

V. Environment Element

A. Introduction

The purpose of the environment element is to identify environmental issues related to future development activities and to determine county roles to protect the sensitive environmental assets in San Juan County. Since the environment ties to all aspects of physical planning, this element deals with subjects common to land use, economic development, water and wastewater, and transportation. Particular focus has been placed on issues of trash and junk, interrelationships with the Bureau of Land Management (including policies for public lands acquisition for private development), and oil and gas wells and roads.

This chapter examines some of the environmental issues and challenges facing San Juan County. These issues are complex and will require further research and planning by the county and other organizations, such as Sustainable San Juan and the Bureau of Land Management. Various plans and studies should be consulted for further understanding of policy directions affecting the environment, such as the BLM Farmington Proposed Resource Management Plan and the San Juan Basin Watershed Management Plan. Coordination with other entities is vital in the implementation of several of the recommended policies.

San Juan County is located in an area of unique natural beauty with an abundance of natural resources. As the population of the county has grown and become more urbanized, people regard environmental issues in the area as quality of life issues. While many recognize the important role that energy-related industries (oil and gas, and power plants) play in the local economy, county residents expect these companies to protect the region's air and water as much as they can from environmental harm that can be caused by their operations. There is also an expectation that county government will also take an active role in protecting the local environment, using various means at its disposal.

