Park

From 1998 to 2005, program activity was focused on the acquisition of real property. During this time, the role of COLTPAC was to annually evaluate potential properties and determine if the County should acquire them. A General Obligation Bond passed in 1998 for $12 million, followed by another in 2000 for $8 million. These bonds funded the acquisition phase. Additionally, 15 percent of a ¼ cent Gross Receipts Tax for open space capital projects was approved in 2003. In 2008 a $3.5 million General Obligation Bond was passed for use specifically on the County's portion of the Santa Fe River.

During the early phase of acquisition, when COLTPAC had $20 million in funding, the committee reacted to proposals that were submitted by the public, rather than seeking out specific properties identified by a strategic plan to achieve goals such as conservation of environmentally sensitive areas, important wildlife corridors and parcel connectivity. The resulting pattern of County ownership is scattered and disjointed. Promoting a more comprehensive approach, all new applications for purchase are evaluated for criteria including:

Generally:

- Financial considerations,
- Community benefit;
- Protection and conservation value;
- Aesthetics and scenic value; and
- System enhancement.

Specifically:

- Cultural and historical areas;
- Natural areas;
- Recreation value; and
- Trails.

The properties that were purchased with the initial bond money do not lend themselves to one management strategy. Most of the properties were purchased to protect them from threatening development. Some have problems with access and connectivity, while the management of others is challenged by the attitude and perspective of the adjacent community members, who often expect they will have exclusive use of the County property. Consequently, the management plans for many of the properties are incomplete. Eight of the properties are open to the public; four have limited public access. Both elected officials and County residents express frustration over the limited access to the properties.

The focus and the mission of the Open Space Program have evolved are currently focused on the following priorities:

- Cultural Heritage Preservation
- Trails for Recreation and Alternative Transportation
- Protecting Views and Open Landscapes
- Protecting and Restoring Natural Areas
- Outdoor Education and Landscape Interpretation
- Community Stewardship and Partnerships

The Open Space and Trails Program relies on partnerships and collaboration with 76 local, state, and national agencies, associations and non-profits to accomplish its work. It is important to cultivate these relationships and to seek out grants and other creative avenues for funding, but these efforts still take staff time to develop, manage, and implement. At this time the staff is managing 20 design, construction, maintenance, or acquisition projects.

With essentially all of the bond money spent and the shift in mission and priorities initiated by staff, the role of COLTPAC is also changing. The Committee is working with Staff on a draft resolution that will allow applications for acquisition throughout the year and will support more strategic acquisitions to support County-wide long range planning. Staff will continue to evaluate the role of COLTPAC with committee members over the next several months.

The program has prioritized the following projects for the next two years, assuming current staffing levels.

1. Santa Fe River Greenway
   Develop a public greenway and trail system along the Santa Fe River from Two Mile Reservoir to the Waste Water treatment Plant in cooperation with the City of Santa Fe. Acquire land, implement river restoration plans, and construct rail and park facilities.

2. Thornton Ranch Open Space Management and Visitor Programming
   Complete a management plan for Thornton Ranch Open Space in coordination with the effort underway by the Bureau of Land Management to develop a management plan for the Galisteo Basin Archaeological Sites. Develop interpretive programming and construct low impact visitor facilities for managed public access.

3. County Trail Network
   Develop a County-wide trail plan. Acquire, design and construct a major trail network in the central portion of the County including the Arroyo Hondo Trail and the New Mexico Central Trail.

4. Open Space, Trails and Parks Funding and Maintenance
   Develop and institute measures to provide dedicated funding for open space, trails and parks capital improvements, operations and maintenance. Hire additional staff to adequately manage and maintain County open space, trails and park properties.

To address "open space" planning in the context of the Sustainable Land Development Plan, a distinction should be made between public and private open space. Currently the Open Space and Trails Program is responsible for acquiring and managing public open space. However, requirements for the provision of internal open space in development projects and linkages through trails and corridor dedications is essential to improving accessibility and contiguity of high quality places. In order to support the goals and implement the strategies that have been identified through the planning process, it is also important to update the role of COLTPAC in acquiring open space and the criteria for decision making. Specifically, this need becomes apparent in reference to the following:

- Prioritize land for preservation that has access/proximity to water, acequias, public lands, existing preserved land, wildlife corridors or flora/fauna habitat
- Provide open space and trails in the buffer areas between increasing residential densities and public lands
- Ensure that open space is high quality and contiguous. Establish standards for open space dedication.

2-5.2. Staffing

The Open Space and Trails Program was critically understaffed during 2007 and much of 2008. Since fall 2008, Open Space staff has increased to 5, although most of these positions are funded on a temporary basis. Less than 2 full time positions are funded from the County General Fund. Estimates from other Open Space programs recommend 2 FTEs per 1000 acres for adequate management. By this metric, the Santa Fe County program should currently have 10 to 12 staff members. The current strategic plan for Open Space and Trails estimates that to be fully staffed, 20 full time employees would be needed, with an annual budget of $1,375,640 for staffing alone.

Throughout the planning process it is evident that open space and trail acquisition, maintenance and access are a high priority for stakeholders for conservation and recreation purposes, as well as to support general sustainability goals. Funding for appropriate staffing, acquisition, maintenance and program development are necessary.

2-5.3. Trails

Trails are an important community asset, providing both recreational and transportation opportunities for a variety of users. Understanding the types of trail users and their needs and preferences is key to designing a system that is well-used for both practical and recreational purposes. The sidewalks, walking trails, equestrian trails, bike lanes and informal pathways that make up a trail system connect residents to the places they go, such as work, school or a neighborhood business, as well as to their neighbors, as one resident meeting another on a community trail is more likely to spark a personal connection than passing each other on a congested freeway. The social, environmental and public health benefits of a well-designed trail system contribute to a high quality of life and associated economic benefits for the community.

New trails should be connected to new and existing trails in the existing City, creating opportunities for pedestrians, cyclists and equestrians to travel to destinations including schools, parks, natural areas and community gathering places. Unique aspects of the high desert setting will have to be taken into consideration when designing and building trails. Features such as shaded arbors and drinking water stations should be included when appropriate. Public education and outreach regarding trail safety in the desert should also be incorporated into the design of trailheads and other high-use areas. There is an opportunity with the trails system to focus on the ecology of the desert and incorporate design elements and educational components that reference the natural setting of Santa Fe County.

Three basic considerations to understand when discussing a trail system include:

Trail Users. Children, adults, residents and visitors, who might be walking, jogging, biking or rollerblading, or equestrians.

Trail Routes. Trails connect homes, parks, shopping areas, businesses, schools and public lands and other transportation modes. Direct routes are preferable to reach practical destinations, such as schools or shopping, while scenic routes are preferable for recreational users.

Design. Surface materials, width, grades, signage and lighting are some of the design issues to consider when thinking about the trail users and their needs.

2-5.3.1. Trail Users

Commuters. Commuters use the trail system to access specific destinations, such as work, school, shopping and parks. Travelling efficiently and safely from place to place is of key concern, with safety being of greater importance when considering the needs of children walking to and from school. Trails and sidewalks surrounding schools should be clearly marked with safe crossings planned whenever the route intersects a street.

Recreational Users. Recreational use is a very broad category including everything from adult cyclists to young children. The trail system should be designed to minimize the potential for conflict among trail users and be built wide enough in high traffic areas to allow for multiple users and user types. Maximum grades and trail side hazards (such as steep drops) are among the many considerations. Trail-side attractions, such as fitness stations, educational displays/nature areas, park equipment, benches and other amenities can enhance the trail experience. Different surfaces appeal to different users, for instance, in-line skaters preferring smooth, hard surfaces while casual walkers might like a natural surface.

People with Disabilities. People with disabilities are a sometimes overlooked population of trail users, especially those without access to or ability to drive. While not every portion of a trail system is accessible to those with certain disabilities, especially those using walkers or wheelchairs, neighborhood trails and other high use areas can be designed to accommodate many levels of users at little or no additional cost. Considerations should include: smooth, consistent surfaces, wheelchair ramps at curbs, appropriate railings and gentle grades. ADA guidelines should be considered.

Active Adult (55+). Active adult and retirement housing is expected to increase due to the aging of the population. Active adults run the same spectrum of ability and preferences as the general population of trail users, but it is likely that active adults will be heavy users of a comprehensive trails system, using it recreationally and as commuters to work, shopping and social events. As for other user groups, integrating aspects that will appeal to the active adult population, such as benches, lighting, appropriate railings, grades and crossings should be considered.

2-5.3.2. Types of Trails

Arroyos and Acequias. Trails can be incorporated into the design of natural or man-made arroyos and acequias. With the incorporation of trails, these natural features can serve multiple functions as both drainageways and linear parks. Due to the drainage function of the arroyos, this land is unsuitable for more intense development and the dual use of the land for recreation will be a net benefit to the community.

Neighborhood Trails. Neighborhood trails connect homes to schools, parks, and businesses. They also provide recreational "escapes" for walkers and cyclists as well as safe routes to school for children. Neighborhood trails may act as feeder trails to the larger community trail system.

Natural Surface Trails. These trails are for less intensive use and are primarily for recreational use, maintained in a more natural state and suitable for hiking or mountain biking, as well as possible equestrian use. Natural surface trails may also connect to public lands.

Bike Trails. Bike trails can be incorporated into the design of streets in the South the County. A bike trail system can consist of both bike lanes and bike routes. Bike *lanes* are striped on streets and marked with signage, while bike *routes* are low traffic streets suitable for use by cyclists and designated by signage. More about bike trails and lanes is discussed in the Transportation section.

2-6. Natural Resources and Conservation

Since 1980, the County has had policy and plans that recognize that certain lands in the County are fragile, sensitive, or of such high value to the community that they need extra consideration and protection from all kinds of development. The County has generally relied on developers to bring forward this information with applications. The Staff and Commissioners then negotiate to identify and protect conservation areas. This leaves the County and its citizens in a reactive and defensive position, leads to conflict, and often does not result in satisfactory resolution of issues. This Plan supports the proactive identification and protection of sensitive lands, prior to the development application or review process.

Protection of environmentally sensitive areas and maintenance of the rural character and scenic beauty of the County through regulations, education, and code enforcement is key to the implementation of this Plan.

2-6.1. Existing Conditions

2-6.1.1. Ecoregions

An ecoregion is a recurring pattern of ecosystems associated combinations of soil and landform that characterize that region. There are 14 different ecological regions in Santa Fe County. **Map 20** shows the ecoregions of Santa Fe County. Within an ecoregion there are areas where there is spatial coincidence in geographical characteristics associated with differences in the quality, health, and integrity of ecosystems. Geographical characteristics include geology, physiography, vegetation, climate, hydrology, terrestrial and aquatic fauna, and soils, and the impacts of human activity (e.g. land use patterns, vegetation changes). Interlinked ecosystems combine to form a whole that is "greater than the sum of its parts". Looking at ecosystems in an integrated way will help Santa Fe County achieve "multi-functional" landscapes. **Figure 2-19** lists the ecoregions located in Santa Fe County.

The northern area includes Rio Grande flood Plain, north-central New Mexico valleys and mesas with sedimentary mid-elevation forests, crystalline subalpine and mid-elevation forests, and foothills shrublands.

The central area of the County consists of north-central New Mexico valleys and mesas with sedimentary mid-elevation forests, crystalline subalpine and mid-elevation forests and foothills shrublands.

In the Estancia area, the majority of the landscape in the eastern section is central New Mexico plains. In the west, there are small patches of conifer woodlands and savannas and Rocky Mountain conifer forests.

The Galisteo area is diverse, with the majority of the western and middle portions consisting of north-central New Mexico valleys and mesas. In the east, most of the landscape is pinyon-juniper woodlands and savannas. Near Glorieta there is a band of foothill shrublands. The southwestern corner of the basin includes Rocky Mountain forests, conifer woodlands and savannas and a small portion of Albuquerque Basin.

Figure 2- 19: Ecoregions of Santa Fe County

Ecoregion	Acres
Foothill Shrublands	217,346.64
Sedimentary Mid-Elevation Forests	55,802.80
North-Central New Mexico Valleys and Mesas	82,452.48
Rio Grande Floodplain	3,752.66
Crystalline Subalpine Forests	6,508.49
Crystalline Mid-Elevation Forests	9,301.61
Sedimentary Subalpine Forests	3,471.53
Alpine Zone	753.64
Albuquerque Basin	171,481.64
Pinyon-Juniper Woodlands and Savannas	86,118.92
Conifer Woodlands and Savannas	38,689.16
Rocky Mountain Conifer Forests	1,669.79
Central New Mexico Plains	434,005.99
Pluvial Lake Basins	27,351.70

2-6.1.2. Geology and Land Forms

Superficial Geology: The contemporary geomorphologic contours of Santa Fe County originated in the Upper Cretaceous (more than 65 million years ago) and were subsequently altered by erosion, uplifts, mountain forming, volcanic activity, and peri-glaciation effects, such as sedimentation from mountain streams and wind erosion and deposits. **Map 21** shows geology.

The land forms for Santa Fe County range from the upper highlands of the rugged Sangre de Cristo Mountains to the banks of the Rio Grande in the northern areas. Midway, the landscape transitions from the plains at Cochiti pueblo, to La Bajada Mesa, traversing along the Santa Fe River valley towards the foothills at the east. Further south, in the Galisteo Basin, the Cerrillos Hills, and Ortiz Mountains are prominent landforms adjacent to arroyos and flatlands. The southernmost section of the County is the Estancia Basin area with mostly flat land and a few drainage channels flowing south. **Maps 22** and **23** show elevation and slope.

2-6.1.3. Flood Plains/Wetlands/Riparian Zones

The surface water drainage systems also form a regional and local hub of water resources and water-related ecosystems of riparian zones and wetlands in an otherwise arid landscape (see **Map 24**). The riparian and wetlands system of the watersheds serve in particular as a small stepping stone (i.e., an “island”) for waterfowl and other migratory birds that follow the alternative eastern fly routes parallel to the Rio Grande.

Flood hazard areas have been designated by Federal Emergency Management Agency (FEMA) mapping (see **Map 25**). Flood hazard areas are subject to periodic inundation that results in loss of life and property, health, and safety hazards, disruption of commerce and governmental services, extraordinary public expenditures for flood protection and relief, and impairment of the tax base, all of which adversely affect the public health, safety, and general welfare.

These flood losses are caused by development in areas prone to inundation that increase flood heights and velocities, and when inadequately anchored, damage uses in other areas. Uses that are inadequately floodproofed, elevated, or otherwise protected from flood damage also contribute to flood loss. Floodplain and stream connectivity are major elements in

maintaining healthy riparian habitat and off-channel habitats for the survival of fish species and conveyance of floodwaters. If river, floodplains and other systems are not viewed holistically as biological, geomorphological units, this can lead to serious degradation of habitat and increase flood hazards, which, in turn, can contribute to listing of various fish species as threatened or endangered and result in extraordinary public expenditures for flood protection and recovery. Frequently flooded areas, including the 100-year floodplain and the floodway, are mapped on Flood Insurance Rate Maps, or FIRMs.

2-6.1.4. Soils

As with vegetation, desert soils are very delicate and prone to erosion. Minimizing soil erosion is a primary environmental concern. Significant soil erosion negatively impacts surface water quality due to turbidity and sedimentation. Topographical features can be destroyed and damage to transportation facilities can occur. Erosion causes changes to the paths and locations of arroyos and drainage facilities, threatening property and habitat. Within Santa Fe County, soil erosion results from three primary sources of soil disturbance: development activities (subdivision, building and street improvements); abandoned surface mining; and poor grazing management. Unmitigated erosion will adversely impact cultural, natural and economic resources (see **Maps 26, 27** and **28** for soils limitations).

Soils with limitations for agriculture are designated by U.S. Department of Agriculture Land Capability Mapping (**Map 29**). Land capability classification is a system of grouping soils primarily on the basis of their capability to produce common cultivated crops and pasture plants without deteriorating over a long period of time:

- Class 1 soils have slight limitations that restrict their use.
- Class 2 soils have moderate limitations that reduce the choice of plants or require moderate conservation practices.
- Class 3 and below soils have severe limitations that reduce the choice of plants or require special conservation practices, or both.

A number of strategies to reduce and mitigate erosion are set forth in the Sustainable Land Development Plan and should be incorporated into the Sustainable Land Development Code. Best management practices (BMPs) for development and building operations and maintenance shall be employed to control erosion. Buffer zones shall be created along riparian corridors and significant topographical and cultural features that are susceptible to the negative impacts of soil erosion. Development sites must include features to limit stormwater run-off during construction and operation, such as vegetative buffers and limited site disturbance. Improvements to all roads shall employ strong erosion control measures during construction and use.

2-6.1.5. Land Cover/Vegetation

The major vegetative communities in Santa Fe County are the Western Great Plains Shortgrass Prairie, the Inter-Mountain Basins Semi-Desert, Juniper and Pinion Pine Woodlands and Savannas, Ponderosa Pine Woodland, and Rocky Mountain Montane Conifer Forest (see **Map 30**). The Western Great Plains Shortgrass Prairie and Inter-Mountain Basins Semi-Desert vegetative communities predominate at elevations lower than 6,500 feet. Between 6,500 and 7,600 feet, Juniper and Pinion Pine Woodlands and Savannas predominate, and between 7,600 and 8,800 feet, Ponderosa Pine Woodland predominates. Above 8,800 feet, Rocky Mountain Montane Conifer Forest predominates, although Aspen Woodlands are commonly found on south- and west-facing slopes.

2-6.1.6. Habitat and Species

Santa Fe County lies at the convergence of multiple ecosystems; this unique intersection provides for a high level of biodiversity including larger mammals. Natural features which allow for the presence and migration of wildlife should be protected as ecological and eco tourism assets. Overall habitat richness, based on number of vertebrate species, has been evaluated as a part of the Southwest Regional Gap Analysis Project (SWReGAP) analysis that was done by New Mexico State University and a refined analysis of habitat value that NMSU recently performed for the county. The conceptual locations of corridors that are needed to connect major habitat patches have been identified by the New Mexico Game and Fish Department (see **Maps 31** and 3**2**).

Fish and wildlife habitat conservation areas have been designated by Comprehensive Wildlife Conservation Strategy for New Mexico. Fish and wildlife habitat conservation areas perform many important physical and biological functions that benefit the jurisdiction and its residents, including but not limited to: maintaining species diversity and genetic diversity;

providing opportunities for food, cover, nesting, breeding and movement for fish and wildlife; serving as areas for recreation, education and scientific study and aesthetic appreciation; helping to maintain air and water quality; controlling erosion; and providing neighborhood separation and visual diversity within urban areas.

Wetlands and streams are environmentally sensitive and serve numerous natural functions and values. These functions include wildlife and fisheries habitat, water quality protection, flood protection, shoreline stabilization, stream flow, and ground water recharge and discharge (**Map 24**).

The Biota Information System of New Mexico database lists 621 species in Santa Fe County. From that list, amphibians, reptiles, birds and mammals (those taxa categories specified in SWReGAP) are selected that met one or more of the following criteria:

- Federal Endangered or Threatened
- NM Endangered or Threatened
- NM Species of Greatest Conservation Need
- Pueblo Tribes: Cultural Importance

Filtering by these criteria results in 91 species that are then compared against a list of all species in Santa Fe County designated as Demonstrably Secure. Removing the Demonstrably Secure species from the 91 results in the 63 species listed in **Figure 2-20.**

Figure 2- 20: List of Endangered, Threatened, Greatest Conservation Need and Cultural Species in Santa Fe County*

Frog, Leopard,	Northern Hummingbird, Violetcrowned	Tern, Least
Snake, Garter, New Mexico	White-faced Ibis,	Thrasher, Bendire's
Snake, Milk	Nighthawk, Common	Thrasher, Sage
Turtle, Box, Ornate	Nuthatch, Red-breasted	Titmouse, Juniper
Crane, Sandhill	Oriole, Bullock's	Vireo, Gray
Duck, Pintail,	Northern Oriole,	Baltimore Warbler,
Grace's Duck,	Teal, Blue-winged	Osprey,
Warbler, Gray, Black-throated	Duck, Teal, Green-winged	Owl, Barn
Warbler, Yellow	Duck, Wood	Owl, Boreal
Woodpecker, Downy	Eagle, Bald	Owl, Burrowing
Woodpecker, Hairy	Falcon, Peregrine	Owl, Spotted, Mexican
Woodpecker, Lewis's	Falcon, Peregrine, Arctic	Pigeon, Band-tailed
Bear, Black	Flycatcher, Olive-sided	Plover, Mountain
Beaver, American	Flycatcher, Willow,	SW. Plover, Snowy,
Western Bobcat	Goldfinch, American	Ptarmigan, White-tailed
Prairie Dog Gunnison's	Goldfinch, Lesser	Sparrow, Baird's
Lion, Mountain	Goshawk, Northern	Sparrow, Grasshopper
Marten, American	Grebe, Eared	Sparrow, Sage
Pronghorn	Grouse, Blue	Swallow, Rough-winged, N.
Raccoon, Common	Harrier, Northern	Swallow, Tree
Sheep, Bighorn, Rocky Mtn.	Hawk, Ferruginous	Swift, Black
Squirrel, Albert's		

*(Minus Demonstrably Secure Species in Santa Fe County

Santa Fe County provides habitats for twenty four rare plants, which have been designated by the New Mexico Rare Plant Technical Council. These include: *Abronia bigelovii, Astragalus cyaneus, Astragalus feensis, Astragalus siliceus, Cuscuta*

fasciculata, Delphinium sapellonis, Hackelia hirsuta, Mentzelia springeri, Mentzelia todiltoensis, Muhlenbergia arsenei, Opuntia viridiflora, and *Rubus aliceae.*

Native plants and existing groundcover provide important natural habitats, prevent erosion and provide natural storm water runoff filtration and management. Additionally, Native American Pueblos in Santa Fe County harvest native plants for ceremonial and practical use. Desert plants are very sensitive, taking years to establish once planted. Disturbance of a site can permanently destroy native vegetation, reducing habitat and biodiversity. Road construction and other development activity threaten native plants. For instance, roads built in previously undeveloped areas can lead to the spread of exotic plants; traffic spreads the seeds of these noxious weeds. Lists of native plants and invasive species are included in the **Appendix.**

Depletion of water supplies and disruption to wildlife corridors and crucial habitat must be prevented in order to protect native fish and wildlife. Provision of a connected critical mass of habitat must be accomplished to provide a viable ecosystem for wildlife. Preservation of connected open space and riparian corridors is a key element of wildlife protection. Monitoring is essential for assessing the impacts of development, as well as whether current management actions are effective.

2-6.2. Environmentally Sensitive Areas

As a part of the current Growth Management Strategy update, staff has researched and mapped Environmentally Sensitive Areas, a concept recommended in the 1999 Growth Management Plan, in order to:

1) Identify natural areas where development may endanger the health, safety and welfare of citizens or of County services; and
2) Identify areas and lands where actions by land use development may damage the cultural and environmental resources that define Santa Fe County and are the basis of its economy and culture.

Identification of the Environmentally Sensitive Areas will give rise to appropriate land use, zoning, and site development strategies to be considered for these designations. The following categories constitute the Environmentally Sensitive Areas:

- **Ecologically Critical Areas**: Maps locating wetlands, critical aquifer recharge and contamination vulnerability areas, severe soils limitations, steep slopes, significant fish and natural wildlife habitat.
- **Perceptually and culturally critical areas**: Scenic priority areas, scenic roads, historic and cultural resources.
- **Resource production critical areas**: Agriculture and grazing lands; mineral, oil, and natural gas extraction areas.
- **Natural-hazard critical areas**: Flood hazard areas, wildfire hazard areas, and geologic hazard areas.

Analysis of Environmentally Sensitive Areas (ESA) Criteria:

- ***Ecologic value****:* What is the function and qualitative value in the landscape?
- ***Utility value****:* How the resource is used by the community?
- ***Economic value****:* How much dollar value the resource provides?
- ***Aesthetic value****:* How much the resource is valued for its qualitative importance, notwithstanding its economic value?

Environmentally Sensitive Areas were used to create a map of Environmental Suitability for Development (see **Map 10**), which was then used to create a map of Total (Environmental + Locational) Suitability for Development (see **Map 11**). Both the Environmental and Total Suitability Maps were used, along with about a dozen other factors (including particular severe development constraints) to create maps showing the extent of proposed Growth Management Tiers.

Environmentally sensitive areas perform key functions that protect and enhance the environment and protect the public from hazards. The beneficial functions and values provided by environmentally sensitive areas include, but are not limited to:

- Water quality protection and enhancement;
- Fish and wildlife habitat;
- Food chain support;
- Flood storage, conveyance, and attenuation (the slow release) of flood waters;
- Ground water recharge and discharge;
- Erosion control and wave attenuation;
- Protection from natural hazards;
- Historical, archaeological, and aesthetic value protection, and;
- Recreation and open space.

Identifying the functions and values of local critical areas is essential in defining the purpose of an environmental resource protection program. Each environmentally sensitive area performs different functions and their protection is essential to protect the public's health and safety, and can be used to comply with state and federal laws. If the functions of environmentally sensitive areas are not protected now, attempting to restore them in the future is likely to be costly, if not impossible.

2-6.3. Air Quality

The Santa Fe/Espanola area ranks number one as far as the top twenty five cites in America with lowest Year-Round Particle Pollution (Annual $PM_{2.5}$) according to the American Lung Association State of the Air 2004 report. The study included a Grade of A for the County based on a three year average.

Air quality is a major environmental health issue, particularly in the when weather conditions trap pollutants close to the ground. Vehicles and other mobile sources powered by combustion (such as lawnmowers) are major causes of air pollution. Santa Fe County experiences days of ozone non-attainment by the U.S. Environmental Protection Agency (US EPA)." Non-attainment may increase as increased VMTs and climate change compound to impact ground air conditions. Public health suffers in the form of increased asthma rates and respiratory disease. Economic health suffers as employers look to cleaner regions to locate.

Regional sprawl is a significant contributor to decreases in air quality.[xlii] Conversely, locating industry in existing urban centers and requiring compact urban form significantly contributes to reductions in emissions and VMT.[xliii] Studies in California and Oregon have estimated NOx and CO emissions reductions of 3-7% by the use of smart growth techniques including but not limited to mixed use and clustering.[xliv] While transit-supportive land use is the optimal development form for reducing air quality, it is unrealistic to expect all development to occur in transit influenced areas due to financial and market constraints.[xlv] Accordingly, sustainable communities use a combination of techniques to address the relationship between land use and air quality. Compact development and mixed use land use patterns, coupled with mechanisms to set aside open space, can help alleviate air quality problems by reducing vehicle miles traveled (VMT).

State and federal land use, transportation, environmental and agencies recognize land use control strategies as a mechanism to reduce emissions and to secure planning and funding approval. Land use mechanisms including parking management programs, area-wide ride-share incentives, improved public transit, bicycle and pedestrian measures, and park-and-ride programs are expressly recognized as transportation control measures in the Clean Air Act.[xlvi]

The County can support achievement of clean air goals by encouraging development in new and infill locations that can be efficiently served by transit, rail, shipping and highway infrastructure, and is near to a variety of commercial, industrial and residential land uses. This prevents the need for excessive transportation and commuting patterns for both employees and commercial transport. This reduction in VMT will enhance the region's opportunity to achieve higher air quality standards.

2-6.3.1. Impacts of Vehicle Miles Traveled (VMT)

Reduced VMT will lead to a direct saving to the community for roads and highways. These cost savings are manifested in several different ways. First, compact development (the infill location of the facility) requires fewer lane-miles of roadways

to serve than less efficient, sprawl development patterns. By reducing road lengths, fiscal impacts for capital costs are reduced. Further, environmental impacts are reduced because compact development patterns require significantly less impervious surface.

Second, the reduced impervious surface coverage produces savings in roadway maintenance. As cars and trucks travel longer distances, increased demands are placed on pavement, drainage and other maintenance needs. These increased demands occur over increasingly longer distances. Federal Highway Administration data indicate that over 70% of the nation's roads are in poor, mediocre or fair condition.[xlvii] The diversion of road monies to capital costs diverts monies available for maintenance. These include costs not only to expand and widen roads, but also to add turn lanes to service uncontrolled growth along collector and arterial roads.[xlviii] The reduced road mileage and impervious surface resulting from the close-in Primafuel location avoids this spiraling effect of capital expansion coupled with deferred roadway maintenance.

Third, compact development patterns minimize the growth inducing impacts of new development. These include minimizing new highways to other locations, and the phenomenon of "induced travel." Induced travel refers to increase in vehicular travel produced by an increase in highway expansion. A 1997 study identified a 0.6 – 0.7% increase in vehicle miles traveled on state highways for each 1 percent increase in highway miles.[xlix] This increase can offset the capacity of the incremental highway expansion. Compact development patterns more effectively utilize increases in roadway capacity by providing realistic access to alternative travel modes.

Finally, the environmental impacts of roadway expansions are well documented. These include: degradation of air quality, impairment of water quality associated with deposition of air pollutants, greenhouse gas emissions, traffic noise, and water quality impacts from activities associated with vehicle use such as oil spills.[l] Impervious surfaces collect pollution from the atmosphere, pollution and other sources, contribute to stream warming and impair stream biodiversity.[li] Smart growth patterns that minimize road construction not only avoid these impacts, but also free up land for green infrastructure, such as greenways.

The fiscal benefits of compact development and the costs of sprawl are well documented.[lii] Compact development patterns reduce response times and energy costs for public safety and services such as police, fire, and emergency management. In turn, this allows service providers more time to respond effectively to other events. More effective use of infrastructure also translates into cost savings for the service providers.

2-6.3.2. Dust Mitigation

Dust mitigation involves paving roads. The benefits to air quality would be a significant reduction in dust generated by traffic on dirt roads. Consideration should be given to paving only those collector roads that are located near populated areas and those that received heavy traffic and excessive dust because of high cost of paving.

The environmental benefits would reduce long term dust emissions from vehicle traffic throughout Santa Fe County but there would be some shorter term increases in emissions associated with asphalt production, paving, and the construction equipment paving the road itself.

2-6.4. Solid Waste

Current recycling programs include eight recycling drop off sites located at county transfer stations throughout the County: Eldorado, Jacona, La Cienega, Nambe, San Marcos, Stanley, Tesuque, Rancho Viejo. The transfer stations accept appliances(non-Freon), scrap metal, aluminum & steel cans, aluminum foil, motor oil, rechargeable batteries, corrugated cardboard, newspaper, mixed paper, phone books, plastic #1 & #2 bottles, glass, tires, and yard waste. The recycling centers are relatively new, with data only available for 2008. **Figure 2-21** shows the amount of recycling occurring at each of the eight transfer stations.

Figure 2- 21: 2008 Recycling Data

Station	Cardboard	Mixed Content	Glass	Total (tons)
Eldorado	105.3	262.19	148.01	515.50
Jacona	34.09	55.59	39.45	129.13
La Cienega	31.67	53.19	13.78	98.64
Nambe	5.32	16.04	10.78	32.14
San Marcos	21.46	46.6	45	113.06
Stanley	8.48	12.37	11	31.85
Tesuque	15.75	22.04	24.72	62.51
Rancho Viejo*	4.9	21.34	5.65	31.89
Totals	**226.97**	**489.36**	**316.08**	**1014.72**

*Rancho Viejo Recycling Center does not include full year

2-6.5. Environmental and Resource Protection Standards

Figure 2-22 provides an overview of potential environmental protection tools and techniques.

Figure 2- 22: Environmental Protection Techniques

Technique	Description	Related Methods	Purpose	Implementation
Performance standards for environmentally sensitive lands	▪Protection of natural processes such as flooding, stormwater runoff and groundwater recharge. ▪Prevent development on sensitive lands and in sensitive resource areas	▪Performance Zoning ▪Overlay Zones (e.g., floodplains, slopes, habitat, hazards) ▪Corridor Designation ▪Conservation/ Subdivision Easements ▪Stormwater Management Standards	▪Environmental Resource Protection ▪Hazards Mitigation ▪Land Use Efficiency ▪Parks and recreation, trails and open space provision	▪Plan should identify and map environmentally- sensitive lands ▪Plan should designate permissible development by type, density/ intensity; etc. ▪Plan should identify equity based preservation strategies where appropriate
Critical areas designation	▪Environmentally sensitive areas where the public interest extends beyond the local jurisdiction.	▪Overlay Zones (e.g., floodplains, slopes, habitat, hazards) ▪Corridor Designation ▪Conservation/ Subdivision Easements	▪Prevent environmental degradation ▪Promote public health, safety and welfare ▪Preserve open space ▪Provide natural areas and greenbelts	▪Plan should identify and map environmentally-sensitive lands. ▪Plan should designate permissible development by type, density/ intensity; etc. ▪Plan should identify acceptable mitigation strategies.
Development of regional impacts regulations (DRI)	▪Provides for special review of large scale developments which have impacts beyond the local jurisdiction.	▪Intergovernmental Agreements (IGA) ▪Development Regulations ▪Adequate Public Facilities Ordinance (APFO) ▪Impact Fees ▪Concurrency	▪Ensure proper level and scope of review of large-scale projects ▪Service / land use efficiency ▪Parks and recreation, trails and open space provision ▪Adequate and available public facilities	▪Plan should establish the thresholds (e.g., number of dwelling units, square footage of non-residential development, number of parking spaces) that would trigger DRI review. ▪Plan should determine standards by which to measure the impacts of development.
Pollution controls	▪Air and water pollution standards ▪Stormwater management standards	▪Development Regulations ▪Performance Standards	▪Prevent environmental degradation ▪Protect the public health, safety and welfare	▪Plan should reference key federal and state standards and requirements. ▪Plan should recommend implementation methods.
Transportation demand management	▪Requires developers and existing employers to implement measures such as staggered work hours, carpooling, parking management, park and ride lots, and facilitating the use of alternative transportation modes to alleviate traffic congestion.	▪Adequate Public Facilities Ordinance (APFO)	▪Adequate and available public facilities ▪Reduce traffic congestion	▪Plan should establish roadway, intersection, and transit Levels of Service (LOS) standards.

2-7. Archaeological, Historic, Cultural and Community Resources

In order to preserve and enhance the unique heritage of the Santa Fe County, it is essential to preserve historic and cultural sites, landmarks and archaeological districts. Such sites, landmarks and districts include, but are not limited to, structures which either are designated by the official register of cultural properties maintained by the New Mexico Cultural Properties Review Committee, or are properties which may contain historic or pre-historic structures, ruins, sites or objects. Desecration or destruction of these resources would result in an irreplaceable loss to the public of their scientific, educational, informational, or economic interest or value.

The historic, cultural and archeological resources in Santa Fe County draw visitors to the area, making historic preservation an element of the County's economy. Historic preservation aims to identify, preserve, and protect sites, buildings, and structures that have significant cultural, social, economic, political, archaeological, or architectural history. The social and cultural benefits to historic preservation are numerous; it can revitalize neighborhoods and instill pride in the community. Preservation is also associated with sustainability, as it encourages the use of existing buildings and sites as well as their infrastructure, rather than building new structures in greenfields. By taking advantage of existing infrastructure through adaptive reuse (using historic buildings for new purposes), preservation reduces the environmental toll of growth.

Historic preservation also increases and encourages heritage tourism. The National Park Service identifies heritage tourism as "traveling to experience the places, artifacts, and activities that authentically represent the stories and people of the past and present." From an economic perspective, a study by the Travel Industry Association of America found that people who engage in historic and cultural activities do more, spend more, and stay longer than other types of U.S. travelers[liii]. While on vacation, visiting historic and cultural sites ranks second only to shopping, which underscores the economic importance of preservation.

2-7.1. Archaeological and Historic Resources

All areas having known or probable archaeological sites designated as Archaeological Districts have been prepared under the direction of the New Mexico State Historic Preservation Division, and are based upon a data base maintained by that Division (**Maps 33 and 34**). In addition to the State Preservation designation of archaeological sites, the Galisteo Basin Archaeological Sites Protection Act was enacted on March 14, 2004 as Public Law 108-208 108 of the United States.

The Act stipulates protection of archaeological sites in the Galisteo Basin recognizing that the Galisteo Basin and surrounding area of New Mexico is the location of many well preserved prehistoric and historic archaeological resources of Native American and Spanish colonial cultures. These resources include the largest ruins of Pueblo Indian settlements in the United States, spectacular examples of Native American rock art, and ruins of Spanish colonial settlements. This cache of archaeological resources are being threatened by natural causes, urban development, vandalism, and uncontrolled excavations. The purpose of this Act is to provide for the preservation, protection, and interpretation of the nationally significant archaeological resources in the Galisteo Basin in New Mexico. **Figure 2-23** includes the Galisteo Basin Archaeological Protection Sites enumerated in the Act. When funding becomes available, the general management plan for the sites is to be developed in consultation with the Governor of New Mexico, the New Mexico State Land Commissioner, affected Native American pueblos, and other interested parties. To date the act has not been implemented since funding has not been provided.

Figure 2- 23: Galisteo Basin Archaeological Protection Sites

Site	Acres
Arroyo Hondo Pueblo	21
Burnt Corn Pueblo	110
Chamisa Locita Pueblo	16
Comanche Gap Petroglyphs	764
Espinoso Ridge Site	160
La Cienega Pueblo & Petroglyphs	126
La Cienega Pithouse Village	179
La Cieneguilla Petroglyphs/Camino Real Site	531
La Cieneguilla Pueblo	11
Lamy Pueblo	30
Lamy Junction Site	80
Las Huertas	44
Pa'ako Pueblo	29
Petroglyph Hill	130
Pueblo Blanco	878
Pueblo Colorado	120
Pueblo Galisteo/Las Madres	133
Pueblo Largo	60
Pueblo She	120
Rote Chert Quarry	5
San Cristobal Pueblo	520
San Lazaro Pueblo	360
San Marcos Pueblo	152
Upper Arroyo Hondo Pueblo	12
Total Acreage	**4,591**

The Secretary of the Interior is directed to administer archaeological protection for sites located on Federal land in accordance with the provisions of this Act, the Archaeological Resources Protection Act of 1979 (16 U.S.C. 470aa et seq.), the Native American Graves Protection and Repatriation Act (25 U.S.C. 3001 et seq.), and other applicable laws, in a manner that will protect, preserve, and maintain the archaeological resources and provide for research thereon.

The Secretary has no authority to administer archaeological protection sites which are on non-Federal lands, except to the extent provided for in a cooperative agreement entered into between the Secretary and the landowner.

It is clear that protection of these resources is not solely a Federal undertaking and must also be achieved through local means and intergovernmental cooperation. This Plan recommends that Santa Fe County should proactively approach

Federal legislators and administrators to fund a Galisteo Archaeological Site Management Plan, as provided for in Public Law 108-208. The County should work with the Pueblos, Department of Indian Affairs, Department of Cultural Resources, Tourism Department and landowners to develop and implement the management plan. The plan should fully document the location, nature, condition and preferred preservation techniques for the sites. The management plan should include specific actions and regulations to minimize soil and other disturbances within the environs of specific archaeological sites. Once the management plan is developed, local regulations should be amended to implement development and erosion related provisions. Implementation of the management plan may be funded in part through historic preservation funding through the New Mexico State Historic Preservation Office.

In addition to the twenty-four designated sites, there is a need to continue to search for Native American and Spanish colonial sites. Additions to or deletions from the list can only be accomplished by an Act of Congress.

The sites of significance in the Galisteo Basin are not only of historic importance. Members of Native American Pueblos throughout the County visit the Galisteo Basin on a regular basis to participate in cultural and religious ceremonies and gather plant material to be used ceremonially. It is of utmost importance to the Pueblo members to protect historic sites, preserve the sanctity of unmarked burial areas, preserve places of importance for ceremonies and prevent the loss of important wildlife and vegetation areas. Protecting the vital groundwater of the Galsteo Basin is also of utmost importance, as it is used ceremonially and is necessary for the preservation of plant, animal and human life in the Basin.

One of the primary challenges in protecting these sites is that only a fraction of sites have been surveyed, documented and mapped. It is accepted that the majority of important sites have not been identified and recorded, and that as development activities proceed in the Galisteo Basin area it is likely that new sites will be “discovered” and unearthed. The County must assess, identify and protect important cultural resources before and during exploration, construction and production phases. As findings are documented and mapped, it is important to add this data to a County-wide data base in order to maintain an updated record. This Plan establishes policies and strategies to identify, preserve and protect archaeological, historic and cultural resources.

Historic sites are located throughout the County. **Figure 2-24** lists the places in the County that are listed on the National Register of Historic Places.

Figure 2- 24: National Register of Historic Places (Santa Fe County)

Sites
Barrio de Analco Historic District
Don Gaspar Bridge
El Puente de Los Hidalgos
El Santuario de Chimayo
Fairview Cemetery
Glorieta Pass Battlefield
Jones, Everret, House
Kelly, Daniel T., House
National Park Service Southwest Regional Office
New Mexico Supreme Court Building
Palace of the Governors
Route 66 and National Old Trails Road Historic District at La Bajada
San Lazaro
Santa Fe Plaza
Schmidt, Albert, House and Studio
Seton Village

2-7.2. National Heritage Area

A "national heritage area" is a place designated by the United States Congress where natural, cultural, historic and recreational resources combine to form a cohesive, nationally-distinctive landscape arising from patterns of human activity shaped by geography. These areas tell nationally important stories about our nation and are representative of the national experience through both the physical features that remain and the traditions that have evolved within them. It encompasses a mosaic of cultures and history, including eight Pueblos and the descendants of Spanish ancestors who settled in the area as early as 1598. The Northern Rio Grande National Heritage Area authorized by Congress, October 12, 2006 (Citation: Public Law 109-338, 120 Stat. 1783), stretches from Santa Fe to Taos, and includes the counties of Santa Fe, Rio Arriba and Taos.

Within the boundaries of Santa Fe County, there are many significant historic sites and a cultural landscape that reflects long settlement of the region. Planning staff from the County are participating in the management/environmental assessment of the three county areas that will eventually lead towards the creation of a cultural resource management plan.

2-7.3. Visual Resources

Santa Fe County is filled with a variety of visual resources, ranging from small, definable places to vast, almost limitless plains and vistas. Some of the County's most significant resources are the views from the Turquoise Trail Scenic Byway (State Highway 14). This highway offers a wonderful view of the basin for motorists who travel to and from Santa Fe and Albuquerque and make stops at local communities and tourist attractions (see **Map 35** for visual resources).

The Santa Fe County Visual Resources Inventory and Analysis, October 1995 report presented the following findings:

1) Scenic places valued by the public include: Major landforms such as the Sangre de Cristo, Ortiz, South and San Pedro Mountains; less well-known scenic areas, such as Diablo Canyon, Lamy train station and village, and Devil's throne near Waldo.
2) Scenic Vistas: important scenic points, such as those from Galisteo toward Ortiz and San Pedro Mountains, From 1-25 coming north up La Bajada looking toward Santa Fe and the Sangre de Cristo Mountains, and the 360-degree views from Tetilla peak near La Bajada.
3) Scenic roads and trails: scenic roads and trails, such as the El Camino Real, Hyde Park, turquoise Trail (Highway 14), segments of Highway 285, 41, and I-25, and trails along Rio Medio and Rio Frijoles.

Because of its open landscapes, vast panoramas, and pronounced topography, the scenic quality of Santa Fe County as a whole is very vulnerable. Maintaining the integrity of view sheds is a priority with regard to tourism and the movie industry. This means that if development is not carefully planned it could easily degrade the County's scenic beauty and economic vitality.

2-7.4. Scenic Roads and Byways

Scenic Byways in Santa Fe County include the Turquoise Trail National Scenic Byway, Santa Fe National Forest Scenic Byway, El Camino Real National Scenic Byway, and the Santa Fe Trail National Scenic Byway.

2-7.4.1. Turquoise Trail

The uniqueness and beauty of the Turquoise Trail makes all who travel the Trail want to preserve this treasure. The founding members of The TTPT took this calling a step further by developing a stewardship organization (which is a 501c3) for the Trail and its communities. The mission of the Trust is to preserve and enrich the environmental and cultural vitality of the Turquoise Trail National Scenic Byway, through education and development of public awareness. The following goals were set to accomplish this task: to promote public education to develop an awareness of the issues concerning the Trail, to facilitate coordination with organizations, businesses, state, county and local agencies to develop long term planning strategies for the Trail, and to facilitate coordination with the communities along the Trail to develop a Turquoise Trail community. The New Mexico Department of Tourism recognized the TTPT is the organization to implement the Corridor Management Plan (CMP). The CMP is the founding document that established the Trail as a National Scenic Byway. The Trust was also given the honor and responsibility to be the project workshop managers for the 2007 Scenic Conservation Workshop by the facilitators Scenic America Byways of Washington DC and Americas' Byway of Minnesota. The Turquoise Trail was the focus of this workshop.

2-7.4.2. Route 66

Route 66 was created in 1926 as part of the nation's first system of federal highways[liv]. Linking Chicago to Santa Monica, Route 66 was the shortest, best-weather route across the country, and it achieved its iconic status as the most famous highway in America though literature, film, television, and song.

The route was decommissioned in 1985 and traffic was diverted to the interstates, and many of the locally-owned establishments that catered to travelers and gave the Route its character went into decline. In 2001, Congress recognized the significance of Route 66 through the creation of the National Park Service Route 66 Corridor Preservation Program, a federal program of technical and financial preservation assistance. Along the Route, significant buildings and businesses are threatened by economic hardship, deferred maintenance, development pressures, and a lack of awareness of the importance of these recent-past resources. Individual states, private and public organizations and individuals have also taken action in recent years to protect the Route.

Route 66 has been named to the World Monuments Fund 2008 Watch List of 100 Most Endangered Sites. In particular, motels on Route 66 are particularly threatened and are listed as a category to the 2007 America's Eleven Most Endangered Places List by the National Trust for Historic Preservation. According to the National Park Services, these listings bring important attention to Route 66 around the nation and the world, raising awareness of its significance, history, challenges and successes.

2-7.5. Community Character and Design

The design of public and private places, including street, sidewalks, buildings and open spaces influences how we interact with our environment. Whether we walk or drive, linger or hurry, feel safe or look over our shoulder, is directly influence by the quality and design of our surroundings. A public space can invite you to sit and relax, or can make you feel open and exposed. The following section describes various techniques and programs that can be implemented in the County to maintain and enhance the high quality public realm and private development. These techniques can be modified to apply to rural areas, small communities and development in planned growth areas.

2-7.5.1. Land Use Compatibility

One of the primary purposes of the planning process is to ensure compatibility among various land uses in order to preserve and protect the health, safety and general welfare of the populous. Future land use planning provides predictability and security by protecting property values and public and private investments in property improvements. Land use compatibility provides compatible edges between communities, ensures adequate transportation network capacity and establishes connectivity between existing and new development.

Key components of land use compatibility include the intensity of development and how transitions between uses are addressed. Intensity of use is measured by density in residential zones – typically dwelling units per acre. In commercial areas, intensity is typically measured by floor area ratio (FAR), which compares the area of a building's footprint on a lot to the amount of total area that the building is allowed to encompass. A higher FAR ratio indicates a more intense land use.

Land use compatibility issues include how well a proposed land use achieves the goals of the Sustainable Land Development Plan, if there are adequate facilities to serve the proposed use, and how performance standards can be used to promote employment and economic growth while protecting residential areas from noise, traffic, diesel fumes and brownfield sites.

2-7.5.2. Site Design

Site design plays the most significant role in assuring land use compatibility. Factors must include transitioning between land use types, intensities, and densities using buffers and floor area ratios; conserving environmental assets using standards to preserve open space and to limit impervious surfaces; providing adequate vehicular and pedestrian traffic circulation and connectivity; mitigating potential nuisances, such as signage, excessive noise, smoke, heat, light, vibration or odors detectable to human senses off the premise; and, designing for public safety.

2-7.5.3. Form-Based Regulations & Design Guidelines

Policies and strategies for extending the development patterns and characteristics of traditional and contemporary communities, infill, redevelopment and planned development opportunities were discussed during the Charrette process and in the community plans. Form-based regulations and design guidelines are one potential implementation tool that can be used to achieve desired development patterns and design elements. Form-based regulations are ordinances geared toward regulating the design of a structure rather than the use of that structure, which is what traditional zoning ordinances are meant to accomplish. The use of a structure still plays a role in a form-based regulation, but its role is subservient to that of development character and intensity. It is often noted in thriving urban areas (whether they be walkable small towns or larger cities) that many buildings change their use repeatedly over time, or contain a variety of uses, but they still fit within the larger context of the area because of their design characteristics. This is the key premise of form-based codes. The "Smart Code" is a particular form-based code that has been employed in areas across the country. Much like architectural design standards, form-based or Smart Codes can be applied to a community as a whole, or to a specific area, such as a community, corridor or historic neighborhood.

2-7.5.4. Walkability

The physical condition of streets, sidewalks, utilities, public spaces and other infrastructure often provides visitors with their first impression of a place and sets the tone for the level of maintenance of private property. High quality streetscapes enhance the community identity and encourage pedestrian activity, adding vitality to commercial and residential areas. Pedestrian amenities make walking and biking attractive for recreation and travel. Such amenities include:

- Sidewalks and bike lanes;
- Street furniture: benches, trash receptacles, bicycle racks, etc.;

- Street trees and street lights;
- Other public spaces, such as plazas and squares;
- Dedicated public access easements; and
- Public art.

This Plan includes policies and strategies for improving the aesthetic quality of Santa Fe County's gateways, corridors and other public spaces to reflect the high quality of life and pride of community. Sidewalks and trails are discussed further in the Transportation section.

Obesity and related health problems, such as diabetes and heart disease, are a widespread public health issue that dominate media and public health campaigns across the nation. Obesity-related health problems result in increased health care costs and reduced productivity, as well as a possible decline in quality of life. Walking has been touted as one of the easiest, most affordable and accessible strategies for improving public health. Provision of adequate infrastructure and destinations to support walkability is key to achieving public health benefits.

2-7.5.5. Complete Streets

Complete Streets, context sensitive design and green streets are similar concepts that promote a more comprehensive approach to the design and function of roadways. The key premise is that roadways should be designed and operated to enable safe access for all users, including pedestrians, bicyclists, motorists and bus riders of all ages and abilities. Streets should be engineered to meet the demands placed on the roadway, but should be done so in a way that minimizes negative impacts and recognizes the character and function of the surrounding area. For instance, even though a downtown street may be heavily travelled, it should not be designed to function like a high speed arterial.

Consideration should include:

- Consider the needs of all users, including pedestrians, bicyclists, transit vehicles and users, and motorists, of all ages and abilities;
- Create a comprehensive, integrated, connected network;
- Recognize the need for flexibility in design dependent upon the context of the roadway and the character and design of surrounding development;
- Consider exceptions to established standards to enhance safety, promote traffic calming and walkability or achieve other objectives;
- Seek opportunities to involve the community in the design of roadways;
- Direct the use of the latest and best design standards; and
- Ensure that streets fit in with context of the community.

Further discussion in the Transportation section.

2-7.5.6. Safe Routes to School

According to the Federal Highway Administration, the number of school children that walk or ride a bike to school has dropped from 50% in 1969 to less than 15% today. This is particularly alarming in consideration of the rising rates of childhood obesity and the associated chronic health disorders, including Type II diabetes and asthma. Aside from the public health concerns of a less physically active school-age population, the number of children who cannot walk to school due to safety concerns is problematic in terms of the increasing costs of fuel for cars and busses. An additional concern is that as more children are driven to school, the increased traffic and air pollution around schools makes it more challenging for the remaining walkers and bike riders to travel safely.

Parents repeatedly identify safety as the number one reason their children ride in vehicles. Safe Routes to School (SRTC) is a national program that addresses the issues that prevent students and parents from utilizing transportation alternatives. The first Safe Routes to School (SRTC) program in America began in New York City in 1997, and in 2005, Congress dedicated $612 million dollars towards the SRTC Program. Schools provide a unique opportunity to educate students as well as provide school-based walking programs where students can walk safely in supervised groups. The SRTC Program is having success in communities around the nation and is expected to continue to grow.

While children in rural communities are not necessarily within safe walking distance from school, development in planned growth areas and communities should incorporate safe route concepts. To promote safe routes to school and the quality of the overall pedestrian environment, the County should include specific design components for new and existing facilities, parks, schools and other community gathering places, such as pedestrian crosswalks, sidewalks and bike trails, signage, schools near to neighborhoods, traffic calming measures, pedestrian refuges and other techniques, including community education.

2-7.5.7. Crime Prevention Through Environmental Design

Proper design of the physical environment can be used to reduce opportunities for criminal activity to occur and improve public perceptions of safety and well-being. When residents feel safe in their community, they experience a higher quality of life and the community becomes more attractive for investment of all types. Crime Prevention Through Environmental Design (CPTED) uses four physical design strategies, as described below, to create safer neighborhoods, shopping, recreation and business areas, as well as public spaces. Encouraging these principles through the development review process may contribute to great comfort and perceptions of safety.

Four Strategies of Crime Prevention Through Environmental Design[1]

- Natural Surveillance - A design concept directed primarily at keeping intruders easily observable. Promoted by features that maximize visibility of people, parking areas and building entrances: doors and windows that look out on to streets and parking areas; pedestrian-friendly sidewalks and streets; front porches; adequate nighttime lighting.
- Territorial Reinforcement - Physical design can create or extend a sphere of influence. Users then develop a sense of territorial control while potential offenders, perceiving this control, are discouraged. Promoted by features that define property lines and distinguish private spaces from public spaces using landscape plantings, pavement designs, gateway treatments, and "CPTED" fences.
- Natural Access Control - A design concept directed primarily at decreasing crime opportunity by denying access to crime targets and creating in offenders a perception of risk. Gained by designing streets, sidewalks, building entrances and neighborhood gateways to clearly indicate public routes and discouraging access to private areas with structural elements.
- Target Hardening - Accomplished by features that prohibit entry or access: window locks, dead bolts for doors, interior door hinges.

2-7.5.8. Handicap Accessibility and Visitability

As of 2006, approximately 15.1% of Americans had a disability status,[lv] yet the majority of American homes and communities are neither welcoming nor safe for physically handicapped people to visit. Communities and homes that are inaccessible to so many create social barriers, increase the number of institutionalized individuals, and increase the chance of injury for handicapped individuals[lvi]. As the baby boomers reach retirement age, the need for accessible housing increases.

Currently there are limited federal mandates that affect the way a new home is constructed in regard to handicap accessibility, but these do not apply to single-family housing. Title II of the Americans with Disabilities Act (ADA), as well as many state laws require homes built with public funding to be accessible[lvii]. However, more and more states are mandating or adopting incentives for homes built accessible for a growing number of disabled Americans.

Universal design, accessible design and “visitability” are related concepts that address the design of homes to accommodate individuals with all levels of abilities, as well as the ability of physically handicapped individuals to visit a home or community without needing assistance. Since the cost of converting a built home to accessible standards is much greater than that of building accessible homes initially, the following minimum requirements for new homes are recommended:

- 32 inch wide passage doors and hallways;
- At least a half bath room on the main floor large enough to accommodate a wheel chair; and

- At least one zero-step entrance approached by an accessible route where feasible due to flood zone requirements.

The County is home to persons with various special needs, including an aging baby boomer population that will require accessible housing. Standards should be different to reflect topography, development and character, but by considering these needs in the planning and development review process, the County can set itself apart as a place with a high quality of life for all its citizens and a progressive view of inclusiveness.

2-7.5.9. Signage

Signs are an integral part of the built environment, attached to almost every non-residential structure and most surfaces throughout communities. The manner in which a community regulates signs impacts the character and quality of development, ultimately influencing economic development opportunities and quality of life. Commercial signs, political signs, traffic and public safety signs, temporary signs and wayfinding signs are but some of the types of signage that one encounters on a major County corridor. While the negative visual impacts of uncontrolled signage are obvious to any visitor driving into a new place, signs are a very necessary tool for businesses and visitors. An ongoing concern in Santa Fe County is the design and character of the major gateways and corridors that lead into the County, on scenic byways, rural corridors, near and through communities and scenic sites. Revising the sign standards to limit the size and number of signs on a given property, and to regulate the materials, lighting, colors, orientation, height and other design considerations will enhance the visual appeal and first impressions of the community.

2-7.5.10. Sustainable Landscaping

Sustainable landscaping is a landscaping approach that seeks to minimize inflow to and outflows from a landscape. Design is an intensive part of the process and must be tailored to suit each geographic location. Care is taken in choosing vegetation types and an overall design that best reflect the natural conditions of the area. The environmental and economical benefits of sustainable landscaping are numerous. Sustainable landscapes can save in reduced labor, water, and fertilizer costs. These benefits are accrued by using native vegetation suited to the local environment that required less intensive maintenance and irrigation.

Methods associated with sustainable landscaping include grasscycling, composting, and mulching, which return valuable organic material to the soil, in turn increasing the water-holding capacity of soil, reducing erosion and conserving water. Proper watering, fertilizing, and pruning along with Integrated Pest Management can encourage healthier, disease-resistant plants and can reduce the amount of pesticides, fertilizers, and other toxic runoff entering storm drains and polluting creeks, lakes, and rivers.

Landscape irrigation consumes more water in urban areas than any other use (one third of all water consumed is typically for landscape irrigation), local governments can play a major role in pushing their community toward more sustainable practices. Santa Fe County is already at the forefront of requiring sustainable landscaping and xeriscaping, limiting water use for landscaping and requiring rainwater catchment.

2-7.5.11. Building Types and Regional Materials

In new and infill development, building architecture and materials should reflect the character of surrounding development. The Plan recommends that development reflect regional and historic building styles. While the following examples are certainly not the only types of recommended architecture, it is key that new development is designed with architecture and quality, climate-appropriate materials in mind. A key to sustainability is that buildings are of high quality and timeless design so that they encourage maintenance and reinvestment to remain in service for many years, with adaptive re-use in mind for future uses. The County should encourage new major development to develop and use regional pattern books to guide development styles, such as in the Oshara Village development. Examples of appropriate residential styles, as featured in the Oshara Pattern Book, are as follows:

Santa Fe Craftsman

Best illustrated by homes in the South Capital Historic District in the City of Santa Fe on Don Gaspar Ave., the Santa Fe Craftsman is a regionally-unique version of the early 1900's staple. The Craftsman style, expressing values such as simplicity, durability, harmony with nature and livability, dominated housing styles in the United States from 1905 to the mid-1920s. Craftsman homes are generally a single story or 1 ½ stories with a low-sloped pitched roof. Frequently including decorative glass windows and a large front porch facing the street, these homes are often identified most easily by their expressive

roofs, typically featuring a gabled or hipped shape with exposed wood brackets and painted wood trim. Details are essential to a Santa Fe Craftsman style home, including window and door trim, porch columns and beams, and exposed rafters.

Territorial

Unique to the region, the Territorial style is native to the Southwest, incorporating a low-level design which matches and blends with the local landscape, taking design cues from nature. Roofs are flat with brick-capped parapets similar to a classical dentil, windows are vertically proportioned with distinctive painted wood trim and exterior walls exclusively use stucco as a finish material. Except for trim around doors and windows, Territorial style buildings are minimally detailed with a symmetrical composition, broad front massing, flat roofs and minimal parapet stepping.

Pueblo Revival

Pueblo Revival style homes are a modernization of the traditional Pueblo style adobe home, and are finished with stucco on the exterior. Windows are vertically proportioned and recessed with bullnosed stucco returns, roofs are flat with rolled stucco parapets, often including irregularly stepped parapets. The overall composition of the home is typically asymmetrical and the trim details seen in Territorial and Craftsman styles are not present, as the doors and windows are always recessed back from the face of the stucco. Details in the style instead typically include posts, beams and rafters of unmilled wood exposed from the stucco exterior.

Building Materials

For the above styles, building materials include adobe, cast pumice, straw bale, rammed earth, Rastra, brick (on Santa Fe Craftsman style only), concrete masonry, and wood or steel frames.

2-8. Housing

Provision of adequate and attainable housing is a vital foundation for supporting sustainable community and economic development. Demographic factors such as an aging population and changing economic conditions play a role in the development of policies and actions related to housing needs and demand. Unique community characteristics and diverse development patterns in different parts of the County impact policy and implementation strategies.

Sustainable communities provide housing options for all residents, so that people can stay vested and participating within their community though their housing needs may change over time. In terms of housing, social sustainability means that housing is available for people of all racial, ethnic and socioeconomic backgrounds, as well as all household types (families, singles, un-related individuals, elderly, etc.). Sustainable neighborhoods provide a mixture of housing forms, sizes, prices and densities, as well as opportunities for social interaction, such as neighborhood parks or neighborhood-based schools. Conventional subdivisions are often designed and marketed to separate housing products based on small pricing increments, for instance, homes with two bedrooms priced very closely to one another are all located in one pod, while slightly larger homes with three bedrooms priced just higher are located in a different pod. While this is presented as a way to maintain property values, it really serves to isolate people based on very small economic factors and matters of preference.

From an economic perspective, adequate workforce housing should be available to support a high-quality employment base for local and regional employers. Workforce housing is necessary if the County is to maintain and enhance its economic health and vitality. Additionally, the provision of adequate, attainable housing helps to prevent neighborhood deterioration and a declining tax base. It is normal in Santa Fe County and many other regions of the country for workers to seek housing in other more affordable communities, forcing them to commute long distances to work. This economic factor influences social and personal health aspects of people's lives as well as the environment, as long-distance commutes have huge impacts on local and global air quality.

Finally, from an environmental perspective, housing should be sustainable in terms of energy efficiency and its ecological footprint. The design of neighborhoods should support alternative transportation methods and public health goals through the integration of pedestrian facilities and proximity to employment opportunities.

2-8.1. Definitions

Providing a balance of housing types within the community can be a challenging endeavor. Local housing issues often involve a broad range of considerations and terminology. Before any meaningful discussion can occur on housing policy, it is important to clarify specific definitions frequently used by those who are addressing local housing issues in the community.

National definitions housing are created by the U.S. Department of Housing and Urban Development (HUD). According to HUD, the term ***affordable*** refers to the ability of a person or household to pay no more than 30% of their (gross) income for housing. ***Low/Mod income*** household is HUD's definition for families earning 80% or less of Area Median Income (AMI). The majority of federal and state subsidy programs are geared to assist Low/Mod income households.

However, in many communities, households earning more than 80% of the Area Median Income are also in need of some form of housing assistance, due to locally unsustainable wage levels or high housing prices. A***ttainable*** is a term that Santa Fe County may use to refer to households earning between 80% and 125% of AMI. Housing programs to meet the needs of both low/mod income households as well as families earning above 80% of AMI can contribute to the social and economic sustainability of growth.

An umbrella term used to refer to both target populations is ***workforce housing***. This term refers to the concept of providing programs that meet the County's diverse workforce housing needs, consisting of both owner- and renter-occupied housing that is affordable to the local workforce and carefully located to meet their needs. Lack of housing that is affordable to the local workforce causes increased commuting times, increased pollution, increased roadway congestion and less time at home with family. Quality of life suffers and the social balance of the community is disrupted.

There are also ***special needs*** populations outside of the workforce who need housing assistance. These groups include military families, seniors, persons with disabilities and the homeless.

2-8.2. Existing Conditions

Santa Fe County has an estimated 2009 population of 149,807; occupying 67,052 housing units (Source: Al Pitts, 2009). Approximately 51 percent of this total resides in the City of Santa Fe. It is projected that the County's population will increase to 164,001 by 2015. Population grow rates have leveled at about 1.5% per annum.

There are 67,052 housing units and 60,991 households in Santa Fe County. Almost 68% of households own their home. Despite a healthy percentage of homeowners, affordability remains a challenge. There are more than 5,000 single parent households with children under 18 years of age and many of them earn below 100% Area Median Income. (Source: US Census Bureau, 2006 American Community Survey).

2-8.2.1. Housing Market Analysis

During the mid years of this decade, significant increase in housing prices coupled with a stagnant wage-based income further widened the housing affordability gap. The median housing price for Santa Fe County (including City) was $289,000 in 2000 and, despite significant national downward trends in housing activities and pricing, $402,057 at the end of the second quarter in 2009. In comparison, the median household income of County of Santa Fe households increased by about 11 percent between 2000 ($59,300) and 2007 ($66,000) according to the Department of Housing and Urban Development. In 2007 at the height of the housing market, median price (over $500,000 in the County) of single-family homes in the County of Santa Fe was about 800 percent higher than the median household income. Households can typically afford to purchase homes priced between about 300 and 400 percent higher than their household income, depending on the size of their down payment and other factors, indicating an overall lack of affordability for homes purchased by the majority of the local workforce. The homeownership rate is 68% for Santa Fe County and 58% for the City; compared to 67.5 % nationally. The current national rate has slumped back to 2000 levels due largely in part to the economic downturn.

The sub prime mortgage crisis fueled the decline of economic growth and the previously robust housing markets throughout the nation. Santa Fe County is not immune to the decline, but has not been as severely impacted as other parts of the nation. However, the downturn of the national economy in the third quarter of 2008 further compounded the housing affordability gap. Construction activities have slowed in response to the increase in inventory and absorption rate for both residential and commercial units. Over 30% of households paying mortgages spent more than 35% of their monthly income on housing expenditures. With increasing energy and fuel costs, the combined costs for occupying a home become even more burdensome for residents of this area. It is important to consider the on-going maintenance costs of occupancy for community residents as well as how energy efficiency and conservation efforts will enhance the economics and quality of living standards.

Existing County Plans and policies related to housing provision include the following:

- Santa Fe County Population and Housing Study 1994 (John Prior & Associates)
- Santa Fe County New Dwelling Units and Lots Permitted 1994-1997
- Community College Affordable Housing Ordinance 2000-12
    - » Established 15% affordable housing requirements and regulations within Community College District
- Housing Needs Study—Central Santa Fe County—2004
- Housing Growth Permitted by Santa Fe County—2004
- Affordable Housing Ordinance 2006-02 and Regulations (via Resolution) 2006-99
- Housing Needs Assessment 2008 (RRC Associates)
- Santa Fe County 2000-2050 Regional Populations and Housing Projects-(Al Pitts 2009)
    - » Created 30% affordable housing requirement for Central and Northern areas of County
- Housing Growth by Subregion; Unincorporated Santa Fe County – 1997-2008 (Al Pitts 2009)
- Santa Fe County New Mexico Mortgage Finance Authority Affordable Housing Plan (pending approval)

- Public Housing 5 Year Plan (Housing Authority)

2-8.2.2. Workforce Housing

The availability of workforce housing has real impacts on the regional economy. Employers in the region will find it increasingly difficult to attract and retain employees due to the lack of affordable quality housing, exacerbated by skyrocketing real estate values, which impacts economic development efforts and the very fabric of the community.

The persons and families that need affordable workforce housing are, for the most part, 'working people'. This is a particular hardship for those who work in entry level jobs that are vital to sustaining a good economy and a good quality of life for everyone, and also includes essential workers (police, fire, health care, utilities, teachers and child care workers) retail, industrial, office and service industry workers, entry- and mid-level professionals and public sector (government and non-profit community organizations) employees. The relationship between commercial enterprises and workforce housing is key to employment supply and demand factors, focusing location of residence, business location and transportation and accessibility.

The 2008 Housing Needs Assessment prepared by RRC and Associates concludes that a higher percent of the City of Santa Fe's middle-income workers (earning between 100 and 150 percent AMI) and low-income workers (50 to 80 percent AMI) are moving out of the City and commuting in for work than workers at other income levels. This is evidenced by the fact that a much higher percentage of workers in the City of Santa Fe that moved out of the City and into the County within the past 5 years earn between 100 and 150 percent AMI (35 percent) than resident workers (23 percent). Also, a somewhat higher percentage of those living in the County that moved out of the City of Santa Fe within the past 5 years earn between 50 to 80 percent AMI (25 percent) than resident workers (19 percent).

Homeownership is higher among in-commuters (87 percent) than resident workers (55 percent) or out-commuters (66 percent). In-commuters are also more likely to have children under the age of 18 in their household (49 percent) compared to out-commuters (36 percent) and resident workers (31 percent).

Resident households earning less than 50 percent AMI and over 150 percent AMI are more likely than other income groups to remain in the City. Households earning less than 50 percent AMI often have fewer housing options and resources to move and those earning over 150 percent AMI can generally afford and find suitable housing options in the City of Santa Fe. A similar percentage of in-commuters that used to live in the City and current worker households in the County earn between 80 and 100 percent AMI.

These findings indicate that some of the growth being experienced in the County of Santa Fe is the result of middle income workers moving from the City seeking affordability and/or a place to raise children. This supports the need for greater affordable transportation options for commuters as well as provision of services for families in the County, including schools and recreation.

About 60 percent of employers in the County of Santa Fe noted that the availability of affordable workforce housing is "one of the more serious problems" in the county, and 7 percent felt it was the "most critical" problem (source: RRC 2008 Housing Needs Assessment). In the City, 54 percent of employers felt it to be one of the more serious problems with 11 percent saying it is "the most critical problem." The data shows that provision of affordable workforce housing is perceived to be significant by both County and City employers.

Housing and the cost of living in Santa Fe County are a problem for retaining and recruiting a qualified workforce. While employers noted a number of problems related to housing, with over 53 percent of County employers indicating that they had lost an employee due to housing or cost of living, compared to 40 percent in the City, most employers were generally not willing to support housing for employees (48 percent) or were uncertain (44 percent).

While employers are also supportive of city and county efforts to address housing through partnerships and regulation and use of city-county lands (66 percent support); however, they are generally not willing to assist in the provision of housing

for workers in the region. 51 percent indicated they would support commercial development requirements, such as affordable housing required in conjunction with new development.

2-8.2.3. Senior Households

Retired people often have smaller household sizes, reduced incomes, and can suffer impaired abilities and mobility as they age. Without housing choices, long-time residents may be forced to leave the community they have always lived in to find appropriate housing as they age. It is expected that senior housing will be a growing concern as baby boomers age.

Senior housing is generally based on market-rate rents, and provides a community for seniors to live in that provides for their increasing needs. Communities that are designed for those 55 years of age and older are increasingly committed to an "active lifestyle" for seniors and cater to the increased health and vitality of today's seniors. Community input has indicated that there are seniors living within the community that are interested in market rate, senior-specific housing. Many middle-income seniors that are looking for housing do not qualify financially for the available government-subsidized senior housing. The preference of many seniors is to obtain modestly-sized residences where they can live near to their children and grandchildren.

Based on the county survey, 19 percent of households are headed by a senior in the County, totaling about 11,790 households (source: RRC 2008 Housing Needs Assessment). Nearly half (44 percent in the county, 48 percent in the city) of senior households had incomes less than 80 percent AMI in 2007. One-third has incomes under $30,000 per year. Projections suggest that demand for senior housing with amenities and services are supported will increase. Within the region, most seniors live in single-family homes (71 percent), and many will seek to transition from larger single family homes into smaller units in the next decade. Resident senior households are expected to demand an additional 1,328 housing units by 2015, not including in-migration of seniors. Senior households looking to buy will likely be seeking housing priced primarily between $150,000 and $250,000 based on incomes and down payment availability. However, few developments in Santa Fe are specifically targeted for the retiree market with single-story designs and low maintenance yards. Retirees can find much more affordable product that meets their design needs in Albuquerque and Rio Rancho.

A large percentage of seniors who rent are cost-burdened by their housing payment and living in apartments. About 18 percent of senior-headed households in the County of Santa Fe have at least one person with a disability and are in housing that does not adequately accommodate their needs. These are households that are currently in need of assistance in the community. Currently, about one-third of all owner households and three-fourths of renter households require in-home care.

2-8.2.4. Housing for Special Populations

Special populations, seniors, developmentally and physically disabled, large families, single parents, the homeless or near homeless and ex-offenders. Various program strategies can be implemented to meet the needs of special populations, such as property tax abatement for lower income home owners, developing more group homes or shared living for the disabled, increasing emergency shelter options and offering transitional housing. Programs should be developed and continued that combine housing assistance with job training, education and day care. All of these programs will address housing and social needs for County and City of Santa Fe residents who encounter multiple obstacles when trying to improve their living situation.

Specific recommendations on special population needs as concluded from local service agency interviews include the following:

- Provide more rental apartments affordable to very low (30 to 50 percent AMI) and extremely low-income (below 30 percent AMI) households. The wait lists for existing City units are currently very long. A variety of housing types and unit sizes are needed in recognition that every household type will need a different type of housing.
- It is estimated that there are between 917 and 1,500 homeless per day in Santa Fe, depending on the time of year, and up to 4,000 individuals per year (Saint Elizabeth's shelter alone has 2,000 individuals per year). More shelter and homeless beds are needed with a winter gap of 603 beds for the homeless and 756 supportive beds.
- There is a lack of housing for purchase for people below 65% of the AMI. These units must be very affordably priced in order for people at this level of AMI to afford the monthly payments. These homes need to be priced in

the range of $100,000 to $150,000 and will require concerted efforts in order to produce units at these price points.

- Prevention of homelessness, including foreclosure prevention and assistance with rental payments are important services that should be expanded in the community. There is also a need for better coordination among the multiple agencies working on homeless housing and services would assist the agencies in identifying gaps and overlaps in services.
- There is a known need for rehabilitation of existing homes on the Pueblos, as well as new home construction totaling approximately 311 units. Pueblos average annual income of $25,119 which is 60 percent of national norm and amongst the highest affordability gap in the nation. Pueblo population totals 30,497 for eight Pueblos.
- In the total County of Santa Fe, 9,862 households have at least one person with a disability. Of this, about 26 percent indicated that their homes do not adequately accommodate them. There is a need to update existing homes to accommodate individuals with disabilities.
- Resident housing needs have been defined for households with housing problems (as estimated from 2007 Household and Employee surveys). Aside from new unit development, other programs such as down payment assistance, monthly rent assistance, and low interest home improvement loans, home improvement labor assistance programs and reverse mortgage programs that permit owners to borrow against the equity of their home could help these households address their current problems of cost-burdened, overcrowding and homes in poor condition.

2-8.3. Providers

2-8.3.1. Public Housing

The Santa Fe County Housing Authority was created on November 17, 1972 and remains one of the largest landlords in Santa Fe. The Housing Authority currently manages 200 public housing units and 241 Housing Choice Vouchers (previously called Section 8). The Housing Authority also manages a Public Housing Homeownership Program, a Section 8 Homeownership Program, a Family Self-Sufficiency Program (FSS), and the Capital Fund Program (CFP). The Housing Authority's budget primarily consists of rental income and subsidies provided by the U.S. Department of Housing and Urban Development.

It is the mission of the Santa Fe County Housing Authority to provide drug-free, safe, decent and sanitary housing to low-income and very low-income families in an environment that fosters self-sufficiency and community pride.

The Santa Fe Civic Housing Authority, Inc. (SFCHA) is a non-profit public housing agency whose fundamental mission is to provide decent, safe and affordable housing for the residents of the city of Santa Fe. The Authority administers programs funded by the Department of Housing and Urban Development (HUD).

The **New Mexico Mortgage Finance Authority** is a quasi-public entity that provides financing for housing and other related services to low- to moderate-income New Mexicans. As the state's official housing agency, MFA administers more than 35 programs that finance housing for the homeless, develop new affordable housing, and help families become first-time homeowners. MFA partners with lenders, realtors, non-profit, local governments and developers throughout the state to make its programs available to all eligible New Mexicans.

In 1975, the New Mexico State Legislature created the New Mexico Mortgage Finance Authority to distribute low interest rate mortgage money to low and moderate income families throughout the state. Funds are generated through the sale of tax-exempt mortgage revenue bonds. Through the 80's and early 90's, the MFA steadily expanded its financing portfolio from first time home buyers to include rental housing construction, affordable housing rehabilitation, and special needs housing.

In 1997, MFA became the state government's designated housing agency, bringing all of New Mexico's housing departments together under one roof. All state and federal housing programs are now administered by the MFA, including Section 8 housing funds and other HUD projects. To date, the MFA has provided more than $4.1 billion in affordable housing for New Mexico's families.

2-8.3.2. Nonprofit and Community Organizations

Regional housing organizations have been key partners to issues involving affordable housing and include:

The Santa Fe Community Housing Trust is a nonprofit organization operating in northern New Mexico. The Trust was formed in 1991, and was instrumental in establishing the Santa Fe Affordable Housing Roundtable and the Santa Fe Affordable Housing Trust Fund, a multi-million dollar fund to enhance nonprofit housing production. The Trust forms partnerships with businesses, other nonprofits, and local government to produce both new and renovated housing. From 1994 through 2000, the Trust developed and sold nearly 220 affordable homes in locations throughout Santa Fe.

Homewise, Inc. was founded as Neighborhood Housing Services of Santa Fe in 1986. Since its founding, Homewise has helped over 1,200 people purchase homes and has helped over 600 people keep their homes by providing financial and technical assistance for home repair. In addition, Homewise has trained and counseled more than 3000 people toward successful homeownership and has built over 150 quality affordable homes. The mission of Homewise is to help modest-income New Mexicans become successful homeowners in order to strengthen families, create wealth, and build strong communities. By providing opportunities for successful homeownership through innovative home purchase, home improvement, and education programs, Homewise helps New Mexican families realize their dreams of owning a home.

Santa Fe Habitat for Humanity promotes affordable homeownership for Santa Fe area residents by constructing simple, adequate houses through the cooperative efforts of volunteers, partner families, donors and staff. Annually, the Family Selection Committee solicits applicants for Partner Families throughout Santa Fe County, whose income is between 30% and 50% of the median. Applicants must be legal residents and have lived in Santa Fe County for at least one year. Families are selected based on their need, ability to pay and willingness to partner with Habitat. Selected families who are successful in completing the requirements will receive a no-interest mortgage on a house built to accommodate their family size and budget.

Enterprise Foundation is a national nonprofit with 25 years of experience in the community development and affordable housing field providing capital and expertise for affordable housing and community development. Enterprise creates opportunity for low- and moderate-income people through fit, affordable housing and diverse, thriving communities. Central to its mission is Enterprise's fundamental commitment to give people living in poverty an opportunity to move up and out. Enterprise believes that these opportunities are best provided in communities with a diverse mix of affordable and market housing options, access to jobs and social supports, and a strong commitment to the environment and civic participation.

2-8.4. Programming

In 2006, Santa Fe County adopted an inclusionary zoning ordinance (2006-02) to require development projects in the Central and Northern areas of the County to provide 16%-30% affordable housing in an effort to address the housing affordability gap in the region. This Ordinance, identified as the Affordable Housing Ordinance, include incentives for developers to increase density to offset some of the costs for development. Incentives include density bonuses up to 15% on community water and sewer; development fee relief of up to 30% with energy efficiency and up to 22.5 % without meeting the energy efficiency; and reduced connection charges and potential water rights transfer waivers for the affordable units. Pursuant to Ordinance 2006-02, land and/or building may be offered to the County in consideration of meeting the requirements of affordable housing as alternative means of compliance.

The City of Santa Fe implements an affordable housing policy and program called HOMES Program mandating 30% affordable housing requirements and also administers CDBG programs under the Office of Affordable Housing.

Other regulatory parameters include the New Mexico Local Affordable Housing Act administered by the State of New Mexico and the New Mexico Mortgage Finance Authority.

Federal HUD rules and regulations apply with federal funding and resources made available to the local region. This is primarily applicable to public housing authorities in the area.

2-8.4.1. Issues

- Current local regulations include requirements (16% to 30% depending if development is minor or major project) for affordable housing throughout the Central and Northern Areas. Some areas are without adequate infrastructure and services to support affordable housing development.
- Incentives exist in the form of density bonus, water rights transfer waivers, fee waivers but should be more directed to areas where there is adequate provision of infrastructure and services.
- Rental housing needs to be addressed.
- Energy efficiency and water conservation need to be more defined and supported as a means for affordability.
- Need to integrate measures to reevaluate affordable housing requirements based on and responsive to economic market conditions, affordable housing needs and growth areas.
- Need to leverage funding and partnerships with city, state and federal partners and non-profit entities.

Nearly 200 affordably priced units have been created as of August 2009 under the county affordable housing program, with an additional 200 units obligated to be constructed in the near future. There are also several development projects undergoing the development review process and an additional 550 units will be approved as obligation under these projects. An Affordable Housing Fund--which can be created and adopted via ordinance and pursuant to the New Mexico Local Affordable Housing Act and Regulations--along with related policies may make available Housing Assistance Grants and other tools in support of the following affordable housing priorities:

- Support workforce population; direct financial assistance to affordable housing residents,
- Special needs housing, rehabilitation, foreclosure and homeless prevention
- Energy efficiency and water conservation as a way towards affordability and environmental responsibility; promote green building standards and measures in an effort to address impact on our environment.
- Assistance and funding for developers incentives; acquisition of water rights for affordable housing.
- Integration of internal and external efforts and resource; support infrastructure improvements and partnerships related to promote affordable housing opportunities.

2-8.4.2. Funding

Sustainability of fund levels and capacity for providing Housing Assistance Grants depend significantly on sound financial management strategies to include, in addition to the above financing mechanisms, grants and contracts from the private, local, state and federal levels. MFA offers comprehensive funding options and this will create a vital partnership between the two entities as complementary resources. Partnering with the MFA Workforce Program will be viable and offer real direct benefits to our residents. Specific funding sources may include CDBG, Rural Housing and Economic Development Grants from the Federal level. Other financial strategies associated with the County Growth Management as well as other programs (e.g. Water Conservation) efforts may support joint funding opportunities and help identify the usages of Impact Fees, Public Improvement Districts, Tax Increment Financing, etc. It is recommended that housing needs be considered as part of the County Capital Improvement Plan and Program for balancing priority initiatives.

A conservative financing approach is recommended to ensure a healthy fund balance to sustain Fund activities. A large percentage of the Housing Assistance Grants may therefore be offered as revolving loans rather that grants. Leveraging and sharing resources with community organizations will ensure that the region invests collaboratively and likely impact broader community benefit.

Affordable Housing initiatives in the County must complement and assist other social, environmental and land use strategies. Towards this end, the Fund and pursuant programs will continue to establish viable and compatible partnership with community organizations, internal growth management strategies, and with energy efficiency, water conservation and green building efforts to achieve a comprehensive approach to housing opportunities. Efforts will also be made towards ensuring our workforce has sufficient resources to acquire and maintain homes in well designed and planned mixed income and housing neighborhoods.

2-8.4.3. Homeownership Affordability Gap

As previously mentioned, the affordability gap has widened over the years despite the recent national housing crisis (4th quarter of 2008) and decrease in the median housing price in the region. Compounded by rising unemployment rate and

other economic factors such as escalating foreclosure rates, residents continue to experience increasing stress in terms of housing expense ratios. Energy and food costs also continue to be a factor and will likely remain in a volatile state for some time to come and therefore contributing to the affordability gap.

The largest gap, based on the distribution of demand compared to the distribution of units available, is for units priced between 50 and 100 percent area median income. The following table illustrates the need based on 2007 market conditions. In consideration of recent market adjustments and the subprime mortgage crisis, the projected demand is overestimated for the near future.

Figure 2- 25: 2007 County of Santa Fe Catch-Up Ownership Housing vs. Current Available

		Need (Residents Looking to Buy, In-Commuters Would Move)			MLS Supply	
	Max Affordable Purchase Price*	% Need**	# Need (30% would move)	# Need (40% would move)	MLS %	MLS #
50% AMI or below	$83,507	13.0%	269	289	0.1%	1
0.1 to 60% AMI	$100,209	13.3%	275	296	0.0%	0
60.1 to 80% AMI	$133,643	15.6%	323	347	0.8%	6
80.1 to 100% AMI	$167,015	10.9%	226	243	0.6%	5
100.1 to 120% AMI	$200,418	9.0%	186	200	2.7%	21
120.1% to 150% AMI	$250,522	8.7%	180	194	2.1%	16
Over 150% AMI	Over $250,522	29.6%	613	659	93.7%	730
TOTAL		**100%**	**2,070**	**2,226**	**100%**	**779**

*Maximum purchase price for a two-person household earning within each income range. Assumes 5% down, 7.0% interest for 30 years and 20% of monthly payment for property taxes, insurance and HOA fees, with no more than 30% of household income used for housing payments.

**Represents combined current worker household distribution and in-commuter distribution

Shaded area represents where market is expected to be deficient in meeting future needs

Source: **(Source: RRC 2008 Housing Needs Assessment)**

The gap shown above may be partly addressed with existing lots to be developed in master planned communities if current market conditions persist. There are trends (2009) that developers are constructing units closer to the affordable purchase price as indicated in the above table than in previous years where most of the new units are priced near the median hosing price of $402,000. Moreover, inventory has increased for existing housing units (with 3200 homes on the MLS available in August 2009) and demand seems to have leveled and/or decreased for various types of housing.

Ownership housing programs should continue to focus on the low- and middle-income range between 60 and 100 percent AMI. These are programs that largely serve current residents and help them get established in the community with first-time ownership. Continued subsidized unit production for households earning between 60 and 80 percent AMI and 80 to 100 percent AMI will be needed to support local economic stability, especially with assistance to the local workforce, with some potential need at the 100 to 120 percent AMI level (8.7 percent of units needed) if home prices continue to rise faster than local incomes or if incomes remain stagnant.

2-8.4.4. Rental Affordability Gap

In 2007, about 30 percent of "total county" units are occupied by renters (12,707 renters in city and 8,126 renters in county), 33 percent of which are single family homes, 35 percent apartments, and 10 percent mobile homes. Thirty-seven percent of all rental units were built in the last seven years.

Current rents in the county average about $812 per month, which is generally affordable to a 2-person household earning about 60 percent of the AMI. Comparing incomes of renters needing and demanding housing to the distribution of existing

units shows a primary gap in the provision of housing for renters earning between 80 and 100 percent AMI (Source RRC Housing Assessment 2008).

Figure 2- 26: AMI Distribution of Current Rents, 2007 Survey

AMI Affordability	Max Affordable Rent (2007)*	Total	City of Santa Fe	County of Santa Fe
<30%	$396	14.1%	6.7%	28.2%
30-50%	$660	22.9%	23.6%	21.6%
50-60%	$792	14.9%	16.9%	11.3%
60-80%	$1,056	28.4%	29.8%	25.8%
80 to 100%	$1,320	9.7%	10.4%	8.5%
Over 100%	Over $1,320	9.9%	12.7%	4.7%
Total	-	100.0%	100.0%	100.0%

Source: 2007 Household and Employee survey; 2000 US Census; RRC Associates, Inc.

*Based on a 2-person household earning within each AMI range.

Figure 2- 27: Catch-Up and Keep-Up Need for Rental Units by AMI

	2007 (2-person household)		Catch-Up			Keep-up	
AMI Range	Max income	Affordable rent	%*	#	%**	2012	2015
30% AMI or less	$15,850	$396	23.3%	141	9.8%	16	7
30.1-50% AMI	$26,400	$660	16.7%	101	22.4%	37	16
50.1-60% AMI	$31,680	$792	7.9%	48	9.1%	15	7
60.1-80% AMI	$42,250	$1,056	14.2%	86	14.0%	23	10
80.1-100% AMI	$52,800	$1,320	10.8%	65	9.1%	15	7
Over 100% AMI	Over $52,800	Over $1,320	27.1%	164	35.6%	58	26
TOTAL	-	-	100%	604	100%	164	72

*Represents distribution of all current renter occupied households, 2007 Household Survey

**Represents current renter occupied worker households, 2007 Household Survey

To catch-up with current rental needs, about 76 units would be demanded by persons in-commuting to jobs in the county and another 528 units would be needed to relieve existing renters in either overcrowded or substandard units. About 40 percent of these units (242 units) will need to be priced for households earning less than 50 percent AMI.

To address future demand in the county, about 164 rentals will be needed by 2012 and another 72 units between 2012 and 2015. About 32 percent of these units will need to be priced for households earning below 50 percent AMI and 23 percent between 50 and 80 percent AMI. This assumption is based on economic recovery that will lead to growth of the local economy.

2-8.4.5. Opportunities

The following provides examples of specific programs in support of priority needs--constructing stock, improving and rehabilitating existing stock, and promoting access, lowering costs, etc.—related to the ownership and rental housing gaps. Given the above scenarios illustrating the widening gap of housing affordability, specific focus should be developed and directed towards actualizing the following:

Down Payment Assistance Loans or Grants for qualified households. May help to alleviate high mortgage balances and provide home equity for initial purchases of affordable homes. Will assist affordability and limit high LTVs (loan-to-value), especially for the lower income range eligible buyers. Leverage with other programs from the State (NMMFA) and community organizations as well as federal funding opportunities

EAH (Employer-Assisted Housing) Program. This program offers Workforce of Local Government assistance in seeking affordable homeownership or rentals. Essential workforce such as Fire, Emergency and other public safety employees can be given preferences. Activity may be expanded to encourage private entities to develop similar programs that will directly help local workforce achieve and maintain a healthy level of living standards. This will address the continue trend of the local workforce moving out of the area in search of more affordable housing and lend to better community and labor stability.

Low Interest Loans and/or Grants for Energy and Water Efficiency and Conservation:

> **Energy Efficiency and Water Conservation for Affordable Housing Residents**--Intends to help offset high energy costs in the occupancy of affordable units and to offer education and outreach on Energy and Water Efficiency and Conservation efforts. This will affect the long-term affordability of these affordable units as operating and maintaining a home continues to escalate in the region. Santa Fe County has adopted water conservation policies for development and residential units and this will be a vital partnership with the Affordable Housing Program in meeting these measures.
>
> **Development Projects**--Intends to encourage a high standard of Green Building, Energy and Water Efficiency and Conservation efforts in new development. Opportunities for Green Infrastructure may also be considered. This will improve not only the long-term affordability of but also the quality standards of these affordable homes and development projects.

Acquisition and Rehabilitation—foreclosure and homeless prevention, assistance for much needed repairs to ensure homes are safe for occupancy. Subject to funding availability and affordable housing needs, funds may be authorized for the market purchase of existing inventory to exercise the first right of refusal or to purchase back foreclosed properties.

Acquisitions of water rights for affordable housing. Intends to assist in the provision of affordable units in areas where infrastructures for water and wastewater services are encouraged. This may also affect higher density in various areas of Santa Fe County in an effort to promote more affordable housing.

Revolving Loans and/or Grants for Infrastructure Improvement and Financing. Intends to provide infrastructure partnership with Development Project and to ensure adequate and high standards are met in these improvements. It will also allow better infrastructure strategic and funding planning for the County. This will also help residents gain better access to improved infrastructure leading to community facilities and networks.

Partnerships with community organizations to leverage and share resources.

Outreach and education related to affordable housing efforts may also be funded through these sources.

2-9. Economic Development

The County seeks to generate economic development which is supportive of the needs of each of its communities, enriches community life and promotes values such as a sustainable environment, protection of social and cultural resources, self-reliance and sufficiency and entrepreneurship. The role of the County is to facilitate a favorable governmental atmosphere for enriching the quality of life of its citizens and communities through a healthy, sustainable economy that reaches beyond the conventional approach of basic economic development strategies and implementation strategies. To reach these ends the County must be aware of current economic and demographic conditions, develop and support local and regional relationships, and reach out to industries best suited to developing in the County.

The County has adopted the following mission statements regarding economic development:

> Santa Fe County government's role is to facilitate a favorable governmental atmosphere for enriching the quality of life of our citizens through a healthy economy. Santa Fe County government recognizes that the needs of each of its communities may be different. We seek economic development which is supportive of these needs, enriches our community life and promotes our values of self-reliance, individualism and entrepreneurship. We seek high quality jobs which will enhance salaries and career development. Growth in Santa Fe County will be integrated and balanced to preserve our quality of life – economically, environmentally and socially. Economic activity in Santa Fe County will allow our children to remain in our communities and to contribute to community growth.

Smart Growth policies promote economic development community-wide. A key component of a Smart Growth system is to ensure economic vitality. Economic vitality includes larger disposable income for residents, a larger tax base and an increased standard of living community-wide. The economic stability of a region is based on providing employment and development opportunities, including research and educational facilities. Smart Growth principals are based on efficient development patterns, which can be designed to support and advocate economic stability. The American Economic Development Council believes that for Smart Growth to succeed, communities must merge land use planning and economic development strategies and should:[lviii]

- Be implemented through county/region wide collaboration;
- Educate decision-makers about the importance of coordinated Smart Growth planning;
- Maintain and improve local economic vitality;
- Plan for economic growth and development in a timely, orderly and predictable manner;
- Establish a long-term strategy that ensures that each jurisdiction has sufficient land for appropriate development; and
- Amend local plans and policies to include fiscal responsibility and economic development elements to ensure that quality public facilities and services are provided in a cost-effective manner.

2-9.1. Existing Conditions

2-9.1.1. Employment and Unemployment

The most recent employment data available for Santa Fe County show an economic climate in line with much of the rest of the country, but holding course better than many communities. In May of 2009 73,822 of the 78,101 members of the civilian labor force in the County were employed, leaving 4,279 unemployed (a 5.5% rate of unemployment). In May of 2008 the unemployment rate was 3.3%.

Figure 2- 28: Unemployment Rate by Quarter – Santa Fe County & New Mexico

Quarter	Santa Fe County	New Mexico
2007 – 2nd Quarter	2.9%	3.6%
2007 – 3rd Quarter	2.9%	3.6%
2007 – 4th Quarter	2.6%	3.3%
2008 – 1st Quarter	3.1%	3.7%
2008 – 2nd Quarter	3.3%	4.0%
2008 – 3rd Quarter	3.8%	4.5%
2008 – 4th Quarter	3.8%	4.4%
2009 – 1st Quarter	5.0%	5.6%
2009 – 2nd Quarter	5.5%	6.5%

Source: University of New Mexico Bureau of Business and Economic Research (BBER) – Quarterly Unemployment Rates.

2-9.1.2. Leading Industries

Employment by industry has varied over the past year, typically following national trends. Two sectors added a total of 200 new jobs to the local economy (Educational and health services; Leisure and hospitality), while a number of other industries reported net job losses (Retail trade; Information; Wholesale trade; Professional and business services; Financial activities; Miscellaneous other services), with the loss of 700 construction jobs leading the way. Two industries remained unchanged from year-to-year (Manufacturing and transportation; Transportation, warehousing and utilities)[lix]. Leading industries in the County, including major local and regional employers, can be found in **Figures 2-29** through **2-32**.

Figure 2- 29: Employment by Industry (July 2009)

Industry	Number of Employees	Percent of Employment
Government	17,000	27%
Educational and Health Services	9,700	15%
Leisure and Hospitality	9,100	14%
Retail Trade	8,700	14%
Professional and Business Services	5,200	8%
Mining, Logging and Construction	3,700	6%
Other Services	3,500	6%
Financial Activities	2,700	4%
Wholesale Trade	1,200	2%
Information	1,100	2%
Manufacturing	900	1%
Transportation, Warehousing and Utilities	700	1%

Source: Department of Labor Workforce Solutions July 2009

Figure 2- 30: Leading Industries by Total Revenue (2002)

Industry	Total Revenue
Retail Trade	$1,809,469,000
Health Care and Social Assistance	$501,417,000
Wholesale Trade	$463,678,000
Accommodation and Food Services	$376,204,000

Source: U.S. Bureau of the Census, 2002 Economic Census.

Figure 2- 31: Major Regional Employers

Albuquerque and Nearby Regions
Los Alamos National Laboratory
Intel Corporation
University of New Mexico
Honeywell Defense and Space Electronic Systems
T-Mobile
Verizon Wireless
CitiCards

Source: Albuquerque Economic Development Department and BEBR study on Arts and Culture.

Figure 2- 32: Major Local Employers

City and County of Santa Fe	Employees	Sector
State of New Mexico	7,643	Government
Santa Fe School District	1,850	Education
US Federal Government	1,750	Government
City of Santa Fe	1,459	Government
St. Vincent's Hospital	1,250	Medical
Santa Fe Community College	717	Education
Presbyterian Medical Services	531	Medical
County of Santa Fe	490	Government
Cities of Gold Casino	470	Gaming
Camel Rock Casino	425	Gaming
Thornburg Companies	150	Financial
Santa Fe Natural Tobacco	125	Manufacturing

Source: New Mexico Development Alliance, 2009.

2-9.1.3. Job Growth

As predicted for the nation's economy as a whole, negative job growth is likely to continue in Santa Fe County for at least the near future. Nevertheless, projected openings in the County are expected to occur in the occupations set forth in **Figure 2-33**. In addition to these areas, the occupational categories outlined in **Figure 2-34** currently represent the fastest growing occupational categories in the state.

Figure 2- 33: Occupations Expecting Near-Term Growth

Occupations
Bookkeeping, Accounting and Auditing Clerks
Cashiers
Combined Food Prep and Serving Workers
Customer Service Representatives
First-Line Supervisors/Managers of Retail Sales Workers
Landscaping and Groundskeeping Workers
Registered Nurses
Retail Salespersons
Security Guards
Waiters and Waitresses

Source: New Mexico Annual Social and Economic Indicators, 2009.

Figure 2- 34: Occupations Expecting Near-Term Growth

Occupations
Personal Care
Healthcare Services
Education
Community Social Services
Protective Services

Source: New Mexico Workforce Report, 2009.

2-9.1.4. Wages

The average weekly wage for the 4th quarter of 2008 was $810, equivalent to $20.25 per hour or $42,120 per year. When averaged along with the previous three quarters of 2008, the resulting 2008 average weekly wage was $743. This weekly wage is the highest recorded in the previous decade and is part of what has been a trend of growing average weekly wages in the County each year, as seen in **Figure 2-35**.

Figure 2- 35: Salary and Wages – Santa Fe County

Year	Average Weekly Wage	Average Annual Pay
2001	$570	$29,615
2002	$600	$31,207
2003	$597	$31,050
2004	$627	$32,590
2005	$639	$33,253
2006	$679	$35,320
2007	$719	$37,395
2008	$743	$38,646

Source: U.S. Bureau of Labor Statistics quarterly census of employment and wages.

2-9.1.5. Educational Attainment

Santa Fe County, as **Figure 2-36** shows, has a higher concentration of adults who are high school graduates than both the state and nation, although the margin is slim. However, the County has a much higher rate of persons with a bachelor's degree or higher than both the state (+13.6%) and the nation (+10.9%).