B. Existing Conditions

Threatened and Endangered Species

As a result of its geography and geology, San Juan County is host to a number of rare plants and animals. Many of the threatened and endangered species are found only in the county or Four Corners area. Threatened, endangered, proposed and candidate species are listed by the federal government, Navajo Nation and state of New Mexico. The following chart shows federally listed species. Federal designation provides the strongest legal protection of any of the listings because it is governed by the Endangered Species Act.

Figure V-1
*Species with
 Federal Protection
 Status*

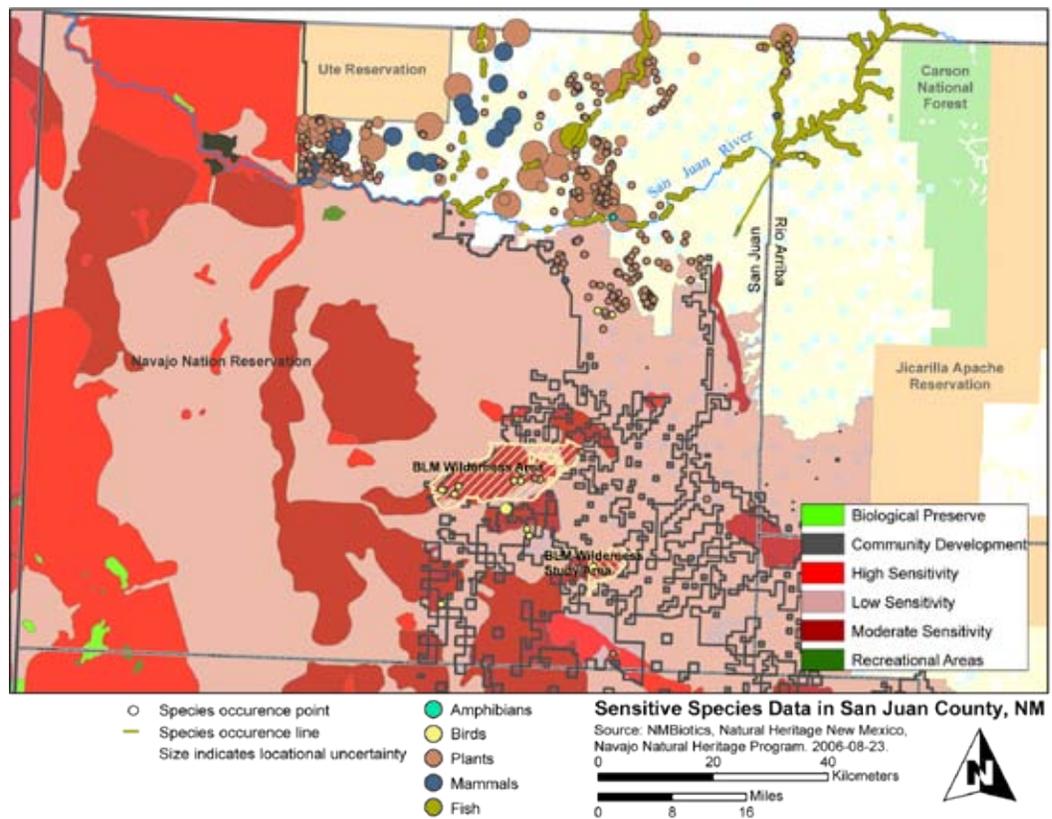
Federally Listed, Proposed, and Candidate Species that Occur or Potentially Occur in San Juan County		
Species	Common Name	Federal Status
Plants:		
<i>Astragalus humillimus</i>	Mancos milkvetch	Endangered
<i>Pediocactus knowltonii</i>	Knowlton's cactus	Endangered
<i>Sclerocactus mesae-verdae</i>	Mesa Verde cactus	Threatened
Fish:		
<i>Ptychocheilus lucius</i>	Colorado pikeminnow	Endangered
<i>Xyrauchen texanus</i>	Razorback sucker	Endangered
Birds:		
<i>Charadrius montanus</i>	Mountain plover	Proposed Threatened
<i>Coccyzus americanus</i>	Yellow-billed cuckoo	Candidate Species
<i>Empidonax trailii extimus</i>	Southwestern willow flycatcher	Endangered
<i>Haliaeetus leucocephalus</i>	Bald eagle	Threatened
<i>Pandion Haliaeetus</i>	Osprey	Endangered
<i>Strix occidentalis lucida</i>	Mexican spotted owl	Threatened
Source: U.S. Fish and Wildlife Service		

While there are various reasons why species become endangered, human activity is the most common cause. For instance, the New Mexico Department of Game and Fish poisoned native species such as the Colorado pikeminnow and the razorback sucker when the Navajo Dam was completed in 1962. The department then stocked the lake with trout for sport fishing. Ironically, there is now an effort to restore these fish in the San Juan River.

The presence of endangered species is sometimes perceived as an impediment to development or an interference with a way of life. Maps of specific locations of endangered and threatened species are usually unavailable to the general public because of the danger of destruction. Detailed location information is usually only made available when there is a demonstrated legitimate need for this information.

The following map, prepared by the New Mexico Natural Heritage Program, shows the type and general location of sensitive species, but does not delineate specific species. It illustrates the diversity of species in the county and their relative distribution. This map highlights the importance of the river corridors as habitat for rare plants and animals, and the consequent need for protection of these areas.

Figure V-2
Sensitive Species
in San Juan
County



General Soils of San Juan County

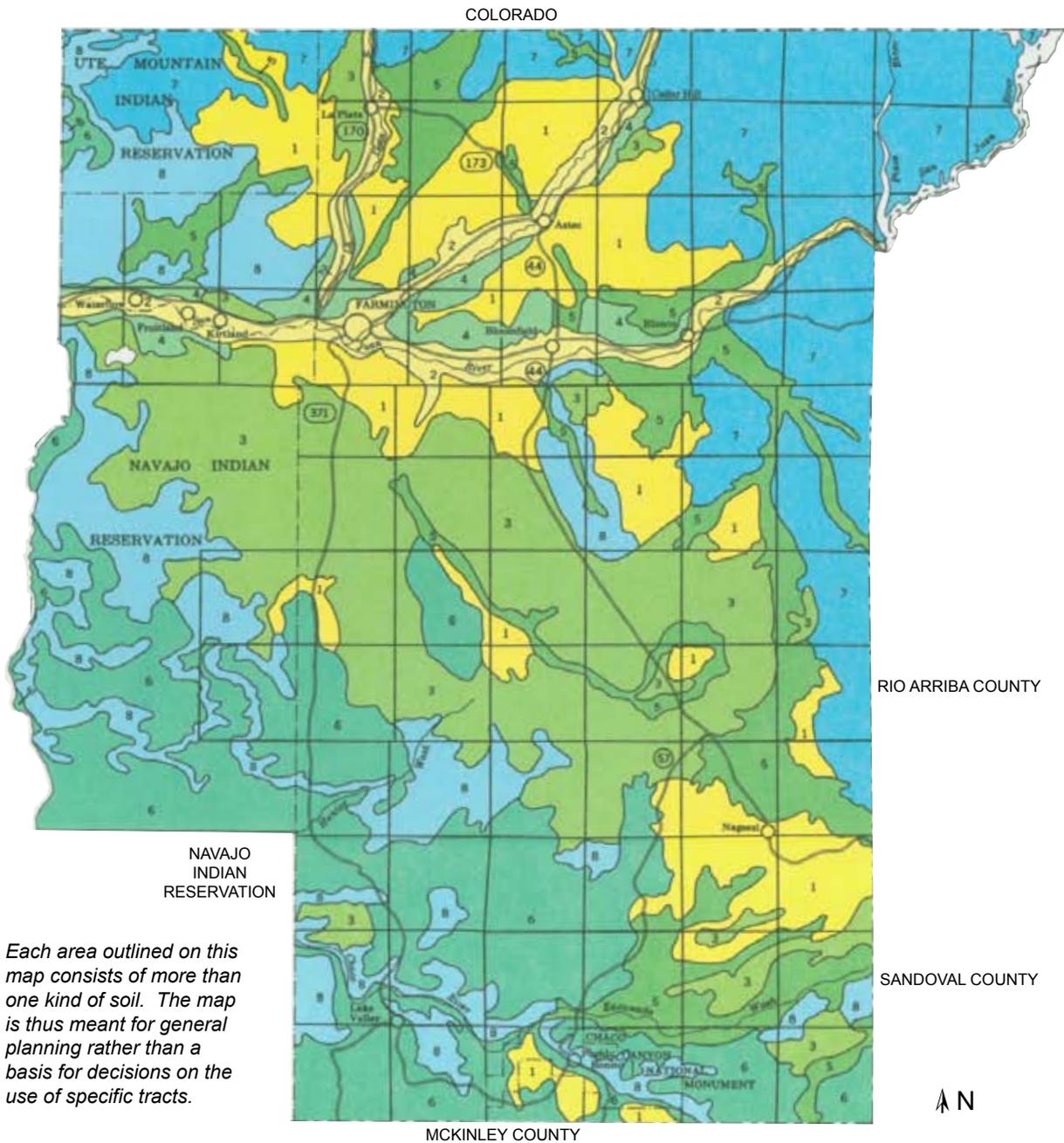
County Soils Survey

The U.S. Department of Agriculture, Soil Conservation Service (now known as the Natural Resources Conservation Service) prepared the *Soil Survey of San Juan County, New Mexico: eastern part*, by C. Wesley Keetch, 1980, Washington, D.C. The general soil map from the *Soil Survey* in Figure V-3 shows broad areas that have distinctive patterns of soils, relief, and drainage categorized into eight units. Each map unit consists of one or more major soils and some minor soils. In some cases, the soils that make up one unit can occur in other units, but in a different pattern. This study can be used as a general guide to land uses and development. However, the *Soils Survey* is not suitable for planning the management of a farm or field or for selecting sites for roads or buildings.

Generalized recommendations regarding the suitability of building site development are contained for each study unit, as summarized in Figure V-4 below.