Figure 2- 36: Educational Attainment (2007)

Year	Santa Fe County	New Mexico	United States
Percent High School Graduate or Higher	85.7%	82.3%	84.5%
Percent Bachelor's Degree or Higher	38.4%	24.8%	27.5%

Source: U.S. Bureau of the Census, 2007 American Community Survey

2-9.2. Current Actions

2-9.2.1. Priorities

The County, in its effort to aid the attraction, expansion and retention of economic investment, has identified several key structural components necessary to develop a sustainable local economy. These components include:

- Economic infrastructure that is sensitive to environmental and community needs, addressing both current deficiencies and developing new capacity as necessary. Specific examples include the expansion of broadband service, the local generation and distribution of renewable energy, and the enhancement of water and wastewater systems.
- A viable, educated, trained and skilled labor force, including the development of a green workforce and support of the local youth workforce. Specific examples include offering supportive services and opportunities to allow workers to transition from outdated to currently marketable skills and enabling local youth to develop skills at an early age to lead to meaningful employment later on.
- Adequate economic development services from the County level downward. Specific examples include promoting entrepreneurial and small business capacities and supporting key cluster industries.
- The strategic development of cluster industries such as the "green" industry, arts and culture, film, agriculture, outdoor recreation and ecotourism.
- Stronger local and regional community participation and organization. Specific examples include strengthening partnerships with local communities to lower costs and share limited resources and working with local and regional organizations to develop targeted, shared approaches to economic development initiatives.

2-9.2.2. Partnerships

Partnering with other governmental agencies and non-profit organizations allows for coordination and cooperation on a regional basis, strengthening economic development outreach and ensuring future economic activity is diversified and appropriate to area communities and regions/supported by these groups. Partnerships create a stronger front, allowing more targeted approaches and a greater ability to seek out desired businesses.

Santa Fe County has established several partnerships both locally and regionally in an effort to encourage economic development. Relationships with non-profit organizations include Santa Fe Economic Development, Inc. (SFEDI); the Regional Economic Development Initiative (REDI); North Central New Mexico Economic Development District; United Way of Santa Fe County; Santa Fe Business Incubator; Santa Fe Community College; Local Energy, Inc.; and the Northern Rio Grande National Heritage Area. Of these partners, SFEDI has been a key relationship as the two have worked together to provide individual businesses with services that meet business and workforce needs, developed a business outreach and economic development collaborative, and established monthly meetings to bring participants together to discuss economic development opportunities.

The County's partnership with the Regional Economic Development Initiative (REDI) is also important as the two share overlapping interests and areas. REDI uses cluster-focused approach, similar to Santa Fe County. In fact, the two overlap on several clusters, with REDI targeting renewable/clean energy industry, media industry, technology industry and high value/value added agriculture in northern New Mexico.

The County has also participated in the development of a Regional Economic Development Strategic Plan with Los Alamos County and other local governments. This project has resulted in several cooperative agreements. The County has also worked with the Santa Fe Community College to develop a memorandum of understanding with the film industry and partnered with the College's Center for Community Sustainability.

Potential partnerships as yet unexplored include work with the Greater Espanola Valley Economic Development and Estancia Valley Economic Associations.

2-9.2.3. Existing Plans and Actions

The County has prepared a number of economic development plans and taken various actions to spur economic development. Examples of recent plans, ordinances and projects can be found in **Figures 2-37 and 2-38.**

Figure 2- 37: Economic Development Plans and Ordinances

Economic Development Ordinance 1996-7
Economic Development Plan 1996
Agriculture and Ranching in Santa Fe County 1998
Culture, Arts and Tourism Plan 2000
Economic Importance of The Arts and Cultural Industries in Santa Fe County 2004
Santa Fe County Community Business Plan 2005-2007
Santa Fe County Community Business Plan Update August 2007
Media District Ordinance 2007-10 and Media District Development

Figure 2- 38: Economic Development Projects

Regional Broadband Infrastructure Improvement
Farmers Market Project
Bicycle Technology International Project
Santa Fe Studios
Santa Fe Alliance Regional Food and Fuels Project
Assessment of Renewable Energy Sources
Regional Economic Development Initiative
New Mexico Economic Development Department Certified Communities Initiatives
Arts, Culture and Entertainment Task Force

2-9.3. Target Industries

The County has identified several target industries which are not only business types desired by the County and its residents as in-line with community goals and aspirations, but also businesses which the County believes can successfully grow and thrive in the area. The industries sought are described briefly below.

2-9.3.1. "Green" Industry – Energy and Water Technology

Santa Fe County has long been known for its cultural emphasis on sustainability. With this local mindset and an almost limitless availability of renewable resources such as solar and wind energy, the County has a unique opportunity to capitalize on these strengths. To encourage the development of "green" industries in the area, the County has partnered with the City of Santa Fe, the Santa Fe Community College, the Santa Fe Business Incubator and Local Energy to develop a Center for Community Sustainability. The Center will work to provide a venue for the development of these technologies locally, identify and support businesses that develop and deploy renewable energy and conservation technologies, provide workforce training and education in these industries, and work to make the County a national leader in the development of such industries.

Specifically the industries targeted include renewable energy, energy efficiency, water conservation, and sustainability systems. The County is working to develop a thriving economy based on locally produced sustainable energy and efficient water use that saves scarce resources and increases the tax base in the area.

2-9.3.2. Arts and Culture

Since the 1970's, the tourism industry in Santa Fe County has experienced explosive growth. Visitors are attracted to Santa Fe's archeological, architectural, cultural and natural beauty. Bird watching, astronomy and observation of the night sky, kayaking, hiking and horseback riding, along with other wildlife and naturalistic pursuits draw significant numbers of tourists to Santa Fe County. The County's artistic communities, Native American Pueblos and historic sites are also important tourism draws. Santa Fe is home to such assets as an amazing concentration of artists, galleries and cultural outlets, including the Indian Market, Spanish Market, the Desert Choral, the Santa Fe Symphony, and the Santa Fe Opera. The area is also considered by many to be the Native American art capitol of the United States. The County desires to not only encourage further tourism in these industries, but also the protection of the very resources which people come to visit and enjoy.

Nearly four of every ten dollars flowing into Santa Fe County (which includes the City of Santa Fe) and one in every six workers are directly or indirectly employed by the arts and culture industry (2004 study by University of New Mexico Bureau of Business and Economic Research). The arts and culture industry accounts for $1.1 billion in revenues and accounts for 17.5% of all jobs within the County (including the City of Santa Fe). Further, of all the revenue generated by arts and culture in Santa Fe County an estimated 78% comes from sources outside the County. This means that instead of fighting for money already within the community, these businesses actually bring in outside dollars, generating new incomes and creating new jobs.

The big business brought in by the arts and culture industry can be directly attributed to the competitive advantage Santa Fe County holds over other national art and culture markets. Such an advantage is due to significant assets, such as the largest per capita concentration of artists, performers and writers of any city in the United States (the City of Santa Fe), the second largest art market in the United States (second only to New York City), and the area's location within the top ten in the concentration of museum curators, architects and graphic designers.

Protecting these assets, along with overcoming obstacles to the continuation and growth of the arts and culture industry, including the affordability of living and working in the County, the inability to establish new and emerging products and markets, and the occasional reduction in tourism, are important obstacles to overcome for the future of the County.

2-9.3.3. Film

Because of its cultural and artistic appeal, and beautiful natural scenery, Santa Fe County has become home to a growing and important film industry. From 2003-2007, Santa Fe County saw the shooting of 32 motion pictures with an added production expenditure of $173 million. Because of secondary impacts, the total motion picture economic impact within the County during the same period is estimated to be $520 million. Favorable results from recent movies filmed in the County, along with appealing economic development incentives from the State of New Mexico, are working to create a favorable environment for film production in Santa Fe County. The County has developed a Media District to specifically target and attract media industries, including development of a business plan and incentives to lure the necessary development. With the creation of a media district and the purchase of the underlying land, the County is now in a proactive position to create and support economic development opportunities in the media and film industries. The County is in the process of identifying and planning for the infrastructure needs for the area, such as expanded broadband and special utility needs, and identifying potential funding sources for the needed improvements. Santa Fe County approved an economic development ordinance to support Santa Fe Studios as a public/private economic development project.

In addition to the advantages of a media district, film-friendly zoning and land use policies and other local incentives, the State of New Mexico has developed incentives for filming in the state. From large tax rebates to loan programs and other assistance (see www.nmfilm.com), the film and media industry are more than welcome in Santa Fe County. A study done in early 2009 by Ernest & Young found that the economic activity created by the film production tax credit program not only results in additional jobs and spending within the state and its counties, but additional local and state tax collections too. For counties the additional tax revenue alone has shown to be $0.56 for every $1.00 spent by the state on the credits. As such, targeting the film industry provides several economic benefits to the County.

Santa Fe Community College currently provides training to students to prepare them for work in the film industry and has formed a working partnership with the local film technicians' union to provide training and mentoring for students. Additionally, the Santa Fe Community College Training Center, a non-profit organization, was established to meet the needs

for job training in the film industry and plans to develop film production, film scene design, construction and training options within its curriculum. Numerous other regional film resources include the College of Santa Fe, offering a comprehensive program that integrates film, video and digital production with critical studies and writing, including a stand-alone documentary studies program.

2-9.3.4. Agriculture

Agriculture maintains an important role in the County, especially within Traditional Communities. In addition to local farmers' markets there are opportunities for value added economic development in the local agriculture industry. The County currently supports agricultural activities through projects such as the Chimayo Chile project, local 4-H programs and a recent grant submission for a community commercial kitchen in coordination with the United Way of Santa Fe County. Further help from the County for the industry can occur through upcoming changes in the land development code to provide standards and policies for land development and zoning which are more conducive to local agricultural practices.

New Mexico as a whole, and especially rural counties, have significant needs for stronger and more local agriculture, despite a strong cultural emphasis on agriculture. One third of New Mexico's counties are classified as low food access or food deserts. Many rural residents must drive up to 70 miles each way to access their closest full-service grocery store. Small-scale rural stores, often closer to fields in agricultural production, routinely cost more for the same basket of food than urban stores in the state. The problem is exacerbated because most of the state's mid-sized and large farmers and ranchers primarily sell production to national markets, not local markets. Developing a strong local agricultural base, with small stores in rural areas with better refrigeration, labor pools and access to capital; and local outlets for agricultural sales, such as farmers' markets and farm stands, can work to reduce this trend and greatly benefit County residents and the local economy.

2-9.3.5. Ecotourism and Outdoor Recreation

Conservation of open space and environmentally sensitive areas can actually increase revenues because businesses and residents are drawn to areas with a high quality of life, which includes high percentage of protected lands and open spaces in and near to urban areas and prime research and educational facilities. According to the Trust for Public Land, "economic advantage will go to communities that are able to guide growth through land conservation and other smart growth measures…. One 1998 real estate industry study predicts that over the next 25 years, real estate values will rise fastest in the smart communities that incorporate the traditional characteristics of successful cities: a concentration of amenities, an integration of residential and commercial districts, and a "pedestrian friendly configuration."[lx] Further, businesses in the Sierra Nevada Region of California, where urban areas are close to mountains, wildlife preserves and open landscapes identified these amenities as drivers of the region's successful economy.[lxi]

Since the 1970's, the tourism industry in Santa Fe County has experienced explosive growth. Within Santa Fe County, tourism is a significant and clean industry with great influence over the County and regional economy. Visitors are attracted to Santa Fe's archeological, architectural, cultural and natural beauty. Protection of these unique environmental and cultural resources will ensure that our competitive advantage in tourism is preserved and enhanced to ensure the viability of tourism.

Ecotourism is the fastest growing market in the United States' $699 billion dollar tourism industry, and a significant amount of tourist activity in Santa Fe County can be regarded as "ecotourism." Ecotourism includes all tourist activities that have a reduced impact on the natural environment, encourage education awareness of the environment and culture of a place, and improve the welfare of the local people. These types of activities usually include scenic trips, such as visiting National parks and wildlife preserves, educational and awareness trips, such as guided tours, and volunteer trips, as well as canoeing, hiking, and other outdoor adventures. Ecotourism is increasing in popularity in concert with the growing popularity of green products, sustainable development and environmentally friendly alternatives to conventional standards of the past. Because of the sustainable culture encouraged in Santa Fe County, the favorable climate and abundant outdoor recreation opportunities, ecotourism can be a fast growing and important economic development component for the County in the near future, provided that it "fits" with the environmental and community constraints.

Bird watching, astronomy and observation of the night sky, kayaking, hiking and horseback riding, along with other wildlife and naturalistic pursuits draw tourists to Santa Fe County. The County's artistic communities, Pueblos and historic sites are also important tourism draws. It is important to note that promoting developing ecotourism is only one component of a

successful ecotourism development program. First and foremost, a healthy environment with connected, protected and accessible natural areas is critical. For the County to protect its ecotourism assets, it must prevent development, including oil and gas development, from infringing on a critical mass of natural preserves.

The high desert climate, with four attractive seasons and abundant sunshine, along with expansive open spaces and a rural, outdoor culture provide numerous opportunities for recreational activities in the County. Tennis, hiking, golfing, skiing, horseback riding and resort activities are already prevalent in the County.

In addition to further development of outfitters and guest ranches, the outdoor recreation industry in Santa Fe County can grow in the outdoor gear and apparel industry. Opportunities related to the outdoor recreation industry already existing in the area include specialty design and light manufacturing related to outdoor activities such as backpacking, rock climbing, biking, running and other similar activities.

2-9.4. Infrastructure Development

A key to attracting and keeping both existing industries and the target industries described above is the development of twenty-first century infrastructure within the County. Without adequate infrastructure, other community and economic activities are weakened and increasingly difficult to support. In assessing current strengths and weaknesses related to infrastructure, the County has identified regional infrastructure development in broadband, renewable energy and agriculture infrastructure, as key to advancing the local economy into the future.

2-9.4.1. Broadband

New Mexico ranks 45th out of the 50 states in broadband access. Further, 75% of the download speed in the state falls below the nations' average, rendering access and capacity in this information-age society and economy more difficult. Broadband access provides a conduit to open and accessible government, enhanced business competitiveness and an improved quality of life, through improved delivery of services such as health care, education and public safety. As such, making the region a connected community, with unlimited access to information resources by building and supporting an open access interconnected broadband infrastructure network will support and sustain local economic health. Because of the importance of access to quality broadband connections, and its ties to numerous quality of life issues, the County has identified the provision of a strong broadband infrastructure as the number one infrastructure priority.

2-9.4.2. Renewable Energy

To offset the high cost of energy production, distribution and consumption the County desires to foster a "green grid" infrastructure. Focusing on energy efficiency, energy conservation, and the development of "green" energy production, distribution and consumption within the County itself, the County is currently working to make these infrastructure improvements more likely to occur through the development of a Renewable Energy Financing District. The District, created to provide viable financing options to address the barrier of high upfront costs of renewable energy development, offers an alternative financing method with long-term and low cost financing, including repayment through a special assessment on property tax bills. In addition to a benefit to industry, this district will also allow residential and commercial property owners to be able to make renewable energy improvements in an accessible and affordable manner. Property owners will be able to opt into the district, therefore making participation a voluntary measure.

2-9.4.3. Agriculture

The third infrastructure component targeted relates to the local agricultural base. As noted earlier, the majority of mid-sized and large farms and ranches within the County process and sell their products on a national, not local level. The lack of local processing infrastructure and local markets readily available for farmers and ranchers to sell to hampers the local economy. The County desires to fix this infrastructure issue by providing ample local markets for the sales of agricultural products, such as allowing on-site farm stands and encouraging community farmers' markets; and by seeking out ways to attract food processing industries to the County.

2-9.5. Existing Tools and Incentives

In collaboration with regional partners and other local government entities, Santa Fe County offers the tools and incentives listed in **Figure 2-39** as part of its economic development program. The County either facilitates the program listed or offers assistance in explaining how the program works and how to apply/receive the award.

Figure 2- 39: Available Tools and Incentives

Assistance With Local Economic Development Act (LEDA)	Solar Market Development Income Tax Credit
Assistance with local real property acquisitions and development processes	Bio Fuels Production and Sales Tax Incentive
Potential partnership with funding and resources development in support of targeted industries	Manufacturers' Investment Tax Credit
New Mexico Business Bonds	High Wage Job Tax Credit
Industrial Revenue Bonds	Technology Jobs Tax Credit
Community Development Incentive Act (Property Tax Exemption)	New Mexico 9000 ISO Compliance for Small Business
New Mexico Job Training Incentive Program (JTIP)	Investment Tax Credit for Manufacturers (Investment Credit Act)
Agribusiness Production Tax Deductions and Exemptions	Child Care Corporate Income Tax Credit
Call Center Capital Equipment Tax Credit	Cultural Property Preservation Tax Credit
New Mexico Rural Job Tax Credit	Rural Software Gross Receipts Tax Deduction
Film Investment Program	Distilling and Brewing Preferential Tax Rate
Film Production Tax Credit	Energy Efficiency and Renewable Energy Bonding Act
Renewable Energy Production Tax Credit	Income Tax Exemptions for Certain Taxpayers
Alternative Energy Product Manufacturer's Tax Credit	Expand Renewable Energy Production Tax Credit
Advanced Energy Tax Credits	Biomass-related Equipment Tax Deduction
Wind Energy Equipment Gross Receipts Tax Deduction	

2-10. Agriculture and Ranching

Agriculture and ranching maintain historic settlement patterns and economic base in Santa Fe County, especially in traditional communities. Supportive endeavors to preserve and protect the continuous use of agricultural and ranching practices in the County are crucial to sustaining the diversity of cultures, local economy and the overall quality of life for residents of the County.

2-10.1. Agricultural History and Background

New Mexico has had a long history of agricultural practices that date back to aboriginal times. Pueblo Indians in the upper Rio Grande area cultivated extensive fields of small crops such as corn, beans, and squash. During colonial times the Spaniards began planting fields and extending existing irrigation ditches or *acequias*. The Spanish colonists cultivated other crops that diversified the native diet and expanded agricultural productivity. The majority of their farming techniques were implemented for subsistence farming, eventually creating a bartering system which led to the sharing and exchanging the cultivated products.

Significant changes in the basic subsistence pattern of farming and ranching correspond to the arrival of the railroad in 1880. Some new techniques, tools, and seeds from the east coast were introduced during this time serving to transform the rural barter system of agriculture to a cash economy. But for the most part, traditional methods, customs, and indigenous seeds were still used and continue to be used among contemporary agricultural and ranching communities of Northern New Mexico. According to the 1950 Census of Agriculture, there were 895 farms in the County in 1950 which consumed almost 1 million acres of land.

The existence of *acequia* landscapes as viable land-based agro-economic systems has been the key to the survival of local communities and cultural continuity. The connection of land, water and culture is exemplified in *acequias* where the cultural identity of a community is able to link the past and future via a topographical setting that conforms to the lay of the land. Other more recent cultural imprints are the homesteading settlement patterns in the southern part of the County. The Homestead Act of 1862 promised 160 acres of public land to any person who filed a claim and agreed to work the land for five years. Here the land divisions are geometrically configured to comply with the 1785 Land Survey Ordinance establishing the platting of Townships and sections. The resulting landscape is now seen as a checkerboard of land divisions.

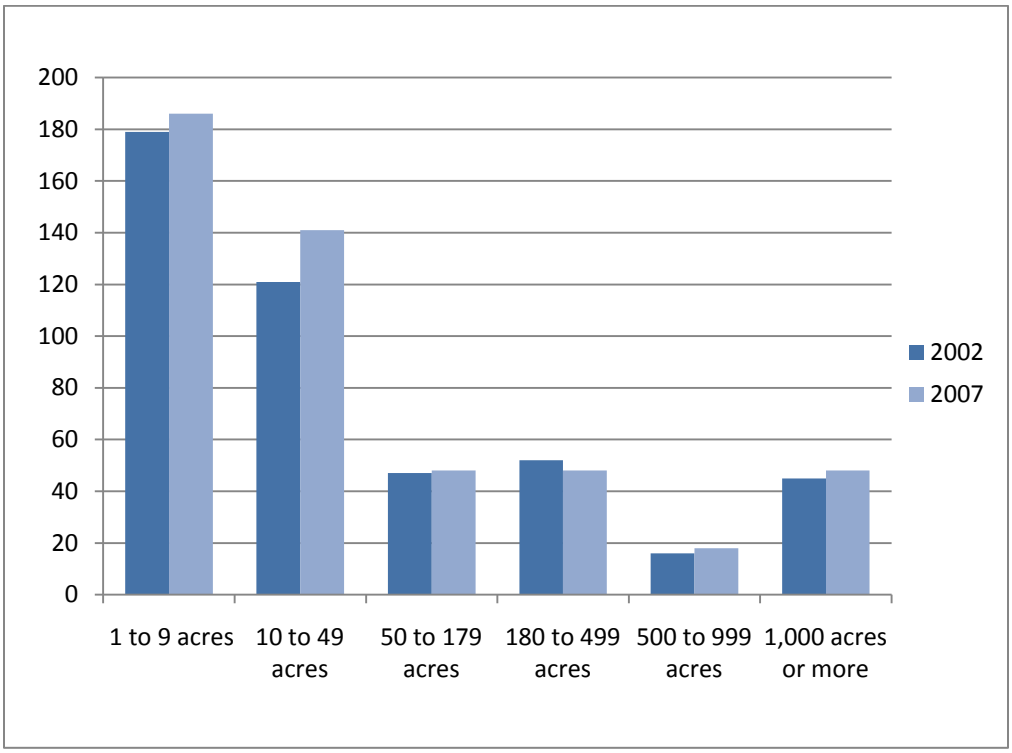
2-10.2. Agricultural Land Use

According to the U.S. Department of Agriculture (USDA) 2007 Census of Agriculture, there were 489 farms in the County and 569,404 acres of land in farming. Eighty six percent of land in farms is identified as pasture land. The number of farms increased from 460 in 2002, while the total amount of land in farming decreased by 17% from 2002, when there was 683,508 acres of farm land. The average farm size also decreased during this time 22%, from 1,486 in 2002 to 1,164 acres in 2007. The median farm size in 2007 was 17 acres. **Figure 2-40** shows that in 2007 there was an increase in farms from 1 to 179 acres, while there was a decrease in farms from 180 to 499 acres.

The number of irrigated farms did not change from 2002 to 2007. However, the number of acres of land in irrigated farms decreased from 351,952 acres in 2002 to 186,131 acres in 2007. In 2007, 106 farms were under 10 acres, encompassing a total of 308 acres. (Source, 2007 Census of Agriculture USDA)

165 cattle farms were identified in the 2007 Census of Agriculture, an increase from 147 in 2002. The total number of cattle declined in 2007 to 7,797 head, down from 10,961 in 2002. The total number of beef cows also significantly decreased over this five year period from 7,729 to 3,871 beef cows in 2007.

Figure 2- 40: Farms by Acreage (2002; 2007)



According to the 1998 Agriculture and Ranching study commissioned by Santa Fe County, agricultural production consisted of small-scale livestock production and field and orchard crops in the north, and larger farms and ranches in the southern part of the County. Cattle and horses made up the majority of the common livestock. The majority of crop production consisted of alfalfa, but there were orchard and vegetable crops as well. Overall, the study concluded that the economic returns for farming and ranching have continued to decrease, making it difficult to pursue farming and ranching as a livelihood. The 2007 Census of Agriculture indicates that the average net cash farm income was a net loss of $4,801 per farm.

According to the 2007 Census of Agriculture, the majority of agricultural land is used for livestock, mainly cattle and calves. Corn is the top crop item in acreage, with 4,357 acres being used for corn while 3,644 acres was used for forage including hay.

Active ranching and farming operations in the County include:

- Traditional agriculture that employs acequia irrigation, and which is mainly located in the valleys of the northern and central portions of the County. Based on the acreage identified as consisting of "Traditional Irrigated Valley" on the map of *Landscape Character Types* found in the document **"Santa Fe County Visual Resources Inventory & Analysis"** (Design Workshop, Inc. 1995), there was a potential of about 8,483 acres consist of traditional agriculture in Santa Fe County. Much of this agriculture consists of the growing of vegetables, fruit, and specialty crops.

- Modern agriculture that employs pivot (groundwater) irrigation, and which is mainly located in the southern end of the Estancia Basin.

- Ranching and grazing uses, which are located in all parts of the County, but are mainly concentrated in the Galisteo and Estancia Basins. Livestock grazing potentially occupies up to about 520,514 acres on private land in the unincorporated County, based on the area of parcels that are either (a) vacant and over 40 acres in size, or (b) developed for a single dwelling and located on parcels of over 160 acres in size. In addition, an estimated 157,515

acres of vacant federal land and 79,562 acres of vacant state land are potentially used for grazing, based on the area of parcels that are either owned by the Bureau of Land Management, the New Mexico State Land Office, or located in the Caja del Rio and Glorieta Mesa units of Santa Fe National Forest. The exact number of acres currently used for grazing is unknown, and depends on the availability of forage, the market for livestock products, and state and federal policies with respect to grazing on public lands.

The U.S. Department of Agriculture Census of Agriculture provides more detailed and accurate data regarding agricultural uses in Santa Fe County for the year 2002 and 2007. According to the USDA Census, there were 16,799 acres of harvested cropland in Santa Fe County in 2002, of which 16,627 acres were irrigated. Of these 16,799 acres of cropland, 6,839 acres were used for growing feed crops; the remaining 9,960 acres were used for growing crops for human consumption. There were 19,599 acres devoted to improved pasture in 2002, of which 2,165 acres were irrigated. The total amount of land used for livestock production (both rangeland and improved pasture) was 605,704 acres in 2002; however, this figure does not include public lands that are used for livestock grazing.

2-10.3. Economic Impact

The market value of agricultural products sold including crop sales and livestock sales increased by 7% from $11,783,000 in 2002 to $12,614 in 2007. Crop sales were $8,591,000 (68%) while livestock sales were $4,023,000 (32%). The average per farm reporting sales was $25,795.

In 2007, the total farm production expenses were $16,335,000, or an average of $33,405 per farm. During this same time period, farms saw an eighty seven percent decrease in government payments from an average per farm receiving payments of $12,471 in 2002 to $2,227 in 2007. This significant decrease resulted in a negative net cash farm income of $4,801 in 2007. Further, only 209 of the farms principal operators identified farming as their primary occupation in 2007.

Figure 2- 41: Farms by Value of Sales (2002; 2007)

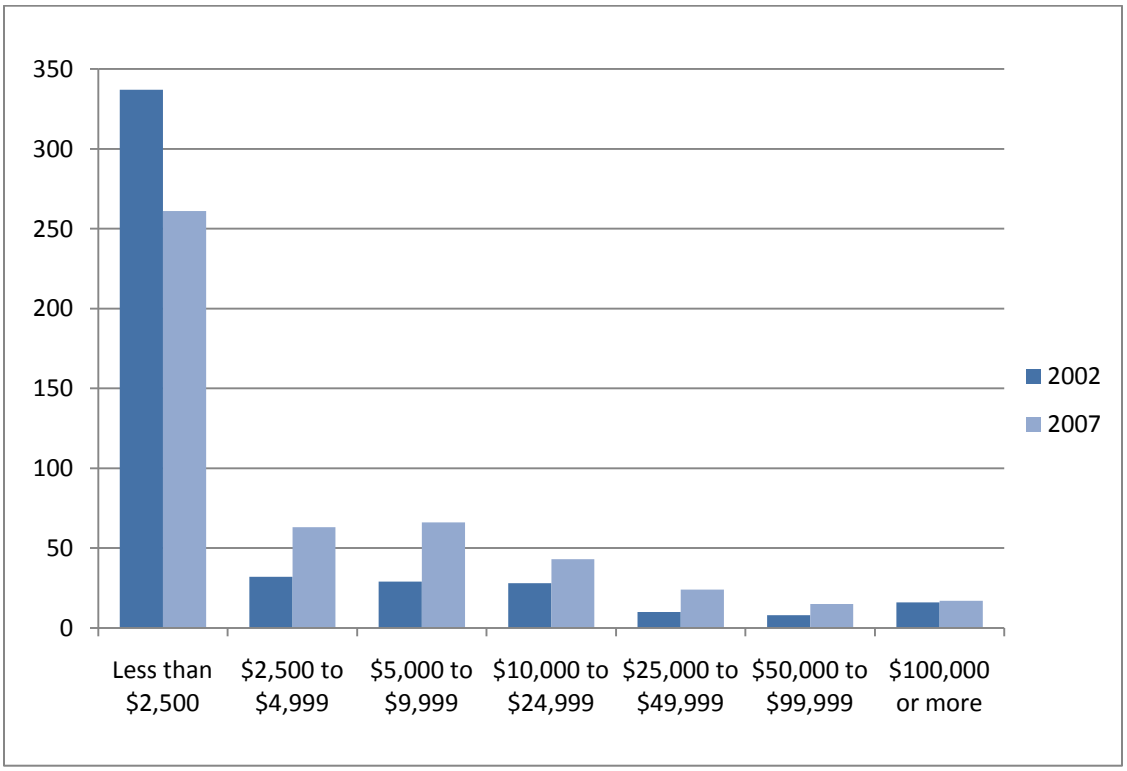


Figure 2- 42: Agricultural Products

Crops	Livestock/products
▪ Grains, oilseeds, dry beans, and dry peas ▪ Vegetables, melons, potatoes, and sweet potatoes ▪ Fruits, tree nuts, and berries ▪ Nursery, greenhouse, floriculture, and sod ▪ Other crops and hay	▪ Poultry and eggs ▪ Cattle and calves ▪ Milk and other dairy products from cows ▪ Hogs and pigs ▪ Sheep, goats, and their products ▪ Horses, ponies, mules, burros, and donkeys

Figure 2- 43: Operator Characteristics (2007)

Characteristic	Quantity
Principal operators by primary occupation:	
Farming	209
Other	280
Principal operators by sex:	
Male	365
Female	124
Average age of principal operator (years)	58.3
All operators by race:	
American Indian or Alaska Native	45
Asian	2
Black or African American	2
White	650
More than one race	6
All operators of Spanish, Hispanic, or Latino Origin	**233**

2-10.4. Issues & Opportunities

- ***Profitability****:* It is becoming increasingly difficult to survive economically in the farming and ranching business due to high expenses, lack of markets and environmental concerns
- ***Transition of the farm****:* Farm and ranchland will be changing hands as aging farmers retire. The future of agricultural practices as they exist is uncertain. Large estate taxes play a role in whether the land will remain agricultural or transition to residential development.
- ***Farmland loss****:* Prime agricultural lands (class I) are limited
- ***Environmentally sound management***: Large scale farming is a leading source of groundwater and surface water pollution due to fertilizers, pesticides and soil erosion.

Emerging Markets

- Expanding markets for local agricultural products

- Community Gardens
- "Farms to Schools" Program
- Wineries/vineyards
- Local-value added food manufacturing and production
- Greenhouse produce
- Organic / sustainable agriculture
- Education and Outreach
- Expanding farmers markets
- Community Supported Agriculture (CSA) programs
- Algae production for food and fuel resources

2-10.5. Keys to Sustainability

The main challenge of the County's plan and land development regulations is to protect agricultural uses, and particularly, the high-value agriculture typically found in traditional agricultural areas, from encroachment by development. The subdivision and development of land in rural areas tends to fragment agricultural lands, which reduces the long-term viability of the agricultural economy, and also leads to compatibility conflicts between development and agricultural uses.

There will be opportunities of which the County will need to be cognizant regarding future agricultural sustainability. As we move into a more technological advanced era, with some uncertainty of economic stability, and acknowledgement that New Mexico is one of the leading states impacted by the "food gap", we need to begin to create mechanisms for partnerships with local and regional players in the agricultural sector.

2-10.5.1. Community-based Agriculture

Most of the community–based agriculture corresponds to the acequia landscapes associated with the traditional communities in northern and central Santa Fe County. The traditional long lots are platted perpendicular to the water courses and use acequias for flood irrigation. A variety of crops are grown ranging from corn, beans, peas, pumpkins and squash to fruit trees and some berries and vineyards. Alfalfa and some forage crops are also grown for feeding livestock, sheep and goats.

Agriculture has been the backbone of community development since the founding of the traditional communities. Survival on the land depended upon being able to grow your own food and barter with the neighbors. The scale of the agriculture ranges from small family gardens to larger acreages. Some fields were large in size producing grains such as wheat that were used for producing flour. Although, some small scale agriculture still exists most of the cash crops are now based on forage crops such as alfalfa and hay.

2-10.5.2. Community Supported Agriculture (CSA)

Community Supported Agriculture or CSA is a relationship of mutual support and commitment between local farmers and community members who pay the farmer an annual membership fee to cover the production costs of the farm. In turn, members receive a weekly share of the harvest during the local growing season.[1] CSA programs are cooperatives that bring the farmer and the consumers together, enabling consumers to buy shares of a harvest. The harvest shares can be distributed in summer and winter seasons.

CSA programs provide many benefits to community. They support the local economy by keeping money in the community. More money in the community means more jobs locally. Other benefits to CSA programs include putting the community back in touch with the local natural resources while reducing the environmental impact. Currently there are at least two CSA programs in operation in Santa Fe County. However other CSAs exist in the surrounding communities of Santa Cruz and Arroyo Seco.

" Sharing the experience through outreach to other farm groups and to the community through gardening events enables consumers and farmers to work together on behalf of the earth – and each other"

- Steve Warshawer, Founder/Owner of Beneficial Farm CSA (Mesa Top Farm) in Glorieta Mesa, Santa Fe County.

2-10.5.3. Local Food Supply / Food Security

Traditional communities grow a substantial amount of their own food. This tradition of subsistence farming has endured since the establishment of the communities. Excess agricultural products are traded or sold at local farmers markets. This food supply is limited to the immediate communities; it would take a greater initiative to increase the available food supply for the entire county. The availability of water is key to the viability of the land and crucial towards food production.

Santa Fe County residents should have the ability to secure nutritious, culturally appropriate food through just and healthy systems. Locally produced food is key to food safety, multiculturalism, nutrition, environmental sustainability, community development and social justice. Many constituents in the County are struggling with poverty, rising food prices and poor nutrition. The majority of health problems are associated with the inability to afford a healthy diet. Contributing to low quality food systems are the degradation of watersheds, loss of farm land and its impact on diminished access to traditional food sources. Rising costs of land, fertilizers, feed, and other inputs as well as low global food prices are affecting local food production.

2-10.5.4. Seed and Food Sovereignty

"… It is widely recognized that the replacement of indigenous foods with a diet composed primarily of modern refined foods is the centerpiece of the (diabetes) problem…."

-Dr.Harriet Kuhnlein, McGill University, Canada

The seed sovereignty movement has a global following for the protection of indigenous seeds and food sources. This movement's goals, among many, are to "protect native seeds, crops, heritage fruits, animals, wild plants, traditions, and knowledge of indigenous land and acequia-based communities" (http://www.lasacequias.org/programs/seed-alliance/, 2009). The purpose of protecting seeds and food sources is to maintain cultural practices and traditions while resisting a global industrialized food system, inappropriate food production and genetic engineering (GE) or modification of native seeds and plants.

This movement in New Mexico has been primarily spearheaded by the New Mexico Acequia Association and the Traditional Native American Farmers' Association, both of which make up the core of the New Mexico Food & Seed Sovereignty Alliance. Their mission and passion to this cause is important to Santa Fe County because this area has a rich history of traditional agricultural practices and is home to native crops where native seeds are still used today.

In an effort to support seed sovereignty in Santa Fe County, Resolution 2007-9 was adopted in support of a "Declaration of Seed Sovereignty: A Living Document for New Mexico." In this Resolution, Santa Fe County expressed support for the following:

- The continuation of seed-saving traditions of traditional Indo-Hispano and Native American farmers and maintain the landraces (native seeds) that are indigenous to the region of northern New Mexico.
- Engaging youth in the continuation of the traditions of growing traditional foods, sharing scarce water resources, sharing seeds, and celebrating our harvests.

- Rejecting the validity of corporations' ownership claims to crops and wild plants that belong to our cultural history and identity.
- Objecting to the seed industry's refusal to label seeds or products containing GE technology and ingredients and demand all genetically modified seeds and foods in the State of New Mexico be labeled as such.
- Objecting to the cultivation of GE seeds, especially within range of our traditional agricultural systems that can lead to contamination of native seeds, wild plants, traditional foods, and cultural property.
- To work with local, tribal, and state governments to create zones that will be free of genetically engineered and transgenic organisms.[lxii]
- To work together to address other environmental abuses that contaminate our air, soil, and water quality that also affects our health, the health of our seeds and agriculture, and the health of future generations.
- To work together with the traditional farmers representing various acequia, Pueblo, tribal, and surrounding communities to create, support, and collaborate toward projects and programs focused on revitalization of food traditions, agriculture, and seed saving and sharing.

Thus, it is Santa Fe County's goal to work in collaboration with other jurisdictional entities and communities in support of the above mentioned goals, policies and strategies to preserve native seeds and ultimately native food sources. It is our intent to not only maintain cultural and traditions throughout the County, but also support local initiatives for agriculture and economic development while maintaining healthy options for all residents.

2-10.5.5. Partnerships

The following is a short list of organizations, groups and government entities that Santa Fe County has either partnered with in the past, or has the potential to collaborate and partner with in the future regarding agricultural initiatives and projects.

- Community based agriculture groups:
  - » La Cienega/La Cieneguilla
  - » Tesuque
  - » Pojoaque Valley
  - » Santa Cruz
  - » Agua Fria
  - » La Bajada
  - » Chimayo
  - » Galisteo
  - » Edgewood/Stanley
- Santa Fe Alliance
- Santa Fe Farmers Market Institute
- Beneficial Farms
- Santa Cruz Farms
- New Mexico Acequia Association
- Agriculture Revitalization Initiative
- Food and Agriculture Quality Council
- Farm to Table
- Pojoaque Valley Irrigation District
- Santa Cruz Irrigation District
- Santa Fe Downs/Pojoaque Pueblo Community Farmers Market
- United Way of Santa Fe County
- Pueblos

2-10.6. Tools & Incentives

The following are land use tools that have been used in other places they may provide incentives for conserving arable land and protecting it in the long term. Although some of these tools may or may not be viable options in Santa Fe County, they are worth exploring as possibilities for future agricultural land preservation.

NM Right to Farm Act

The purpose of the Right to Farm Act is to conserve, protect, encourage, develop and improve agricultural land for the production of agricultural products and to reduce the loss to the state of its agricultural resources by limiting the circumstances under which agricultural operations may be deemed a nuisance.

According to this State Act, any agricultural operation or agricultural facility is not, nor shall it become, a private or public nuisance by any changed condition in the localition of the agricultural operation or agricultural facility if the operation was not a nuisance at the time the operation began and has been in existence for more than one year.

Nuisance Easements

Easements can have both a negative or positive impact on real estate value. They can increase value in situations where the easement can generate added income (signs), attract desired services (utility) or provide access to an otherwise landlocked parcel. But, they can also decrease value in situations where the easement is a nuisance, prevents maximum profitability of land use, or creates a liability.

Differential Assessment

Farmland is valued for property tax purposes according to its current use in farming, not at its highest and best use for house lots. The difference (differential) in assessed value between the highest and best use and the agricultural use multiplied by the local tax rate determines the size of the tax break. The higher the local tax rate and the greater the differential between farm-use value and the highest and best use, the larger the property tax savings to the farmland owner.

Preferential Taxation

There are three types of preferential assessment:

- Simple preferential assessment, in which a landowner voluntary enrolls the land and withdraw the land at any time without a penalty;
- Preferential assessment with a “roll-back” provision (also known as deferred taxation) to recapture tax benefits along with an interest penalty if farmland is withdrawn from the preferential assessment program or sold for development; and
- Preferential assessment based on a contract that lasts for 10 to 25 years.

Conservation Easements

An agricultural conservation easement (ACE) is a legal agreement restricting development on farmland. Land subjected to an ACE is generally restricted to farming and open space use (American Farmland Trust). An ACE provides permanent land protection but does not guarantee that a farm will remain a farm because it cannot require that land be actively farmed; the land may revert to open space.

Purchase of Development Rights

Purchase of Development Rights (PDR) Purchase of development rights is a voluntary transaction in which a farmer receives a cash payment in return for signing a contract called a deed of easement, that restricts the use of the land to farming or open space. Most sales of development rights are permanent, though a deed of easement may specify a certain term such as 30 years.

Transfer of Development Rights

Transfer of Development Rights (TDR) A TDR is a conveyance of development rights by deed, easement, or other legal instrument, authorized by ordinance or regulation, to another parcel of land and the recording of that conveyance. Transfer

of development rights allow a farm owner to sell development rights from their property to a private developer who transfers those rights to develop the real estate.

LESA

The Land Evaluation and Site Assessment (LESA) System developed by the USDA can be used to identify high quality farmland with long-term viability for agricultural production. The LESA system consists of two parts:

- Land evaluation rating of land for farming
- Site assessment rating of the surrounding economic, social and geographic features that measure development pressures on the farm and that indicate farm viability.

Agriculture Protection Ordinance or District

Agricultural zoning protects high-quality soils and separates conflicting farm and non-farm land uses. It can slow the conversion of farmland to other uses and prevent fragmentation of the farmland base into parcels too small to farm. Effective agricultural zoning regulations strictly control:

- the land uses allowed in each zone;
- the number and size of new farm parcels;
- the number, size, and siting of nonfarm parcels allowed; and
- setbacks for farm buildings from property lines

There are three main types of agricultural zoning:

- large minimum lot size;
- fixed area ratio; and
- sliding scale

A model that incorporates some of these techniques was used in Rio Arriba County where an ordinance was created in order to require the preservation of agricultural lands throughout the County. The purpose of the Agricultural Protection and Enhancement Ordinance, adopted in 2002, was to protect and augment the agricultural lands, the acequia systems, and the ground and surface water resources of the County by establishing criteria for review and approval of land use zoning, subdivisions, or division of land, located within irrigated agricultural lands. An agricultural protection ordinance could be used to achieve the following purposes:

- Promote the use of clustering lots, homes and structures on irrigated agricultural lands while accommodating development
- Ensure the integrity and conservation of irrigated agricultural land and water resources for future generations
- Minimize and reduce potential contamination of underground and surface water supplies from the proliferation of septic systems associated with new development
- Protect the water supply by regulating land use zoning, the development of subdivisions or division of land, homes, private and community wells and liquid wastewater disposal systems on irrigated agricultural land
- Require more compact development with open space set aside to protect historic patterns and important visual qualities
- Protect the agricultural uses from the negative impacts of development and from uses that are not compatible with irrigated agricultural land

The ways that we could achieve these goals may be to outline requirements for potential development on arable land in the Sustainable Land Development Code. Some of the requirements might include the following:

- Create a zoning district that will be the basis for identifying viable agricultural land

- Creating an Agriculture Overlay Zone that would include site design criteria for the creation of new lots and lots and/or new development.
- Create a matrix that would outline existing lot sizes and the potential number of new lots that could be created if clustering techniques were utilized.
- Designating areas that have potential to remain as agricultural open space.
- Designating permitted uses on the areas identified as agricultural open space.
- Designating buildable areas that should not exceed 30% of the lot.

2-10.7. Acequias

2-10.7.1. Acequia History & Background

The community-based acequias in Santa Fe County are one of the oldest water management institutions in the United States. These earthen ditches, native engineering works used for irrigation, date back to indigenous times. When the first European settler arrived in northern New Mexico during the late sixteenth century with the first Juan de Oñate colony in 1598, they saw the efficiency of the water irrigation systems already in place. The landscape in the area encompassed a vast semi-arid territory rich in natural and mineral resources, but short on surface water resources. When Spanish c*onquistadores* conducted the first *entradas* into the Río Grande they realized that the construction of irrigation works or acequias would be critical for the establishment of communities and agricultural production. Spanish colonization policies required that officials of the crown, and settlers from the central valley of Mexico who accompanied them, must locate their communities in the vicinity of water resources essential to permanent occupation. The irrigation technology employed by the settlers was gravity flow by way of earthen canals or acequias that closely followed the contours of the sloping land form. Thus the Spanish expanded the acequia system as more colonizing settlements began to occur.

The acequia irrigators known as *parcientes* formed their own water democracies operating outside of government in terms of their internal affairs: they elected their own officers, established rules, enforced them, and settled water disputes. The first water laws adopted by the Territorial Assembly of New Mexico in 1851-52 under United States jurisdiction were the *Leyes de las Acequias*, published in Spanish, guaranteeing the priority of water use for irrigation and the application of existing ditch rules. As in the past, acequia communities today are still in charge of their day-to-day governance, and collectively maintain their irrigation works and repair their diversion structures when necessary.

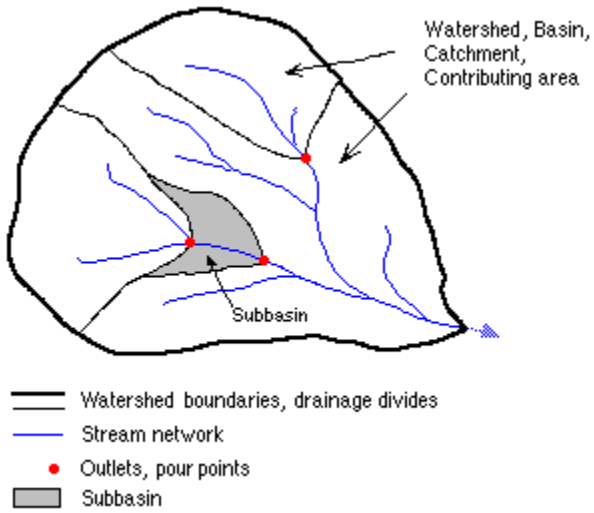
Acequia irrigation systems in the upper Rio Grande area have supported human subsistence for hundreds of years. These systems also supported the social, political, and ecological systems in traditional communities throughout Santa Fe County. As a social institution, they have preserved historic settlements and local cultures spanning from the Spanish colonial period, through the Mexican and Territorial periods, to present day. From a political standpoint, as we see today, many of the acequia institutions have functioned as the only form of local government below the County level. As biological systems, acequias have supported soil and water conservation, aquifer recharge, wildlife and plant habitat preservation and energy conservation.

2-10.7.2. Acequia Landscape

The *acequia* watercourse remains as the most distinguishing feature of the northern New Mexico village. Its relationship to the surrounding landscape is molded by the force of the water as it flows through the terrain; it defines the natural and human-made boundaries in a mosaic of gradual transitions. An *acequia* landscape allocates space for the built environment and agro-economy. In a sense, it sets the limits to growth by realizing the carrying capacity of land and water while nourishing the plant and animal life within the spatial corridor.

The landscape associated with an *acequia* encompasses an upslope drainage area or watershed known as a catchment or basin, as shown in **Figure 2-44.**

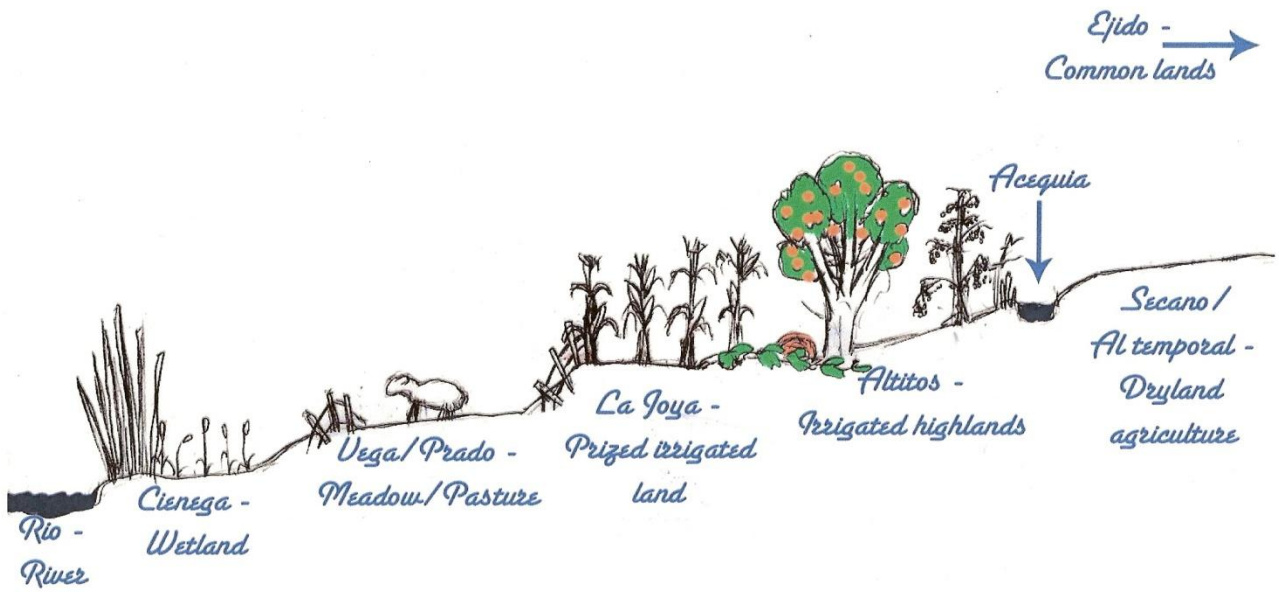
Figure 2- 44: Watershed Diagram



It begins with a collection area (watershed, *cuenca*) that eventually drains into a water course. The boundaries (*lindes*) of the watershed are delineated by the upslope area that drains towards the drainage channels. The hydrologic system of conveyance occurs through a drainage network or hierarchy of small streams, springs (*ojos*), and seepages (*esteros*). The Sangre de Cristo Mountains and foothills (*lomitas*) are the watershed environment that provide run off in the form of rain, snow and seepages. Surface water flows from first order streams onto second and third orders becoming a river at some point from where a portion of water is diverted onto a manmade hydrologic conveyance system which is the *acequia*. The main *acequia* (*acequia madre*) then follows the upper contours of the landscape providing irrigation water to the agricultural fields via a subsystem of gravity flowing laterals (*linderos)* and small ditches (*sangrias).*

Since water from the *acequia* requires gravity flow, the working landscape incorporates a system of terraces. A typical *acequia* terrace transect begins with the *acequia madre* diverting at the upper section (*altitos)* of the river providing irrigation to the lower terrace (irrigated highlands). The next level below is the prized irrigated land known as *la joya* or the jewel. Below *la joya* are the *vegas* or the meadows or pasture lands that are closer to the river and have a higher ground water level requiring little or no irrigation. The last level adjacent to the river is the *cienega* or wetlands. The river itself is a lush riparian corridor giving rise to flood plain vegetation or dense forested land known as a *bosque*

Figure 2- 45: Cross-section of Acequia Landscape



The terraced systems of agricultural related functions are associated with a land division system that incorporates long narrow lots that are platted perpendicular to the river tributary valley. These field patterns are known as *extensions* or *vara* strips named after the Spanish unit of measurement used in laying out their width. The long lots provide a transect of the terrain allowing each homestead an equitable portion of the land with a cross section of all the natural elements essential for surviving in an arid landscape. Linear settlements known as *corriedas* or corridors are associated with the acequia alignments. Dwellings, sacred spaces, and commercial buildings typically characterize these linear communities. Collectively, the *acequia* landscape consists of the *acequia*, the long lot agricultural fields and the built environment consisting of dwellings, outbuildings, corrals, pens and other homestead related structures and objects.