Figure V-3
General Soil Map

**GENERAL SOIL MAP
SAN JUAN COUNTY, NEW MEXICO EASTERN PART**



Each area outlined on this map consists of more than one kind of soil. The map is thus meant for general planning rather than a basis for decisions on the use of specific tracts.

- | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1: Persayo-Fruitland-Shepard | 5: Blancot-Notal |
| 2: Fruitland-Riverwash-Stumble | 6: Sheppard-Huerfano-Notal |
| 3: Shiprock-Sheppard-Doak | 7: Travessilla-Rock Outcrop-Weska |
| 4: Haplargids-Blackstone-Stumble | 8: Badland-Rock Outcrop-Monierco |

*Map Source: United States Department of Agriculture - Natural Resources Conservation Service 1979

Figure V-4
Development Constraints by Major Soil Types

Development Constraints for Selected Major Soil Types Present In Northern San Juan County						
Soils Mapping Units	Permeability Rate (inches per hour)	Shrink-swell Potential	Shallow Excavations	Bulding Development	Local Roads & Streets	Development Notes
1: Persayo-Fruitland-Shepard						
Persayo	0.2-0.6	Moderate	Severe: Slope	Severe: Slope	Severe: Slope	Development limitations are due to slopes. This unit is generally good for development depending on the slope of the site. Site-specific studies are required to allow for development.
Fruitland	2.0 to 6.0	Low	Severe: Slope	Severe: Slope	Severe: Slope	
Shepard	6.0-20	Low	Severe: Slope	Severe: Slope	Severe: Slope	
2: Fruitland-Riverwash-Stumble						
Fruitland	2.0-6.0	Low	Slight	Slight to Severe: Slope	Slight	Development limitations include slopes and cutbanks cave. This unit is generally good for development depending on the slope of the site and cutbanks cave. Also, riverwash soils are generally in Floodplains and are not recommended for development. Site-specific studies are required to allow for development.
Riverwash	Not Developable	Not developable	Not developable	Not Developable: Streambeds, Arroyos, Floodplains;	Not developable	
Stumble	6.0-20	Low	Severe: Cutbanks cave	Slight to Moderate: Slope	Slight	
3: Shiprock-Sheppard-Doak						
Shiprock	2.0-6.0	Low	Slight	Slight	Sight	Development limitations include the slope, cutbanks cave, shrink-swell, and low strength. This unit is generally good for development. Site-specific studies are required to allow for development.
Shepard	6.0-20	Low	Severe: Cutbanks cave	Moderate to Severe: Slope	Moderate: Slope	
Daok	0.6-2.0	Low to Moderate	Slight	Moderate: Shrinkswell, Low strength	Severe: Low Strength	
4: Haplargids-Blackstone-Stumble						
Haplargids	2.0-6.0	Low	Not developable	Not developable	Not developable	Development limitations include the slope, cutbanks cave, and small stones. This unit is generally good for development if the development site is not in the blackstone areas. Site-specific studies are required to allow for development.
Blackstone	0.2-0.6	Low	Severe: Cutbanks cave, small stones, slope	Severe: Slope	Severe: Slope	
Torriorhents	6.0 - 20	Low	Mixed soil - varying characteristics	Mixed soil - varying characteristics	Mixed soil - varying characteristics	
5: Blancot-Notal						
Blancot	0.2-2.0	Low to Moderate	Severe: Cutbanks cave	Moderate: Shrinkswell, Low strength	Severe: Low Strength	Development limitations include cutbanks cave, low strength, shrink-swell, and extremely clayey conditions. Generally this unit is not favorable for development. However, site-specific studies may allow for development.
Notal	0.2-0.6	Moderate to High	Moderate: Too Clayey	Severe: Shrinkswell, Low Strength	Severe: Shrinkswell, Low Strength	
6: Sheppard-Huerfano-Notal						
Sheppard	6.0-20	Low	Severe: Cutbanks cave	Slight to Modertate: Slope	Slight	Development limitations include cutbanks cave, depth to rock, shrink-swell, and extremely clayey conditions. Much of this area has severe limitations however, many of these areas can be developed with only slight limitations. Site-specific studies are required to allow for development.
Huerfano	0.6-2.0	Moderate	Severe: Depth to rock	Moderate to Severe: Depth to rock, shrinkswell, low strength	Severe: Low Strength	
Notal	0.2-0.6	Moderate to High	Moderate: Too Clayey	Severe: Shrinkswell, low strength	Severe: Shrinkswell, low strength	
7: Travessilla-Rock Outcrop-Weska						
Travessilla	2.0-6.0	Low	Severe: Depth to rock, slope	Severe: Depth to rock, slope	Severe: Depth to rock, slope	Development limitations include depth to rock and slope. This unit is generally not good for development. Site-specific studies may allow for development.
Rock Outcrop	0	Not developable	Not developable	Not developable	Not developable	
Weska	0.2-0.6	Moderate	Severe: Depth to rock, slope	Severe: Depth to rock, slope	Severe: Depth to rock, slope	
8: Badland-Rock outcrop-Monierco						
Badland	0	Not developable	Not developable	Not developable	Not developable	Development limitations include depth to rock and low strength. Generally these areas are not good for development. Site-specific studies may allow for development.
Rock outcrop	0	Not developable	Not developable	Not developable	Not developable	
Monierco	2.0-6.0	Low to Moderate	Severe: Depth to rock	Moderate: Depth to rock	Moderate: Depth to rock, low strength	