2-10.7.3. Acequia Governance

Acequias are recognized under New Mexico law as political subdivisions of the state. The acequia associations have the power of eminent domain and are authorized to borrow money and enter into contracts for maintenance and improvements. Acequia associations do not have the power to tax, so the expenses of maintenance and improvements are borne by the individuals served by the irrigation system.[lxiii] **Map 15** shows the locations of acequia associations in the County.

2-10.7.4. Santa Fe County Watersheds

There are eight basins or watersheds in Santa Fe County (**Map 36**). The northern most watershed is the Cundiyo Basin extending into Rio Arriba. To the west is the Guaje Basin which lies adjacent to the Tesuque and Nambé Basins. At the eastern county line the Pecos Basin is extends into Santa Fe County although it drains easterly towards the Pecos River. Midway at the west County line lies the Caja del Rio Basin. The Galisteo Basin starts midway and extends south adjacent to the Estancia Basin. All of the *acequias* lie within the Cundiyo, Tesuque Santa Fe, and Nambé Basins. (**Figure 2-46)** Historically there were *acequias* in Galisteo but are no longer functional. Most of the irrigation in the Estancia Basin occurs via center pivot sprinklers.

Figure 2- 46: Watersheds with Active Acequias

Watershed	Area/Acres	Streams/Rivers	No. of Acequias
Cundiyo Basin	191 sq mi/122,359 acres	5	20
Nambé Basin	204 sq mi/130,902 acres	4	17
Tesuque Basin	114 sq mi/72,948 acres	4	22
Santa Fe Basin	279 sq mi/178,755 acres	5	11
			Total Acequias: 70

Source: SEO, March 1987

2-10.7.5. Acequias and Irrigated Land in Santa Fe County

In 1987, the four major basins or watersheds contained 70 acequias with approximately 7,595 acres of irrigated land. There were 1,791 farmers with an average of 108.5 irrigated acres per *acequia*. Sixty-six of the *acequias* had active associations, although only 19 had bylaws on file with the State Engineers Office. **Figure 2-47** lists the total irrigated acres in 1999 for the major river basins. The total surface water irrigated acres in Santa Fe County were 7,502 acres in 1999. In 2005 the acreage decreased to 7,005 acres (**Map 29**).

Figure 2- 47: Irrigated Agriculture (1999; 2005)

River Basin	Total Irrigated Acres 1999	Total Irrigated Acres 2005
Pojoaque Valley Irrigation District	1,917 Acres	1,880 Acres
Santa Cruz & vicinity	4,600 Acres	4,425 Acres
Santa Fe & Vicinity	595 Acres	700 Acres
Total	**7,112**	**7,005**

Source: Office of the State Engineer

2-10.7.6. Water Rights

Most irrigation water rights in New Mexico became established simply by historic irrigation of the land and continuous use to the present. Surface water rights originating prior to 1907 do not need any kind of permit or paperwork to be considered valid today, as long there is continued use. The land does not need to be plowed or planted with crops to have a water right; for example, land that is irrigated only for pasture or for a lawn can have a valid water right. The only requirements are a man-made diversion from a stream and beneficial use associated with the irrigation. In 1907, the Territorial Assembly adopted a Water Code that diminished the sovereignty of acequias and the control and utilization of surface water. The control and issuing of water permits for the diversion and use of surface water became a State power (statehood was granted in 1912). This law marked the moment, under American Law, when water and land ownership were split. This policy meant that water and water rights were not tied to the land or communal resources, but were commodities that could be bought and sold privately. People who wanted to obtain a new surface water right after 1907 had to get a permit from the State Engineer, and could only get one by proving that there was surplus water in the particular stream system.

A “water right” differs from a “ditch right”. A water right has to do with the state’s rules and laws governing who can take water from a stream. A ditch right usually refers to the specific rules a particular ditch has about being in good standing with the acequia.

Every water right is legally defined by a number of elements:

- Source of water (i.e., which stream)
- Place of use (i.e., which tract of land and how many acres)
- Purpose of use
- Point of diversion
- Priority date (i.e., date water was first put to use on the land)
- Amount of water (limit on the volume of water that can be used per acre)

New Mexico has a type of water law called the **"**prior appropriation" system, which is found in most Western states. This system gives preference in times of water shortage to those water rights with the oldest priority dates. The priority date of a water right is the date the water was first put to "beneficial use" on the land. For most acequia-based water rights, this is the date the acequia was first constructed. In many regions of New Mexico the most senior water rights (i.e., those with the oldest priority dates) are held by tribal and by acequia *parciantes* because those are the oldest communities in those regions with a continuous history of irrigated agriculture. The priority dates of most acequias are in the 1600s-1800s, which reflect the dates those communities were settled. The preference that is given to senior water rights is recognized by the laws and Constitution of New Mexico.

If there is a shortage of water on a stream, and the water users do not have an established system for rationing or sharing the water, then the senior water right owners have the right to demand that junior water right owners reduce or stop their diversion of water so that the senior water users can get enough water. This is called a **"**priority call." These senior rights can be enforced if necessary by a court. There is also a provision in New Mexico law for priority administration, in which the State Engineer or a water master appointed by the State Engineer is legally authorized in times of shortage to allocate water in accordance with the different priority dates, if necessary by curtailing the use of junior water users.

The laws regarding priority administration have rarely been used, and there is not a consistent record of the Office of the State Engineer (OSE) or water masters actually curtailing junior users when senior users have asked the OSE for protection of their rights. The OSE has recently developed regulations for priority administration (called "Active Water Resource Management" regulations), but it is not clear whether this will result in honoring senior-priority rights in the manner set forth in the state's laws and Constitution.

2-10.7.7. Stakeholders

In addition to the acequia irrigated landscapes there are numerous internal and external stakeholders that are in competition for the surface water:

- Pueblo Indian Tribes claim and hold aboriginal rights that are paramount and federally reserved;
- Municipalities face increased demands from growing populations at a time of reduced snowmelt and precipitation and for the first time are diverting Rio Grande surface water for domestic uses;
- The industrial sector asserts a priority for higher use values in order to fuel the economy and increase job growth in the metropolitan area;
- Commercial agriculture is the largest consumer of surface and ground water, and thus farmers dependent on water delivery by irrigation and conservancy districts resist the transfer of water for other purposes such as urban development;
- Recreational users want to be included in regional water allocation and management decisions to ensure their continued access to streams and lakes for fishing, rafting, boating, and other water-based sports; and
- Environmentalists advocate minimum in-stream flows supplemented with water rights acquisitions for the protection of endangered fish and wildlife species such as the silvery minnow and the willow flycatcher.

These very diverse and often competing stakeholders present the community *acequias* in Santa Fe County and its tributaries with formidable challenges. The long term survival of the acequias may well depend on how the stakeholders,

elected officials, policymakers and the public recognize the eco-cultural and heritage values of the *acequia* irrigation systems.

2-10.7.8. Issues and Opportunities

The issues listed below are the result of the loss of cultural knowledge and traditions of the acequias. As values shift in traditional communities, the desire to farm and participate in the acequia culture has declined in some areas. The constant pressure of challenging the water rights of the acequias has also shifted the desire to continue participating in agriculture and irrigation. There is also a loss of institutional knowledge of acequia systems as newcomers move into an area and do not see the value of participating in its governance. In some cases, there is limited public information about acequias because of the sensitivity of information due to unresolved adjudication settlements in some communities.

The opportunities outlined are ways that we can look at educating the public about the importance about acequia systems and settings and continue to keep them as viable watercourses that contribute to the sustainability of our communities. The mapping and documentation of acequia systems and their associated watersheds will also be an important mechanism to identify issues relating to access, right-of-ways and easements.

On-going Issues

- Loss of agricultural lands to residential developments
- Abandonment of *acequias*
- Small family lot transfers
- Loss of agricultural and land based values
- Degradation of the watersheds/pollution of surface water flow
- Climate change, diminishing precipitation drought conditions
- Impacts from supplemental/large wells and groundwater use
- Acequia water rights transfers
- Encroachment and fencing off of easements
- Lack of information/mapping on *acequias*
- Lack of coordination/communication with Santa Fe County
- Development-planning and zoning is not consistent- doesn't protect riparian areas

Opportunities

- Encourage sustainable agricultural practices and continuation of traditional agricultural methods
- Advocate for cluster development or family compounds
- Establish educational programs and provide information on acequia landscapes
- Collaborate with New Mexico Acequia Association and other State wide *acequia* organizations on acequia system related issues and opportunities.
- Incorporate watershed based planning into Santa Fe County long range planning strategies
- Restore contaminated/polluted watersheds
- Protect *acequia* easements/water rights
- Document acequia easements and rights-of-way on County maps
- Support water banking among *acequia* systems
- Provide incentives for *acequia* based agriculture

2-10.7.9. Keys to Sustainability for Acequia Communities

The recognition of *acequia* quasi-judicial governance and acknowledgement of their fundamental landscapes as viable land-based agro-economic systems is the key to their survival. The connection of land, water and culture is exemplified in *acequias* where the cultural identity of a community is able to link past and future. Topographically, the northern communities of Santa Fe County located at the base of the Sangre de Cristo Mountains are ideal gravity based irrigation

systems. The sloped terrain and tributary valleys serve as surface water collection systems that convey the precious water that accumulates from snow pack and seasonal rains. It is critical to preserve and maintain the integrity of the water sheds in order to continue to provide irrigation water for the agricultural lands that sustain their communities. Changes in the climate and drought will present a challenge to the sustainability of *acequias*.

The scarcity of water will limit agricultural productivity and create more stresses for the community members in equitably appropriating water and overall governance of the *acequia* political structure. The preservation of *acequia* landscapes will depend upon the availability of and protection of agricultural land, surface water flow and a continuance of the historic traditions of *acequia* communities. Collaboration of *acequia* communities with local government, state and federal agencies will be essential in crafting public policy, land use controls and strategies for insuring the survival of *acequia* landscapes in Santa Fe County.

It is also important to acknowledge that acequias are political subdivisions of the State, and have quasi-jurisdictional mandates. Therefore acequia organizations and their efforts to conserve acequia water and put it to beneficial use should be validated. Furthermore the County will need to work more diligently with acequia associations to make sure they are brought to the table and considered in intergovernmental relations and decision-making for associated projects and policies. A mechanism in order have a better working relationship would be to allow acequia associations to automatically have the option to form a Community Planning Organization (CPO). Formation of a CPO would be an easy transition to make for acequia associations as most already have completed a formal process with bylaws, defined boundaries and a system of governance already in place. However, if the acequia association is already within the boundaries of a CPO, designation as an Registered Organization would be more appropriate.

Key strategies that will create a win-win situation for acequia communities and Santa Fe County is to create a comprehensive hydrographic layer for County maps that will show all acequia water courses and their associated landscapes in order to fully understand the connectedness of the system. Therefore the County will need to work with the Office of the State Engineer who has already been formulating a complete map of the hydrographic mapping of acequias through the State. These maps will in turn make it easier to identify easement, setbacks, and right of way issues as development proposals are presented to the County development review staff.

2-11. Energy

Much as petroleum production led to prosperity for producer regions in the 20th century, biofuels and alternative fuel production will constitute a key component of future economic prosperity of the country. In addition to economic benefits derived from the security of a sustainable energy source, economic benefits are likely to accrue to the innovators and producers of renewable energy.

2-11.1. Existing Conditions

2-11.1.1. Existing County Energy Sources

Electricity for the entire county is supplied via the four corners San Juan coal-fired generating facility. Transporting the electricity from the power plant to the consumer occurs through a 345KV primary line then transferred to a 115KV. The only County facility that is designed for renewable energy utilization is the public works building. All other County facilities and infrastructure are of conventional design relying on imported energy sources.

Natural Gas service is available from New Mexico Gas Company via pipelines coming from the San Juan wells. Areas outside of the pipeline have to rely on propane gas. Wood for space heating and cooking is also popular in the traditional/historic communities adjacent to the foothills and forested areas.

The construction and operation of residential, commercial and industrial buildings consume almost fifty percent of total energy consumption. Buildings thus are the largest energy consumers and emitters of greenhouse gas emissions.

2-11.1.2. Climate Change

Human activity is changing the global climate by increasing the concentration of carbon dioxide, methane and other greenhouse gases in the atmosphere. These gases trap heat near the earth's surface. The greatest human-caused contribution to the increased greenhouse effect is the large amount of carbon dioxide produced by burning of carbon-based fuels such as coal, oil and natural gas. Other human-caused sources of greenhouse gases include land use changes, cement production, and other industrial processes.

Increased warming of the earth's surface changes the complex interactions of air, land, water and ice, and the circulation of winds and ocean currents that make up the global climate system. Computer models of the climate system are used to estimate global patterns of future climatic conditions under various scenarios of future greenhouse gas concentrations. Significant warming and decreased snow and ice cover in Arctic regions has occurred.

Climate models project substantial changes in New Mexico's climate over the next fifty to one hundred years, if no measures are taken to reduce global greenhouse gas emissions. Projected climate changes by mid- to late-21st century include: air temperatures warmer by 6-12°F on average, but more in winter, at night, and at high elevations; more episodes of extreme heat, fewer episodes of extreme cold, and a longer frost-free season; more intense storm events and flash floods; and winter precipitation falling more often as rain, less often as snow.

Some climate models project that average precipitation will increase in New Mexico, while others predict a decrease. However, recurrence of a severe multiyear drought like that of the 1950s is likely some time during this century, regardless of human-caused climate change. When such a drought does recur, higher evaporation rates because of warmer temperatures will exacerbate effects of drought, and will at least partially offset the effect of any increase in precipitation that might occur due to climate change.

Climate change is likely to have significant impacts on the ecosystems of New Mexico's forests, grasslands, deserts, lakes and streams. Predicting the specific impacts is difficult because of the complexity of natural systems, with each species responding in its own way to the physical environment and with multiple interactions among species. As each species responds individually to its changed environment, existing plant or animal communities will likely change as new assemblages of species form. Changes in ecosystem structure and functioning will often be abrupt rather than continuous and gradual.

Aquatic and riparian systems are particularly vulnerable to climate change because they will be impacted not only by warmer temperatures but also by changes in the timing and amount of water. Climate change is expected to result in a

significant loss of aquatic and riparian habitat. Habitat suitable for coldwater fish (e.g., trout) is expected to shrink, with replacement by warm water fish species. Extinction rates of many endemic species of the eastern plains are expected to increase. Riparian ecosystems are expected to experience losses and decline, with a reduction in species diversity. Change in terrestrial ecosystems will include shifts in the timing of seasonal life history events such as breeding of birds, insects or amphibians, and flowering of plants.

Geographic ranges are expected to shift to the north and to higher elevations. Some species trapped on isolated mountain ranges could become locally extinct if the mountain is not high enough to provide suitable alternative habitat and the species cannot disperse across intervening deserts to other mountaintops. Invasions of non-native species are likely, and species diversity may be reduced. Shrubs such as mesquite and creosote bush are likely to further invade grasslands. Forests are likely to experience more catastrophic wildfires, and more massive dieback due to drought stress and insect outbreaks. Alpine meadows may largely disappear from New Mexico.

2-11.2. Alternative Approaches

2-11.2.1. New Mexico Renewable Energy Standards

Pursuant to the Renewable Energy Act ("REA"), §§ 62-16-1 et seq. NMSA 1978 and Title 17.9.572 NMAC ("Rule 572"), New Mexico Investor Owned Utilities and Rural Electric Cooperatives must meet a Renewable Portfolio Standard (RPS). SB418, signed March 5, 2007 by Gov. Bill Richardson increases the RPS. Investor Owned Utilities must have in their portfolio as a percentage of total retail sales to New Mexico customers, renewable energy of no less than 15% (by 2015) and 20% (by 2020.) Utilities must also offer a voluntary renewable energy program to their customers. In addition to and within the total portfolio percentage requirements, utilities must design their procurement plans to achieve a fully diversified renewable energy portfolio no later than Jan. 1, 2011 as follows:

Diversity requirements for IOU's as a percentage of total RPS requirement:

- No less than 20% Wind
- No less than 20% Solar
- No less than 10% Other techniques
- No less than 1.5% Distributed Generation (2011-2014) and 3% Distributed Generation by 2015

For Rural Electric Cooperatives, renewable energy must comprise of no less than 5% of retail sales to New Mexico customers by 2015, increasing at a rate of 1% annually until 2020, at which time the RPS will be 10%. Coops must also offer a voluntary renewable energy program to their customers provided that their supplier makes renewable resources available.

2-11.2.2. Biodiesel and Ethanol

Energy security, ever rising oil prices, and the climate crisis are three facets of the same energy challenge. While various alternative energy sources are under development globally, multiple challenges impede the near-term viability of most of those options. Biofuels are a preferred alternative because they rely on the use of a proven technology, with minimal adverse environmental impacts and available production and distribution infrastructure that is easily modified. According to the United States Department of Energy "Currently, biomass is the only clean, renewable energy source that can help to significantly diversify transportation fuels in the U.S."

In fact, the Energy Independence and Security Act signed in to law in December of 2007 requires an annual production of 36 billion gallons of low-carbon biofuels by 2022. The targets were established to directly address all three concerns highlighted above. This legal requirement represents a very significant technical and logistical challenge, and the physical realities of fuel production and distribution will need to shift significantly in order to achieve it.

In 2005, the U.S. used 20.7 million barrels of petroleum each day, using 67 percent for transportation, the largest single use of petroleum. Imports of oil have outstripped domestic production since 1996, with 12.4 million barrels imported per day.[lxiv] Biofuels, such as ethanol, have become a focal point in discussions of how to displace demand for petroleum, which requires an investigation of fuel transport trends. In 2006, ethanol accounted for about 3.5 percent of U.S. gasoline supplies, and it was included in about half of the gasoline consumed. According to the Renewable Fuels Association, there

are currently about 120 ethanol plants in operation in the United States, with the capacity to produce 6.3 billion gallons per year. Another 6.2 billion gallons of capacity is under construction, up from 175 million gallons produced in 1980.[lxv]

Ethanol yields 25% more energy than the energy invested in its production, whereas biodiesel yields 93% more. Compared with ethanol, biodiesel releases just 1.0%, 8.3%, and 13% of the agricultural nitrogen, phosphorus, and pesticide pollutants, respectively, per net energy gain. Relative to the fossil fuels they displace, greenhouse gas emissions are reduced 12% by the production and combustion of ethanol and 41% by biodiesel. Biodiesel also releases fewer air pollutants per net energy gain than ethanol. These advantages of biodiesel over ethanol come from lower agricultural inputs and more efficient conversion of feedstocks to fuel[lxvi].

Along with the infrastructure impacts, the growing industry is having an economic impact on both the producing regions and elsewhere in the nation. Infrastructure investments help to keep the system running smoothly—necessary for the cost of moving ethanol to remain competitive with petroleum. Transporting petroleum from refinery to gas station costs about 3 – 5 cents per gallon, while the cost for ethanol ranges from 13 – 18 cents per gallon. Since many regions now depend on ethanol as a fuel additive, reliable and efficient movement of ethanol is key to maintaining the economy and avoiding price spikes. In addition, according to the Renewable Fuels Association, the ethanol industry added 163,034 jobs and $41.9 billion of gross output (in spending on annual operations, transportation and capital spending) to the nation's economy in 2006.[1]

Reducing urban sprawl is accomplished by promoting redevelopment and infill of existing incorporated built up areas is an important component of the proposed project and eventual distribution ethanol network.

While various alternative energy sources are under development globally, multiple challenges impede the nearterm viability of most of those options, such as efficient distribution channels. One of the benefits of biofuel is that the distribution infrastructure for petroleum products can be used or is easily modified to support biofuel distribution.

According to the California State Alternative Fuels Plan, "Ethanol (E-10), biodiesel (B20), and renewable diesel fuel blends can use existing fueling infrastructure."[lxvii] Conventional petroleum stations can be converted to biofuel stations easily. The U.S. Department of Energy states that the process for converting existing fuel stations to biodiesal stations is "affordable, flexible, and integrates seamlessly with existing infrastructure." The U.S. Department of Energy provides toolkits, information, and resources that make the transition to a biofuel station simple.[lxviii]

EISA – Energy Independence and Security Act of 2007

- Mandates that fuel producers must use at least 36 billion gallons of biofuels by 2022[lxix]
- Of the 36 billion, 15 billion must be corn ethanol, with increases beginning at 9.0 billion in 2008, on up to the standard 15 billion by 2015[lxx]
- Authorizes creation of the Renewable Fuel Standard (RFS)

RFS – Renewable Fuel Standard

- Developed by the EPA (Environmental Protection Agency) and adopted as a final rule in 2007
- From 2007 baseline, the rule requires an 85% increase in corn ethanol by 2010, 100% by 2012[lxxi]
- Focus is on both petroleum fuel use and greenhouse gas emissions reductions[lxxii]

2-11.2.3. Solar

New Mexico gets at least 6 kilowatt-hours of solar energy per day, on average, almost everywhere in the state. This is the maximum amount of solar energy that could be captured each day on average, in principle. The nearly flat or gentle sloped terrain of Santa Fe County coupled with the annual mean total sunshine hours of 3,400 creates an ideal setting for solar energy applications (see **Map 37**). Space heating, water heating, photovoltaic cells, cooking and food production via solar greenhouse are just a few of the possible applications that already have existing technology.

The scale for the integration of solar technology varies from residential to commercial. Many county residents in remote areas are already using solar energy for electricity, space and water heating. The potential for large-scale solar electric generating facilities exists within Santa Fe County. Impacts on the view sheds, historic and archaeological resources and the

creation of a grid network to distribute the power would have to be considered in future development proposals in order to preserve the integrity of the landscape.

New Mexico's Solar Rights and Solar Recordation Acts (both contained in NMSA § 47-3) allow property owners to create solar easements for the purpose of protecting and maintaining proper access to sunlight. The Solar Rights Act established the right to use solar energy as a property right and prevents neighboring property owners from constructing new buildings or planting new trees which would block their access to the sun.

In May 2007, SB 1031 strengthened solar access rights in New Mexico by limiting the ability of a county or municipality to restrict the placement of solar collectors unless the location is within a historic district. SB 1031 also voided all covenants and restrictions (from July 1, 1978 forward) that effectively prohibit the installation of solar collectors.

At a minimum, standards to ensure the use of solar energy should be established in the SLDC, including:

Solar Access and Production Standards

1. Setbacks / "solar fence"
    a. 6'-15' for residential; 16'-25' for non-residential
2. Shadow analysis
    a. based upon shadow cast by building(s) from 9AM – 3PM local time on December 21st (winter solstice)
3. Siting standards
    a. Oriented within thirty degrees of true east-west
    b. Roof structure capable of holding 75lbs of solar panels
    c. Unimpeded solar access
4. Performance standards (Exemptions available for single-family residential)
    a. Impact to existing vegetation, archeological and cultural areas, scenic views, stormwater run-off and other resources
    b. Reasonable measures to reduce glare required (reflection from panels)
    c. Power collection lines must be installed underground
    d. When / if project completed the area must be returned to pre-permit conditions, including re-seeding with native vegetation
    e. Surety bond for de-construction required

2-11.2.4. Wind

New Mexico's wind resources are primarily located on the Eastern Plains of the State. The wind resources for Santa Fe County are poor to fair due to the low annual average wind speeds. Santa Fe County's wind resources range from Class 1 to Class 3 as identified in **Map 38. Map 17** shows the existing utility grid and solar power capacities in the United States.

Estimates of the wind resource are expressed in wind power classes ranging from Class 1 to Class 7, with each class representing a range of mean wind power density or equivalent mean wind speed at specified heights above ground level. The Table defines the wind power classes in terms of mean wind power density and mean wind speed at 30 meters (98 ft.) and 50 meters (164 ft.) above ground level. Areas designated as Class 4 or higher are generally considered to be suitable for most wind turbine applications. Class 3 areas may be suitable for wind energy development using tall (e.g., 70-80 meters hub height) towers (New Mexico Wind Development Handbook 2002).

At a minimum, standards to ensure the use of wind energy should be established in the SLDC, to encourage wind energy production while preventing nuisances from noise and vibration, hazards to air navigation, hazards to birds and other wildlife, degradation of scenic viewsheds and other potential nuisances and hazards. Such regulations should include:

- Separate requirements for small and large-scale systems.
- Requirement for Environmental Impact Analysis Report, to include potential impacts to wildlife and avian species including migratory birds, as well as proposed mitigation measures.

- Required setbacks from property lines, floodplains, historic and cultural resources and public roads.
- Minimum clearance from ground.
- Maximum height.
- Necessary compliance with FAA regulations.
- Required utility notification (not necessary for off-grid systems)
- Aesthetic regulations, including color specifications to minimize visual impact and restrictions on decorative items, advertising and signage.
- Restrictions on abandonment and removal.
- Hillside and ridgetop restrictions.
- Lighting restrictions.
- Fencing and buffering requirements.

2-11.2.5. Renewable Energy Infrastructure

Initial criteria to consider when siting industrial and energy-related uses include access, infrastructure, compatibility with surrounding uses and environmental impacts. With respect to alternative locations of the site within an urban, suburban or exurban setting, from a Smart Growth perspective, the siting of an alternative energy production and distribution land use must consider:

- Location in relation to housing for employees and the commuting distances and modal alternatives for those employees
- Efficient use of existing infrastructure and public investment
- Creation of a jobs/housing balance
- Minimization of time and cost associated with "bringing the product to market"
- Minimization of conflicts with surrounding land uses
- Opportunities for infill development/redevelopment in lieu of greenfield development

2-11.3. Financing Tools

2-11.3.1. Renewable Energy Financing District

The 2009 New Mexico Legislative Session passed two important bills and signed by Governor Richardson to enhance opportunities for and encourage local residents and businesses to make renewable energy improvements. Senate Bill 647 (Renewable Energy Financing District Act) and House Bill 572 (Solar Energy Improvement Special Assessment Act), sponsored by Senator Peter Wirth and Representative Brian Egolf, respectively, provides leadership in response to development of renewable energy sources and positively impact the security, economic well-being and public and environmental health of the state, and contributing to energy independence.

The County is currently in the process of crafting a Renewable Energy Financing District for the purpose of providing viable financing options to address the barrier of high upfront costs of renewable energy improvement. The district aims to develop an alternative that will offer relative long term and low cost financing with repayment accomplished by a special assessment on property tax bills. Residential and commercial property owners will in turn be able to leverage this program to make renewable energy improvements in an accessible and affordable manner. Equally important, Santa Fe County residents will contribute significantly to climate change by reducing the carbon footprint and greenhouse gas emissions for the region. Property owners opt into the district and therefore participation is on a voluntary basis. Qualified photovoltaic, solar thermal, wind and geothermal systems may be eligible (**Map 39** shows potential geothermal resources in the County). Guidelines are being developed and based on existing state, local or national standards to ensure quality control is addressed.

There are several components of community benefits potentially supported by this program that include long term and ongoing financial, environmental and local economic impact.

On the financial level, property owners may yield energy costs savings and in situations where federal and state tax incentives are applied, affordability of the improvement will likely be enhanced as well. Currently, residents and commercial operators may qualify for PNM Renewable Energy Credits (REC's) and this may also positively impact energy costs savings. In general, the intent of the district to offer long term low costs financing, along with energy savings, make the overall reduction to the costs of renewable energy improvement for the average community member possible.

Environmental impact reflects partly on how much fossil fuel can be avoided in generation of energy needed for local consumption in the region and the related efforts to reduce greenhouse gas emissions and address climate change. As example, a typical 3.4kW covering about 50% of a home's energy use (habits and other factors will determine energy consumption and this is, therefore, variable) and assuming that the average kilowatt hour from PNM's grid is produced in a way that releases approximately 1.504 pounds of CO^2 into the atmosphere. As this system produces 5,624 kilowatt hours of electricity per year, the system would save 8,458 tons of carbon from going into the atmosphere. One kilowatt hour is equivalent to saving 3.412 kBTUs. This system's production is therefore equivalent to 19,194 kBTUs.

Local economic effects may be observed by activities stimulated from renewable energy systems being installed and skilled workers being employed and trained in green jobs. This, in turn, is a vital part of the region's transition into a green sustainable economy and in times where unemployment rate continues to rise and greater economic conditions remain challenging, local policy and program may offer a form of community-based economic stimulus working collaboratively with the natural environment, local resources and talents.

2-11.3.2. Tax Credits

Applying available federal and state incentives may significantly impact the costs of financing renewable energy systems.

Federal

Established by the federal *Energy Policy Act of 2005*, the federal tax credit for residential energy property initially applied to solar-electric systems, solar water heating systems and fuel cells. *The Energy Improvement and Extension Act of 2008* (H.R. 1424) extended the tax credit to small wind-energy systems and geothermal heat pumps, effective January 1, 2008. Other key revisions included an eight-year extension of the credit to December 31, 2016, the ability to take the credit against the alternative minimum tax, and the removal of the $2,000 credit limit for solar-electric systems beginning in 2009. The credit was further enhanced in February 2009 by *The American Recovery and Reinvestment Act of 2009* (H.R. 1: Div. B, Sec. 1122, p. 46), which removed the maximum credit amount for all eligible technologies (except fuel cells) placed in service after 2008.

A taxpayer may claim a credit of 30% of qualified expenditures for a system that serves a dwelling unit located in the United States and used as a residence by the taxpayer. Expenditures with respect to the equipment are treated as made when the installation is completed. If the installation is on a new home, the "placed in service" date is the date of occupancy by the homeowner. Expenditures include labor costs for onsite preparation, assembly or original system installation, and for piping or wiring to interconnect a system to the home. If the federal tax credit exceeds tax liability, the excess amount may be carried forward to the succeeding taxable year. The excess credit can be carried forward until 2016, but it is unclear whether the unused tax credit can be carried forward after then. The maximum allowable credit, equipment requirements and other details vary by technology, as outlined below.

State

New Mexico provides a 10% personal income tax credit (up to $9,000) for residents and businesses (non-corporate), including agricultural enterprises, who purchase and install certified photovoltaic (PV) and solar thermal systems. Eligible systems include grid-tied commercial PV systems, off-grid and grid-tied residential PV systems, and (active) solar hot water or hot air systems. To be eligible, systems must first be certified by the New Mexico Energy, Minerals, and Natural Resources Department.

See a comprehensive list of Federal and State policies and financing tools and incentives for renewable energy use in the **Appendix.**

2-13. Public Health

Public Health is "the science and art of preventing disease, prolonging life and promoting health through the organized efforts and informed choices of society, organizations, public and private, communities and individuals"[lxxiii]. Public health efforts also include support mechanisms to promote healthy living by providing options to live, work, and play not only in a healthy physical environment, but also the human built environment. Additionally, public health promotion must also come from health providers and systems that are efficient and proactive in meeting the demands of the people especially those living in the remote areas of the County.

Health and Human Services Division plays a critical role for the success of public health measures and the overall quality of life through involvement in hospital relations and public health policy at the local, state and federal level. It is also a factor that is considered for economic development and business relocation projects. Health and Human Services strives to develop capacity to deliver public health options reliably, safely, humanely, and equitably.

2-13.1. Advisory Groups and Plans

The Health and Human Services Division has a number of affiliated advisory groups which make recommendations to the Division and Board of County Commissioners concerning health issues, public policy, proposed legislation and rules, and funding recommendations among other duties. These groups include the Santa Fe County Health Policy and Planning Commission (HPPC), DWI Planning Council, Maternal and Child Health Planning Council, and the Care Connection Advisory group.

The HPPC has developed and updated its needs assessment and plan for the County which is called "A Call to Action". The DWI and MCH Planning Councils also have formal plans that address the issues specific to these programs.

2-13.2. Services and Providers

Services such as the Healthcare Assistance Program (Indigent Fund), Senior Services, and the Care Connection Assessment and Sobering Centers address basic needs of our citizens. They are targeted especially at low income persons and families. Other programs operated or delivered by the Health & Human Services Division include the Maternal & Child Health Program, Mobile Health Van, DWI Program, and health planning performed by the Santa Fe County Health Policy & Planning Commission. The Division is also heavily involved in hospital relations and public health policy on the local, state, and federal levels.

The primary healthcare provider for emergencies and major medical care in Santa Fe County is Christus St. Vincent Regional Medical Center, located in the City of Santa Fe. It has a Level III Trauma Center rating. Emergencies above this level are transferred to University of New Mexico Hospital in Albuquerque via air or ground. There is a surgical hospital, Physicians Medical Center of Santa Fe, located in southeastern Santa Fe that performs some surgeries, as well as the Espanola Hospital, owned by Presbyterian Healthcare Services.

The healthcare system in Santa Fe County also includes private and non-profit practitioners and clinics, including Federally Qualified Health Centers. Many residents receive primary care in the metropolitan areas of the Cities of Santa Fe or Albuquerque due to the large number of workers commuting to those population centers, and the availability of providers.

2-13.2.1. Senior Services

There are 11 Senior Centers located throughout the County. Services consist of meals, "meals on wheels", transportation, and other services. The frequency and quantity of these services are limited by funding availability. The City of Santa Fe operates all centers within the County with the exception of the Ken and Patty Adams Center in Eldorado which is operated by the County. Senior Centers are regularly utilized by a small percentage of the senior population. However, growth in the numbers of senior citizens in Santa Fe County will most necessarily require the construction of new, and/or expansion of existing centers. According to the 2000 census, there were 13,903 residents aged 65+ in Santa Fe County. New Mexico's 65+ senior population is projected to increase by 141% by 2025. Using this estimate, the population for Santa Fe County will include 33,910 persons aged 65+ by 2025. (US Census Data)

2-13.2.2. Services by Area

Estancia Area Services

- Two (2) Federally Qualified Health Center (FQHC) clinics are located in Edgewood and Estancia, which also offer dental care. Healthcare Assistance Program outreach is limited to these two FQHC clinics.
- There are mental health and substance abuse outpatient treatment services available in Moriarty, and to a more limited extent at First Choice clinic in Edgewood.
- There are senior centers located in Edgewood and Moriarty. Attendance is generally limited to residents of the Edgewood, Cedar Crest, and Stanley area.
- The DWI Program conducts prevention education and activities within the Moriarty Schools and Edgewood community. Many Moriarty School District students live in Santa Fe County.
- The Mobile Health Van visits Edgewood and Moriarty on a regular basis.

Galisteo Area Services

- There is a Presbyterian Medical Services FQHC clinic in Cerrillos. The clinic has been allocated Healthcare Assistance Program funds, but has used them sporadically. It serves low income persons within the Cerrillos, Madrid, and some in the Highway 14 area. It is not well located to serve persons in Galisteo.
- There is no Senior Center located within this area. Galisteo residents who have transportation may go to the new center in Eldorado or into Santa Fe. There is "Meals on Wheels" delivery in only the Eldorado and Galisteo areas at this time. The County intends to expand services to this area when it has the resources to do so.
- The Santa Fe County Mobile Health Van visits this area sporadically. It does appear at larger events such as the Galisteo Rodeo.

El Centro Area Services

- This central area contains most of the health resources in the County. There are numerous private traditional and non-traditional providers, as well as a number of non-profit providers.
- There is one major hospital, CHRISTUS St. Vincent Regional Medical Center, located in Santa Fe. It has a level III Trauma Center rating. Emergencies above this level are transferred to University of New Mexico Hospital via air or ground. UNM has a level I rating. There is a boutique surgical hospital, Physicians Medical Center of Santa Fe, located in southeastern Santa Fe that performs some surgeries.
- La Familia Medical Center is the designated FQHC for the area. It has two locations that provide primary, dental, maternal, and other care. It also provides assistance with pharmacy.
- Women's Health Services is a non-FQHC clinic provider that specializes in women's healthcare, which also serves men and children and provides behavioral healthcare. They do not provide dental services or pharmacy.
- There are many private options for behavioral mental health treatment. Non-profit providers include the Presbyterian Medical Center Guidance Center and Life Link.
- There are a number of for-profit and non-profit providers for outpatient substance abuse treatment in El Centro, and two options for in-patient substance treatment for the entire County. The Santa Fe Recovery Center provides a twenty-eight day in-patient program, along with their outpatient programs. There is usually a waiting list, with the only other option being to go outside of the County for such services.
- There are five (5) City of Santa Fe Senior Centers located in this area. They serve a growing number of seniors within the area. Most attendees are long term residents. Recent arrivals to the area are less likely to attend these centers. There is a potential center that may open on Rufina Street in the City. It is unknown at this time if the City or County will open this center.

El Norte Area Services

Many residents in the northern area of Santa Fe County work in Santa Fe, Espanola or Los Alamos, and receive healthcare in those areas. Therefore, healthcare resources in Los Alamos and Rio Arriba County are included in this discussion.

- There are two (2) hospitals, one in Los Alamos and one in Espanola that are located near northern Santa Fe County. Both are smaller, and can handle a variety of emergencies, with higher level trauma cases moved to Santa Fe or Albuquerque.
- Los Alamos Medical Center is owned by a private non-profit hospital organization and has a limited scope of services. Espanola Hospital is owned by Presbyterian Healthcare Services, and has expanded its services within the past few years. Its association with Presbyterian gives this hospital access to investment capital to expand more in the future.
- There are a number of private healthcare providers in the area, as well as the non-profit Pojoaque Primary Care clinic, which is owned by CHRISTUS St. Vincent Regional Hospital. It has been operating in Pojoaque for a while, but has not been profitable over time, hence has seen little expansion.
- El Centro Medical Centers in Espanola is a FQHC that serves a number of northern counties, but is headquartered in Espanola. They have two (2) clinics in Espanola, and are in the process of building a "Health Commons" in partnership with Rio Arriba County and New Mexico Department of Health. When this facility is complete, it may serve additional clients from Santa Fe County.
- There are a number of private behavioral health providers in the area and a small number of non-profit providers servicing low-income and sliding scale clients.
- There are County owned and City operated Senior Citizen Centers in El Rancho, Santa Cruz, Rio en Medio, and Chimayó. These services are adequate for the moment, but will require remodeling and/or expansion in the future. Rio Arriba County has built a new community\senior center in Chimayó that Santa Fe County residents may choose to attend instead of Santa Fe County's older center. There is discussion to build an additional or replacement center in the Pojoaque\Nambe area.
- The DWI, Health Van, and Care Connection Programs are active in this area. The DWI Program works with the Pojoaque Schools in the prevention and education areas. The Health Van visits the area, including Pojoaque and Tesuque Pueblos, on a regular basis. Care Connection staff provide assessment and counseling services at the Santa Fe County Pojoaque Satellite Office.

2-13.3. Issues & Opportunities

Healthcare infrastructure is insufficient due to lack of access and use. The County's healthcare infrastructure is barely sufficient to meet current demands. Many County residents do not use the system until emergency care is necessary for a variety of reasons; including a lack of payment resources and/or insurance, fear of discovery of immigration status and difficulty in scheduling appointments at Federally Qualified Health Centers due to overcrowding. In addition, many residents access emergency and hospital care in the Albuquerque market. With the large number of residents accessing the Albuquerque market, the Healthcare Assistance Program (Indigent Fund) budget for out-of-County hospitals is under extreme pressure. To improve access and limit out-of-County expenses, healthcare providers will need to be attracted to the County, especially those that accept Medicaid and Medicare. The County must work with state agencies to provide an inviting atmosphere for doctors, nurses, and other providers. The tax structure in New Mexico, along with inadequate Medicaid\Medicare reimbursements, is driving providers from the State.

Lower-paying jobs stress the public healthcare system. Lower income service jobs typically do not provide healthcare insurance, causing greater demand for subsidized healthcare and social services. Attraction of employment opportunities that provide a higher, or "living wage" and insurance benefits should be a cornerstone of economic development efforts.

Partnerships with surrounding counties can help improve healthcare provision. Partnerships with Torrance County, Rio Arriba County, Los Alamos, the Cities of Santa Fe, Espanola and Edgewood, and the Pueblos may be mutually beneficial in the development of healthcare infrastructure, hospital development and regional healthcare and social service programs that address issues such as substance abuse and behavioral health.

Expansion of mental and behavioral health services are particularly needed. Low-income mental health and substance abuse providers have insufficient capacity for patient loads, including in- and out-patient options, and most providers have waiting lists. Non-profit sliding scale services need expansion to meet current demand.

Transportation access limits healthcare access. In the rural areas of the County, access to healthcare is limited by transportation access, including public transportation options. Improving transportation access will open up healthcare access to a greater number of residents.

Aging of the population. As the baby boomer population continues to age, it will provide additional stress on the healthcare and social services infrastructure. As providers plan for the future, the general aging of the population and related increase in service demand, especially in-home care, should be a primary consideration.

Large-scale public health emergency. If all residents had sufficient resources to see a doctor or dentist in a private or clinic setting, the system would be immediately overwhelmed. The current system is not sufficient to service our population today. The same can be said for hospital capacity in the event of a large public emergency. The unspoken fallacy concerning proposed "universal" coverage programs is that we have enough providers to treat everyone. In the case of a public health emergency, where large numbers of County residents would have to be evacuated or hospitalized, the County and provider infrastructure would be insufficient.

County services can provide a range of tools and resources to assist communities in promoting a safe and healthy environment. County policies should recognize the essential link between sustainable development, the environment and health of the public. Residents and other stakeholders in communities in Santa Fe County will have to do their part as well in taking responsibility to proposed and support projects that promote community's overall health.

The following key points are some ways to support public health initiatives which would contribute to a more sustainable and healthier environment for communities in Santa Fe County:

- Providing the infrastructure to ensure walkability and the use of alternative modes of transportation.
- Improving the air and water quality in all areas of the County.
- Improving ways to disseminate information for preventive health measures in which general public would have access.
- Limiting rising costs of healthcare through innovative programs and greater access to primary care.
- Collaborating with other health care entities to more effectively achieve better health outcomes that take organizational needs, community needs, and resource sharing into consideration.
- Providing healthy living and working environments through adequate housing and high quality work opportunities.
- Providing an inviting, or competitive wage and tax structure for healthcare professionals and their businesses.
- Preparing for public health emergencies.

2-14. Public Safety

2-14.1. Law Enforcement

The Santa Fe County Sheriff's Department provides crime prevention, response, investigation and prosecution services in Santa Fe County. The Department also provides animal control services. The mission statement of the Department is as follows:

> "The Office of the Sheriff exists to serve the community.
>
> The protection of people and their property is our primary responsibility.
>
> Honor, Courage, Commitment, Leadership and Teamwork shall be the core values employed as we serve the citizens of Santa Fe County. In partnership with our communities, we will provide the highest quality public safety services. Our Department is dedicated to the health, safety and welfare of the public we serve and working with the citizens of our county to ensure the quality of life and the preservation of peace for future generations. Our mission is to deter, detect, apprehend and prosecute persons who violate county, state, or federal laws. We are committed to provide investigation of all criminal activity in Santa Fe County. We will ensure that the animal ordinance is enforced, to educate the public about animal ownership, to capture loose animals, and patrol the county. We are totally dedicated to this mission, to the County we serve and to accept the responsibility of attaining our goal of achieving excellence within our profession."

2-14.1.1. Calls for Service & Response

As is shown in **Figure 2-48,** the Sheriff's Department responded to a total of 40,103 calls in 2007, with 17,885 calls initiated by Officers in the field and 22,218 calls for service by the community. With 78 officers and animal control personnel, exclusive of administrative staff **(Figure 2-50),** this equates to approximately 514 calls for service per officer or animal control personnel**. Figure 2-49** illustrates the average response time per call, based on the call priority.

Figure 2- 48: Sheriff's Department Calls for Service

Total Offenses (Aug 1, 2007 - July 31, 2008)	9,717
Number of Calls Dispatched (2007, not officer initiated)	22,218
Number of Calls Dispatched (2007, officer initiated)	17,885
Total Calls Dispatched (2007)	40,103

Figure 2- 49: Sheriff's Department Average Response Time (2007)

Call Priority	Average Response Time (HH:MM:SS)
Priority 1	0:26:14
Priority 2	0:24:15
Priority 3	0:40:55
Priority 4	0:27:10
Priority 5	0:21:10
Priority 7	0:36:31

2-14.1.2. Levels of Service

The Sheriff's Department operates out of the Santa Fe County Public Safety Building at 35 Camino Justicia in Santa Fe, NM. **Figure 2-50, 2-51** and **2-52** show the Sheriff's Department personnel, vehicles and building space. **Figure 2-53** shows the level of service per thousand population, based on the unincorporated population in the County in 2006.

Figure 2- 50: Sheriff's Department Personnel (2008)

Commissioned Officers	72
Non-Commissioned Officers	1
Administrative	17
Animal Control	5
Total	**95**

Figure 2- 51: Sheriff's Department Vehicles (2008)

Patrol Vehicles	97
Administrative Vehicles	4
Investigative Vehicles	15
Special Ops/Misc	4
Total	**120**

Figure 2- 52: Sheriff's Department Building Space (2008)

Main Station	6000 sq. ft.

Figure 2- 53: Sheriff's Department Level of Service

Facilities & Services	Level of Service (LOS) per 1,000 Residents*
Vehicles (Number)	1.82
Building (GSF)	91
Personnel (Number, Career)	1.44
Average Response Time (2007; approx):	
Priority 1	26 mins
Priority 2	24 mins
Priority 3	41 mins
Priority 4	27 mins
Priority 5	21 mins
Priority 7	36 mins

* The 2006 unincorporated County population of 65,806 was used to calculate the LOS.

2-14.2. Fire Protection & Emergency Medical Services (EMS)

Fire protection, suppression and emergency response services are integral public safety services provided to Santa Fe County residents. In 1997, the Santa Fe County Fire Department was created by the Santa Fe County Commission by S.F.C. Ordinance 1997-11, effectively consolidating the existing fifteen county volunteer fire districts and the County Fire Marshal's office into the new County Fire Department. The Fire Department's Five Year Plan (2005-2009) and updated 2008 Capital Improvement Plan (together, "Fire CIP") as well as discussions with the Fire Department informed this report.

The Fire Department works proactively to adopt mutual aid agreements and joint powers agreements with other governmental agencies to improve the availability of emergency services to Santa Fe County citizens. Mutual Aid Agreements have been adopted between San Miguel County, Rio Arriba County, Torrance County, Bernalillo County, City of Moriarty, and Sandoval County. Joint Powers Agreements have been approved between the City of Santa Fe and Edgewood Fire District for Fire, Rescue, and EMS services as well as for Regional Emergency Communication Services.

Santa Fe County received a national award for its efforts in the pilot program of the Firewise Communities USA program. Through this program, the Fire Department developed a wildland-urban interface hazard assessment model that has also garnered national recognition for its effectiveness and innovation. The development and implementation of the first Wildland-Urban Interface Code in New Mexico has improved the County's prevention and response to wildland fires.

One of the on-going challenges for the Santa Fe County Fire Department is provision of training opportunities for professionals and volunteers. The lack of efficient, effective, and readily available training venues for emergency services personnel has been, and continues to be, problematic for the department's firefighters.

2-14.2.1. Funding

In 1997, Santa Fe County Fire Department implemented its first five-year plan utilizing several revenue sources to not only fund the operational needs of the department but also to fund its capital improvement plan. Funding mechanisms of the Santa Fe County Fire Department are described as follows:

The **State Fire Protection Fund** is administered by the State Fire Marshal's Office and funding is provided to the County for specific operational use by a specific County Fire District. These funds are restricted funds, meaning they can only be used for the operational and capital needs for the fire district; they cannot be used for payment of salaries or personnel benefits.

The **State EMS Fund** is administered through the State EMS & Primary Care Bureau of the Department of Health. These funds can only be used to purchase emergency medical services equipment and supplies and cannot be used for personnel salaries or benefits.

The **County Fire Protection Excise Tax**, more commonly referred to as the one-quarter percent fire tax, is a gross receipts tax approved by the County Commission and by the county voters via a county referendum.

Santa Fe County Fire & Rescue Impact Fees were imposed in 1995 by the County Commission on all new development in Santa Fe County. These impact fees, imposed under the authority of the State Development Fee Act, are collected and spent in each fire district where the development occurs. These fees are for capital infrastructure expenses secondary to the growth and development within a specific fire district. The fees can only be utilized for capital infrastructure expense such as building fire stations or buying fire apparatus or equipment with a life expectancy of ten years or more. The fees cannot be utilized for personnel salaries or benefits. Additionally these fees can only be spent in conjunction with a capital improvement plan for the department.

In 1998, a **Revenue Bond** was approved by the County Commission, raising $2.2 million dollars to significantly improve the capital infrastructure of the county fire districts and the department based on the five-year plan. This Bond has been retired.

General Obligation Bond monies, derived from the approval of the voters for specific purchases or expenditures, have been utilized to help support the capital improvement plan of the department. These monies are spent for the purchase of capital infrastructure items, buildings and apparatus. A General Obligation Public Safety Bond in the amount of $4.5 million approved by voters in November 2000 has provided a Public Safety Building and Regional Emergency Communications Center (RECC) communications equipment.

Existing County general funds for personnel are considered insufficient to meet the growing demand of services expected from the fire department by the public. Growth in the County will increase capital needs over the next six years as well as the need for staffing, which has not kept up with labor needs. Significant growth in the department is needed to meet level of service expectations. Volunteers are in short supply and responses to calls are very often provided by the station that is capable of sending staff. The Fire Department is in the process of training and hiring additional career firefighters and EMTs on an annual basis to increase the County's level of service and shorten response times. The use of development agreement funding for staff and personnel needs generated by oil and gas projects should be utilized.

Impact fees collected by individual fire districts have been spent more rapidly in some districts than in others. Some smaller and less active districts have surplus funds that could be, at least in part, utilized by districts with greater needs. However, current law mandates that fees collected must remain and be spent in the individual district in which they are collected. Districts that collect lower levels of impact fee funding often find it necessary to reserve the funds from year to year until enough funding is available to purchase a large piece of equipment. The use of development agreement funding for staff and personnel needs generated by oil and gas projects should be utilized.

2-14.2.2. Emergency Medical Service

Emergency Medical Services (EMS) comprise a majority of the Fire Department call volume County-wide. Regional paramedic ambulances offer 24-hour Advanced Life Support (ALS) coverage throughout the County. The regional ALS teams consist of a professional Paramedic Firefighter and a professional EMT-Intermediate Firefighter. The five ALS regional

medic units exist to augment and support the services of the volunteer fire districts. The fire districts of Edgewood, Turquoise Trail, El Dorado, Hondo and Pojoaque also offer ambulance transport services. The Fire Department also works cooperatively with Espanola Hospital to ensure that the closet ambulance service is dispatched to emergencies in the Pojoaque area.

2-14.2.3. Personnel

Since the fall of 1998 the Santa Fe County Fire Department has used paid professional staff to support local volunteer personnel to ensure that the mission of the department is successful. The paid staff augments those services provided by the volunteers of each fire district and additionally provides a higher level of emergency medical service (Advance Life Support or Paramedic level) than can be typically provided by a county-wide volunteer-based service.

The volunteer personnel of the fifteen fire districts of Santa Fe County Fire Department are responsible for responding to fire, rescue and EMS emergencies twenty-four hours a day, three hundred and sixty-five days per year. These personnel must undergo the same training, licensure and certification required of career (paid) personnel.

The Department has been working to increase the number of career staff to overcome the difficulties of recruiting and retaining volunteers, as well as to increase the level of service and response times. Given the geographic extent of the County, it is unrealistic to transition to an entirely professional staff, and emergencies and fires at oil and gas projects sites are too complex to be handled by volunteers. While the Department will continue to rely on the high quality service provided by volunteers, it will require major funding by oil and gas projects to meet the professional fire and emergency response personnel need which is generated by those projects. **Figure 2-54**enumerates the professional and volunteer staff of the Fire Department.

Figure 2- 54: Fire Department Personnel (2008)

Position	Number
Full Time Uniformed Career Positions (Cross Trained Firefighter/EMT or Paramedic)	73
Volunteers	204
Administrative (Civilian) Staff	12
Total	**289**

2-14.2.4. Calls for Service & Response

Figure 2-55 shows the Fire Department's calls for service for 2006, 2007 and 2008. The 2008 calls for service are projected. Sixty-three to sixty-six percent of those calls were for emergency medical service. The annual increase in calls from 2006 to 2007 was 8.6 percent, and a similar annual growth rate is expected for 2007-2008. The average response time, based on 2006 data, was ten minutes and forty-six seconds. While the Department considers the average response time to be adequate, especially considering the geographical extent of the County area served, it strives to constantly improve response. To improve response time, the Department is in the process of adding additional career staff. Additionally, increasing the number of stations and equipment can improve response time.

Figure 2- 55: Fire Department Calls for Service

Year	Fire (Number)	Fire (Percent)	EMS (Number)	EMS (Percent)	Total	Annual Increase
2006	1,469	34%	2,819	66%	4,288	
2007	1,723	37%	2,934	63%	4,657	8.6%
2008*	1,758	35%	3,309	65%	5,067	8.8%

*Projected.

2-14.2.5. ISO Rating & Levels of Service

As per the Fire CIP, fire districts are rated by the Insurance Services Office (ISO) for insurance purposes on a scale of 1 to 10 with 1 being the highest and 10 the lowest. A district rating of 1 indicates an urban area with a sound municipal water system and ample vehicles and stations to accommodate the district population; a rating of 10 indicates a rural area with no community water system, inadequate equipment, and no stations. The Fire Department CIP established a minimum service level in order to determine the vehicle and station improvements that are attributable to growth versus existing inadequacies.

The Santa Fe County Fire Administration has determined that a reasonable minimum level of service (MLOS) is the equipment and station equivalent of an ISO rating of 7/9. This indicates a rating of 7 in the more densely developed portions of rural areas and a rating of 9 in the less densely developed portions of rural areas. This rating is the *minimum* required LOS; a district may have a higher ISO rating. The ISO rating of 7/9 is not dependent on a community water system.

It is the goal of the Santa Fe County Fire Department that all County Fire Districts receive an official ISO rating of 7/9 or better. While determination of ISO ratings is often subjective and dependent largely on the unique circumstances of each district, an ISO rating of 7/9 generally requires that, in addition to a station, the district be in possession of an engine, a tanker with tanker-shuttle capabilities, and a rescue vehicle. These needs will be further exacerbated by responses to oil and gas explosions and fires, which require sophisticated equipment and rapid response times.

As part of the Fire CIP, an inventory of fire apparatus and fire stations for each County fire district was conducted which included both existing apparatus and stations and those needed to meet MLOS. **Figure 2-56** documents the Department's existing, deficient and replacement vehicles (or apparatus) – engines, tankers, brush trucks, ambulances, rescues and aerial/quints. **Figure 2-57** shows square footage of existing and needed stations. **Map 40** shows the locations of existing stations and wildfire hazards.

Figure 2-58 shows the Levels of Service per thousand unincorporated County residents (including Edgewood) for Fire and EMS personnel, vehicles, and building space.

Figure 2- 56: Fire Vehicles – 2007-2012 CIP

Type of Vehicle	Existing	Deficiencies	Replacements
Engines	33	3	11
Tankers	29	2	8
Brush Trucks	21	3	2
Aerial/Quint	0	2	0
Ambulances	8	0	4
Rescues	14	0	4
Total	**105**	**10**	**29**

Figure 2- 57: Fire Department Stations – 2007-2012 CIP

	Existing	Deficiencies
Number of Stations	37	6
Gross Square Footage (GSF)	133,650	21,672

Figure 2- 58: Fire Department Level of Service

Facilities & Services	Level of Service (LOS) per 1,000 Residents*
Vehicles (Number)	1.55
Building (GSF)	1,977
Personnel (Number, Career & Volunteer)	4.27
Average Response Time (2006; approx)	10 mins
Fire Station Service Area (est)	4 miles
ISO Rating	7/9

*The 2006 County population of 65,806 plus the Edgewood population of 1,810 were used to calculate the LOS since the Santa Fe Fire Department provides first-response service to these areas.

2-15. Water and Wastewater

[Water resources and systems are described below and supplemented in the SLDP Maps Atlas and Map Atlas Supplement.]

2-15.1. Water Resources

2-15.1.1. Aquifer Vulnerability

Aquifer vulnerability is the relative ease with which a contaminant applied on or near a land surface can migrate to an aquifer. This analysis is most appropriate for when conducted over large areas (larger than 100 acres) and as one component in a multi-factor analysis (it should not be the sole factor to determine the appropriateness of a proposed land use for a given location.

Aquifer vulnerability was conducted as part of the Land Suitability Model conducted during development of the SLDP to determine the vulnerability due to surface contaminants. This was the same model used during the development of the Sante Fe County Oil and Gas Element, which focused on the Galisteo planning region. That data was utilized for the SLDP, and new data sets were created and incorporated in the SLDP analysis for the remainder of the County.

The specific methodology being used is the DRASTIC model. DRASTIC was developed by the US EPA, in 1987, to create a process to rank the groundwater pollution potential by utilizing influential hydrogeologic factors in a graphical mapping format. DRASTIC is an acronym derived from the following seven analysis factors:

D – Depth to water
R – Net Recharge

A – Aquifer Media
S – Soil Media

T – Topography

I – Impact of the Vadose Zone

C – Hydraulic Conductivity

Map 41 shows the County's Hydrologic Zones.

2-15.1.2. Vulnerability Factor Analysis

Each DRASTIC factor has been evaluated by the EPA with respect to each other to determine the relative importance of each factor, and each factor is assigned a relative weight to determine its importance. Factor scores range from 5 (the most important or significant) to 1 (the least important or significant). To calculate pollution potential each DRASTIC factor is multiplied by the assigned weight then added together for an overall ranking. **Map 42** shows the EPA DRASTIC Aquifer Sensitivity Rating. **Map 43** shows the County Utilities Model DRASTIC Aquifer Sensitivity Rating. **Map S-1** in the **Map Atlas Supplement** shows Aquifer Vulnerability.

Figure 2- 59: DRASTIC Weighting

Factor	Weight
Depth to Water	5
Net Recharge	4
Aquifer Media	3
Soil Media	2
Topography	1
Impact of the Vadose Zone	5
Hydraulic Conductivity	3

2-15.1.3. Depth to Water Factor

The distance between the surface of the land and the top of the aquifer (the feet below the surface) determines the depth of material a contaminant must travel to reach the aquifer. In general with shallow or low depth to water the travel time is less, which increases the pollution potential. The range and rating for the analysis are as follows:

Figure 2- 60: Depth to Water Rating

Range	Rating
0 – 5 feet	10
5-15 feet	9
15 – 30 feet	7
30-50 feet	5
50 – 75 feet	3
75 – 100 feet	2
100 + feet	1

To estimate depth to water groundwater contour maps, estimating the top of the water table in feet above sea level, from various sources (Hodgins, Mourant, Shomaker, DBS and Johnson) were scanned, geo-rectified and manually traced in Arc Map to create a line shape file. The shape file was converted to a 10m grid using the ESRI Topo to Raster Tool[1] . The depth to water grid was subtracted from the 10 meter DEM grid (USGS) using the ESRI Raster Calculator. The results were reviewed for accuracy and manually adjusted where necessary utilizing well log data and 7.5 minute quadrangle.

The water table appears too shallow on the northwest and western flank of the Ortiz Mountains and some areas of the northern and eastern Estancia Planning Area. This is presumed to be an artifact of interpolation error due to too few data points. Further investigation for aquifer depth data in these areas is recommended.

[1] The ESRI Topo to Raster is an interpolation method specifically designed for the creation of hydrologically correct digital elevation models (DEMs). It is based on the ANUDEM program developed by Michael Hutchinson

2-15.1.4. Net Recharge Factor

Represents the amount of water per unit area of land which penetrates the ground surface and reaches the water table. Recharge has the capability to transport contaminants vertically to the water table. Generally the greater the recharge the higher the potential for ground water pollution except where recharge is great enough to dilute the contaminant. The standard range and rating for the analysis are as follows:

Recharge occurs primarily through three mechanisms; as infiltration in arroyo and creek bottoms; through fractures along the Sangre de Cristo mountain front and percolation of water from the ground surface through the vadose to the groundwater table. Due to the high evaporation and transpiration rates and low precipitation in New Mexico very little water infiltrates from the surface to the groundwater table so the third mechanism for recharge, commonly referred to as areal recharge, was dismissed for this analysis. In the ephemeral arroyos and creek bottoms the primary source water for recharge occurs as runoff from monsoonal precipitation events. Where streams are perennial or intermittent the primary source of water for recharge is from spring runoff and discharge (springs and seeps) from groundwater. The mountain front recharge is derived from snowpack in the Sangre de Cristo Mountains.

Recharge areas and rates from the Santa Fe County Regional Groundwater Model and the OSE Estancia Model were utilized.

Due to low recharge rates the DRASTIC ranking was slightly modified to reflect the difference between the creek and arroyo bottoms and areal recharge areas. The lowest standard DRASTIC ranking of 1 describes a recharge of 0 to 2 inches which covers most of Santa Fe County. This low rank was broken out further to capture the difference between the overland flow or areal recharge areas and arroyo and creek bottoms. The modified rankings are as follows:

Figure 2- 61: Modified Recharge Rating

Range	Rating
No significant recharge	0
0 – 2 inches / year	1
2 – 4 inches / year	3
4 – 7 inches / year	6
7 – 10 inches / year	8
10 + inches / year	9

2-15.1.5. Aquifer Media

Aquifer Media refers to the shallow consolidated or unconsolidated saturated material which yields sufficient quantities of water for use. The route which a contaminant will take is strongly influenced by the material the contaminant must move through. Geologic units with high porosity and permeability such as sand and gravel have a greater ability to transmit contaminants than low porosity units such as shale.

Recent geologic mapping by the New Mexico Bureau of Geology and Mineral Resources and the USGS (Lisenbee, Maynard et al, Sawyer and Scholle) were utilized to characterize the shallow saturated geologic units within the El Norte, El Centro and Galisteo Planning Areas. For the Estancia Planning Area the geologic units described in layer 1 of the OSE Estancia Groundwater Model was used.

Figure 2- 62: Saturated Geologic Units Rating

Material	Rating
Massive Shale	1 - 3
Metamorphic/Igneous	2 - 5
Weathered Metamorphic/Igneous	3 - 5
Glacial Till	4 - 6
Bedded Sandstone, Limestone and Shale Sequences	5 - 9
Massive Sandstone	4 - 9
Sand and Gravel	4 - 9
Basalt	2 - 10
Karst Limestone	9 - 10

2-15.1.6. Soil Media Factor

Soil media refers to the upper part of the vadose or unsaturated zone characterized by significant biological activity. Soil has the ability to impact the amount of water which can infiltrate in the ground. This impacts the ability of a contaminant to move vertically into the vadose zone.

USDA Natural Resources Conservation Service surface soil texture data downloaded from the Soils Data Mart website for was utilized for this analysis. The surface texture may not be representative of all the soil horizons in a certain location but was the best fit from the available data for this topic.

Figure 2- 63: Soil Media Rating

Range	Rating
Thin or Absent	10
Gravel	10
Sand	9
Peat	8
Shrinking and/or Aggregate Clay	7
Sandy Loam	6
Loam	5
Silty Loam	4
Clay Loam	3
Muck	2
Non-shrinking and Non-aggregated Clay	1

2-15.1.7. Topography

Topography refers to the slope of the land surface. Topography controls the ability of a pollutant to runoff or remain on the surface in one area long enough to infiltrate into the subsurface. Land surfaces that are flat or have a low slope are more sensitive to a surface contamination source and have the highest ranking.

Slope data utilized for this analysis was obtained from the Santa Fe County GIS Server. The actual source of the data was not documented but is presumed to be derived from the 10 meter Digital Elevation Model data obtain from the USGS. The ranking for topography is as follows:

Figure 2- 64: Topography Rating

Range	Rating
0 – 2 Percent Slope	**10**
2 - 6 Percent Slope	**9**
6 – 12 Percent Slope	**7**
12 - 18 Percent Slope	**5**
18+ Percent Slope	**3**
75 – 100 Percent Slope	2

2-15.1.8. Impacts of the Vadose Zone

The vadose zone represents the unsaturated portion of the aquifer material above the water table. The type of material the vadose zone is comprised of determines the attenuation potential or the ability of the material to naturally remove contaminants. Biodegradation, neutralization, mechanical filtration, chemical reaction, volatilization and dispersion are processes which may decrease the volume of a contaminant. The type of media also controls how a contaminant can move through the unsaturated zone.

Recent geologic mapping by the New Mexico Bureau of Geology and Mineral Resources and the USGS (Lisenbee, Maynard et al, Sawyer and Scholle) were utilized to characterize the shallow saturated geologic units within all the planning areas. These units were matched to the material listed below to rank.

Figure 2- 65: Impacts of the Vadose Zone Rating

Material	Rating
Confining Layer	1
Silt / Clay	2 - 6
Shale	2 - 5
Limestone	2 - 7
Sandstone	4 - 8
Bedded Sandstone, Limestone and Shale Sequences	4 - 9
Sand and Gravel with significant silt and clay	4 - 9
Metamorphic / Igneous	4 - 9
Sand and Gravel	6 - 9
Basalt	2 - 10
Karst Limestone	8 - 10

2-15.1.9. Hydraulic Conductivity

Hydraulic Conductivity represents the ease at which water flows through the aquifer material under a given hydraulic gradient. The rate at which groundwater flows also controls how fast or slow a contaminant can move away from the source.

Values for hydrologic conductivity from the Santa Fe County Regional Ground Water Model (Intera 2006 and 2008) and the OSE Estancia Basin Ground Water Model (Keyes et al) were used. These values were assigned to the aquifer units and rated using the following values. Most of the values for Santa Fe County were either a 1 or 2 due to the nature of the aquifers in this region.

Figure 2- 66: Conductivity Rating

Range	Rating
1 – 100 GPD/Ft	1
100-300 GPD/Ft	2
300 - 700 feet GPD/Ft	4
700 – 1,000 GPD/Ft	6
1,000 – 2,000 GPD/Ft	8
2,000 + GPD/Ft	10

2-15.1.10. Combining DRASTIC Parameters

Each of these layers is weighted or multiplied based on a pre-determined level of importance in the DRASTIC model and added together to create a final weighted composite evaluation of aquifer vulnerability for Santa Fe County.

2-15.2. Critical Management Areas

The Critical Management Area (CMA) analysis is based on estimates of future water supplies, based on a 40-year projected pumping scenario. This model identifies CMAs by projecting the remaining aquifer thickness and average annual rates of drawdown. (Keyes 2001). The purpose of identifying CMAs is to identify areas for protection due to inadequate water resources. (Turney 2002). To be considered a CMA the saturated thickness of the aquifer is estimated to go below 80 feet or the regional ground water decline is estimated to exceed 1.5 feet per year.

CMAs are identified in the Land Suitability Model (SLDP Volume 3) as sensitive will assist Santa Fe County in future land use and zoning decisions.

2-15.3. Water Quality

2-15.3.1. Known Contaminants

Santa Fe County has been a partner in two intergovernmental water fairs with Los Alamos National Laboratories and the New Mexico Environment Department. The first event was in 2004 and focused on Nambe, Pojoaque and Tesuque areas and the second event occurred in the Santa Fe area in July 2009. Ongoing testing and regional coordination has identified a variety of contaminants in some water samples, as follows:

> ***Uranium.*** In the Pojoaque water fair 133 wells of the 242 tested exceeded the EPA drinking water standard for uranium. Of the 90 preliminary samples analyzed to date for the Santa Fe Water fair 13 wells exceeded the EPA drinking water standard for uranium. These wells were located proximal to the mountains. The Uranium is naturally occurring and thought to originate from the Precambrian rocks of the Sangre de Cristo Mountains.
>
> ***Arsenic.*** In addition to the two water fairs, Peggy Johnson from the Bureau of Geology and Mineral Resources reviewed water chemistry data in the greater Santa Fe area for levels of arsenic. Arsenic is distributed across the El Norte, El Centro and Galisteo Planning Areas. In the Caja del Rio area the source is thought to be the local basalt but in the rest of the County the source is unknown but is thought to be naturally occurring.
>
> ***Nitrates.*** The water fair data showed low levels of nitrates and nitrites in many domestic wells but only a few wells in the Pojoaque and Mountain area northeast of Eldorado exceeded the maximum contaminant level set forth by the EPA. The most common source of nitrates and nitrites are septic tanks. Continued monitoring of both nitrate and nitrite is recommended to ensure public welfare and to assist in planning future wastewater infrastructure.

2-15.3.2. Known Contamination Sites

The Water Supply Study Jemez Y Sangre Water Planning Region New Mexico (Duke) compiled a list of known contamination sites identified by the New Mexico Environment Department. In general the known ground water contaminants are from liquid underground storage tanks, dry cleaners, mining activity, septic tanks and agricultural activities. Continues identification of such contamination sites is recommended to protect public welfare and to assess risk.

Contaminant sites are identified in the Land Suitability Model (SLDP Volume 3) as sensitive will assist Santa Fe County in future land use and zoning decisions. **Map 46** shows Groundwater Contamination.

2-15.4. Water Systems

2-15.4.1. County Water System

The County water system is presently in the following areas, primarily in and around the City of Santa Fe:

- The ***South County Area*** has the majority the present demand, about 90 percent, has about 1600 customers, and will continue to be the major area of County service demand.
- The ***Airport Development District*** has only one service customer, the new County Public Works Building, but will probably have the largest growth potential in the future due to the Buckman Direct Diversion pipelines being able to supply water to the area in 2011.
- The ***West Sector Area*** has a small service demand, the least number of customers, about 65, but could be an area that expands considerably when the City of Santa Fe annexation of areas inside the I-25/SR599 boundary issue is completed and The City water service areas outside of this boundary are turned over to the County to operate and maintain.
- The ***South Meadows Road/County Road 62 Area*** has only three customers, but will have a large potential for growth when the South Meadows Road extension is completed in late 2010 and the Buckman Direct Diversion eastern segment pipeline is completed and operational in spring 2011.

Map 45 shows the Water and Sewer Systems. **Map S-16** shows well locations.

2-15.4.2. City of Santa Fe Water Service Agreement

The County has a Water Service Agreement with the City of Santa Fe to provide up to 875 acre-feet of water supply annually to the County to provide sufficient water to serve customers for domestic and fire protection purposes through three master meters, two located in the South Sector Area and one to serve the West Sector Area. When the Buckman Direct Diversion (BDD) comes online in 2011, the water supply requirement will reduce to 500 acre-feet annually. Presently the County water supply demand is approximately 410 acre feet and is estimated to increase at a rate of about 5 percent per year for the next few years. The majority of this demand is expected to be in the South County Area where most of the new development is expected to occur.

As shown in the following table, which describes the total water taken from 2005 to present, Santa Fe County has been increasing its water demand, now using over half of its annual supply. After BDD becomes available, the County could be using 100% of the City water supply (as demand increases and the allotment decreases).

Figure 2- 67: Utility Water Useage

Year	Total SFC Utility Water Usage	Percentage of Physical Water Used
2005	370.29 acre-feet	42.32%
2006	367.42 acre-feet	41.99%
2007	399.11 acre-feet	45.61%
2008	437.92 acre-feet	50.05%
2009*	156.63 acre-feet	

**Billed Usage from January 09 – May 09 plus 6% line loss.*

2-15.4.3. Connection to Homes on Domestic Wells

The County is being requested to serve existing population, primarily in the southeast portion of the South Sector Area that is presently on domestic wells. Development conditions that were placed on these subdivisions at time of their approval require that they connect to the County water system when available within 200 feet of the respective residence. This requirement as well as enforcement of the condition will be a challenge for the County both monetarily in the way of

providing the funds to construct the water system to supply the service and to negotiate the actual connection of respective residences because most land owners will be reluctant to do so unless forced to connect by County Ordinance requirements which presently are not in place.

Preliminary Analysis of plats in the La Cienega area showed 307 parcels which are required by plat condition to connect to the regional water system when it is available within 200 feet of the parcel edge. There are distinct clusters to the northwest and southwest of The Downs property which may make connection cost efficient. Additionally as part of Master Plan approval, The Downs is also required to connect to a regional water system when it is available.

Public welfare issues, such as water quality and lack of supply (quantity), may also be a motivating factor for connection of home on domestic wells where feasible within the service area.

2-15.4.4. Bulk Sale of Water

The County also sees a need to provide supplemental or backup water supply to other water suppliers in the area or help develop regional water systems in areas of the County that are remote to the central County/City water systems. Entities like Mutual Domestic Water Consumers Associations (MDWCA) or Water Cooperatives need systems with reliability and redundancy. In order to accomplish this, the County developed Joint Powers Agreements to address the specific water system needs and be able to provide funding in which the County will partner and promote regionalization water system benefits.

The County currently is providing water to:

- The Property Control Division of the State of New Mexico for the State Penitentiary Complex;
- The New Mexico National Guard; and
- La Cienega MDWCA.

Future entities which will or could be served by the Santa Fe County water system are:

- Agua Fria MDWCA
- Sunlit Hills Water Cooperative
- Eldorado Water and Sanitation District
- Canoncito MDWCA
- Galisteo Commonweal Conservancy
- La Campanas Home Owners Association Water System

Entities outside the Santa Fe County Water Service Areas with which the County is working to develop regional water systems are:

- Cuatro Villas MDWCA
- Greater Chimayo MDWCA
- Glorieta Lifeway Conference Center
- Glorieta Estates MDWCA
- Glorieta East MDWCA
- Glorieta MDWCA

2-15.4.5. The Buckman Direct Diversion Water System

The Buckman Direct Diversion (BDD) Project is designed to address the immediate need for a sustainable means of accessing water supplies for the applicants, the City of Santa Fe, Santa Fe County and the Las Campanas Limited

Partnership. The BDD project will involve the diversion of water from the Rio Grande; raw water pipelines, pump stations, infrastructure for transmission of raw water to two water treatment plants; and pump stations, potable water pipelines, and infrastructure to distribute treated water to customers in the City of Santa Fe, Santa Fe County, and in Las Campanas.

The BDD project is being designed and will be constructed by March 2011 with the capacity necessary to meet the near term needs of the City, County, and Las Campanas. The river diversion structure will have an average diversion capability of 8730 acre feet per annum but can be operated to a peak capacity of 17,500 acre feet for short periods of time to meet peak demands of the three entities. Capacity allocation for the three entities is: 5230 acre feet for the City of Santa Fe, 1700 acre feet for Santa Fe County, and 1800 acre feet for Las Campanas. Agreements currently in place allow the entities to share capacity allocation should the need arise. Additional diversion of water supply for the three entities can probably be accomplished in the future but would require considerable effort and time to meet environmental as well as governmental regulation requirements.

The 15 mgd state of the art water treatment plant and potable water pipelines are designed to provide sufficient water supply to meet the needs of the present City, County, and Las Campanas customers as well future development needs in the respective service areas for the entities until approximately 2030, based on current population projections.

2-15.4.6. Water Rights

Currently Santa Fe County owns 654.18 acre-feet of water rights which may be utilized from the Buckman Well Field or the Buckman Direct Diversion as described below:

Figure 2- 68: Buckman Water Rights

Water Rights Status	Quantity Permitted
SFC Completed Transfers to the Buckman Direct Diversion	367.5 acre-feet*
SFC Completed Buckman Well Transfers	286.68 acre-feet
Total BDD and Buckman Well Field Permitted Water Rights	**654.18 acre-feet**

**Under OSE Permit No. 4842, Santa Fe County may divert up to 367.5 acre-feet per year (afy) which may be increased to 468.75 afy if adequate stored water is available for release to allow for the increased diversion. Santa Fe County has a storage contract with the BOR to store its San Juan Chama water.*

With pending applications for transfer of water rights and conveyance from developer owned water rights, the permitted amount of water available to the BDD will be increased prior to start of operation.

2-15.4.7. Allocations Established Through Water Service Agreements

The following table is a listing of water allocations established by either a Water Service Agreement or a Water Delivery Agreement. Approximately 807 acre-feet are allocated for various existing and proposed projects; roughly 50 % of the water is actually delivered each year. No new agreements to serve water have been executed since the last report to the BCC in March of 2009.

Figure 2- 69: Water Allocations

Customer	1995 – 2004 Allocation (acre-feet per year)	2005 – 2009 Allocations (acre-feet per year)
Rancho Viejo	166.00	59.20
Academy Tech	2.00	
Greer	8.76	
Taurus	3.00	
La Pradera	13.14	
Oshara	30.00	11.00
Beaty ,Montoya et al	9.50	
New Mexican	5.00	
American Tobacco	2.00	
Jehovah's Witness	0.50	
Berridge	10.00	
NMDC & NMNG	6.00	
PNM Electric	3.00	
Mowery	1.50	
Warren	2.00	
Terrell	1.00	
Browncastle	5.58	
Capitol Ford	0.31	
Khalexico	0.31	
Boylan (Valle Serena)	1.86	4.2
Jones	0.31	
Traveltown	0.31	
Seaman (Vereda del Este)	0.93	
Santa Fe Brewing Co.	1.00	
Wolf Canyon	1.00	
Allsups	0.67	
Las Lagunitas	42.00	
Hurlocker, et al	30.38	
Fallows (El Prado)	4.96	
San Cristobal	22.00	
Pueblo Garcia Heights	3.00	
Paseo C de Baca	5.00	

Suerte Del Sur		45.00
Pearson		3.15
Komis		45.00
Gillentine		1.50
Agua Fria CWA		36.00
Burro Alley Partners	8.00	27.00
Northwest Ranches		3.60
Oliver C de Baca		1.0
Love Ranch		1.0
Beaver Toyota		.5
Private Development Subtotal	**390.02 acre-feet**	**238.15 acre-feet**
Detention Facility	55.00	
Affordable Housing	19.00	
Economic Dev. Park	5.16	16.84
SFPS Elementary School	3.00	
Public Safety Complex	7.00	
Other	2.98	
--Valle Vista Housing	40.00	
--Bulk Water Sales	30.00	
County Projects Subtotal	162.14	16.84
Grand Total = 807.15	**552.16**	**254.99**

2-15.4.8. The Pojoaque Valley Regional Water System

The Aamodt Settlement law suit was filed in 1966 to determine the nature and extent of the four Pueblos Indian water rights as well as the thousands of other water rights claimants in the Pojoaque River Basin. In the settlement agreement of May 2006, a potable regional water system was studied and consider feasible to serve the four Pueblos and the majority of water users in the Basin. The Pojoaque Valley Regional Water System as presently conceived would provide potable water to the four Pueblos; San Ildefonso, Nambe, Pojoaque, and Tesuque as well as the majority of residents who live within about 1000 feet of the rivers valleys or along major roads or highways that are located in the area. The regional water system proposed includes a river diversion and pumping station on the east bank just north of the SR502 (Otowi) bridge over the Rio Grande, a 7.2 mgd water treatment plant to treat water to Safe Drinking Water Standards, and potable water transmission and distribution system consisting of pipelines, pump stations, storage tanks, and appurtenances to provide service to Pueblo and county residents in the Basin from San Ildefonso to the upper Tesuque area.

The combined water system would have a capacity of 4000 acre feet per annum of which 2500 acre feet would be allocated to the Pueblos and 1500 for County residents and entities. The proposed regional water system would be operated by

Board composed of County and Pueblo representatives. The regional water system authority would provide wholesale water to the Pueblos and the County for distribution to their respective customers. Santa Fe County would be the operator for water distribution service to all County customers connected to the non-Pueblo portions of the regional water system. The Pojoaque Valley Regional Water System as part of the Settlement Agreement funding does not expect to acquire federal congressional approval until late 2009 and the water system construction would not start until 2012 with the diversion and water treatment plant and regional transmission and distribution pipelines not being completed until at least 2020.

In order for the County to feasibly and cost effectively connect non-Pueblo residents to the proposed water system will be a challenge both monetarily in the way of providing the funds to construct the water system to supply the service and to negotiate the actual connection of respective residences because most existing residential owners will be reluctant to do so unless forced to connect by County Ordinance requirements which presently are not in place. New development residences in the area are or will be required to connect the County water system.

Future entities which can be served by the Santa Fe County water system in the Pojoaque Valley area are:

- Tesuque MDWCA
- Bishops Lodge Water System
- Santa Fe Opera Water system

Entities outside the Santa Fe County Non-Pueblo Service Areas with which the County is working to develop regional water systems are:

- Chupadero MDWCA
- Rio en Medio MDWCA
- Vista Redondo MDWCA
- Rancho Encantado

2-15.4.9. Community Water Systems

Data from the New Mexico Environment Department (NMED) Drinking Water Bureau (DWB) was gathered from the Sanitary Surveys to provide information on community water systems. Sanitary Surveys are preformed on community water systems every 3 years. These surveys contain information about community water systems such as the storage capabilities, compliance with NMED drinking water standards, sources of water, the number of wells and administrative records. Through this information a spreadsheet was created to add information on population, storage capacity, production and demand of each community water system.

Although these surveys contain useful data, one of the limiting factors of these surveys is the accuracy of the data. The smaller community water systems are generally run by volunteer members. These volunteers are not versed in the proper terminology or methodology and often reply to the surveys based on memory. According to the drinking water regulations a certified operator must be employed by the system. After reviewing the surveys a majority of these systems did not comply with this requirement. A majority of the systems were required to have a water conservation plan on file but did not comply with this regulation. The following is a description of the water systems reviewed:

Figure 2- 70: Community Water Systems

Water System	Description	Potential for Regionalization
AGUA FRIA WATER ASSOCIATION	The Agua Fria Water Association water system serves a population of 650, and consists of one well, one storage tank, a single chlorination system (used as needed), six pressure tanks, and distribution. This system is currently being upgraded to serve additional customers and provide fire protection to the area and will receive wholesale water from the County when the BDD infrastructure is completed in Spring 2011.	Yes
ASI LA MAR TRAILER PARK	The Asi La Mar Trailer Park water system serves a population of 80, and consists of 2 wells, two storage tanks, and distribution.	
CANADA DE LOS ALAMOS MDWCA	The **Canada De Los Alamos MDWCA** water system serves a population of approximately 70 persons, through 24 metered connections. The water system consists of one infiltration gallery, two wells, (well #2 is inactive but still connected to the system), and a 50,000-gallon storage tank for distribution.	
CANONCITO AT APACHE CANYON	The Canoncito at Apache Canyon water system serves a population of 250 through 80 metered connections, and consists of two wells, two storage tanks totally 33,000 gallons, and a distribution system of mainly 3" pipe. Quality water problems with Radium 226/228 have occurred since 2002 making the water non-potable. Water supply treatment is currently installed but equipment is leased and very expense to operate. An alternate water supply is needed to supply good potable water which is being planned by Santa Fe County and should be constructed by 2011	Yes
CHUPADERO MDWCA	The Chupadero MDWCA water system serves a population of 160, and consists of two wells, one storage tank, and distribution. Interconnection with the Rio en Medio MDWCA water system would be advisable for regionalization purposes.	Yes
CIELO LINDO	The Cielo Lindo water system serves a population of 26, and consists of 2 wells, one storage tank, a pressure tank, and distribution.	
CUNDIYO MDWCA	The Cundiyo MDWCA water system serves a population of 65 and consists of two wells, has a new 70,000-gallon storage tank, and 4465 of 6" and 8" water distribution water main to provide domestic and fire protection supply. Connection of the additional residence in close vicinity of the river should be considered for regionalization measure.	Yes
EL RANCHO MOBILE HOME PARK (SANTA FE)	The El Rancho Mobile Home Park water system serves a population of 50, and consists of two wells, two storage tanks, and distribution. This system should be interconnected with the Pojoaque Valley (Aamodt) Regional Water System when it becomes available.	Yes
EL VADITO DE LOS CERRILLOS WATER ASSOC	The El Vadito de los Cerrillos water system serves a population of 350 and consists of one infiltration gallery, a 100,000-gallon storage tank on the north side of Galisteo Creek and a new 50,000 storage tank on the South side of Galisteo Creek and 1000 feet of new 6" water main on Gold Mine Road to extend the distribution system. Extension of the Santa Fe County water system South on SR 14 to interconnect and provide supplemental water supply should be considered in the near future.	Yes
ELDORADO AREA WATER AND SANITATION DIST.	The **Eldorado Water and Sanitation District** water system serves a population of approximately 7500, through 2904 service connections and approximately 70 commercial connections. The water system consists of fourteen wells, eight storage tanks, six treatment plants, three booster stations, and distribution. Notes: Well number 11 is no longer part of the system (IAF to remove). Well(s) 3, 5, & 10 are still physically connected but not being used (flagged inactive). Well 13 is still connected but no longer used (IAF to inactivate). This water system needs to be upgraded by drilling new wells, making considerable distribution system improvements, and interconnecting with the Santa Fe County water system when the Eldorado-Canoncito Water transmission system is constructed1 in 2011.	Yes
ENCHANTED MESA MOBILE HOME PARK	[in progress]	
ENTRANOSA WATER AND WASTEWATER COOP	The Entranosa Water System serves a current population of 7100 year round residents through 2,552 metered service connections. The system consists of 7 wells, 2 main pump stations with chlorine disinfection feed systems, 16 storage tanks, 6 smaller booster pump stations, 2 altitude valves and an adequate distribution system. This system should be considered for interconnection to the NM American Water Company-Edgewood District water system and the Thunder mountain water system as part of a regionalization effort.	Yes

Water System	Description	Potential for Regionalization
GALISTEO MDWCA	The Galisteo MDWCA water system serves a population of 150, and consists of 1 well, two storage tanks, and distribution. The well is capable of producing up to a total of 40 gallons per minute (GPM). The storage tanks are bolted steel and glass tanks, with a capacity of 54,500-gallons and 15,000-gallons respectively. The distribution network consists of all PVC piping. This water system should be considered for interconnection with the Eldorado-Canancito Transmission system via the El Dorado water system at sometime in the future to provide supplemental water supply.	Yes
GLORIETA EAST WATER SUPPLY	The Glorieta East Water Supply system serves a population of about 60 persons, and consists of one well, one old, badly corroded 8,000-gallon storage tank, and old small distribution lines. This system needs upgrading with a new main distribution line, adequately sized storage tank and a water well renovation. This system can be considered for interconnection to a future water system which will connect the three MDWCA's systems to the Glorieta Lifeway Conference Center water system.	Yes
GLORIETA ESTATES MDWCA	The Glorieta Estates Water MDWCA water system serves a population of approximately 100 persons, and consists of one well, and an existing badly corroded 10,000-gallon storage tank and 2" and 3" distribution lines. Currently planned for construction is a new 40,000 gallon tank at a higher elevation with some 300 feet of 8" water main with fire hydrants to provide adequate water supply for domestic purposes and some degree of fire protection for the area. Recently this water system has shown be have water quality problems due to excessive levels of Radium 226/228. This water quality problem will need to be addressed if the excessive levels continue to be evident. This system can also be considered for interconnection to a future water system which will interconnect the three MDWCA's in the area to the Glorieta Lifeway Conference Center water system.	Yes
GLORIETA MDWCA	The Glorieta MDWCA water system serves a population of 200, and consists of one well, one storage tank, and distribution. The one well is capable of producing between 28 to 35 gallons per minute (GPM). The storage tank is bolted steel, with a capacity of 22,000gallons. The distribution network consists of a mix of galvanized steel and PVC piping. This system can also be considered for interconnection to a future water system which will interconnect the three MDWCA's in the area to the Glorieta Life way Conference Center water system.	Yes
HYDE PARK ESTATES WATER USERS ASSOC	The Hyde Park Estates Water Users Association water system serves a population of 183, consists of three wells (two active and one for emergencies only), a system connection to the City of Santa Fe water system, two storage tanks, and looped distribution lines to serve the entire development. The three wells are capable of producing up to a total of 15 gallons per minute (GPM). The storage tanks are bolted steel tanks, designed to float on the distribution system, with a capacity of 25,000 gallons each. The distribution system consists of a mix of ductile iron and PVC piping.	Yes
JUNIPER HILLS MHP	The Juniper Hills MHP water system serves a population of 55 to 60 persons, and consists of one active well, one back-up well, a 5000 gallon storage tank, and distributions lines. The two wells are capable of producing up to a total of 50 gpm. The distribution network consists of a mix of galvanized steel and PVC piping. This water system should be considered for interconnection to the Juniper Hills Ranch water system.	Yes
JUNIPER HILLS RANCH	The Juniper Hills Ranch water system serves a population of 54, and consists of one well, two pressure tanks, and distributions lines. This water system should be considered for interconnection to the Juniper Hills Ranch water system.	Yes
LA CIENEGA LAKESIDE MHP	The La Cienega Lakeside Mobile Home Park community water system serves an average population of 75 residents from 26 connections. Two of four wells are currently active, meeting an average daily demand of 3000 gallons. There is a 10,000 gallon storage tank floating on the distribution that has a residence time of 0.5 days. This water system could easily be connected to the Santa Fe County water system for back-up as well as supplemental supply.	Yes
LA CIENEGA MDWCA	The La Cienega MDWCA water system serves a population of 525, consists of 2 active wells, one storage tank, two chlorination units, and distribution. The storage tank is a welded steel tank with a capacity of 60,000 gallons, which was rehabilitated in 2007. The storage tank is plumbed to "float" on the distribution system, as both wells flow to the distribution before filling the tank, allowing water to "short-circuit" or bypass the storage tank. Each well has a chlorination station for disinfection in the well house, but only one chlorination pump functions at a time so that disinfection is not continuous and only utilized on an as needed basis. Well # 3 is the primary producer for the system with a pump capacity of 80 gpm and generally functions at 80 psi. Well # 2 has historically been a back up well, which also has a pump capacity of 80 gpm, but functions at 40 psi on average and generally does not produce as much water as well # 3. The La Cienega MDWCA water system was recently connected to the Santa Fe County water system to provide supplemental and back-up water supply as well as provide system reliability and adequacy.	Yes

Water System	Description	Potential for Regionalization
LA VISTA HOMEOWNERS ASSOCIATION	The La Vista Homeowners Association water system serves a population of 48, and consists of two wells, one storage tank, and distribution. As the City of Santa Fe water system is extended southward, this water system could be connected to provide supplemental or back-up water for reliability.	Yes
LAMY DOMESTIC WATER USER ASSOCIATION	The Lamy Domestic Water User Association water system serves a population of 150, and consists of one well, one storage tank, a single chlorination system, a booster station, and distribution. The one well is capable of producing up to a total of 33 gallons per minute (GPM). The storage tank is bolted a steel tank, with a capacity of 75,000-gallon. The distribution network consists of all PVC piping. This water system should be considered for interconnection with the Eldorado-Canancito Transmission system via the El Dorado water system at sometime in the future to provide supplemental or back-up water supply.	Yes
LAS CAMPANAS WATER SYSTEM	The Las Campanas Water System is owned and operated by the Las Campanas Homeowners Cooperative located in Santa Fe, New Mexico. The system receives its entire water supply from the City of Santa Fe Sangre de Cristo Water Division Water System. The water supply is received through a single raw water transmission line fed by Buckman Wells 1-13 located in the Buckman Well Field. The Las Campanas HOA has moved water rights into the Buckman well system but does not have operational control of production of the wells. Las Campanas is currently a partner in the Buckman Direct Diversion Project and has designated diversion capacity of up to 1800 af/a. Their project diversion water was to be diverted from the City/ County Transmission Diversion pipeline at Booster Station 2A for transmission directly to their own separate 2.0 mgd water treatment facility. Las Campanas is presently considering not building their own water treatment facility and having Santa Fe County provide their required domestic and fire protection water supply needs via a wholesale water supply agreement.	Yes
LIFEWAY GLORIETA CONFERENCE CENTER	The Lifeway Glorieta Conference Center water system serves a population of 100 to 200 in the fall and winter months and the increases to approximately 2,500 in the spring-summer months. The water system consists of eight wells but only two are currently used for supply, two 500,000-gallon storage tanks, a chlorination system, and looped distribution lines. The two wells are capable of producing up to a total of 830 gallons per minute (GPM). The Lifeway Glorieta Conference Center water system is being considered for interconnection to the MDWCA's water systems in the area to regionalize facilities and provide reliability and system redundancy.	Yes
LONE STAR TRAILER RANCH	The Lone Star Trailer Ranch water system serves a population of approximately 100 persons. The system consists of one well, capable of producing approximately 20 gpm, a treatment facility, one 5000 gallon storage tank and distribution lines.	
MADRID VILLAGE WATER CO-OP	The **Madrid Water Co-op** water system serves a population of approximately 300, through 125 currently operating metered connections. The water system consists of one well (#3) and a 30,000-gallon storage tank for distribution. The system has secondary level water quality problems which cause the water to be slightly unpleasant to use.	
NM AMERICAN WATER CO EDGEWOOD DISTRICT	The NM American Water Company Edgewood District water system serves a population of 5018, and consists of 4 wells, 14 storage tanks, a chlorination system, and distribution system. The 4 wells are capable of producing up to a total of 846 gallons per minute (GPM). The storage tanks are bolted steel tanks, with a capacity of 1.09 million gallons. The storage tanks are plumbed to "float" on the distribution system. The wells supply water that is chlorinated for disinfection into the distribution system for eventual transmission to the storage tanks. The distribution network consists of a mix of PVC and asbestos cement piping. This water system should be considered for interconnection to the Thunder Mountain water system and the Entranosa water system as part of a regionalization effort.	Yes
NM STATE PENITENTIARY	The NM State Penitentiary water system serves a population of approximately 2200. This system is classified as a Non-Transient Non-Community (NTNC) system. There are four sources of water supply that consist of 3 ground water wells and one consecutive connection (purchase) that obtains water from the Santa Fe County water system. The NM State Penitentiary purchases some of its treated water from the Santa Fe County South Sector public water system only when the well water supply system cannot supply sufficient water to maintain system distribution pressure and water supply to the elevated tanks. The consecutive connection is automatically utilized if system pressure falls below 50 psi. The State Prison water system is very old, has inadequate sized water lines to provide required fire flow to all prison facilities and should be upgraded to meet County as well as national fire flow and protection requirements. This water system should become an integrated part of a regional water system that serves the entire County South Sector serve area.	Yes

Water System	Description	Potential for Regionalization
POJOAQUE TERRACES MHP	The Pojoaque Terraces Mobile Home Park water system serves a population of 200, and consists of one well capable of producing up to a total of 25 gallons per minute (GPM), one 10,000 gallon storage tank, a chlorination system, an iron-manganese removal unit, a uranium removal unit, a bleeder tank, six pressure tanks, two booster pumps, and distribution lines. The distribution network consists of a mix of galvanized steel and PVC piping. This water system should be considered for interconnection to the Pojoaque Valley Regional Water System when it becomes available.	Yes
RANCHITOS DE GALISTEO WUA	The Ranchitos de Galisteo WUA water system serves a population of 60-70 persons, and consists of two wells, a storage tank, and distribution. The two wells are capable of producing up to a total of 55 gallons per minute (GPM). The storage tank is bolted steel, with a capacity of 25,000-gallons. The distribution network consists of all PVC piping.	
RIO CHIQUITO MDWCA	The Rio Chiquito MDWCA water system serves a population of approximately 200 through 57 metered connections. The system consists of one well, two storage tanks, a single chlorination system, and distribution lines. The well can produce a total of 57 gallons per minute (GPM). The storage tanks have a total capacity of 15,000 gallons and are plumbed to "float" on the distribution system. The distribution network consists of PVC piping.	
RIO EN MEDIO MDWCA	The Rio en Medio water system serves a population of 130, and consists of one well, two 10000 gallon storage tanks, a pressure tank, and distribution lines This water system should be considered for interconnection to the Chuperdero MDWCA water system in the future.	Yes
SANTA CRUZ MDWCA	The Santa Cruz MDWCA water system serves a population of 75, and consists of 2 wells, two storage tanks, and distribution. The two wells are capable of producing up to a total of 52 gallons per minute (GPM). The storage tanks have a capacity of 20,000 gallons each. The distribution network consists of galvanized steel piping. This water system should consider interconnecting to the Espanola water system or the Cuatro Villas water system in the near future to facilitate regionalization efforts and provide system reliability and redundancy.	Yes
SANTA FE COUNTY SOUTH SECTOR	The Santa Fe County South Sector water system presently purchases and receives its entire water supply from the City of Santa Fe water system. The Santa Fe County South Sector water system serves a population of 3000, has two distribution system chlorination stations, a booster station, a 1.5 million gallon storage tank and distribution lines. The distribution network consists of all ductile iron and PVC piping. This water system will interconnect with the Buckman Direct Diversion water system and lines in 2011 and the BDD will serve as its primary supply source.	Yes
SANTA FE COUNTY UTILITIES@VALLE VISTA	The Santa Fe County Utilities @Valle Vista water system is a purchase water supply from the City of Santa Fe water system. The Santa Fe County Utilities @Valle Vista water system serves a population of about 900 persons, and consists of two chlorination stations, and distribution lines. The majority of the distribution network consists of PVC piping. This system is not operating at this time and the population is served by the Santa Fe County South Sector Water System.	Yes
SANTA FE COUNTY WEST SECTOR	The Santa Fe County West Sector water system is a purchase water supply system that receives its entire water supply from the City of Santa Fe water system. The Santa Fe County West sector serves a population of 250 and consists of one PRV station and distribution lines. The distribution network consists of all PVC piping. This water system could be readily connected to the Las Campanas water system as well as the Buckman Direct Diversion potable transmission line in the future.	Yes
SANTA FE MOBILE HOME HACIENDA	The Santa Fe Hacienda Mobile Home water system serves a population of 250, and consists of 2 active wells, one inactive well, a 10,000-gallon storage tank, a 500-gallon pressure tank, and distribution lines. This water system should be considered for interconnection to the City of Santa Fe water system in the near future.	Yes
SANTA FE WATER SYSTEM (CITY OF)	The City of Santa Fe Water System serves a population of 100,000, and consists of 22 wells, two reservoirs, one surface water treatment plant which include both chlorine stations and Mix stations, nine storage tanks, eight booster stations, five treatment plants, a Supervisory Control and Data Acquisition System (SCADA), and distribution. The 22 wells are capable of producing up to a total of ~10,600 gallons per minute (GPM). The storage tanks are ground storage steel tanks and one underground concrete tank with a capacity ranging from 150,000 gallons to 10 million gallons. The storage tanks are both direct and floating tanks. The distribution network consists of a mix of PVC, Ductile Iron, Cast Iron, Galvanized Steel, Asbestos Concrete, Copper, other unknown material type. The City water system will be interconnected with the Buckman Direct Diversion water system and lines in 2011 and the BDD will serve as its primary supply source for the west, southwest and south areas.	Yes

Water System	Description	Potential for Regionalization
SANTA FE WEST MHP	The Santa Fe West Mobile Home Park water system serves a population of 200, and consists of 2 wells, two storage tanks, a water softener system, and distribution. This water system should be considered for interconnection to the City water system in the near future.	Yes
SHALOM MOBILE HOME PARK	The Shalom Mobile Home Park water system serves a population of 40-50, and consists of one well, one storage tank, a single chlorination system, and distribution. The one well produces up to 50 gallons per minute (GPM). The distribution network consists of all PVC piping.	
SOLACITO MDWCA	The Solacito HOA water system located in northern Santa Fe County in the Arroyo Seco area serves a population of 44, and consists of one well, one 10,000-gallon storage tank, two 60-gallon pressure tanks, and distribution lines. This water system could be interconnected to the Sombrillo-Arroyo Seco planned regional water system in the future when that system becomes available.	Yes
SUNLIT HILLS WATER SYSTEM	The Sunlit Hills water system serves a population of 990, and consists of 11 wells, four storage tanks, a booster station and distribution. Three of the storage tanks are bolted steel tanks, with a capacity of 210,000 gallons collectively, and one HDPE tank with a capacity of 1000 gallons. The storage tanks are plumbed to "float" on the distribution system. The distribution network consists of all PVC piping. This water system could be interconnected to the Santa Fe County planned Eldorado-Canoncito Transmission water line when constructed in the near future (2011).	Yes
TESUQUE MDWCA	The Tesuque MDWCA water system serves a population of 370, and consists of 1 well, a 55,000-gallon storage tank, and distribution lines. This water system should interconnect with the planned Pojoaque Valley Regional Water System when available in the near future (2020) for supplemental and back-up water supply.	Yes
THUNDER MOUNTAIN WATER SYSTEM	The Thunder Mountain Water System serves a population of 1800, and consists of two (2) wells, three (3) storage tanks, a chlorination system, and distribution. The two (2) wells are This water system should be considered for interconnection to the Thunder Mountain water system and the Entranosa water system as part of a regionalization effort. capable of producing up to a total of 400 gallons per minute (GPM). The storage tanks are steel tanks, with a combined capacity of 217,000 gallons. The storage tanks are plumbed to "float" on the distribution system. Both wells supply water that is chlorinated for disinfection prior to the storage tanks and distribution. The distribution network consists of PVC piping. This water system should be considered for interconnection to the NM American Water Company-Edgewood District water system and the Entranosa water system as part of a regionalization effort.	Yes
TRAILER RANCH MOBILE HOME PARK COMM	The Trailer Ranch Mobile Home Park water system serves a population of 210, and consists of one well, two storage tanks, and distribution.	
VILLAGE MOBILE HOME PARK	The Village Mobile Home Park water system serves a population of 150, and consists of two wells, four pressure tanks, and distribution.	
VISTA REDONDA MDWCA	The **Vista Redonda MDWCA** water system in Tesuque serves a population of approximately 60-75, through 53 service connections. The water system consists of seven wells, one 29,000 gallon storage tank, one 64,000 gallon storage tank, and distribution lines. This water system could be interconnected with the Pojoaque Valley Regional Water System when available if supplemental or back-up water supply is considered necessary.	Yes
WILD AND WOOLEY TRAILER RANCH	The Wild and Wooley Trailer Ranch water system serves a population of 93, and consists of one well, two pressure tanks, and distribution. This water system could interconnect with the Buckman Direct Diversion water system and lines near CR54 (Los Pinos Road) in 2011.	Yes

2-15.4.10. Non-Community Water Systems

The following is a description of non-community water systems, which tend to be user-specific and privately owned:

Figure 2- 71: Non-Community Water Systems

District	Description	Potential for Regionalization
AGUA FRIA FIRE STATION & COMMUNITY CENTR	The Agua Fria Fire Station and Community Center water system serves a population of 30-60, and consists of one well, one storage tank, a single chlorination system, a booster station, and distribution. The storage tank is bolted steel, with a capacity of 6,000 gallons. The storage tank is used for both distribution and fire protection. The distribution network consists of all PVC piping. This water system will be connected to the eastern BDD potable water pipeline when the South Meadows Road waterline and CR62 waterline are constructed.	Yes
ARROYO SECO TEEN CENTER	The Arroyo Seco Teen Center has its own water system consisting of a well, 10,000 galon steel ground storage tank, and about 200 feet of 8" distribution line. This water system should be integrated into the Sombrillo-Arroyo regional water system when its constructed.	Yes
BICENTENIAL REST AREA	DOT owned, contains 2 wells, one for production and the other for backup	Yes
BOBCAT BITE	The Bobcat Bite water system serves a population of about 300 per day and consists of one well, a water softener, a nitrate filtration system, a carbon filter, a cartridge filtration system, a UV system, a reverse osmosis system, and five 15-gallon pressure tanks. This water system could be connected to the Santa Fe County Eldorado-Canoncito transmission waterline when constructed in 2011	Yes
CAMP FRANK RAND	The Camp Frank Rand water system serves a population of 1500, and consists of one well, two storage tanks, a single chlorination system (used occasionally), and distribution. The one well produces a total of 20 gallons per minute (GPM). The storage tanks are plastic, with a capacity of 12,500 gallons each. The storage tanks are plumbed to “float” on the distribution system. The distribution is all PVC piping.	
COTTONWOOD RV PARK	The Cottonwood RV Park water system serves a population of 30-50, and consists of one well, two pressure tanks, a single chlorination system, and distribution. The well is capable of producing up to a total of 18 gallons per minute (GPM). The distribution network consists of all PVC piping.	
EL GANCHO	El Gancho Swim Club serves a population of approximately 300 persons, and consists of 2 wells, 1 storage tank, 2 pressure tanks, and distribution. The 2 wells are capable of producing 19 gpm respectively, sufficent to meet facility demand. The storage tank is steel, with a capacity of 10,000 gallons. The storage tank is plumbed directly from the wells on to the pressure tanks and onto the distribution system. The distribution network consists of PVC piping.	Yes
EL NIDO RESTAURANT	The El Nido Restaurant water system in Tesuque serves a population of about 180, and consists of one well and two 80-gallon pressure tanks.This water system could be connected to the Tesuque MDWCA water system and eventually to the Pojoaque Valley Regional Water System when constructed which is presently planned to be by the year 2020.	Yes
EL PARASOL		
EL RANCHO DE LOS GOLONDRINAS	The El Rancho de Las Golondrinas water system has two 3,000-gallon storage tanks, two (2) hydropneumatic pressure tanks, a 1-micro bag filter, and an ultraviolet disinfection. There is one groundwater production well, Well # 2 (Well # 1 is operated for grey water supply only). Recharge limits the total production capacity of the system, which is reported to be approximately 539-gallons/day --peak demand is 930-gallons/day. This water system should be connected to the La Cienega MDWCA water system for supplemental and back-up supply when needed.	Yes
EL RANCHO SENIOR CITIZENS CENTER	This water system should be connected to the Pojoaque Valley Regional Water System when it becomes available which is presently planned to be about 2020.	Yes
GABRIELS	Gabriel’s water system serves a population of 1000 per week, and consists of 1 well, two pressure tanks for distribution, a cartridge filtration system, and a Culligan water softener.This water system should be connected to the Pojoaque Valley Regional Water System when it becomes available which is presently planned to be about 2020.	Yes
HARRYS ROADHOUSE	The water system consists of a single groundwater production well, pressure tanks, and distribution. The water system no longer meets the needs of the restaurant operations, and the system components are deteriorating. This water	Yes

District	Description	Potential for Regionalization
	system should consider connecting to the City of Santa Fe water system as it is being extended to provide water supply to other entities in the area.	
HYDE MEMORIAL STATE PARK	The Hyde Memorial State Park public water system is classified as a groundwater under the direct influence of (GWUDI) surface water public water supply. The system is open year round and currently estimates 29,000 customers are served per year. There is a 12,000 gallon storage tank. Older treatment components include bag filtration and an ultraviolet disinfection system.	
JOE TO GO, LLC		
LONE BUTTE GENERAL STORE	The Lone Butte General Store water system serves a population of approximately 50 persons and consists of 1 well. The well is capable of producing a sufficent amount of water to meet the needs of the facility which is believed to be under 1,000 gallons per day.The system has one pressure tank believed to be 100 gallons. This water system should consider connecting to the Santa Fe County water system when it is extended south on SR14 in the future.	Yes
MINE SHAFT TAVERN	The Mine Shaft Tavern water system serves a population of approximately 150 persons and has 3 service connections. The water system consists of all new components includinng well#2 which replaced well #1 a 1,700 storage tank, new ultraviloet disinfection.	Yes
MUNICIPAL RECREATION COMPLEX	The Municipal Recreation Complex (MRC) includes 1) Marty Sanchez Links de Santa Fe, and 2) Sports Complex and is owned and operated by the City of Santa Fe's Parks and Recreation Department. The MRC has two separate groundwater water systems which are 1) Marty Sanchez Links de Santa Fe, and 2) Sports Complex located in a single aquifer basin. The systems are not physically connected. The Marty Sanchez Links de Santa Fe is open year-round, and the Sports Complex is seasonal, open April through November, generally. This water system should be connected to the Caja del Rio portion of the BDD potable water pipeline is constructed in 2011.	Yes
PINON RV PARK		
POJOAQUE VALLEY LITTLE LEAGUE FIELD	The Pojoaque Valley Little League Field water system serves a population of 25-100, and consists of one well, two pressure tanks, and distribution. The well is capable of producing up to a total of 45 gallons per minute (GPM). The distribution network consists of all PVC piping.This water system should be connected to the Pojoaque Valley Regional Water System when it becomes available which is presently planned to be about 2020.	Yes
RANCHEROS DE SANTA FE CAMPING PARK	The Rancheros de Santa Fe Camping Park transient non-community water system serves an average seasonal population of 150 and consists of one well, a storage tank, a pressure tank, two booster pumps, and a distribution system. Well # 1 located in the pump house has been physically disconnected and inactivated, while well # 2, constructed in 1980, meets the average daily demand of 3000 gallons/day from the end of March through the end of October. The storage tank installed in March 2005 is fiberglass with a 10,000 gallon capacity. The pressure tank is galvanized steel, manually filled with an air compressor. The distribution network consists of galvanized steel service connections and PVC main lines, where 20% of main lines have been replaced in the past 10 years.	
REAL FOOD NATION	This water system should consider connecting to the County of Santa Fe water system Eldorado-Canoncito transmission water line as it is being extended to provide water supply to other entities in the area.	Yes
SAN MARCOS RESTAURANT	The San Marcos Café public water system serves an average of 40 persons per day. The water system has 1 well that serves the residence and restaurant. The system has 2 pressure tanks, the distribution is made of PVC and the system does not provide disinfection.This water system should consider connecting to the Santa Fe County water system when it is extended south on SR14 in the future.	Yes
SANGRE DE CRISTO RACQUET CLUB	The Sangre de Cristo Racquet Club water system serves a population of 1500, and consists of 3 wells, two storage tanks, a single chlorination system, and distribution. The three wells are capable of producing up to a total of 900 gallons per minute (GPM). The storage tanks are bolted steel tanks, with a capacity of 150,000 gallons and 500,000 gallons respectively. The storage tanks are plumbed to "float" on the distribution system. All three wells supply water to the single chlorination station for disinfection prior to the storage tanks and distribution. The distribution network consists of a mix of cast iron and PVC piping.This water system should consider connecting to the City of Santa Fe water system as it is being extended to provide water supply to other entities in the area.	Yes

District	Description	Potential for Regionalization
SANTA CRUZ RECREATION AREA	This water system should be connected to the Cuatro Villas Regional Water System when it becomes available which is presently planned to be about 2015.	Yes
SANTA FE LODGE	The Santa Fe Lodge water system serves a population of 25, and consists of one well, a 3,000-gallon storage tank, a 120-gallon pressure tank, and distribution. The well is capable of producing 28 gallons per minute (GPM). The storage tank is bolted steel, with a capacity of 3,000 gallons. The distribution network consists of a mix of galvanized steel and PVC piping.This water system should consider connecting to the City of Santa Fe water system as it is being extended to provide water supply to other entities in the area.	Yes
SANTA FE OPERA GROUND	The Santa Fe Opera Ground water system serves a population of approximately 100-2865 through five metered connections. The system consists of 3 wells, two storage tanks, two pressure tanks, and distribution. The three active wells can produce a total of 70 gallons per minute (GPM). The storage tanks are bolted steel tanks, with a capacity of 15,000 gallons and 5,000 gallons respectively. The distribution network consists of a mix of copper and PVC piping.This water system should be connected to the Pojoaque Valley Regional Water System when it becomes available which is presently planned to be about 2020.	Yes
SANTA FE SKI BASIN	The Santa Fe Ski Basin Water system runs seasonally from November to February. There is one groundwater production well, Well # 1 and one (1) spring gallery. Results from a Microscopic Particulate Analysis conducted in July 1999 indicate that the spring gallery was at High Risk from surface water influence. The source was determined to be Ground Water Under the Direct Influence (GWUDI) of surface water source based on the report findings.	
SANTA FE TREE HOUSE CAMP	The Santa Fe Tree House Camp Water System is privately owned and operated, and receives its entire drinking water source from a single groundwater well. The system is a seasonal public water system that operates during the months of May through August.	
SILVER SADDLE AT JACKALOPE	The Silver Saddle at Jackalope water system serves a population of 50-75, and consists of one well, one storage tank, four pressure tanks, a 3 hp booster pump, a single chlorination system, and distribution. The well is capable of producing up to a total of 50 gallons per minute (GPM). The storage tank has a capacity of 5,000 gallons. This water system should consider connecting to the City of Santa Fe water system as it is being extended to provide water supply to other entities in the area.	Yes
SUNRISE GENERAL STORE	This water system should consider connecting to the Santa Fe County water system when it is extended south on SR14 in the future.	

2-15.5. Water Service Areas

Consistent with the establishment of Tiers, Sustainable Development Areas and capital improvement planning, water service areas have been identified as shown on the Maps Atlas and Atlas Supplement. The County's existing and proposed Water Service Area (WSA) has been expanded to include primary and secondary growth areas, designated as Sustainable Development Area 1 (SDA-1) and Sustainable Development Area 2 (SDA-2), respectively.

- ***Water Service Area 1 (WSA-1)*** identifies and is consistent with SDA-1 and identifies the lands projected to develop, consistent with the Future Land Use Map, during the first 10 years of the SLDP.
- ***Water Service Area 2 (WSA-2)*** identifies and is consistent with SDA-2 and identifies the lands projected to develop, consistent with the Future Land Use Map, during years 10 through 20 of the SLDP.

The differences between the Waster Service Areas (WSA-1 and WSA-2), and, similarly the primary and secondary Sustainable Development Areas (SDA-1 and SDA-2), focus on the provision and *timing* of necessary public facilities and services, based on Capital Improvements Projects adopted by Santa Fe County and service providers. Thus, should a proposed development be located in WSA-2, and if either water and sewer becomes available or the proposed development participates in funding necessary infrastructure, in advance of the CIP, then the development should be permitted to proceed (provided that the development is consistent with the FLU map and other provisions in the SLDP).

Vacant and developed lands also have been identified in WSA-1 and WSA-2, in order to ensure that the adequate land is available to accommodate new development and that water capacity can be planned to accommodate new development

and water system upgrades and connections for existing development on domestic wells and through regionalization and system interconnections. Though existing wells also have been identified countywide, and their location in WSA-1 and WSA-2 noted and that data is being updated and refined to confirm well location and activity, the well location pattern shows significant opportunities to reduce their impact on groundwater by connecting to a community or public water system that will become available (or interconnected and available) over the next 20 years. **Maps S-13** through **S-15** shows Water Service Areas.

2-15.6. Estimated Ground Water Budget by District

The importance of ground water in Santa Fe County is emphasized by the fact ground water represents a water source that can be relied upon year to year, whereas surface water supplies tend to fluctuate due to variations in climate. In the El Centro Planning Area water supplies for new growth will be served conjunctively by the Buckman Direct Diversion Project and back-up wells (Ross et. al.). Within the El Norte Planning Area the proposed Pojoaque Regional Water System will serve existing and new growth conjunctively as well. For the rest of Santa Fe County the only source of water is ground water. In areas where recharge is low, the ground water in storage is all the water that will ever be available for current and future water demand.

The purpose of estimating a ground water budget is to get an idea of the relative quantities of water that enter and leave and area each year and to estimate if water is being depleted from or added to the aquifer. The ground water budgets estimated for this plan are based the principle of mass balance where the inflow will equal the outflow plus or minus the change in storage.

Inflow for ground water consists for mountain-front recharge, limited areal recharge, infiltration from streams and inflow from up-gradient districts. Outflow consists of ground water pumping; gaining reaching of streams, springs and outflow to adjacent districts. Data for inflow and outflow for each district was taken from the Santa Fe County Regional Ground Water Model and the OSE Estancia Basin Ground Water Flow Model (Intera, Keyes).

Map 44 shows the Water Budget.

2-15.6.1. Estimated Water in Storage

To estimate the current available water in storage the specific yields for varying geologic units were taken from the available ground water models and a saturated thickness of 500 feet was estimated for most of the planning areas. In the Estancia Planning Area the Valley Fill was estimated at 100 feet. Specific yield is the volume of water that drains from saturated material due to gravity. The values for specific yield used in this analysis is as follows:

Figure 2- 72: Specific Yield Values

Geologic Unit Name	Specific Yield	Source of Data
Tesuque Formation	0.15	LW& A (1974)
San Andreas	.01	Shomaker (1997)
Cretaceous Shale Units	.01	Intera (2006)
Tertiary Igneous	.01	Intera (2006)
Pennsylvanian Units	.01	Intera (2006)
Jurassic Units	.01	Intera (2006)
Cretaceous Sandy Units	0.02	Lisenbee (2008)
Precambrian Granite	.01	Intera (2006)
Galisteo Formation	0.02	Intera (2006)
Espinaso Formation	0.01	Lisenbee (2008)
Upper Galisteo Formation	0.01	Lisenbee (2008)
Valley Fill (Estancia only)	0.13	Shomaker (1997)

To arrive at an estimated water in storage the surface area of each district was multiplied by 500 feet and the appropriate specific yield. The change in storage estimated from the water budget analysis was subtracted from to the estimated water in storage to arrive at a percentage of water remaining in storage for future use.

2-15.6.2. Trends in Groundwater Supply

Where aquifers are estimated to be in decline or where the out put exceeds the input appears to be where there is a higher population or a large extraction wells. Most of the predicted rates of decline are less than 1% per year with the exception of the Greater Edgewood, Estancia South, Lamy, San Pedro, Estancia Central, Madrid, Los Cerrillos, Canada de los Alamos and the Eldorado Districts. Further investigation and refinement of data is suggested in these areas.

Figure 2- 73: Groundwater Supply

	INPUTS (acre-feet per year)			OUTPUTS (acre-feet per year)			CHANGE IN STORAGE		
District	Re-charge	Stream Infil-tration	Inflow from Adjacent District	Outflow from Adjacent District	Ground Water With-drawls	Discharge from Streams and Springs	2008 Change in Storage	Water in Storage	% of Remaining Water In Storage
Agua Fria THC	17.07	0.00			-292.26	0.00	-275.19	113177.45	99.76%
Apache Canyon	7.87	0.00			-25.93	0.00	-18.06	17720.99	99.90%
Apache Ridge	0.00	0.00			-13.48	0.00	-13.48	5374.51	99.75%
Arroyo Seco TC	0.00	0.00			-6.46	0.00	-6.46	102216.20	99.99%
Bishop John Lamy Land Grant	0.00	0.00			0.00	0.00	0.00	8437.27	100.00%
Buckman	0.00	0.31			-4879.54	0.00	-4879.23	1933240.18	99.75%
Caja del Rio	0.00	25.54			-2305.58	-1.25	-2281.29	5199444.27	99.96%
Canada de Los Alamos (outlier)	7.19	0.00			-22.84	0.00	-15.65	10124.44	99.85%
Canada de Los Alamos TC	1.07	0.00			-17.19	0.00	-16.12	711.78	97.78%
Canoncito	0.00	0.00	0.25		-7.25	0.00	-7.00	4516.94	99.85%
Cedar Grove	2.09	0.00	5.55		-7.64	0.00	0.00	6814.18	100.00%
Cerrillos (outlier)	0.00	0.92		-0.62	-0.30	0.00	0.00	1847.70	100.00%
Cerrillos Hills 1	0.00	0.00			-62.04	0.00	-62.04	7054.70	99.13%
Cerrillos Hills 2	0.00	0.00			0.00	0.00	0.00	4418.11	100.00%
Cerrillos Hills 3	0.00	0.00			0.00	0.00	0.00	2834.84	100.00%
Cerrillos TC	0.00	1.31	0.62		-18.22	0.00	-16.29	4144.04	99.61%
Cerro Colorado	1.21	0.00			-74.90	0.00	-73.69	28666.11	99.74%

	INPUTS (acre-feet per year)			OUTPUTS (acre-feet per year)			CHANGE IN STORAGE		
District	**Re-charge**	**Stream Infil-tration**	**Inflow from Adjacent District**	**Outflow from Adjacent District**	**Ground Water With-drawls**	**Discharge from Streams and Springs**	**2008 Change in Storage**	**Water in Storage**	**% of Remaining Water In Storage**
Cerros Negros	17.31	0.00			-25.70	0.00	-8.39	6989.32	99.88%
Chimayo (outlier)	0.30	0.00	10.41		-10.71	0.00	0.00	5689.94	100.00%
Chimayo THC	7.91	0.00			-11.58	0.00	-3.67	58471.89	99.99%
Chupadero (outlier)	9.64	0.00		-1.49	-8.15	0.00	0.00	13158.18	100.00%
Chupadero TC	0.78	0.00	6.31		-7.09	0.00	0.00	23157.93	100.00%
Cieneguilla	6.28	0.00			-26.78	-9.71	-30.21	595451.96	99.99%
City of Santa Fe (2008)	357.60	0.00	6.15		-5262.20	-13.60	-4912.05	1743561.23	99.72%
Cochiti Pueblo	0.00	0.00			-1.81	-2.33	-4.14	429162.95	100.00%
Cundiyo (outlier)	0.00	0.00			0.00	0.00	0.00	15230.45	100.00%
Cundiyo THC	0.00	0.00	0.75		-0.75	0.00	0.00	9566.76	100.00%
Cuyamungue	0.00	0.00	12.68		-12.67	0.00	0.00	40411.15	100.00%
Cuyamungue Land Grant	14.60	0.21		-4.68	-9.20	-0.93	0.00	131953.37	100.00%
Edgewood (unincorporated)	128.14	0.00			-1044.05	0.00	-915.91	75172.33	98.80%
Edgewood 2008 (incorporated area)	100.44	0.00			-5406.29	0.00	-5305.85	102898.32	95.10%
Edgewood Extended Planning Area 1	1.75	0.00			-2.21	0.00	-0.46	39175.15	100.00%
Edgewood	5.95	0.00			-323.57	0.00	-317.62	80204.35	99.61%

	INPUTS (acre-feet per year)			OUTPUTS (acre-feet per year)			CHANGE IN STORAGE		
District	**Re-charge**	**Stream Infil-tration**	**Inflow from Adjacent District**	**Outflow from Adjacent District**	**Ground Water With-drawls**	**Discharge from Streams and Springs**	**2008 Change in Storage**	**Water in Storage**	**% of Remaining Water In Storage**
Extended Planning Area 2									
Edgewood Extended Planning Area 3	1.56	0.00			-1428.67	0.00	-1427.11	50033.70	97.23%
Eldorado	1.12	0.00			-623.88	0.00	-622.76	70828.80	99.13%
Eldorado Wilderness	26.46	0.00		-19.22	-7.24	0.00	0.00	24547.38	100.00%
Ellis Ranch	0.99	0.00			-3.77	0.00	-2.78	1076.29	99.74%
Espanola	0.00	0.00			-122.50	0.00	-122.50	79212.76	99.85%
Estancia Central	27.11	0.00	94.22		-6837.61	0.00	-6716.28	438197.53	98.49%
Estancia East	359.68	0.00		-34.38	-325.30	0.00	0.00	306385.35	100.00%
Estancia North	59.86	0.00			-5102.73	0.00	-5042.87	625694.24	99.20%
Estancia South	7.39	0.00			-15290.16	0.00	-15282.77	371291.93	96.05%
Galisteo (outlier)	0.00	3.14			-244.55	0.00	-241.41	11875.21	98.01%
Galisteo Basin	0.04	0.20			-19.16	0.00	-18.91	116890.61	99.98%
Galisteo Land Grant	0.00	0.37		-0.06	-0.30	0.00	0.00	1277.18	100.00%
Galisteo TC	0.00	1.62	0.06		-75.38	0.00	-73.70	3360.53	97.85%
Glorieta (outlier)	0.00	0.00			0.00	0.00	0.00	6268.16	100.00%
Glorieta Mesa	0.00	0.00			-2.00	0.00	-2.00	142053.21	100.00%
Glorieta Pass	0.00	0.00			-0.50	0.00	-0.50	16307.53	100.00%
Glorieta TC	0.00	0.00			-4.50	0.00	-4.50	4219.45	99.89%
Golden TC	0.00	0.00			-0.75	0.00	-0.75	692.35	99.89%

	INPUTS (acre-feet per year)			OUTPUTS (acre-feet per year)			CHANGE IN STORAGE		
District	**Re-charge**	**Stream Infil-tration**	**Inflow from Adjacent District**	**Outflow from Adjacent District**	**Ground Water With-drawls**	**Discharge from Streams and Springs**	**2008 Change in Storage**	**Water in Storage**	**% of Remaining Water In Storage**
Hondo Hills	36.78	0.00	12.99		-112.11	0.00	-62.34	28542.64	99.78%
Horcado Ranch	0.00	0.00			-8.90	0.00	-8.90	110827.12	99.99%
Jacona Land Grant	0.00	0.00	3.02		-3.02	0.00	0.00	497991.08	100.00%
La Bajada	0.00	0.00			-0.30	-0.15	-0.45	127913.59	100.00%
La Cienega Communit y District	0.00	0.00			-426.59	-49.12	-475.71	678125.76	99.93%
La Cueva	0.00	0.00			0.00	0.00	0.00	5301.15	100.00%
La Puebla (outlier)	0.00	0.00			-28.57	0.00	-28.57	26837.52	99.89%
La Puebla THC	0.00	0.00	14.34		-95.08	0.00	-80.74	77992.78	99.90%
Lamy (outlier)	0.09	0.00			-76.20	0.00	-76.11	3917.91	98.09%
Lamy TC	0.28	0.00			-21.91	0.00	-21.63	924.35	97.71%
Las Campanas	0.00	0.00			-15.69	0.00	-15.69	394686.04	100.00%
Las Tierras	0.00	0.00			-67.13	0.00	-67.13	602056.73	99.99%
Lightly inhabited (Area EC-01)	0.00	0.00			-0.91	0.00	-0.91	23028.56	100.00%
Lightly inhabited (Area EC-02)	0.00	0.00			-0.60	0.00	-0.60	47906.26	100.00%
Lightly inhabited (Area EN-01)	0.00	0.00			-0.60	0.00	-0.60	67480.51	100.00%
Lightly inhabited (Area EN-02)	103.40	0.00		-51.27	-52.13	0.00	0.00	1864785.2 8	100.00%

	INPUTS (acre-feet per year)			OUTPUTS (acre-feet per year)			CHANGE IN STORAGE		
District	**Re-charge**	**Stream Infil-tration**	**Inflow from Adjacent District**	**Outflow from Adjacent District**	**Ground Water With-drawls**	**Discharge from Streams and Springs**	**2008 Change in Storage**	**Water in Storage**	**% of Remaining Water In Storage**
Lightly inhabited (Area EN-03)	0.00	0.00			-0.91	0.00	-0.91	88828.21	100.00%
Lightly inhabited (Area EN-04)	0.00	0.00			0.00	0.00	0.00	4651.55	100.00%
Lightly inhabited (Area ES-01)	139.77	0.00		-47.74	-92.03	0.00	0.00	107024.75	100.00%
Lightly inhabited (Area ES-02)	20.11	0.00		-12.10	-8.01	0.00	0.00	88023.31	100.00%
Lightly inhabited (Area GA-01)	10.21	1.10			-167.17	-4.48	-160.34	242938.56	99.93%
Lightly inhabited (Area GA-02)	0.00	0.00			-15.84	0.00	-15.84	860707.44	100.00%
Lightly inhabited (Area GA-03)	0.00	0.00			-0.25	0.00	-0.25	265577.01	100.00%
Lightly inhabited (Area GA-04)	0.00	5.61			-255.95	0.00	-250.34	193056.39	99.87%
Lightly inhabited (Area GA-05)	4.25	0.10			-11.56	0.00	-7.21	56837.87	99.99%
Lightly inhabited (Area GA-06)	2.66	0.00		-0.25	-2.41	0.00	0.00	805.90	100.00%

	INPUTS (acre-feet per year)			OUTPUTS (acre-feet per year)			CHANGE IN STORAGE		
District	**Re-charge**	**Stream Infil-tration**	**Inflow from Adjacent District**	**Outflow from Adjacent District**	**Ground Water With-drawls**	**Discharge from Streams and Springs**	**2008 Change in Storage**	**Water in Storage**	**% of Remaining Water In Storage**
Lightly inhabited (Area GA-07)	0.68	0.00			-31.54	0.00	-30.86	3747.83	99.18%
Lightly inhabited (Area GA-08)	0.00	0.00			-1.96	0.00	-1.96	1811.67	99.89%
Lightly inhabited (Area GA-09)	0.37	0.00			-71.19	0.00	-70.82	2307.20	97.02%
Lightly inhabited (Area GA-10)	0.00	0.00			0.00	0.00	0.00	5151.75	100.00%
Madrid (outlier)	0.00	0.79			-67.61	0.00	-66.83	243781.03	99.97%
Madrid Communit y District	0.00	0.00			-18.86	0.00	-18.86	1306.82	98.58%
Nambe Pueblo	272.33	9.85		-260.95	-20.21	-1.02	0.00	1221051.8 9	100.00%
Oja de la Vaca	0.00	0.00			-75.17	0.00	-75.17	128986.28	99.94%
Oja de la Vaca	0.00	0.00			-75.17	0.00	-75.17	128986.28	99.94%
Old Ranch	6.53	0.00	19.22		-50.72	0.00	-24.97	13389.20	99.81%
Ortiz Mine Grant	27.12	0.00			-574.80	0.00	-547.68	840482.84	99.93%
Pacheco Canyon	7.31	0.00	26.20		-33.51	0.00	0.00	100701.44	100.00%
Pecos Pueblo Land Grant (North)	0.00	0.00			0.00	0.00	0.00	1825.39	100.00%
Pecos Pueblo	0.00	0.00			0.00	0.00	0.00	10367.17	100.00%

District	INPUTS (acre-feet per year)			OUTPUTS (acre-feet per year)			CHANGE IN STORAGE		
	Re-charge	Stream Infil-tration	Inflow from Adjacent District	Outflow from Adjacent District	Ground Water With-drawls	Discharge from Streams and Springs	2008 Change in Storage	Water in Storage	% of Remaining Water In Storage
Land Grant (South)									
Pojoaque Pueblo	0.00	15.28	83.74		-98.98	-0.04	0.00	861288.05	100.00%
Pojoaque Valley Communit y District	0.00	55.96	101.70		-157.62	-0.04	0.00	343502.00	100.00%
Proposed Annexatio n Area	116.54	0.00	84.90		-852.38	-7.77	-658.71	604870.75	99.89%
Rancho Encantado	10.82	0.00	12.20		-52.21	0.00	-29.19	190827.63	99.98%
Rio Chiquito (outlier)	0.00	0.00			0.00	0.00	0.00	839.36	100.00%
Rio Chiquito Extended Planning Area	0.00	0.00	11.61		-11.61	0.00	0.00	47316.65	100.00%
Rio Chiquito THC	0.00	0.00			0.00	0.00	0.00	6090.60	100.00%
Rio En Medio (outlier)	10.42	0.00		-6.21	-4.21	0.00	0.00	15263.06	100.00%
Rio En Medio TC	7.70	0.00	9.39		-17.09	0.00	0.00	9969.37	100.00%
San Cristoval Land Grant	3.44	0.10			-52.50	0.00	-48.96	418452.55	99.99%
San Ildefonso Pueblo	0.00	51.31			-480.78	0.00	-429.48	2013067.7 4	99.98%
San Marcos (outlier)	0.00	0.56			-3.17	0.00	-2.61	11816.62	99.98%

	INPUTS (acre-feet per year)			OUTPUTS (acre-feet per year)			CHANGE IN STORAGE		
District	**Re-charge**	**Stream Infil-tration**	**Inflow from Adjacent District**	**Outflow from Adjacent District**	**Ground Water With-drawls**	**Discharge from Streams and Springs**	**2008 Change in Storage**	**Water in Storage**	**% of Remaining Water In Storage**
San Marcos Communit y District	6.79	7.21			-57.35	0.00	-43.35	441371.08	99.99%
San Pedro (outlier)	19.46	0.00		-7.86	-11.60	0.00	0.00	18709.11	100.00%
San Pedro Communit y District	48.85	0.00	9.83		-64.37	0.00	-5.69	42229.27	99.99%
San Pedro Extended Planning Area	7.80	0.00		-7.52	-0.28	0.00	0.00	3849.68	100.00%
Santa Clara Pueblo	0.00	0.00			-1.81	0.00	-1.81	133793.26	100.00%
Santa Cruz / Sombrillo	0.00	0.00			-3.27	0.00	-3.27	66051.11	100.00%
Santa Fe Communit y College District	9.63	0.00			-191.23	0.00	-181.60	1080385.5 3	99.98%
Santa Fe Foothills	37.26	0.00		-12.99	-24.27	0.00	0.00	9475.61	100.00%
Santa Fe National Forest (East)	185.04	0.00		-83.41	-101.63	0.00	0.00	705240.62	100.00%
Santa Fe National Forest (El Norte)	0.00	0.00	5.91		-5.91	0.00	0.00	351159.12	100.00%
Santo Domingo de Cundiyo Land Grant	0.00	0.00	0.25		-0.25	0.00	0.00	123154.47	100.00%
Santo Domingo Pueblo	0.00	0.52			-100.60	-1.63	-101.71	275465.06	99.96%
Seton	5.65	0.00			-324.11	0.00	-318.46	283146.78	99.89%

District	INPUTS (acre-feet per year)			OUTPUTS (acre-feet per year)			CHANGE IN STORAGE		
	Re-charge	Stream Infil-tration	Inflow from Adjacent District	Outflow from Adjacent District	Ground Water With-drawls	Discharge from Streams and Springs	2008 Change in Storage	Water in Storage	% of Remaining Water In Storage
Silverado 1	0.00	0.00			0.00	0.00	0.00	22894.69	100.00%
Silverado 2	0.00	0.00			0.00	0.00	0.00	59803.89	100.00%
Spur Ranch	0.00	0.00			-48.46	0.00	-48.46	34259.21	99.86%
Stanley TC	0.00	0.00			-0.83	0.00	-0.83	2278.84	99.96%
Tano Road	0.00	0.00	6.21		-33.19	0.00	-26.98	220337.07	99.99%
Tesuque (outlier)	2.91	0.00			-10.41	0.00	-7.50	53618.62	99.99%
Tesuque Community (TC, THC, and District)	64.02	0.00		-6.15	-57.87	0.00	0.00	253080.88	100.00%
Tesuque Pueblo	1.58	0.44	18.39		-18.14	-2.28	0.00	1235858.78	100.00%
Tierra Sabrosa	0.15	0.00			-4.98	0.00	-4.83	11005.19	99.96%
Tres Arroyos Community District	0.14	0.00			-34.54	0.00	-34.40	342328.24	99.99%
Tsankawi	0.00	0.00			-1936.91	0.00	-1936.91	784149.74	99.75%
Valencia	0.00	0.00			0.00	0.00	0.00	3468.71	100.00%
Valle Vista	0.00	0.00			-3.92	0.00	-3.92	200510.10	100.00%
Total	**2,342**	**182**	**557**	**-557**	**-57,227**	**-94**	**-54,797**	**33,542,805**	

2-15.7. Future Water Demand

2-15.7.1. Methodology and Sources

Water Conservation studies for the land use types have been preformed from the City of Santa Fe and the New Mexico Office of the State Engineer. These studies have determined data for the commercial and residential uses in Santa Fe County or by activities preformed such as farming and ranching. Each land use type was given a water use amount based on the known activities that would occur within the land use sources:

- **Agricultural** - Consists of a minimum 40 acre parcel and has no maximum. This land use type is located furthest from the city limits. The types of activities that happen on these properties are ranching livestock and small scale

farm production. Typically these activities are for profit. The water uses for this land use type will include a main residence, a caretaker residence, livestock, and/ or irrigated agriculture. This is the highest water use category.

- **Rural** - Ranges from 39.99 acres down to 1 acre. This land use type is centered on rural communities within Santa Fe County. The proposed activities for this land use type are residential farming and a few head of livestock either as pets or for personal consumption. The water uses for this land use type are for the larger parcels a main residence and possibly a caretaker residence. The water uses for all other parcels will include a residence, a few head of livestock and a small residential garden.
- **Residential** - Includes traditional communities, low density, moderate density and high density lots with the average lot size ranging from 0.33 to 12 acres. These are residential lots that will not likely have any intensive outdoor watering and will be situated closest to the City limits or in planned developments. The water uses for these land use types include residences and the water use accurately reflects the 0.25 acre foot restriction. However, water use data from the City of Santa Fe does indicate that larger lots tend to have more landscaping and therefore water use is slightly higher at 0.32 acre foot per year.
- **Non-Residential** - Identifies the different types of commercial uses and their respective water use. The water use in this category ranges vary depending on the commercial site and facility. The commercial facilities identified are rural business, neighborhood center, office, light industrial and heavy industrial.

Figure 2- 74: Water Use by Land Use Type

Future Land Use	Assumption	Water Use (acre-feet per year)
Agriculture (non-irrigated)	main residence @ .25 afa; caretaker residence @ .125 afa; 50 head livestock @ .50 afa; residential garden @.10 afa	0.975
Agriculture (irrigated)	main residence @.25 afa; caretaker residence @.125 afa; 5 head livestock @ ; large scale crop production	0.675
Rural Conservation	residence @.25 afa; guest house @ .125; 5 head livestock @ .06 afa; residential garden @.10 afa	0.525
Rural Fringe	residence .25 afa; 3 head livestock @ .03 afa; residential garden @ .10 afa	0.38
Rural Estate	residence @.25 afa; residential garden @ .10 afa	0.35
Traditional Community	Single Family residential on smaller lots	0.25
Low Density	single family residential on larger lots	0.32
Moderate Density	single family and multi family	0.2
High Density	(multi-family inlcudes per unit landscaping)	0.21
Non-Residential:		
Rural Business (per 1,000 sq ft)	feed store	0.15
Neighborhood Commercial (per 1,000 sq ft)	village shopping center (grocery, retail, café)	0.15
Office w/ landscaping (per 1,000 sq ft)	per 10,000 square foot	0.1
Office w/o landscaping (per 1,000 sq ft)		0.05
Medical Office (per 1,000 sq ft)		0.15
Light Industrial (per 1,000 sq ft)	wholesale, warehouse water use per 10,000 sq. ft	0.04
Heavy Industrial (per 1,000 sq ft)	depends on type of industry	0.08

2-15.8. Long Term Water Supply Options

2-15.8.1. County Supplemental Well Program

As the completion of the Buckman Direct Diversion Project approaches successful selection and permitting of Conjunctive Management Wells is necessary. When the first applications for wells were submitted to the Office of the State Engineer over 200 protests to the granting of these applications were received. Due to staff efforts in clarifying water policy for groundwater supply, and consolidation of Protestants the number of protests has been reduced to 5 parties.

At the Pre-Hearing Scheduling conferences held at the end of January 2009, a schedule where Santa Fe County would do an analysis of each well location and have witness reports due at the end of May was agreed to. It was determined a more thorough analysis of potential well locations would be in the best interest of Santa Fe County so additional time was requested.

In consultation with Planning Works and through a review of a previous work performed by INTERA a mapped based analysis was formulated. This analysis addresses sensitive areas in the region such as proximity to springs and aquifer decline and feasibility of connection to the County water distribution system.

Suitability Factors: 10 different factors were selected and given equal importance or weight in this analysis. Each factor was ranked for High Suitability, Moderate Suitability and Low Suitability and assigned a numeric value of 3, 2 and 1 respectively. Maps of the different factors were created using ArcMap and ranking into the 3 categories. 10 meter grids of these maps were created to allow easy adding of the suitability factors. Once ranked, each factor was added together to arrive at a grand total. A summary of these factors is shown below. A map of each factor and the composite map are included in the **Map Atlas Supplement**, **Maps S-2** through **S-12**.

Figure 2- 75: Location Suitability

Factor #	Suitability Factors	Well Location Suitability			Weighting
		High Suitability	Moderate Suitability	Low Suitability	
Factor 1	Areas of favorable Hydrogeology	Tesuque Formation	Pre-Cambrian Granite	Espinaso or Galisteo	1
Factor 2	Proximity to Areas of Existing Groundwater Contamination	Exceeds Maximum Contaminant level	Within Margin of Error for Maximum Contaminant Level	Less than Maximum Contaminant Level	1
Factor 3	Proximity to Major Water Lines	< 200 feet	200 to 1000 feet	> 1000 feet	1
Factor 4	Feasibility of Pressure Zones	Pressure Zone 1 - 6	Pressure Zone 7 & 8	Pressure Zone 9 -11	1
Factor 5	Proximity to Drainages	>500 feet	100 feet to 500 feet	<100 feet	1
Factor 6	Proximity to Springs	>1/2 mile	500 feet to 1/2mile	<500 feet	1
Factor 7	Proximity to Faults	>300 feet	100 feet to 300 feet	<100 feet	1
Factor 8	Areas of Aquifer Decline	>1/2 mile	500 feet to 1/2 mile	<500 feet	1
Factor 9	Slope	0 - 15 %	15% - 33%	> 33%	1
Factor 10	Distribution Potential	Can Serve All Utility	Can Serve Portion of Utility	Cannot Easily Serve Utility	1

2-15.8.2. Deep Aquifer Desalination

Recent applications have been filed with the New Mexico Office of the State Engineer (OSE) for drilling deep aquifers characterized at 2,500 feet below ground surface (bgs) or deeper. As of May 2009 10 notices have been filed with the OSE for 25 deep wells. In response to the lack of regulation on the deep aquifers the New Mexico State legislation passed House Bill 19 which determined the authority over deep aquifers potable or not to be under the jurisdiction of the OSE.

Many of the deep aquifers are saline and non-potable therefore treatment will be necessary. Desalinization is the treatment option that will be required. A number of factors determine the operating costs for desalination: capacity and type of facility, location, source water, labor, energy, financing and concentrate disposal. There are desalinization plants currently located in Alamogordo, New Mexico and El Paso, Texas.

2-15.8.3. Importation

Importation of water from other regions is a consideration for the Santa Fe County Water Utility. It is likely that the imported water would come from surrounding counties that are sparsely populated. Some factors would need to be considered including: infrastructure, transportation of water, labor, and other operating costs.

2-15.8.4. Aquifer Storage and Recovery

Santa Fe County may consider Aquifer Storage and Recovery (ASR) as an option to preserve groundwater supplies. ASR is in it's infancy in New Mexico and requires a relatively large population to be cost effective but may be something to consider in the future. The basic premise of aquifer storage and recovery is to store water underground when surplus supply exists; the water stored is either recovered directly at a later date or serves to recharge the aquifer. The source of water for storage is generally surface water or water reclaimed from treated effluent. The primary mechanisms for conveying water

into the aquifer are by injection well, Aquifer Storage and Recovery (ASR) Well or infiltration through a recharge basin. Recovery of stored water can occur directly in the case of an ASR well or indirectly down-gradient of an infiltration basin.

2-15.8.5. Cloud Seeding

Alternatives for climate change and drought have been proposed through cloud seeding. The process has the potential to increase rainfall up to 30% in the region. Other Counties in Southeast New Mexico have participated in cloud seeding projects and have received legislative funding.

2-15.9. Potential Wildcards

2-15.9.1. Climate Change

Santa Fe County is susceptible to climatic change. In the Santa Fe Basin, mountain front recharge from melting snow pack is the primary source of water for the aquifer and the City's reservoirs. These sources currently constitute the County's principal water supply. After the BDD becomes operational, the Rio Grande will become an important additional source of water. It too may be susceptible to droughts or floods if climatic trends are negative.

Evidence of climate change already exists in New Mexico with increased temperatures, changes in snowpack elevations, increasing precipitation in the form of rain rather than snow, smaller spring run off volumes, milder winters and hotter summers are only a few indicators. Climate Change models confirm increasing temperatures. The models do not show changes in precipitation. Precipitation is driven by decadal drought cycles. These cycles are driven by the temperature variations of the Atlantic and Pacific oceans. A warm Atlantic Ocean and cold Pacific Ocean result in drought in the Southwest USA. These cycles can last for several decades bring long droughts. The historical record of this is recorded in tree rings.

The result of these trends is higher temperatures especially in summer. This will result in greater evaporation and drier soils. Drier soils create a lower plant density, more bare soil, and more dust. Dust is covering snow packs on mountains and causing them to melt earlier.

2-15.9.2. Prolonged Drought

During times of drought water conservation becomes important for all water users and is a first step in sustaining existing supplies. For new constructions water conservation is built into the development review process but for historic communities different strategies are necessary.

The Santa Fe County Water Conservation Program was officially put in place in August 2007 to implement and oversee the various conservation proposals and requirements put forth by the County over the last several years. Conservation actions include:

- Requiring roof catchments on all new construction. Houses with over 2,500 square feet of heated area must include a centralized cistern; smaller houses may use rain barrels.
- Requiring hot water circulation pumps on all new construction.
- For those on the County water utility, a tiered rate structure which charges higher water rates for those using more water.
- Requiring metering of domestic wells in new subdivisions, and a reporting of those meter readings yearly to the County.
- Water use restrictions in new subdivisions, built into the plat requirements.
- Analysis of water budgets for new developments, working with the developer to promote the best conservation technology.
- Public outreach and education activities.

For historic communities water conservation measures can be obtain by instituting an inclining rate structure, where the more water a customer uses per month the greater the monthly charge. Also retrofitting of water fixtures and leak detection has been very successful within the City of Santa Fe.

2-15.10. Creation of Regional Water Authority

As described above, there are many opportunities for a regional water authority, to efficiently serve residents and businesses, manage and conserve resources and ensure available, adequate and safe drinking water.The water districts generally were supportive of changes which would limit the drilling of domestic wells due to concerns regarding sustainability of the aquifer. Most also commented that the County shouldn't routinely allow for new community systems, but require connection to existing water systems.

The efficiencies and benefits of minimizing individual wells, emphasizing community water systems and interconnecting systems, was outlined in a detailed1997 Santa Fe County study identifying comparative cost information, updated for the SLDP, which showed that costs drop, significantly, for homeowners of all lot sizes, when the focus shifts from drilling individual wells to coordinating water supply, whether sharing wells, creating or connecting to community water systems or connecting to a public water system, as shown in the following charts (which also are provided in the **Map Atlas Supplement**):

Figure 2- 76: Shared Wells vs. Individual Wells

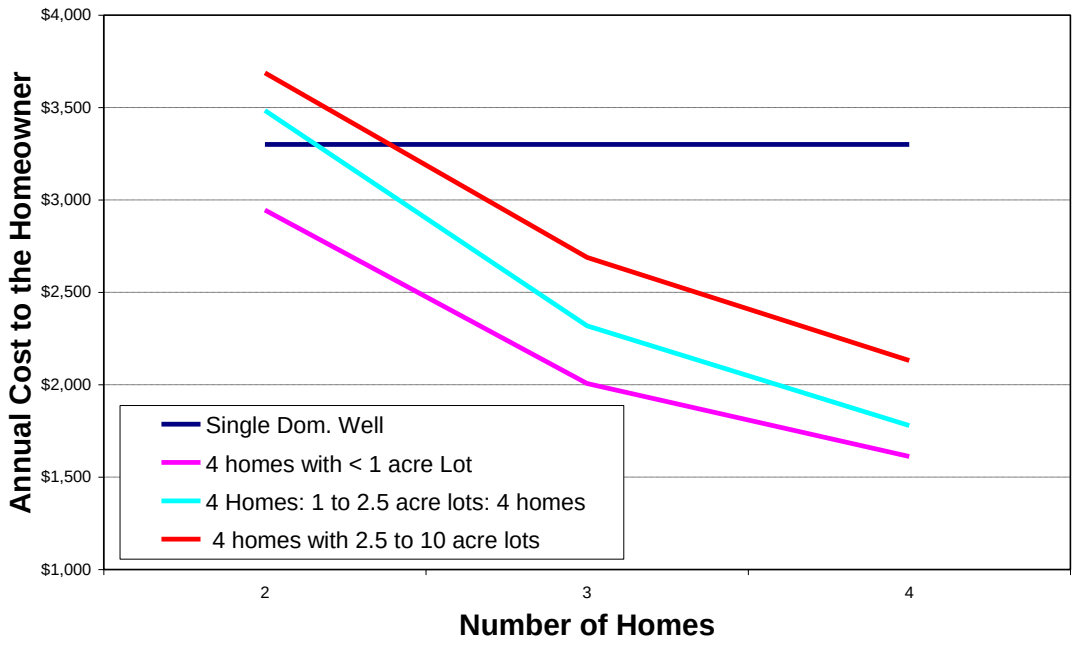


Figure 2- 77: Shared Wells vs. Community Water System (2.5- to 10-acre lots)

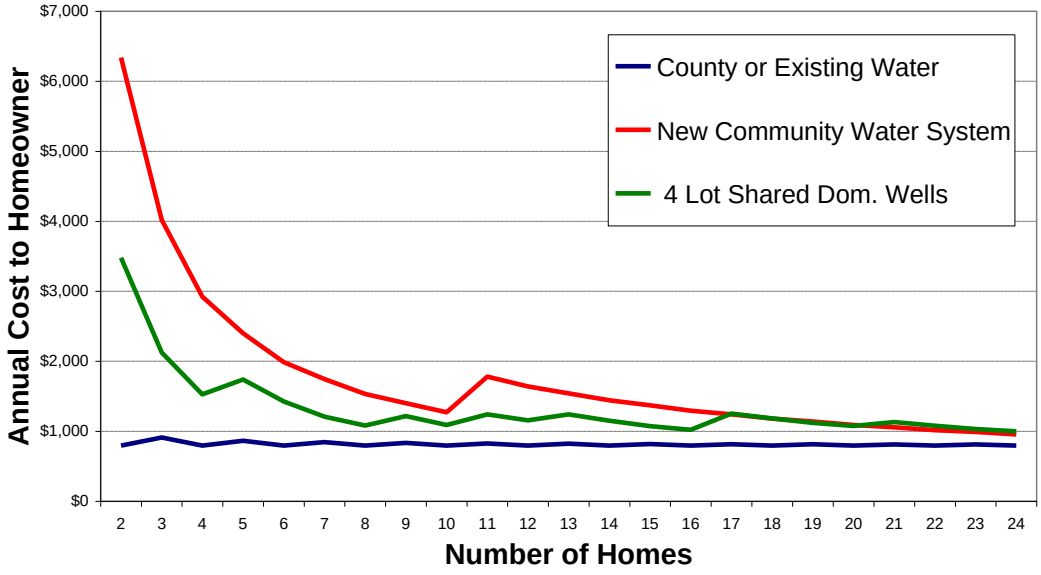
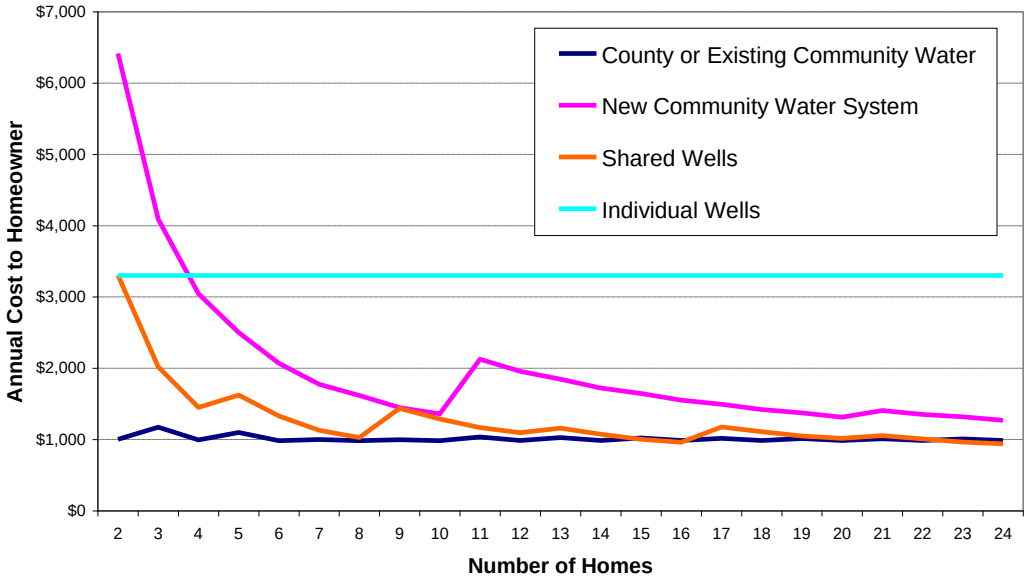


Figure 2- 78: Domestic Wells vs. Community Water Systems (10- to 40-acre lots)



2-15.11. Wastewater Systems

There are quite a few wastewater service providers currently operating in Santa Fe County – most are private, community systems, that are dispersed countywide.

2-15.11.1. County Wastewater Service Areas – County Facilities

Presently Santa Fe County has three service areas in which the County collects the wastewater and provides treatment. These areas are:

- The ***Valle Vista Area***, which is located just southwest of the SR599 and SR14 intersection has 308 homes and eight businesses connected to an area wastewater collection system which discharges the wastewater to and old beyond repair extended aeration treatment plant which is barely capable of handing about 70,000 gallons per day (gpd) of normal domestic wastewater. The plant has reached its useful life expectancy as it was installed in early 1970's and needs to be replaced. Plans are presently underway by the County to replace the current facility with a state of the art membrane bioreactor type regional treatment plant capable of handling wastewater from the entire area within about two miles. Present design capacity would be 300,000 gpd but could be readily expanded in the future to handle up to one million gallons per day (mgd). The new wastewater treatment plant will meet all federal surface water as well as state ground water discharge requirements and will be available for reuse on parks, recreation fields, common areas, and for construction purposes in the area. The new wastewater treatment plant should be operational by the spring of 2011.
- The ***County Public Safety Complex and the Detention Facility*** area has a County operated wastewater collection system designed to collect all the sewage effluent from this area as well as the planned County development to the north and the large New Mexico State Land Office development to the north and east. Presently this area discharges their wastewater to the State Penitentiary wastewater treatment plant located about one mile to the northwest. This present wastewater discharge amounting to about 50,000 gpd is planned to be pumped to the new County wastewater facility at Valle Vista for adequate treatment and disposal by 2011.
- The ***State Penitentiary and National Guard Complex Wastewater Treatment Plant*** is located just north of the present State Penitentiary Complex and about ½ mile south of the new planned regional wastewater treatment Valle Vista. This aerated/facultative lagoon treatment system followed by discharge to irrigated acreage has a capacity of 200,000 gpd. The present plant is handling about 170,000 gpd of which 110,000 gpd comes from the Penitentiary Complex, 50,000 gpd from the County facilities to the east and about 10,000 gpd from the National Guard complex to the west. The present treatment plant was constructed in the early 1990's and has considerable need to be upgraded. According to the State's wastewater consultant, the present treatment plant needs at least two million dollars in upgrades and could really use about 3 million dollars to provide a more workable and cost effective treatment facility for the area. The County has approached the State of New Mexico to consider a regional wastewater facility for the area at this location. At the present time the State has made no meaningful indications that regionalization of the present facility to meet area needs at fair and reasonable wastewater treatment charges for all entities disposing of their effluent to this site is currently considered feasible and effective. Therefore the County is pursuing building a regional wastewater treatment facility at the Valle Vista location to handle their wastewater needs as well as those of other interested parties. If the State Penitentiary Complex considers wastewater disposal to the Valle Vista Plant feasible in the future, the County will consider the availability of treatment plant capacity in the new plant at that time but probably at a considerable increased cost over present anticipated treatment plant costs.

2-15.11.2. Wastewater Service Areas – North

Presently there are only two major wastewater treatment plants in the northern portion of Santa Fe County. The first and major one is the Espanola treatment facility within the municipal boundaries of Espanola. This plant is currently designed to treat up to 3.0 mgd of wastewater and is capable of handling wastewater from the entire area surrounding the City. One of the major drawbacks in the Espanola plant becoming a regional facility for the entire area including the Santa Cruz valley is the dispute between Espanola and the Santa Clara Pueblo over rights-of–way, specifically the roads where most utilities are or could be located. If the Pueblo and the City could settle this dispute in the near future, then the Espanola treatment facility should be considered as the most reasonable location to handle wastewater treatment for the areas within two miles of the City. The other major sized facility in the area is the Santa Clara Pueblo wastewater treatment plant located in

the Arroyo Seco valley. This facility was built in 2005 to handle up to 80,000 gpd and is presently not treating any wastewater since the plans for a major development in the area to the northeast did not materialize. Due to its location, available treatment capacity, and that no rights-of-way are major obstacles, this plant offers the Sombrillo and Arroyo Seco areas an available and accessible treatment facility. Present plans are to collect wastewater from these areas, and transport the wastewater to the Santa Clara treatment facility.

Other areas in the Santa Cruz valley like La Puebla and Chimayo do not appear to have severe groundwater contamination problems presently. In the future if additional dense development is considered or allowed, then these areas may need to some type of area treatment facility to handle wastewater collection and treatment on a limited area basis. Most of the groundwater problems in these areas are presently caused by naturally occurring contaminates which make regionalization of potable water facilities a major need and a much higher priority to facilitate.

2-15.11.3. Wastewater Service Areas – Pojoaque Valley

In the Pojoaque Valley there is one major sized treatment facility and several small treatment plants that handle the present wastewater needs of the valley. The newly constructed 0.5 mgd membrane bio-reactor type wastewater facility, built southeast of the US 285-84/SR 502 interchange, is currently operable and treating about 200,000 gpd of wastewater mainly from the core area of Pojoaque, the new casino complex area, and the west Pojoaque valley school campus area. The present facility is currently being studied as to how to most feasibly connect wastewater contaminated or stressed areas that need to have the wastewater collected for treatment transported to the facility. The other treatment facilities in the area are the San Ildefonso Pueblo lagoons, the Tesuque Pueblo lagoons, the newly renovated 20,000 gpd MBR treatment facility at the Santa Fe Opera, and the Bishop's Lodge treatment facility. These facilities are so far removed from the Pojoaque core area treatment plant that transporting wastewater from these facilities to a centrally located plant is not presently justified or feasible. It will be a. major task, funding wise, to secure funding to collect wastewater from the present core area entities that need a wastewater collection system. These outlying treatment facilities need to be studied as to how they can be expanded to handle wastewater treatment needs for the immediate area surrounding them if area needs dictate such expansion.

2-15.11.4. Wastewater Service Areas – Santa Fe River Basin

In the Santa Fe River Basin there are presently two major wastewater treatment plants; the City of Santa Fe's 13.0 mgd regional treatment facility and the Las Campanas 0.45 mgd in the northwest portion of the Basin. The City's wastewater plant, located at the downstream end of the basin, is ideally suited to be a regional wastewater facility. Most of the service area can gravity flow into a collection system which transports the wastewater to the regional treatment facility. Presently the treatment plant is treating only 7 mgd so capacity is available. The treatment facility is also providing reuse water to a number of recreational facilities in the area as well as providing construction water to contractors. There is considerable need to extend the collection system to outlying areas where present groundwater contamination exists or it is apparent that it will become a problem in the future. These two areas are the Agua Fria traditional village area and the southeast area along old Las Vegas highway where several commercial developments have a need to dispose of wastewater into a municipal system rather than on-site systems which are inadequate to treat wastewater to required levels economically and/or effectively. The County Airport Development District, North of SR-599 and West of Caja Del Rio, which is currently developing at a more rapid pace, is ideally suited to discharge the majority of the wastewater created on the area to a gravity collection which could discharge to the City's wastewater plant. The Las Campanas wastewater treatment facility can be utilized as a regional facility for the west sector area in that it has available capacity since it presently is treating only an average daily flow of about 70,000 gpd and the treated wastewater can be utilized for reuse on recreational complexes.

2-15.11.5. Wastewater Service Areas - Central

Presently in the eastern part of the County Wastewater Service Area there are four wastewater treatment plants.

- The largest of the four is the ***Rancho Viejo*** wastewater treatment facility. This plant is a 240,000 gpd sequential batch reactor type facility treating about 80,000 gpd presently to wastewater reuse requirements for use on area parks, recreation fields, and common areas needing good quality irrigation water. This plant can be considered for regionalization of wastewater needs of the area.

- The ***Santa Fe Community College*** wastewater treatment plant about a mile upstream from the Rancho Viejo plant. This plant handles about 50,000 gpd and is a sequential batch reactor type facility treating wastewater for reuse on the college grounds.
- The ***Oshara*** development treatment facility, about two miles northeast of the Rancho Viejo facility, designed to treat 30,000 gpd of wastewater but presently handling only about 6000 gpd. The facility is designed to treat wastewater to reuse requirements for reuse in the development to reduce potable water needs.
- The ***La Pradera*** wastewater treatment plant located about 2-1/2 miles north of the Rancho Viejo wastewater plant. This facility was designed to treat 60,000 gpd of residential wastewater to requirements for reuse in and around the development to reduce potable water needs. Presently this plant is only treating about 10,000 gpd of wastewater flow. In the future consideration should be given to regionalization of these facilities into one treatment facility in order to consolidate operational and maintenance costs. The most likely candidate for the regional plant location would be the Rancho Viejo plant which located the furthest downstream and has the capacity to handle the combined wastewater flow.

2-15.11.6. Wastewater Service Areas - East

Presently one wastewater treatment plant operates in the eastern portion of Santa Fe County. This plant is located in the Glorieta Lifeway Conference Center Complex, has a capacity of 0.4 mgd, and disposes of its wastewater into Glorieta Creek. This privately operated system accepts wastewater from the old Glorieta Community, composed of approximately 37 residences. The plant is well operated but is 20 years old. Presently the maximum daily flow is about 200,000 gpd. The County has initiated discussions with the Glorieta Lifeway Conference Center to possibly acquire the facility and make it into a regional treatment facility which accept wastewater from other communities in the area when the need arises and could provide treated wastewater for reuse purposes for the Glorieta Lifeway complex as well as other entities the area.

2-15.11.7. Wastewater Service Areas - South

The Edgewood area has the one wastewater treatment plant in this area of the County. The present plant was constructed in 2008 and has a capacity of 50,000 gpd. The plant is presently not operational as the wastewater collection system s being constructed. This membrane bio-reactor type treatment plant should be considered as a regional facility capable of handling wastewater for the Edgewood region and should be able to provide treated wastewater for use on parks, recreational areas, and other common use areas not needing potable water. It should be noted that if the area of Santa Fe County north of Moriarty has future development impacts which are substantial, then this area should be considered for a wastewater collection system which would discharge its wastewater to the Moriarty wastewater treatment plant for adequate treatment.

2-15.11.8. Areas That May Need Centralized Wastewater Treatment

Three other areas of the County that warrant consideration for feasibility studies for development of centralized wastewater treatment systems are the Cerrillos area, the Madrid area, and the Eldorado area. Presently these areas have not shown to have contaminated groundwater due to concentrated development but as additional development occurs in these areas, the impact to will become more severe and will require consideration for a centralized wastewater collection and treatment system

2-15.11.9. Community Wastewater Systems

A review of existing wastewater systems was performed based on discharge permits issued by NMED. The following table is a summary of these systems and the potential for regionalization.

District	Potential for Regionalization	Description
Agora Shopping Center	Yes	IF regional wastewater is considered feasible in the future.
Alba Prado Wetlands		

District	Potential for Regionalization	Description
Bishop's Lodge	Yes	Reuse is practiced by grounds irrigation and Ornamental use. Effluent could be discharged to City of Santa Fe wastewater system in the future.
Boylan Mobile Home Park		
Caja Del Rio Landfill		
Camp Stoney		
Cielo Lindo Mobile Home Park		
Cunningham Hill Mine Reclamation		
Cunningham Hill Mine Reclamation		
Downs at Santa Fe	Yes	Aerated lagoon, followed by facultative lagoon, disinfection, followed by grounds irrigation. WWTP could be connected to regional Santa Fe County WWTP at Valle Vista
Downs Trailer Park		
Edgewood Center	Yes	New 50,000 gpd MBR WWTP is constructed and available for use for wastewater treatment when collection systems are constructed to collect effluent from dischargers.
Edgewood Elementary School	Yes	New 50,000 gpd MBR WWTP is constructed and available for use for wastewater treatment when collection systems are constructed to collect effluent from dischargers.
Edgewood Middle School	Yes	New 50,000 gpd MBR WWTP is constructed and available for use for wastewater treatment when collection systems are constructed to collect effluent from dischargers.
El Dorado School	Yes	IF regional wastewater is considered feasible in the future.
El Rancho Trailer Park	Yes	Effluent could be treated at regional Pojoaque Valley WWTP if regional collection system is extended to area.
Flushing Meadows		
Gabriels	Yes	Effluent could be treated at regional Pojoaque Valley WWTP if regional collection system is extended to area.
Glorieta Conference Center	Yes	Current treatment plant is 0.4 mgd bio-disk activated sludge extended aeration wastewater treatment plant followed by

District	Potential for Regionalization	Description
		clarification and UV disinfection before discharge to Glorieta Creek. Collection system could be extended to serve area as regional waste
GLORIETA CONFERENCE CENTER	Yes	See above
Harry's Roadhouse	Yes	Current wastewater treatment system is adequate and needs to be upgraded. Alternative is to discharge effluent to City of Santa Fe collection system for eventual treatment at regional City WWTP.
Harry's Roadhouse	Yes	Current wastewater treatment plant is inadequate and needs to be upgraded. Alternative is to discharge effluent to City of Santa Fe collection system for eventual treatment at regional City WWTP.
Inn At The Opera	Yes	
Jacona Campus		
La Cienega Lakeside Mobile Home Park		
La Pradera Subdivision	Yes	Subdivision has small 0.04 mgd WWTP to treat wastewater to requirements for reuse around subdivision. Could be connected to Rancho Viejo WWTP in future if regional collection and treatment is feasible.
Lamy Town Center Wastewater System		
Las Campanas De Santa Fe		Current WWTP has 0.2 mgd capacity and treats wastewater for reuse on the two golf courses
Las Lagunitas Subdivision	Yes	Currently subdivision has several small wastewater treatment units. Wastewater could be collected and sent upstream to new County regional wastewater treatment facility at Valle Vista.
Mountain Valley Baptist Church		
New Mexico (State of) - Game and Fish Dept Headquarters		Currently has small wastewater treatment plant which collects and treats wastewater on-site for disposal around the grounds.
New Mexico (State of) Correctional Facility - State	Yes	Current wastewater treatment plant has 0.24 mgd capacity but is 20 years old and needs considerable upgrades. The

District	Potential for Regionalization	Description
Penitentiary		effluent from the State Prison complex should be collected and sent to the new County WWTP at Valle Vista for adequate treatment and disposal
New Mexico (State of) Highway and Transportation Dept - La Bajada		
New Mexico (State of) Highway and Transportation Dept - PCB Lagoon		
New Mexico Academy For Science	Yes	Effluent from this faculty is collected and treated at the regional Rancho Viejo WWTP.
Nizhoni School For Global Co		
Pilot Septage Treatment Facility		
Prairie Hills Subdivision		
Public Service Co of New Mexico - Santa Fe Service Center	Yes	Currently the PNM facility has several small wastewater treatment units. Wastewater could be collected and sent downstream to new County regional wastewater treatment facility at Valle Vista.
Pueblo Encantado		
Rancheros de Santa Fe Campground		
Ranchland Utility - Rancho Viejo WWTP	Yes	Currently the Rancho Viejo WWTP has 0.40 mgd capacity, treats wastewater to reuse requirements through a SBR type facility and could be considered as a regional wastewater facility for the subdivision and surrounding area.
Rancho De Bosque		
Rancho Encantado	Yes	Effluent could be treated at regional Pojoaque Valley WWTP if regional collection system is extended to area.
Riverside Mobile Home Park	Yes	Effluent could be treated at regional Pojoaque Valley WWTP if regional collection system is extended to area.
Route 66 Elementary School		
San Pedro Mining - 10tph		

District	Potential for Regionalization	Description
Crusher No0786		
Sangre De Cristo Center		
Santa Fe (City of) - Sludge	Yes	Current City of Santa Fe WWTP is a regional facility with a capacity of 8.0 mgd that treats wastewater to reuse requirements. Recently completed sludge treatment faculty will treat sludge to class 1A requirements for disposal or sale as soil nutrient amen
Santa Fe (City of) - Wastewater Treatment Plant	Yes	Current City of Santa Fe WWTP is a regional facility with a capacity of 8.0 mgd that treats wastewater to reuse requirements. Recently completed sludge treatment faculty will treat sludge to class 1A requirements for disposal or sale as soil nutrient amen
Santa Fe (County of) - Pojoaque Septage Facilities	Yes	Septage disposal facilities will integrate ultimate disposal septage into new 0.5 mgd MBR regional wastewater treatment facility with reuse capabilities for disposal to area recreational, institutional, or other irrigational need facilities.
Santa Fe Brewing Company II	Yes	Currently the Santa Fe Brewing facility has a small on-site wastewater treatment unit. Wastewater could be collected and sent downstream to new County regional wastewater treatment facility at Valle Vista.
Santa Fe Brewing Company II	Yes	Currently the Santa Fe Brewing facility has a small on-site wastewater treatment unit. Wastewater could be collected and sent downstream to new County regional wastewater treatment facility at Valle Vista.
Santa Fe Christian Academy		
Santa Fe Community College	Yes	The Santa Fe Community College has small 0.05 mgd SBR type WWTP to treat wastewater to requirements for reuse around the campus. Could be connected to Rancho Viejo WWTP in future if regional collection and treatment is feasible.
Santa Fe Country Club	Yes	The Santa Fe County Club has a small on-site treatment facility which should be considered for connection to the City of Santa Fe wastewater collection system. The County Club uses City of Santa Fe wastewater treatment plant effluent to water their golf c
Santa Fe Estates Subdivision		
Santa Fe Generating		

District	Potential for Regionalization	Description
Santa Fe Horse Park	Yes	The Santa Fe Horse Park has a small on-site treatment facility which should be considered for connection to the City of Santa Fe wastewater collection system. The Horse Park uses City of Santa Fe wastewater treatment plant effluent to water their facility.
Santa Fe Mobile Home Hacienda	Yes	The Santa Fe Mobile Home Hacienda has a small on-site treatment facility which should be considered for connection to the City of Santa Fe wastewater collection system.
Santa Fe Opera	Yes	The Santa Fe Opera has a new 0.02 mgd MBR type wastewater treatment plant to treat wastewater to reuse requirements for disposal of the majority of the effluent on the Opera grounds.
Santa Fe Ski Basin		The Santa Fe Ski Basin has a small on-site wastewater treatment facility which must meet stringent requirements for discharge to the Tesuque Creek. All sludge needs to be trucked to a regional treatment facility.
Santa Fe Skies RV Park	Yes	Currently the Santa Fe Skies RV Park has a small on-site wastewater treatment unit and disposes of the treated effluent onto the area grounds. Wastewater could be collected and sent downstream to new County regional wastewater treatment facility at Valle Vista
Santa Maria De La Paz	Yes	The Santa Maria de la Paz Church collects their wastewater and sends it to the Rancho Viejo WWTP for treatment and disposal.
Sfe Hydrocarbon Landform		
Smith's Food & Drug-Edgewood	Yes	New 50,000 gpd MBR WWTP is constructed and available for use for wastewater treatment when collection systems are constructed to collect effluent from dischargers.
Sol Y Sombra Trailer Park		
Sunrise Springs Resort	Yes	Currently the Sunrise Springs Resort has a small on-site wastewater treatment unit and disposes of the treated effluent onto the area grounds. Wastewater could be collected and sent upstream to new County regional wastewater treatment facility at Valle
Sweeney Elementary School	Yes	The Sweeney Elementary School should be considered for connection to the City of Santa Fe wastewater collection system.

District	Potential for Regionalization	Description
Tano Santa Fe		
Ten Thousand Waves	Yes	Ten Thousand Waves has a small on-site treatment facility which should be considered for connection to the City of Santa Fe wastewater collection system.
Tesuque Elementary School	Yes	Effluent from the school could be treated at regional Pojoaque Valley WWTP if regional collection system is extended to area.
Turquoise Trail Business Park	Yes	Currently the Turquoise Trail Business Park has a small on-site wastewater treatment unit and disposes of the treated effluent onto the area grounds. Wastewater could be collected and sent downstream to new County regional wastewater treatment facility
Valle Vista Subdivision	Yes	New regional 0.3 mgd MBR wastewater treatment plant is planned for this area and should constructed by 2011. Effluent will meet requirements for disposal to La Cienega Creek or for reuse requirements by area facilities
Vista Clara Ranch		
Wild and Wooley Trailer Ranch	Yes	Currently the Wild and Wooley Trailer Ranch has a small on-site wastewater treatment unit and disposes of the treated effluent onto the area grounds. Wastewater could be collected and sent upstream to new County regional wastewater treatment facility at
Zorro Ranch		
Oshara Village	Yes	The Oshara subdivision has small 0.03 mgd SBR type WWTP to treat wastewater to requirements for reuse around the subdivision. This area could be connected to Rancho Viejo WWTP in future if regional collection and treatment is feasible.

2-15.12. Coordinating Wastewater Service

There is no one-size-fit-all approach to coordinating the provision of wastewater countywide, but a range of options due to environmental, locational and system design factors. The summaries of existing wastewater systems by planning district show that some systems have greater opportunities to connect to an existing system (Agua Fria Village to City; Community College, Oshara and La Pradera to Rancho Viejo System); some have a high potential for regionalization by sector (Edgewood, for new and existing development; Las Campanas Area) some have a low potential for regionalization (Lamy, Santa Fe Opera) and other areas will have to rely on septic systems. Future wasterwater system expansions and upgrades will increase opportunities to regionalize, such as for Sombrillo, Pojoaque, Valle Vista (The Downs and Wild and Wooly can connect to Valle Vista upgrade). It also is important to recognize that there are problem areas, and that regionalization

offers alternatives, such as for Eldorado, the mountain areas and La Cienega (due to contamination issues). Coordinating wastewater systems also provides economic development opportunities, such as for Madrid.

2-15.13. Stormwater

There are known major problems with drainage in some areas of Santa Fe County. Too often, drainage becomes an issue after an event. A Stormwater Master Plan, with an integrated implementation and improvements plan, would help address some of the County's most challenging stormwater challenges, identified, below.

- ***Chimayo*** - Flooding on tributaries of the Santa Cruz River above Santuario Regional facilities will be needed to correct these areas, and property acquisition for siting of facilities and conveyances is probable.
- ***Nambe*** - Rancho de Chimayo Roadway issues. Low water crossings prevalent, numerous parcels have no access during storm events. Regional facilities will be needed to correct these areas, and property acquisition for siting of facilities and conveyances is probable.
- ***Bishops Lodge Road*** - Inundated in 100 yr recurrence interval storm. Numerous parcels do not have all weather access. A Flood Insurance Restudy (hydrologic and hydraulic analyses) of the Tesuque Creek could reveal a mapping error on the FIRM. If this is not a mapping error, regional detention facilities could reduce 100-year flood heights and limit roadway inundation during major events.
- ***Paseo de Angel*** - North and south crossing required to provide access to some 120 homes. Public works may address the north crossing, per recent statement by James Lujan. A CLOMR/LOMR will be required pre and post conveyance construction.
- ***Glorieta*** - Canada Issues (roadway inundated).
- ***Arroyo Hondo*** - Flood Insurance Restudy (hydrologic and hydraulic analyses) and Regional Detention recommended reducing flooding probability in primary growth area. Regional detention will also reduce size of conveyance downstream of pond, resulting in cost benefit.
- ***Edgewood*** - Alluvial fan type flooding issues—entire area needs Flood Insurance Restudy (hydrologic and hydraulic analyses) to determine if fans are active. If active, all projects in area must design for Apex flows, only control there is detention at the Apex, which would likely involve PMF spillways, etc.
- ***Madrid*** - Economic benefit to storm water management. If wastewater is upgraded, stormwater improvements can be accomplished at the same time.

2-15.14. Stormwater Master Plan

A Stormwater Master Plan should establish Flood Districts based on watershed boundaries. The smaller the subareas used will provide more accurate analysis, which alerts development of known stormwater issues, though it would not relieve the proposed development of the need for site specific analysis. The Plan also should identify, describe and map existing conditions. These studies will supplement ongoing compliance with EPA NPDES criteria, including quantification of flows through hydrograph methodology, hydraulic analyses of major arroyos and tributaries and requiring flood insurance restudies to reduce floodplain in areas and where facilities are constructed. An added benefit of the Plan would be that when a development is proposed, and a permit requested, there is pre-existing knowledge of the stormwater for the area, reducing the need for detailed engineering studies, and reducing development costs.

The overall Plan approach should include using the CIP to identify regionalization and standardization of stormwater facilities.

- Too often, small on-lot detention ponds are not maintained and streets are not equipped with storm drain facilities when built.
- All fully improved streets should be constructed with the benefit of an underground storm drain system.
- Gravel roads should have standardized sections that account for stormwater conveyance.
- Formulas should be developed to assure that water never overtops curbs or roadside ditches, and that a dry lane is maintained for access by emergency response vehicles during the 100-year storm event.

- Open space requirements should be integrated with ponding requirements.
- Retain in upper third of watershed, detain in mid third, and allow projects to free drain lower third. This reduces the peak volume, and could allow existing conveyances to function without flooding.

The Plan also should identify mitigation strategies, based on location, need and the size of facilities, using industry standard solutions, such as:

- Regional detention to provide a watershed-wide solution (retain in upper watershed, detain in mid sections, free drain lower section) and reduce downstream conveyance needs (such as reduced culvert sizes, bridge openings, etc).
- Develop a joint use facilities, such as athletic fields, recreation areas and planned open space and viewsheds which are visually more pleasing that the standard approach of constructed improvements.
- Require ongoing maintenance to prolong the life of stormwater facilities.
- Consider naturalistic solutions, such as watershed restoration approach (ideal for smaller areas, visually more acceptable to the public and can utilize grants and volunteerism to reduce costs).
- A cost benefit analysis to implement mitigation strategies would prioritize projects based on a “needs based” approach (each major watershed could get some regional facility, somewhere near the upper middle of the watershed) and identify a schedule of improvements, based on need.

2-16. Transportation

In order to address the complexity of developing a safe and efficient transportation system in Santa Fe County, several key issues, processes, and recommended strategies have been considered. The principles laid out in this document aim to balance the social, economic and environmental factors affecting the transportation network as well as transit services throughout the County. The Sustainable Land Development Plan sets forth policies and strategies to provide safe access and mobility for all of its users to a full range of services including employment, educational opportunities and goods and services throughout the County as well as to other service areas outside of Santa Fe County. The existing road system is shown in **Map 47**. Traffic counts are shown in **Map 48**.

2-16.1. Agencies and Organizations

Coordination of planning for Santa Fe County falls within the jurisdictions of four Transportation Planning Agencies:

The Santa Fe Metropolitan Planning Organization (MPO)

The MPO also sets priorities for funding of new or improved roads and transit using State and Federal funds within the Metropolitan area. The Transportation Policy Board comprised of City Councilors and County Commissioners is the governing body of the Santa Fe MPO. Identify TCC as recommending body to MPO. **Map 14** shows the current MPO and RPA boundaries.

The Northern Pueblos Rural Planning Organization (NPRPO)

The NPRPO sets priorities for funding of new or improved roads and transit using State and Federal funds outside of the MPO boundary

The Regional Planning Authority (RPA)

The RPA is the fiscal agent through which 1/16 cent GRT will be allocated for transit operations throughout Santa Fe County as well as the City of Santa Fe. It is anticipated that the GRT will generate approximately $4.5 million in revenues with fifty percent ($2.5 million) going to the Rail Runner service, $1.9 million to the City of Santa Fe and Santa Fe County, and $300,000 to the NCRTD for Rail Runner Express. Santa Fe County staff is currently working with Santa Fe Trails (City of Santa Fe) staff and the RPA to develop a transit plan to serve City and County ridership needs with emphasis to connection to the Rail Runner commuter rail service.

The North Central Regional Transit District (NCRTD)

The NCRTD transit operations serve the four north central counties of Los Alamos, Taos, Rio Arriba and Santa Fe Counties as well as Santa Clara Tesuque and Ohkay Owingeh pueblos. The NCRTD operates several transit routes or programs in Santa Fe County including the Greater Eldorado Express (GEE-Line) which began in October of 2007 with service to Eldorado. Service was expanded in January of 2008 serving riders in Edgewood, Moriarity, Stanley, Galisteo and Eldorado to destinations in the City of Santa Fe. These services are currently contracted through All Aboard America and run from 6:00 am to 7:04 pm. There has been steady interest among residents in the southern portion of the County to increase these transit services. The Transit Advisory Board for Santa Fe Trails, the City of Santa Fe bus system, has stated that services to Eldorado and the Community College District will be priority areas to be served by Santa Fe Trails in 2009. Ridership studies and route and mode analysis are needed to determine potential ridership.

The Middle Rio Grande Council of Government (MRCOG)

2-16.2. Road Improvement Plan

In 2005, the County Public Works Department and the Road Advisory Committee developed the 5 Year Road Improvement Plan that was adopted by the Board of County Commissioners in the same year. The plan was primarily for paving improvements, but also included some drainage structures. The plan was comprised of approximately 98 road projects totaling 148 miles. Unfortunately due to increased construction costs, only about half of the projects have been completed or have existing funding and are waiting to be constructed.

The plan was to be funded primarily by the general obligation bond approved by the voters in November of 2004. These projects are also funded through GRIP 2 funding which is being utilized to construct existing projects from the plan. In order to provide a consistent policy for transportation planning, the County Road Improvement Plan will be revised as necessary to incorporate the direction as set forth by the approved transportation planning strategies in this Sustainable Land Development Plan.

2-16.3. Long Range Transportation Plans

Several plans for future arterial and primary roads and transit have been completed and adopted for El Centro, where most new growth has occurred in the last 40 years. In 1992 the Extra Territorial Zoning Authority (EZA) adopted an Arterial Roads Plan for the 5 mile Extraterritorial Area around Santa Fe. This Plan has been replaced since by two efforts: the Santa Fe Urban and Extraterritorial Future Roads Plan (ARTF) adopted in 1999 by the County, the City, the EZA and the MPO and the Community College District (CCD) Plan adopted by the County and the EZA in 2000. The CCD Circulation Plan also includes a plan for trails and transit routes.

Several planned arterials and primary roads indentified in these plans link or cross through multiple developments or ownership, and Right-of-Way would have to be purchased to develop these County roads. To date, roads throughout the County are built as development is proposed and approved. There has been no plan for phasing or financing of roads or portions of roads needed to complete the network to County standards in the absence of pending development. It is also not clear where the responsibility lies for implementing the construction of new roads that cannot be attributed to a specific development. The County Code ties off-site road requirements to the scale of each development as it comes in for approval. This leaves some roads under built and does not adequately address the need for road improvements resulting from the cumulative impacts of many small lot splits through various means such as family transfers.

The Metropolitan Transportation Plan approved by the MPO builds on the transportation networks of the County and the City to identify construction and improvements needed in a specific time frame. The Regional Planning Authority (RPA) is also concerned with the completion of planned road networks and how that interacts with the growth areas in that plan.

2-16.4. Transportation Sustainability

Providing a sustainable transportation system in Santa Fe County depends on integrating several inter-related elements. The key to implementing an effective sustainable transportation system is tying together the various elements of the system including the larger road network, regional transit, multi-modal transportation infrastructure, the pattern of the built environment, as well as the means of funding these projects. Planning for a sustainable transportation system in Santa Fe County should consider the following key elements:

- Safety, welfare and convenience of area residents should be enhanced by providing road connections that link the various areas of the County to goods and services;
- Current traffic congestion within the County's existing communities and roadways should be remedied through a context sensitive solutions approach;
- Traffic likely to be generated by future development should be anticipated and accommodated in a manner that preserves the quality of life of current residents, minimizes disruption of the County's existing communities, and minimizes congestion of the County's existing road network;
- Traffic should be distributed as evenly as possible among the County's existing and future through-roads as well as through the State and Federal highway systems;
- Road planning and the implementation of road plans across jurisdictional boundaries should be effectively coordinated;
- Urban growth in the County should be concentrated in ways to limit sprawl and provide for more mixed land use through land use policies and development plan review. This would reduce demand (especially for automobile trips) by moving origins and destinations closer together and help reduce habitat destruction and the loss of agricultural and recreational lands;
- Priority should be given to less polluting, lower impact modes of transportation in the design of transportation systems especially within the future growth areas. Pedestrian and cycling paths and on-road bike lanes should be provided as attractive and safe alternatives to cars;

- Public transit in the County should be maintained and enhanced to encourage more people to use transit rather than rely on personal automobile use;
- Multi-modal infrastructure such as bike lanes, paths and sidewalks should be integrated with transit in order to provide safe and effective transportation alternatives to personal automobile use;
- Historical sites and archaeological resources should be protected as well as noise pollution reduction, and consideration of aesthetics in the planning, design and construction of transportation systems;
- Compact urban form should be emphasized in order to reduce habitat destruction and loss of agricultural and recreational lands around urbanizing areas;
- Impacts on natural habitat and wildlife should be minimized the in the design, construction and operation of the transportation system;
- Fossil fuel consumption and emissions should be reduced through vehicle efficiencies and demand management; and
- The use of alternative and renewable energy sources should be promoted whenever possible.

These elements of a sustainable transportation system can only be effectively implemented if the decision making processes incorporates the following key to sustainability:

- Ensure public and private sector stakeholders should coordinate their transportation planning, and project development. These transportation decisions should also be integrated with environment, health, energy and urban land-use decisions;
- Transportation-related decisions should be made through an open and inclusive process. The public should be informed about transportation options and impacts to encourage the public to participate in decision making so that the needs of different communities (i.e. rural vs. urban; cyclists vs. drivers, etc.) can be understood and accounted for;
- Environmental or social impacts of transportation-related decisions should be anticipated rather than reacted to after these impacts have occurred. This will result in considerable cost savings since transportation decisions often involve costly, long-term infrastructure investments; and
- Both the global and local social, economic and environmental effects of decisions should be considered.

2-16.4.1. Transportation System Issues, Opportunities and Constraints

Opportunities

A number of opportunities exist for the County to improve the transportation network. The County's transportation network has a solid foundation of interconnected State and County roadways and an adopted 5-year Road Improvement Plan for paving and drainage improvements to these roadways. Basic infrastructure assets also exist, such as railroad service for freight hauling and several historic and scenic byways. A multitude of transit opportunities also exist, including long-distance commuter service to the cities of Albuquerque and Santa Fe through the Rail Runner. The NM599 station for the Rail Runner already exists and the opportunity for several more throughout the County appears feasible. Some bus service also exists within the County, including the Greater Eldorado bus service and Santa Fe Trails. Multi-modal transportation is also becoming a reality as the County has developed several bike lanes and trail networks. Finally, the County has coordinated with a number of other entities on transportation issues in the past and can build on these relationships in the future. Collaboration has already occurred with the MPO, the Santa Fe Southern Railroad, the Regional Planning Authority, the North Central Regional Transit District, the Town of Edgewood and the State of New Mexico.

Constraints

To achieve a first-class transportation system and meet the goals listed in this plan, a number of constraints must first be overcome. First, a number of right-of-way problems plague the County, including inadequate documentation of legal easements, confusion of jurisdiction regarding many roadways, and inadequate right-of-way ownership by the County to implement bike and pedestrian access on many roadways. Emergency response issues also exist, including substandard grades, widths and turnarounds hampering emergency access; roads which are inaccessible in bad weather, poorly

constructed or maintained; lack of an efficient way for updating road and address information for emergency responders; and limited emergency response to a mass casualty incident. Although a number of roadways exist, connecting much of the County in an efficient manner, there are issues related to the operation and maintenance of existing roadways. From inadequate funding of road maintenance in general to public demand for the County to take on the responsibilities of maintaining privately constructed roadways to a lack of future funding for new road construction when maintaining already built roads is already an issue.

The future of transit in the County also must overcome significant constraints such as a dispersed population with spread out destinations, a lack of planning for future transit hubs and service provision and the severance of transit project planning and long-range planning. Further, a number of environmental issues exist such as existing roads built in environmentally sensitive areas and wildlife habitat fragmentation. Coordination with other entities, although also listed as an opportunity, is also a constraint as there has been a lack of coordination for road maintenance services with other jurisdictions and a lack of City/County coordination in maintaining roads in areas that are in the process of urbanization. Existing County roadway standards also constrain the development of a better transportation system as there is currently a lack of consistent road standards for development throughout the County. Finally, a number of planning constraints also exist, including a lack of coordinated access planning, inadequate planning for future capacity or connections and a lack of enforcement of the construction of substandard roadways.

The following County-wide transportation issues have been identified that threaten or impede sustainability:

- Many County and private roads do not meet County standards, yet developments are approved with/on substandard roads;
- There is no overall Long Range Transportation Strategy; many agencies involved, competition for funding, and complex internal process;
- Public demand for new roads to be dedicated to/and maintained by the County;
- Existing and proposed roads built in “environmentally sensitive areas”;
- Impacts on wildlife, need for appropriate wild life crossings, mitigating impact on wildlife habitats;
- There is an imbalanced approach to planning/ funding to provide fire and emergency services. Emergency access and water supply is underfunded relative to equipment and manpower;
- The County is reacting to public request for transit service; and
- Currently transit projects are not tied to Growth Management or Long Range funding.

2-16.5. Level of Service (LOS)

The transportation facility level of service standard shall apply to all transportation facilities identified in the Santa Fe County road plan. These include: collector roads, arterial roads, freeways, and expressways that are maintained by Santa Fe County or the State of New Mexico and which shall include all County collector and arterial roads as well as State highways, U.S. highways, and Interstate highways, within the unincorporated portion of Santa Fe County. Primary roadways that are within municipalities within Santa Fe County and are on the border of the incorporated and unincorporated portions of the County shall also be subject to the transportation facility level of service standard. Transportation facilities shall include all road links, intersections, and interchanges for roads that are components of the thoroughfare system. (See ***Santa Fe County Sustainable Land Development Plan Thoroughfare Plan and Proposed Transportation Facility Level of Service Standards, Map 49***).

2-16.5.1. Level of service standards for transportation facilities:

1. For facilities generally within the Communities, Primary Growth Areas, or Secondary Growth Areas Tiers, that are identified in the Santa Fe County Sustainable Land Development Plan, as well as within municipalities or the City of Santa Fe Annexation Area a Level of Service “D” is recommended, and;
2. For facilities generally outside of the Communities, Primary Growth Areas, and Secondary Growth Areas Tiers, municipalities, and the City of Santa Fe Annexation Area a Level of Service “C” is recommended.

The thoroughfare plan shall depict the exact extent and location of the transportation facilities where each level of service standard applies. Where a facility would be located in two level of service standard designations, the higher standard shall apply to the facility.

The transportation facility level of service shall apply on a peak-season, peak-hour, directional basis, for all impacted road links, intersections, and interchanges, using traffic volumes that are based on the latest edition of the Highway Capacity Manual published by the Transportation Research Board. For road types that are not address by the Highway Capacity Manual, the traffic volumes used shall be those which are established and adopted by Santa Fe County.

2-16.5.2. Traffic Impact Analysis and Mitigation

Standards will be set forth in the Sustainable Land Development Code requiring traffic impact analysis and mitigation to ensure safe and sustainable transportation management planning.

2-16.6. Future Road Network

Santa Fe County's historic pattern of "solving" traffic problems with the addition of new arterial roadways has had the unfortunate result of displacing many residents and negatively impacting the rural character of historic communities. Therefore, in order to prevent further negative impacts to the rural character of the County and its traditional communities, this plan proposes the following general policies:

- Santa Fe's future roads program should avoid concentrating traffic on a small number of large arterials. Instead, the network should de designed to fulfill the principles of several small roads where traffic can be more evenly distributed, neighborhood-friendly roads, and pedestrian oriented roads;
- To achieve this, all future roads should be designed as two-lane roads, with third lanes added only as necessary to provide turning lanes at congested intersections;
- To remedy congestion on existing roads, traffic calming measures and the construction of additional small roads should be implemented before road-widening, or creation of roads having four or more lanes, is considered; and
- Recognition and preservation of historic trails and roadways.

A two-lane arterial road network is both desirable and feasible. Such a network will be less disruptive of existing communities and less destructive of Santa Fe's character. This type of road network will also make pedestrian and cyclist travel more possible.

2-16.6.1. Guiding Principles for Road Planning

In developing a process to evaluate road improvement projects and new road projects in the Santa Fe County the following guiding principles should be considered:

- Priority roads projects including improvements to existing roads and construction of new roads shall connect to designated community service areas and proposed growth areas.
- Road improvement projects and new road construction projects shall address improved connectivity and access to other areas that provide a range of community services. The road network should improve access to areas both within Santa Fe County and outside service areas including Albuquerque, Espanola and Los Alamos which provide many key services such as employment and medical services to residents in Santa Fe County.
- Existing and projected population, social values, and environmental, economic and historic characteristics specific to the project area shall be evaluated to determine the suitable level of transportation service appropriate to the area and the need for improvements to the transportation network.
- Road improvement projects and new road construction projects shall be evaluated and prioritized based on the need for a higher level of service, the character of the road (i.e. rural or sub-urban), the environmental suitability of the road project, and whether the proposed project would provide improved connectivity to services.
- A process shall be developed that evaluates the traffic demands of the full spectrum of roadway users including local and commuter traffic, emergency services, commercial users, and multi-modal users including pedestrians, cyclists and equestrians for all proposed road improvements and new road construction projects.

- A clear public input and evaluation process shall be developed and followed to consider the specific conditions of the project and the full spectrum of user demands.
- The County shall adopt a hierarchy of roads to prioritize specific roads for planned improvements. The components of the road hierarchy are addressed in a later section of this chapter.

2-16.6.2. Road Prioritization Matrix

To prioritize the importance of each major roadway construction project, and projects to be funded through the Capital Improvements Program (CIP) this plan proposes parameters for an evaluation prioritization matrix. The following twenty-one parameters have been selected as criteria for evaluating and prioritizing major roadway construction projects and eligibility for CIP funding:

1. Existing Structural Deficiencies
2. Safety Enhancements
3. Connectivity to Services
4. User Benefit
    (a) Population to be served by the improvement
    (b) User Groups to be served by the improvement
5. Improvements/Connectivity to Transit system
    (a) Rail Runner
    (b) Santa Fe Trails
    (c) NC RTD
6. Connectivity within a designated County Growth Area
7. Road Performance/Congestion
8. Bike/Ped/Alternative Mode Improvement
9. Level of Service (LOS)
    (a) Current LOS (AM)
    (b) Current LOS (PM)
    (c) Anticipated LOS (AM)
    (d) Anticipated LOS (PM)
10. Fire Access
11. Consistency with County Plans
12. Consistency with other regional transportation plans (MPO, City of Santa Fe)
13. Impact on Economic Development
14. Impacts to Existing Residents
15. Improvements to Recreational Access/Tourism
16. Maintain/Protect Historically Significant Structures
17. Impacts to the Natural Environmental
18. Public Support
19. Project Readiness
20. Project Cost
    (a) Cost to accommodate motorized vehicles
    (b) Costs to accommodate multi-modal transportation (bike/ped)
21. Available Funding

Each of these criteria shall be weighed to create a priority list of County Roads to be eligible for CIP funding.

2-16.6.3. County Future Road System

Santa Fe County, in collaboration with the Santa Fe Metropolitan Planning Organization (MPO), has developed a draft map of the County's future road system **(See Future Road Network Map 50).** The County's future roadway recommendations are based on the Arterial Roads Taskforce recommendations and reviewed and revised by Santa Fe County Staff, County transportation consultants and the Santa Fe MPO. All roadways indicated on the Future Roadways map were evaluated based on the *Guiding Principles for Road Planning in Santa Fe County* as described above. Future road improvements can be found in **Map 51**.

2-16.7. Maintenance and Operations

Map 52 shows road surface and maintenance projects.

2-16.8. Transit

Public transportation will play an increasingly important role over time in meeting the transportation mobility needs of County residents, businesses, employees, and visitors. As Santa Fe County continues to grow, especially in targeted growth areas, public transit investments are a significant component to:

- Increase personal and regional mobility
- Promote smart growth, redevelopment, and sustainability
- Improve economic vitality, competitiveness, job access, and employee recruitment/retention
- Increase housing buying power
- Encourage active living and healthy communities
- Address social equity – providing transit for life-sustaining activities for those with few or no other transportation options

Potential public transit investments may span a range of options tailored to specific needs and circumstances in different areas of the County. These include commuter-oriented connections to Rail Runner, downtown Santa Fe, and major regional destinations through fixed route, commuter express, park-and-ride, or other service delivery options. Transit investments also include demand-response and other tailored services to connect outlying areas to life-sustaining activities.

Santa Fe County does not intend to directly operate transit service in the County. Rather, the County will collaborate with regional transportation stakeholders to ensure effective service provision and coordination of transit services within the County. These stakeholders include the Santa Fe Regional Planning Authority, the North Central Regional Transit District, the Santa Fe MPO, New Mexico DOT, and others. The County will actively participate in regional transit planning, prioritization, and evaluation activities, as well as potentially contribute funding for transit services provided by others that effectively meet the objectives and criteria above.

2-16.8.1. Existing Transit Services

Current transit in Santa Fe County is being provided by the NCRTD, of which Santa Fe County is a member, as well as Santa Fe Trails operated by the City of Santa Fe. The Santa Fe Trails component comprises recent and anticipated service investments to improve Rail Runner connections, serve IAIA and SFCC, and provide new service along NM 14. Santa Fe Trails and the City have increased and expanded service to connect to Rail Runner and to serve new areas within the City and County. These investments are relying on temporary funding that currently is funded through the County's portion of the Transit GRT.

Figure2-79 is a list of specific, high-priority initial transit services for Santa Fe County as provided by Santa Fe Trails and the North Central Regional Transit District:

Figure 2- 79: High Priority Transit Services

Current Operator	Service Component
NCRTD	Exist. SF County routes & GEE
City of Santa Fe	Santa Fe Pick Up
SF Trails	Route 4 RR enhancements
SF Trails	Route 22 – IAIA/SFCC
SF Trails	New NM 599 RR station service
TBD	New NM 14 service

2-16.8.2. Transit Oriented Development

As the County develops policies and strategies to guide development into areas that can be served with limited available County resources, some of the County's future growth can be effectively served in Transit Oriented Developments (TODs). With the New Mexico Rail Runner Express service to Santa Fe beginning in 2008, there is an opportunity to orient future growth in and around Santa Fe toward rail as well as bus transit stations. This section of the plan presents a broad range of recommended principles for Transit Oriented Development in Santa Fe County.

There are several primary design considerations that help to foster an efficient and effective Transit Oriented Development. In general, Transit Oriented Development should incorporate more connections with more intersections and more small streets, thereby elevating the importance of the pedestrian rather than the automobile within the built environment. As discussed in more detail in the Sustainability section, features that should be incorporated into a Transit Oriented Development include:

- An identifiable center and edges that create a "sense of place".
- A mix of land use and building types.
- A variety of housing types with affordable housing integrated into the design.
- A connected and integrated network of walkable streets.
- Residential areas located within ¼ to ½ mile of transit stops.
- Bicycle and pedestrian infrastructure that links to transit stations.
- Emphasis on pedestrian features including prominent entrances, landscaping and sidewalks.
- Other civic amenities such as parks and open space that are designed into the development.

The County's transportation investments and policies will directly affect mobility, connectivity and access throughout Santa Fe County. Therefore, the type, location and scale of existing land uses have a strong influence on the transportation system.

2-16.9. Approach to Road Design

2-16.9.1. Complete Streets

As also discussed in the Cultural and Historic Resources section, complete streets are designed and operated to enable safe access for all users. A Complete Street is a road that is designed to be safe for drivers; bicyclists; transit vehicles and users; and pedestrians of all ages and abilities. The Complete Streets concept focuses not just on individual roads but on changing the decision-making and design process so that all users are routinely considered during the planning, designing, building and operating of all road ways. It is about policy and institutional change. ("*Complete Streets: We Can Get There from Here*," by John LaPlante, P.E., and Barbara McCann)

A Federal Highways Administration safety review found that streets designed with sidewalks, raised medians, better bus stop placement, traffic-calming measures, and treatments for disabled travelers improve pedestrian safety. Some features,

such as medians, improve safety for all users: they enable pedestrians to cross busy roads in two stages, reduce left-turning motorist crashes to zero, and improve bicycle safety.

Due to the 573 miles of roadways in the County Road network, it is not practical or feasible to apply uniform criteria of Complete Streets for all County roads, however, there are priority segments and areas where this approach should be used.

There are many factors that must be considered in determining the degree to which Complete Streets policies apply to a specific roadway in the County's road network such as the location of the roadway within the County, the adjacent land use, the volume of different users such as cyclists, pedestrians and equestrians, the design speed of the roadway, etc. Therefore, the applicability of the Complete Streets policy should be evaluated on a case by case basis. All transportation facilities or improvements within a designated growth area in which federal funding is made available through the Santa Fe Metropolitan Planning Organization (SF MPO) are required to incorporate elements of Complete Streets design.

2-16.9.2. Context Sensitive Design

All road projects in Santa Fe County should respect the character of the areas where they are proposed and should be designed to reflect the unique local context of each community and its surrounding area. The design of a road should reflect the particular local conditions and change as the road transitions from rural to semi-rural to more urbanized areas. Changes in roadway widths, the presence or absence of parking lanes, and other factors provide clues to motorists on how fast to drive when they pass from one land use type to another. If appropriately designed, vehicular speeds should fit local context.

The needs of pedestrians, bicyclists and transit users must be considered in designing all roadway projects. Sidewalk networks should be well connected with opportunities for regular, safe street crossings. On collector and arterial roadways, bike lanes or wide curb lanes can encourage people to bike rather than drive for short and moderate distance trips. If a roadway is designed to discourage vehicular speeding, it can be comfortably used by pedestrians and bicyclists alike.

In an effort to maintain the character of many of the traditional communities throughout Santa Fe County, all road projects within communities should consider the context and characteristics of the community's Main Street. Main Streets in communities throughout the County may include the following characteristics:

- Regular pedestrian activity, sometimes along wider sidewalks;
- Presence of commercial and civic uses;
- Typically higher building density than the surrounding rural areas;
- Buildings oriented to the street, with little or no building setbacks;
- Presence of street furniture and public art;
- On-street parking;
- Speeds of 30 mph or less;
- Typically no more than two travel lanes

These characteristics should be considered for all proposed road projects effecting communities in Santa Fe County. Several critical parameters for roadway design shall be considered in developing a context sensitive road network for Santa Fe County. Prior to implementation of all future road projects, careful consideration shall be made to the type of roadway, the local and regional context of the roadway, its general purpose, and what type and volume of traffic the road is to handle after project completion. By increasing the options of motorists to travel from one point to another, a well-connected County road network will provide greater flexibility in designing individual roadways. Improving roadway connectivity will provide greater regional mobility as well as serve the needs of pedestrians and bicyclists better than simply widening arterial roadways. All roadway networks should be evaluated using the measures on internal connectivity, external connectivity, and route directness.

In general, context-sensitive design philosophy views retrofit projects as an opportunity to improve conditions for walking and biking. Travel lanes wider than needed present the opportunity to narrow travel lanes and install bike lanes.

Desired Operating Speed

"Desired operating speed" is one of the most important concepts for ensuring that vehicular traffic flows at speed that is appropriate for the given context of the roadway. The desired operating speed is the speed of traffic that best reflects the function of the roadway and the surrounding land use context. Identification of this speed allows the designer to select the design speed and appropriate roadway and roadside features. The desired operating speed is the speed at which we would like vehicles to travel. It is operationally defined here as the desired speed of the 85th percentile vehicle. The concept of desired operating speed is best explained by its relationship to three other concepts of speed: operating speed, posted speed, and design speed.

- Operating speed is the speed at which a typical vehicle operates, commonly measured as the 85th percentile speed of all vehicles.*
- Posted speed is the legal speed limit on a roadway. It is often set without any means of self enforcement, and drivers tend to travel at what they perceive as a safe speed regardless of the posted speed. Fewer than a third of drivers go the speed limit on urban and suburban arterials.**
- Design speed (as defined in the AASHTO Green Book) is the speed used to determine various geometric design features, including horizontal curvature, gradient, superelevation, stopping sight distance, and, for rural highways only, lane width.

The greatest drawback to the existing design speed approach is that drivers usually drive as fast as they believe the road can safely accommodate. Existing policy may thus encourage operating speeds higher than the posted speed limit and/or selected design speed in an area. In the interest of road safety, it is desirable to have a stronger relationship between the posted speed limit, design speed, and operating speed. *** Therefore, this plan recommends that the desired operating speed for most roadway types be the same as the design speed, and also the same as the posted speed. For all roadways posted at 45 mph or above, the design speed should be set 5 mph over the desired operating speed.

Under this policy, all of the controlling design elements directly related to design speed – horizontal curvature, gradient, superelevation, and stopping sight distance – would be set equal to, and therefore reinforce, the desired operating speed. Roadway features not directly related to design speed, such as lane and shoulder width, and the presence or absence or a parking lane, should also support the desired operating speed. Roadside design features, such as the building setback or use of street trees, should likewise support the desired speed.

2-16.9.3. Consideration of Project Needs and Objectives

Prior to design and implementation of road projects, the full spectrum of project needs and objectives shall be established. The defined purpose and need should include the objectives that the proposed project is intended to achieve. Objectives may include:

- Achieving a transportation objective identified in the statewide or MPO transportation plan;
- Supporting state, local or tribal plans guiding land use, economic development, or future growth objectives;
- Satisfying the diverse needs and objectives of community residents and other stakeholders.

The following includes examples of project objectives that should be considered for County road projects:

1. **Structural integrity.** For many projects, the primary objective is to provide safe and structurally-sound roads and bridges. Does this require full reconstruction, rehabilitation, or preventative maintenance? The character and design of the structure, including historic significance and treatment of pedestrians and bicyclists, may also be important objectives for the community.

2. **Safety.** Crash data should be reviewed to determine if safety problems exist. Safety must be addressed for all users, including pedestrians and bicyclists. Is safety increased through the raising of design speed (crashworthiness) or through the reverse method of matching desired operating speeds with the context (context sensitive design)? The solution must be commensurate with the documented problems.

3. **Traffic service.** Do traffic service goals apply to service for all users? Does the design consider daily local travel to destinations or does it also consider weekend use? Is there a concern with traffic service all day, a peak hour, or something in between? Is mobility (the ability to get from origin to destination, possibly by a variety of routes), really the traffic issue, rather than speed or delay? Does the proposed project address the parking needs for the area?

4. **Non-motorized user service.** Do the goals of "pedestrian-friendly," "bicycle-friendly," or "transit oriented" apply? If these are important goals in the study area, consideration could be given to the use of formal level of service measures for pedestrian, bicycle and transit service.

5. **Community character.** How does the proposed project fit with the existing community character? There may be various contexts to consider such as adjacent land uses, features of historic significance, for any specific project.

6. **Economic development.** Will the road project result in opening up more area to development? Is the project located in a growth area identified by the County and/or other municipalities? Will it serve to attract "big-box" retail or regional distribution uses? Will it strengthen a "Main Street," or otherwise compete with sprawl? Will it add to the visitor appeal of a scenic or historical asset?

All objectives should be developed with the input of Public Works and Land Use Staff and shall make all efforts to incorporate the needs and objectives of community residents and other effected stakeholders. For simple projects, documenting agreement may involve informing the public of the specific project. For complex projects, however, these goals must be vetted with the project team and stakeholders, and documented ***before*** project alternatives are developed.

2-16.10. Bike Lanes, Trails and Pedestrian Accommodations

In order to accommodate and encourage a full range of transportation options, bike lanes should also be considered for future roadways as well as for retro-fits to existing roadways in Santa Fe County. By designating a space only for bicyclists, bicycle lanes give bicyclists a measure of comfort that motorists will not move into their path. They serve to advise motorists of the possible presence of bicyclists. The presence of bike lanes encourage bicyclists to separate themselves from parked cars more than they otherwise might, reducing the possibility of collisions with motorists.

2-16.10.1. Paved Shoulders

Paved shoulders or designated bicycle lanes are the two primary means to dedicate road space to bicyclists. For many streets, however, including low-speed local roads, rural routes with minimal motor vehicle traffic, and unpaved roadways, "shared lanes" are a sufficient accommodation for bicyclists. The decision to include paved shoulders, shared lanes, or off-road facilities for non-motorized used should also reflect consideration of the projected needs of pedestrians, children on bicycles, equestrians, and other local users along a given road segment (See ***On-Road Bikeways Map 53***).

According to AASHTO (1999), "Adding or improving paved shoulders often can be the best way to accommodate bicyclists in rural areas and benefit motor vehicle traffic. Paved shoulders can extend the service life of the road surface since edge deterioration will be significantly reduced. Paved shoulders also provide a break-down area for motor vehicles. Where funding is limited, adding or improving shoulders on uphill sections will give slow-moving bicyclists needed maneuvering space and will decrease conflicts with faster moving motor vehicle traffic.

Paved shoulders should be at least 1.2 m (4 feet) wide to accommodate bicycle travel. … Shoulder width of 1.5 m (5 feet) is recommended from the face of guardrail, curb or other roadside barriers. It is desirable to increase the width of shoulders where higher bicycle usage is expected. Additional shoulder width is also desirable if motor vehicle speeds exceed 80 km/h (50 mph), or the percentage of trucks, buses and recreational vehicles is high, or if static obstructions exist at the right side of the roadway.

In general, AASHTO's recommendations for shoulder width (as described in A Policy on Geometric Design of Highways and Streets (Green Book)) are the best guide for bicycles as well, since wider shoulders are recommended on heavily traveled

and high-speed roads and those carrying large numbers of trucks. However, in order to be usable by bicyclists the shoulder must be paved."[lxxiv]

2-16.10.2. Design Factors

Consideration of providing a paved shoulder or bicycle lane for use by bicyclists in the design of a new roadway should be based on a variety of factors. These factors can also be applied to the prioritization of retrofits on existing roadways. In assessing needs on Santa Fe County roads, the following primary factors have been considered to indicate that paved shoulders or bicycle lanes should be included:

- Local land use: Mixed land use or higher population density
- Motor vehicle traffic: Higher volume and speeds (e.g. >30 mph) of motor vehicle traffic

In prioritizing retrofits, several additional factors may be influential:

- Continuity and connectivity with other bicycle facilities
- Lack of availability of other facilities (e.g. other roads, multi-use path, or existing side path) to safely and conveniently reach significant destinations
- Destinations of particular interest to bicycle and pedestrian traffic
- Local pedestrian demand not addressed by sidewalks or sidepaths
- Input from bicyclists
- Feasibility of addition of paved shoulder

Based on the accepted guidance from AASHTO, five feet is generally recommendable as the desired minimum width of shoulders intended to provide sufficient space for bicyclists, or for designated bicycle lanes. Some exceptions to this minimum may be permissible where motor vehicle speeds are lower than fifty mph and/or available right-of-way is limited. Additional AASHTO recommendations apply to shoulder or bike lane design, construction and maintenance with respect to intersection treatments, shy distance from guardrails and other roadside obstacles, pavement quality,[lxxv] etc.

This Plan proposes that all future county roads that are to be classified at the collector or arterial level, or that otherwise meet the criteria expressed above, be accordingly built with appropriate paved shoulders or bicycle lanes.

Several Santa Fe County Roads have already been built with paved shoulders, or designated bicycle lanes, that meet or exceed the AASHTO minimums described above. The County should maintain these paved shoulders as integral parts of the corresponding County Roads.

Paved shoulder or bike lane meeting AASHTO desired specifications (5 ft. or wider)

- Richards Ave. (from city limits to Avenida del Sur)
- Rabbit Rd. (extension by Oshara) (designated bike lanes)
- Airport Rd.*

(*in area to be annexed by City)

Paved shoulder meeting AASHTO minimum specifications (4 ft.)

- Caja del Rio Rd.
- Rabbit Rd. (old part, including Puesta del Sol; these shoulders need maintenance)
- Rabbit Rd. extension: "FHWA section"
- Old Agua Fria Rd.
- Ave. Vista Grande (with improvements to shoulder surface recommended below)

Some County Roads have shoulders that do not meet AASHTO minimums and many have no paved shoulder at all. In most cases, applying a "retrofit" to such roads means widening the roadway in order to add paved shoulders or bicycle lanes. In limited cases, a retrofit to create sufficient shoulders or bicycle lanes is possible simply through re-striping or repaving the roadway. For example, multi-purpose paved shoulders could be created along a critical part of Tesuque Village Rd. through a "road diet" treatment whereby space dedicated to motor vehicles is reduced (in this case by eliminating a third, "climbing" lane). This kind of re-striping treatment typically takes place in the context of a maintenance overlay. On other highways, the pavement overlay itself may serve to remediate other limitations to bicyclists' use of the shoulder, such as deteriorated shoulder conditions or longitudinal seams left in the shoulder area (as on Ave. Vista Grande).

This Plan proposes that the County dedicate County resources and seek additional federal and state support to construct or improve paved shoulders on existing roadways classified as arterials or collectors through a prioritized effort following priority levels listed below, which have been determined following the criteria described above. A full list of these road segments with notes on their classification, including those classified as "lower-priority" retrofits, is available through **Figure 2-80**.

Figure 2- 80: Priority Paved Shoulder Improvements

High Priority

- Old Santa Fe Trail, to El Gancho Rd.
- El Gancho Rd., particularly northbound (uphill)
- Tesuque Village Rd., Tesuque Village south to US84/285 (Retrofit possible through "road diet" / re-striping)
- Tesuque Village Rd., Tesuque Village north to US84/285
- Avenida del Sur
- Rancho Viejo Blvd.
- Bishop's Lodge Rd. (from Bishop's Lodge south into City) (particularly southbound side on climb)
- West Alameda*
- Agua Fria St.*
- Caja del Oro Grant Rd. (south of NM599)*
- San Ysidro Crossing*
- Rodeo Rd. east of Sawmill*

(*in area to be annexed by City)

Medium Priority

- Old Lamy Trail
- Richards Ave. (at least first 100 yds. south from Ave. del Sur to Trailhead)
- Old Santa Fe Trail (to Two Trails Rd.: both sides; also consider uphill side to Cañada de los Alamos, both sides in Cañada de los Alamos)
- Two Trails Rd.
- A Van Nu Po
- Camino La Tierra (bet Las Campanas and NM599)
- Las Campanas Dr. (bet. Caja del Rio Rd. and Camino la Tierra)
- Los Pinos
- Dinosaur Trail (esp. where no side path)
- Paseo Real
- Tano Rd. (paved part: east of Tano West)
- Ave. Vista Grande (re-pave shoulders to eliminate seam)
- Beckner Rd.*

(*in area to be annexed by City)

Additional priorities (outside of MPO area)

- Road from NM503 to Chimayo (pilgrim route; High Road to Taos)
- County Rd. integrated into US84/285 frontage road between Cuyumungue and Pojoaque Pueblo
- County Rds. integrated into US84/285 frontage between Cities of Gold Rd. and JCT NM503 / US84/285 (includes addressing local pedestrian needs)

2-16.10.3. Paved Shoulders on State Highways

Many state highways in Santa Fe County have no paved shoulder provisions or have been built and/or maintained with hazardous seams in paved shoulders. In its relationship with NMDOT, the County should advocate for all construction, reconstruction, and maintenance of state highways to include appropriate paved shoulders or bike lanes per the specifications described in AASHTO (1999). In particular, as directed under Resolution 2009-135, County staff and elected officials should urge NMDOT to design, build, and maintain sufficient paved shoulders or bike lanes in Santa Fe County without leaving longitudinal seams in the paved shoulder. Working with the MPO and the NMDOT, the County should prioritize improvements to the following state highways currently lacking sufficient paved shoulders:

Within (or including some) MPO area:

- NM599 (Relief Route) frontage roads, including "Via Abajo" and CR70 connector (inconsistent shoulders, pavement seams, guardrail placement)
- NM14 between Dinosaur Trail and NM599 (inconsistent shoulder, no sidewalks)
- Existing and future road to connect to NM599 station from NM14 (via Santa Fe Brewery)
- NM592 to Rio en Medio, with particular attention to adding shoulders on climbing side and on both sides within Chupadero and Rio en Medio
- NM475 (Hyde Park Rd.), with particular attention to adding shoulders on climbing side and on both sides near and between significant trailheads
- NM300 (Old Las Vegas Highway) east of JCT US285, particularly to Ojo de la Vaca Rd.)("Road Diet" possible where climbing lane exists)
- US84/285 frontage road within Tesuque Pueblo, where lacking paved shoulder.

Outside of MPO area

- NM14 between Lone Butte and Cerrillos (Turquoise Trail Scenic Byway) (repave to eliminate seam in existing 4-5' shoulder)
- NM41 from US285 to Clark Hill (future State Bike Route 9)
- NM503 (High Road to Taos)
- NM50 (east of Glorieta) (future State Bike Route 21; alternative to I-25)

2-16.10.4. Shared Lanes and the use of "Sharrows"

In some cases where cyclists can easily travel at or close to the posted speed limit, and particularly on lower-speed roadways with multiple conflicts (driveways, parked cars, etc.), the "shared-lane arrow" or "sharrow" is an appropriate pavement marking device to indicate appropriate positioning of cyclists to "take the lane," as they are entitled to in order to be more safely positioned in the roadway and to prevent unsafe (and unnecessary) passing attempts by motorists.

Guidance on the use of sharrows is slated to be provided in the next editions of both the Manual of Uniform Traffic Control Devices (MUTCD) and the AASHTO Guide for the Development of Bicycle Facilities. On higher-speed facilities with shared lanes, where cyclists can be expected to ride as far to the right as "practicable" (per state law), the more customary practice to direct motorists and bicyclists to consider each others' needs is to erect Bicycle Warning signs with "Share the Road" plaques rather than "sharrows."

2-16.10.5. Multi-Use Paths

Suitability of Multi-Use Paths as a Substitute for On-Road Facilities

"Shared use paths are facilities on exclusive right-of-way and with minimal cross flow by motor vehicles. … Users are non-motorized and may include but are not limited to: bicyclists, in-line skaters, roller skaters, wheelchair users (both non-motorized and motorized) and pedestrians, including walkers, runners, people with baby strollers, people walking dogs, etc. …

Shared use paths should be thought of as a complementary system of off-road transportation routes for bicyclists and others that serves as a necessary extension to the roadway network. Shared use paths should not be used to preclude on-road bicycle facilities, but rather to supplement a system of on-road bike lanes, wide outside lanes, paved shoulders and bike routes.[lxxvi]"

Suitability of Side Paths as a Substitute for On-Road Facilities

Sidepaths, while they may provide a useful facility for pedestrians and other users, including some recreational bicyclists, are not acceptable as a substitute for on-road facilities as they typically provide a less convenient and less safe alternative for through-cyclists. One of the primary difficulties created by parallel roads and paths is the increased complexity of intersections with driveways and cross-streets, which results in increases in the number and severity of hazards that sidepaths present to cyclists of all skill levels. Sidepaths also typically provide a less convenient route for cyclists, partly due to the design of the path vs. the road but also particularly because cyclists' legal right of way is legally or effectively denied at cross-streets and driveways.

According to AASHTO (1999)'s section on "Separation Between Shared Use Paths and Roadways:" "When two-way shared use paths are located immediately adjacent to a roadway, some operational problems are likely to occur. In some cases, paths along highways for short sections are permissible, given an appropriate level of separation between facilities, as in Figure 16. [Due to] design problems with paths located immediately adjacent to roadways…other types of bikeways are likely to be better suited to accommodate bicycle traffic along highway corridors, depending upon traffic conditions. Shared use paths should not be considered a substitute for street improvements even when the path is located adjacent to the highway, because many bicyclists will find it less convenient to ride on these paths compared with the streets, particularly for utility trips."[lxxvii]

Multi-Use Trails (or "Shared Use Paths") as transportation corridors in Santa Fe County

"Shared use paths should be thought of as a complementary system of off-road transportation routes for bicyclists and others that serves as a necessary extension to the roadway network. Shared use paths should not be used to preclude on-road bicycle facilities, but rather to supplement a system of on-road bike lanes, wide outside lanes, paved shoulders and bike routes.[lxxviii]"

For a wide variety of bicyclists and other non-motorized users, a system of multi-use trails on alignments distinct from the road network can create enhanced opportunities for transportation as well as recreation (See ***Off-Road Bikeways Map 54***). Multi-use trails that are intended to address transportation needs should follow accepted engineering guidelines with respect to width (generally 10 ft. minimum), surface (ADA-compliant), acceptable horizontal and vertical curvature, sight distance needs, clear zone, and a variety of other safety and convenience factors discussed in the AASHTO Guide for the Development of Bicycle Facilities.

Santa Fe County has generally focused on developing soft-surface trails for recreational purposes while requiring developers to include small trail networks, including narrow paved trails, focusing on internal transportation and recreation. Neither approach has emphasized the development of longer-range transportation corridors for non-motorized traffic, but both approaches have created some favorable conditions to do so.

Two trail corridors in particular have considerable potential to address bicycle transportation needs in the County's growth area around the Community College District:

- Arroyo Hondo Trail and associated trail segments. Key east-west links between transit, residential areas, Richards Ave., the community college, and a major north-south trail corridor can be made through the western-most segments of the planned Arroyo Hondo Trail (from the NM599 Rail Station to La Pradera (Dinosaur Trail)) and an adjacent trail alignment planned along a tributary arroyo along the north side of Rancho Viejo. A small part of the Arroyo Hondo Trail has already been built as a soft-surface recreational trail east of NM14. Key to the overall alignment would be designing and building trail underpasses of NM14 and possibly the abandoned Interstate on-ramp east of the train station. Use of excess capacity of concrete box culverts to this end holds promise, following the City's example of the recently-built Rodeo Rd. underpass (Arroyo Chamiso Trail).

- Kennedy Line (abandoned NM Central Railroad bed) from I-25 to Eldorado. This overall trail alignment holds exceptional promise to address north-south transportation needs through the growth area and into the City. Some parts have been built and others have been planned, but it generally has not been conceived as a single trail in the past. A trail from Rabbit Rd. to Rancho Viejo through Oshara Village, over the Arroyo Hondo, and through Santa Fe Community College (via the existing SFCC Loop Trail) would facilitate a major link from the City's Rail Trail to Rancho Viejo's trail system. Rancho Viejo's "District Trail" is one of several parts of this alignment that have already been built. The distance from the end of the "District Trail" to the closest part of Eldorado is just over two miles, but a desirable connection through state land to the end of Ave. Vista Grande in Eldorado would require about an additional half-mile along the rail line. In order to serve as a transportation corridor, the trail would need to maximize use of the originally-engineered grade. Segments of eroded raised railbed and missing trestles are key obstacles to achieving this. The trail can avoid problem sections, as occurred with the District Trail, but significant investment may be needed to overcome at least some of these obstacles, where feasible, if the trail is to serve as an efficient transportation facility.

Other North-South Alternatives

Other alternatives to make the broader transportation connection from Eldorado to the city include the Santa Fe Rail Trail and an on-road route, State Bike Route 9.

Santa Fe Rail Trail. The County's primitive Rail Trail is an excellent, albeit somewhat challenging, recreational facility providing access to the City's paved Rail trail (north of Rabbit Rd.) for off-road cyclists, hikers, and runners from neighborhoods in Eldorado and Arroyo Hondo. This connection to the City Rail Trail from central Eldorado makes for a favorable and desirable transportation corridor. However, difficult terrain, the fact that the rail line is active, and public input favoring maintaining a "primitive" trail together mean that the five-mile segment of the Santa Fe Rail Trail north of Eldorado to Rabbit Rd. does not hold as much promise to serve a better transportation function for bicyclists.

State Bike Route 9 is a series of on-road facilities connecting Lamy, Eldorado, Santa Fe and Tesuque Village. The link from Eldorado to Santa Fe follows paved shoulders and bike lanes along US285, NM300 (Old Las Vegas Highway), and Old Pecos Highway (NM466 and City section). It is a less direct route to downtown Santa Fe than the Rail Trail, but as a paved route it is a more efficient option for most commuter cyclists, particularly those residing in eastern Eldorado.

Additional Trail Corridors with Transportation Significance

The County has several other areas in the Santa Fe metropolitan area where additional planning around future multi-use trail needs is desirable. Future pieces of the River Trail and the Arroyo Chamiso Trail pass through County areas to be annexed by the City. These trails will have substantial significance as transportation facilities in the metropolitan area. Other considerations for the future for the County in particular include:

- NM599 Rail Station to Tierra Contenta. Two alternatives alignments have been proposed. One follows public right-of-way along NM599. The alternative to the east may provide a more efficient connection to the existing Tierra Contenta trail (Arroyo Chamiso tributary) and the planned Arroyo Chamiso trail. An underpass via concrete box culverts housing the Arroyo Hondo may ultimately provide access to the NM599 train station and the Arroyo Hondo Trail
- River Trail to Municipal Recreation Center (MRC) via NM599 underpass. This trail connection represents a near-future need. The segment north of NM599, along Caja del Rio Rd., has already been built by the City of Santa Fe as a soft-surface trail.
- Connections from paved MRC trails to Caja del Oro Rd. and Caja del Rio Rd. Because the MRC is city-owned, these are primarily City issues though the connections are to County roads, and the overall connection may have more significance to County residents.
- Connection between Tres Arroyos area and city (via W Alameda and River Trail) via NM599 underpass. This underpass southeast of Aldea could be part of a useful north-south transportation link, but topography, sparse settlement and nature of surrounding trails may dictate that improvement efforts focus primarily on obtaining and preserving easements.
- Connection from Camino La Tierra to La Tierra Trails. This alignment provides access to the City's soft-surface trails.

Additional Role of Soft-Surface Trails in Non-Motorized Transportation to Recreational Facilities

In some cases, the development of soft-surface recreational trails may also play a transportation role where they create connections that obviate the need to use the road system to access a trail network. Examples include the following foothill trail connections to Santa Fe National Forest trails

- From Dale Ball Trails to Little Tesuque River along Hyde Park Rd.
- From Dale Ball Trails to Little Tesuque River via Conejo Rd.
- From Atalaya / upper Arroyo Chamiso to SFNF trails in upper Arroyo Hondo area (via Barbarria)

A bike lane width of 5 ft. is recommended by AASHTO *Guide for the Development of Bicycle Facilities*, and is the most widely accepted standard. Widths of 6 ft. are recommended with the presence of considerable truck traffic, and under most circumstances when roadway speeds exceed 40 mph. Widths greater than 6 ft. are generally not used, to discourage motorists from using the bike lane as a parking lane or turning lane. While 4 ft. bike lanes are not preferable, they may be appropriate in areas where there are constrained rights-of-way, particularly as part of an effort to narrow wide travel lanes.

Where retrofits to existing roadways is not feasible, an interim measure for accommodating bicyclists on roadways should include including “sharrows”, arrows on roadways that indicate that roads are shared by bicyclists.

2-16.10.6. Curb Extensions

Curb extensions (or bulb-outs) which reduce the width of the street to provide safer pedestrian crossings as designated locations are encouraged whenever possible. They are often used in urban core, village/town center and suburban center contexts to improve visibility of and by pedestrians, and also reduce the length of pedestrian crossings. They are installed at both intersections and mid-block locations. A common width is 6 ft., or slightly less than the width of a parallel parking lane. Their use should be restricted to streets with on-street parking. They should not be installed within a striped bike lane. They are favored by emergency service departments in many municipalities, since their presence prevents vehicles from parking too close to an intersection, or in front of a water hydrant if so positioned.

2-16.10.7. Modern Roundabouts

Modern roundabouts provide one-way traffic flow around a central island, and should be considered as an alternative to signalized intersections throughout the County. They have become increasingly more accepted in the United States, and have been successfully implemented in other countries for decades. Modern roundabouts help to maintain traffic flow, while improving safety through reducing vehicular speeds and the number of vehicle conflict points (eight versus 32 at traditional 4-way intersections). A before and after study sponsored by the Insurance Institute for Highway Safety found that roundabouts produced a 39% decrease in overall crashes and a 76% decrease in injury crashes.*

2-16.10.8. Paved Shoulders on State Highways

Many state highways in Santa Fe County have no paved shoulder provisions or have been built and/or maintained with hazardous seams in paved shoulders. In its relationship with NMDOT, the County should advocate for all construction, reconstruction, and maintenance of state highways to include appropriate paved shoulders or bike lanes per the specifications described in AASHTO (1999). In particular, as directed under Resolution 2009-135, County staff and elected officials should urge NMDOT to design, build, and maintain sufficient paved shoulders or bike lanes in Santa Fe County without leaving longitudinal seams in the paved shoulder. Working with the MPO and the NMDOT, the County should prioritize improvements to the following state highways currently lacking sufficient paved shoulders:

Within (or including some) MPO area:

- NM599 (Relief Route) frontage roads, including “Via Abajo” and CR70 connector (inconsistent shoulders, pavement seams, guardrail placement)

- NM14 between Dinosaur Trail and NM599 (inconsistent shoulder, no sidewalks)
- Existing and future road to connect to NM599 station from NM14 (via Santa Fe Brewery)
- NM592 to Rio en Medio, with particular attention to adding shoulders on climbing side and on both sides within Chupadero and Rio en Medio
- NM475 (Hyde Park Rd.), with particular attention to adding shoulders on climbing side and on both sides near and between significant trailheads
- NM300 (Old Las Vegas Highway) east of JCT US285, particularly to Ojo de la Vaca Rd.)("Road Diet" possible where climbing lane exists)
- US84/285 frontage road within Tesuque Pueblo, where lacking paved shoulder.

Outside of MPO area

- NM14 between Lone Butte and Cerrillos (Turquoise Trail Scenic Byway) (repave to eliminate seam in existing 4-5' shoulder)
- NM41 from US285 to Clark Hill (future State Bike Route 9)
- NM503 (High Road to Taos)
- NM50 (east of Glorieta) (future State Bike Route 21; alternative to I-25)

2-16.10.9. Sidewalks

Sidewalks are desirable to support both mobility and safety and to establish a multi-modal transportation system. According to a 1987 FHWA study, the presence of sidewalks has been shown to reduce the risk of pedestrian crashes in residential areas and that locations with no sidewalks were more than twice as likely to have pedestrian/motor vehicle crashes as sites where sidewalks existed.** The study found that the safety benefit was particularly pronounced in residential and mixed residential areas. Approximately 15% of pedestrian accidents in suburban and rural areas occur when a pedestrian is struck while walking along a roadway (ibid.)

2-16.11. Road Hierarchy

The purpose of a road hierarchy is to understand the function of a road within a larger network, and be able to design a specific portion of roadway to ensure safety and promote appropriate design of adjacent land use elements (such as setbacks). Roads are conventionally organized into a three-tiered hierarchy—arterial, collector and local. Even in residential areas, roads in the conventional hierarchy are oriented toward automobile safety and efficiency as the dominant design factor. In this hierarchy, virtually all street functions—the concept of roads as public spaces—are eliminated to accommodate automobile safety and convenience.

In establishing a road hierarchy, this plan classifies roadways according to two systems:

1. Use priority; and
2. Level of Service (LOS)

In this plan, a three tier use priority system has been established for roads within the Community College District. Level of Service (LOS) has been established for all major roadways throughout Santa Fe County.

2-16.12. Use Priority

The road hierarchy for the Community College District proposes to change the conventional design priority. The District road network is divided into three categories:

1. Living Priority — where pedestrians and cyclists are given primary consideration,
2. Mixed Priority — the transition zone, and
3. Traffic Priority — where automobiles have primary design consideration.

For planning purposes, planned roads are simply labeled as either primary or secondary roads. The ultimate designation of each roadway section (living, mixed or traffic priority) will be determined at the time of development, based on the project's land use plan, the number of trips per day the road will carry and accepted transportation standards such as those used by the Institute of Traffic Engineers. Road designations can change along a given route (for example, a road might be living priority within a Village Zone, then transition to traffic priority through an open space area, and back again to living priority). This plan also identifies Level of Service for roadways throughout the County.

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[i] *See*: Duany, Andres, Elizabeth Plater-Zyberk and Jeff Speck, *Suburban Nation: The Rise of Sprawl and the Decline of the American Dream*, Union Square West, NY: North Point Press, 2000, pp 5-7.

[ii] Hall, Kenneth B., Jr. and Geral A. Porterfield, *Community by Design: New Urbanism for Suburbs and Small Communities*, New York, NY: McGraw-Hill, 201, p 254.

[iii] Duany, Andres, Elizabeth Plater-Zyberk and Jeff Speck, *Suburban Nation: The Rise of Sprawl and the Decline of the American Dream*, Union Square West, NY: North Point Press, 2000, p 25.

[iv]*See*: Duany, Andres, Elizabeth Plater-Zyberk and Jeff Speck, *Suburban Nation: The Rise of Sprawl and the Decline of the American Dream*, Union Square West, NY: North Point Press, 2000, p 4.

[v] *See*: Duany, Andres, Elizabeth Plater-Zyberk and Jeff Speck, *Suburban Nation: The Rise of Sprawl and the Decline of the American Dream*, Union Square West, NY: North Point Press, 2000, pp 3-4.

[vi] *Ibid*, pp15-17.

[vii] Lennertz, William, "The Codes." Duany, Andres and Elizabeth Plater-Zyberk, eds. *Towns and Town-Making Principles.* Cambridge, MA: Harvard University Graduate School of Design, 1991, p 102.

[viii] *Ibid.*

[ix] *See* Calthorpe note 25; P. Calthorpe & P. Katz; Peter Calthorpe, The Next American Metropolis, Ecology, Community And The American Dream (1990); P. Katz, The New Urbanism: Toward An Architecture Of Community (1994).

[x] Lennertz, William, "Town-Making Fundamentals." Duany, Andres and Elizabeth Plater-Zyberk, eds. *Towns and Town-Making Principles.* Cambridge, MA: Harvard University Graduate School of Design, 1991, p 23.

[xi] *See:* Calthorpe, Peter, *The Next American Metropolis: Ecology, Community and the American Dream*, New York, NY: Princeton Architectural Press, 1993, p 56.

[xii] *Ibid.*

[xiii] *Ibid,* pp 62-65.

[xiv] Mid-America Regional Council, *Principles of Transit Supportive Development*, Kansas City, MO: 2000.

[xv] *Ibid.*

[xvi] *Ibid.*

[xvii] Town planners Andres Duany and Elizabeth Plater-Zyberk, two of the founders of the Congress for the New Urbanism, define 13 elements of New Urbanism, included in the following descriptions. *New Urban News,* "About New Urbanism," 20 March 06. <http://www.newurbannews.com/AboutNewUrbanism.html>

[xviii] See Linde B. Altman, "Picket Fences", *Builder*, Feb. 1994 at 94- 96; Lloyd W. Bookout, "Neotraditional Town Planning: Bucking Conventional Codes and Standards", *Urban Land,* April 1992 at 18- 25.

[xix] *See* Charles Lockwood, The New Urbanism's Call to Arms, Urban Land, Feb. 1994 at 10- 12.

[xx] *See* Jerry Adler, 15 Ways to Fix the Suburbs, Newsweek, May 15, 1995.

[xxi] *See* John M. Fernandez, Boulder Bring Back the Neighborhood Street, Planning, June 1994 at 21- 26.

[xxii] Lennertz, Willian, "Town-Making Fundamentals." Duany, Andres and Elizabeth Plater-Zyberk, eds. *Towns and Town-Making Principles.* Cambridge, MA: Harvard University Graduate School of Design, 1991, p 22.

[xxiii] *See* S. Mark White, Neotraditional Development: A Legal Analysis, 49 Land Use Law & Zoning Digest, No. 8 at 3 (August 1997), and S. Mark White, The Zoning and Real Estate Implications of Transit-Oriented Development, Transportation Research Board Project J-5 (January 1999).

[xxiv] Hirschord, Joel and Paul Souza, *New Community Design to the Rescue: Fulfilling Another American Dream*, Washington, DC: National Governors Association, 2001, p. 33.

[xxv] 39-44

[xxvi] Source: U.S. Green Building Council, online at http://www.usgbc.org.

[xxvii] Source: "Landscape Character Types" Map, from "Santa Fe County Visual Resources Inventory & Analysis" (Design Workshop, Inc. 1995).

[xxviii] Source: New Mexico Fish and Wildlife Research Unit at New Mexico State University (1996).

[xxix] Florida Administrative Code Sec. 9J-5.003(45).

[xxx] *See*, Robert H. Freilich and S. Mark White, *21st Century Land Development Code* (American Planning Association, 2008); S. Mark White, *Using Adequate Public Facilities Ordinances For Traffic Management*, Planning Advisory Service Report No. 465 (American Planning Association, 1996); Board of County Commissioners of Larimer County v. Conder, 927 P.2d 1339 (Colo. 1996).

[xxxi] Richard L. Settle and Charles G. Gavigan, *The Growth Management Revolution Washington*, 15 U. Puget Sound L. Rev. 869 (1993); Robert H. Freilich, *From Sprawl to Smart Growth: Effective Legal, Planning, and Environmental Systems* (American Bar Association, 1999).

[xxxii] Robert H. Freilich and S. Mark White, *Transportation, and Growth Management*, 4 Loy. L. Rev. 915, 955 (1991). *See* Maryland Code Ann. Envt. § 9-4`1(b); Wash. Rev. Code § 36.70A.010.

[xxxiii] Wincamp Partnership v. Anne Arundel County, 458 F. Supp. 1009 (D. Md. 1978); Long Beach Equities v. County of Ventura, 282 Cal. Rptr. 877 (Cal. App. 1991)

[xxxiv] See R. Freilich, A Five-Tiered Growth Management Program for San Diego 2-7 to 2-11 (1976).

[xxxv] J.W. Jones Companies v. City of San Diego, 157 Cal. App. 3d 745 (1984).

[xxxvi] Nelson, Arthur. "Development Impact Fees: The Next Generation," from Exactions, Impact Fees and Dedications: Shaping Land-Use Development and Funding Infrastructure in the Dolan Era: American Bar Association, 1995.

[xxxvii] Id. at 2319-20.

[xxxviii] Nollan v. California Coastal Commission, 483 U.S. 825 (1987).

[xxxix] Dolan v. City of Tigard, 512 U.S. 374 (1994).

[xl] See Nollan, 483 U.S. 825 (finding a taking where a north-south beach easement was required for, but unrelated to, the stated purpose of preserving east-west accessibility to the beach).

[xli] See Dolan, 512 U.S. 374 (finding a taking where the city failed to demonstrate that the extent of the required land dedication was "roughly proportional" to the actual impact of the proposed development.)

[xlii] R. Ewing, R. Pendall, & D Chen, *Measuring Sprawl and its Impact* (Smart Growth America, 2002), at 5.

[xliii] U.S. Environmental Protection Agency. EPA Guidance: Improving Air Quality Through Land Use Activities (EPA420-R-01-001, January 2001), at 15.

[xliv] U.S. Environmental Protection Agency, at 18 (citing Cambridge Systematics, Inc. and Parsons, Brinckerhoff, Quade & Douglas. 1996a. Making the Land Use Transportation Air Quality Connection: Analysis of Alternatives. Vol. 5. Prepared for Thousand Friends of Oregon; Johnston, R.A., Rodier, C. J., Choy, M., and Abraham, J.E. 2000. Air Quality Impacts of Regional Land Use Policies. Prepared for U.S. Environmental Protection Agency, Urban and Economic Development Division, Washington, DC.; Cambridge Systematics. 1994. The Effects of Land Use and Travel Demand Strategies on Commuting Behavior. Prepared for the U.S. Department of Transportation, Federal Highway Administration, Washington, DC.; DeCorla-Souza, P. 1992. "The Impacts of Alternative Urban Development Patterns of Highway System Performance." Presented at ITE conference on Transportation Engineering in a New Era.)

[xlv] The Planning Center, Land Use, Transportation and Air Quality: A Manual for Planning Practitioners, San Bernardino Air Quality Plan (1993).

[xlvi] U.S. Environmental Protection Agency, at 52.

[xlvii] Surface Transportation Policy Project, Decoding Transportation Policy & Practice #9, "The State of Our Nation's Roads: Half of All Major Roads Are in Less Than Good Condition" (January 30, 2003), citing Federal Highway Administration. Highway Statistics Series 1997 and 2001. Table HM-64.

[xlviii] Maine State Planning Office, at 9.

[xlix] U.S. EPA, supra, at 22; Mark Hansen and Yuanlin Huang, "Road Supply and Traffic in California Urban Areas," Transportation Research-A, 31:3 (1997), pp. 205-218; Transportation Research Board, Expanding Metropolitan Highways: Implications for Air Quality and Energy Use, TRB Special Report 245, Washington, DC: National Academy Press, 1995,.

[l] U.S. EPA, supra, at 25 (citing U.S. Environmental Protection Agency, Office of Policy. Indicators of the Environmental Impacts of Transportation: Highway, Rail, Aviation, and Maritime Transport. October, 1999, EPA 230-R-99-001.)

[li] Schueler, "The Importance of Imperviousness.", in Watershed Protection Techniques Vol. 1, No. 3 (Center for Watershed Protection, Fall 1994).

[lii] Burchell, et al. *The Costs of Sprawl—Revisited*. Transportation Research Board, National Research Council, TCRP Report 39, 1998 (summarizing studies); Real Estate Research Corporation (RERC).

1974. The Costs of Sprawl: Environmental and Economic Costs of Alternative Residential Development Patterns at the Urban Fringe: (Volume I: Detailed Cost Analysis; Volume II: Literature Review and Bibliography). Washington, DC: U.S. Government Printing Office.

[liii] Source: Cultural Resource Management, National Park Service, U.S. Department of the Interior

[liv] Source: National Park Service; Route 66 Corridor Preservation Program.

[lv] Source: U.S. Census

[lvi] Source: Research and Training on Disability in Rural Communities (RTC Rural); University of Montana

[lvii] Source: Concrete Change Organization

[lviii] American Economic Development Council, PERSPECTIVE: Smart Growth & Economic Development.

[lix] Source: New Mexico Workforce Solutions

[lx] Trust for Public Land, Economic Benefits of Parks and Open Space 10 (1999) *available at* www.tpl.com.

[lxi] *Id.* at 15.

[lxii] Transgenic organisms – a plant, animal, or bacteria that have been genetically modified to contain a gene from a different species. (http://encarta.msn.com/encyclopedia_761582444/transgenic_organism.html, 2009).

[lxiii] Source: Office of the State Engineers website at: http://www.ose.state.nm.us/isc_acequias.html (August 2009).

[lxiv] Energy Perspectives, U.S. Department of Energy, Energy Information Administration, July 27, 2006.

[lxv] Paul C. Westcott, "Ethanol Expansion in the United States: How Will the Agricultural Sector Adjust?" USDA, ERS, May 2007, p. 2, 4; Renewable Fuels Association, U.S. Fuel Ethanol Industry Biorefineries and Production Capacity, http://www.ethanolrfa.org/industry/locations/, accessed 06/18/2007.

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[lxvii] Final Adopted State Alternative Fuels Plan, Final Commission Report, December 2007. Pub. # CEC-600-2007-011-CMF; p.7.

[lxviii] E85 Fleet Toolkit; Energy Efficiency and Renewable Energy. U.S. Department of Energy. Available on-line at http://www.eere.energy.gov/afdc/e85toolkit/.

[lxix] Fact Sheet: Energy Independence and Security Act of 2007. Available at: http://www.whitehouse.gov/news/releases/2007/12/20071219-1.html.

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[lxxi] Herwick, Gary. The Impact of Recent Legislation on Ethanol Use in US Transportation Fuel. April 22, 2008.

[lxxii] Herwick, Gary. The Impact of Recent Legislation on Ethanol Use in US Transportation Fuel. April 22, 2008.

[lxxiii] http://en.wikipedia.org/wiki/Public_health,

[lxxiv] AASHTO 1999, p. 16.

[lxxv] Pavement Surface Quality (AASHTO 1999, p. 18): "The smoothness of the riding surface affects the comfort, safety and speed of bicyclists. Pavement surface irregularities can do more than cause an unpleasant ride. Pavement surfaces should be smooth, and the pavement should be uniform in width. Wide cracks, joints or drop-offs at the edge of traveled way parallel to the direction of travel can trap a bicycle wheel and cause loss of control; holes and bumps can cause bicyclists to swerve into the path of motor vehicle traffic." Also

see Santa Fe County Resolution No. 2009-135 directing that "The Growth Management Department, Public Works Division shall design and engineer its paving or repaving projects so that the final layer of paving or overlay is continued to the outer edge of the paved portion of the shoulder…" (p. 3).

[lxxvi] AASHTO 1999, p. 33.

[lxxvii] AASHTO 1999, p. 33-34.

[lxxviii] AASHTO 1999, p. 33.