Source: Soil Survey of San Juan County, New Mexico, Eastern Part, United States Department of Agriculture - Natural Resources Conservation Service, 1980.

Development constrains are applied to three types of development activities:

- Shallow excavations affect basements, graves, utility lines, open ditches, and other similar purposes.
- Building developments are structures built on shallow foundations with a load limit equal to a single-family dwelling and no higher than three stories.
- Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year.

Soil character also affects suitability for development, according to the following qualities.

- Permeability is the measurement of inches of water soaking into the ground per hour; each soil has a general permeability range. The greater the permeability, the fewer the limitations for development.
- Shrink-swell is the shrinking of the soil when dry and the swelling when wet. If the limitations are considered *slight*, the soil properties and site features are generally favorable for development. If the limitations are considered *moderate*, the soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance may be needed to overcome or minimize the limitations. If the limitations are considered *severe*, the soil properties and or site features are so unfavorable or so difficult to overcome that special design, significant increase in construction costs, and possibly increased maintenance are required.

Descriptions of Map Units

Further detail is given below on the soils map units:

1: Persayo-Fruitland-Shepard

This map unit makes up about 16% of the survey area. It occurs on nearly level fans, plateaus, and valley sides to very steep upland hills. It has very shallow to deep, well-drained to excessively drained soils. This unit ranges from a 0-40% slope. The elevation is 4,800' to 6,400'. The area receives an average of 6" to 10" of annual precipitation. The major soils of this unit are *Persayo*, *Fruitland* and *Shepard* soils. Some of the patterns of these soils show severe limitations. There are development limitations due to slopes, but this unit is generally good for development, depending on the slope of the site. Site-specific studies are required to allow for development.

2: Fruitland-Riverwash-Stumble

This map unit makes up about 5% survey area. It has nearly level to moderately steep, well-drained to somewhat excessively drained soils. The slope ranges from 0-20% and elevation is 4,800' to 6,400'. The area receives an average of 6" to 10" of annual precipitation. The major soils in this unit are *Fruitland*, *Riverwash*, and *Stumble* soils. The patterns of these soils show slight to severe limitations for development. Development limitations include slopes and cutbanks cave (the walls of excavations tend to cave in or slough). This unit is generally good for development, depending on the slope of the site and cutbanks cave. Also, riverwash soils are generally in floodplains and are not recommended for development. Site-specific studies are required to allow for development.

3: Shiprock-Sheppard-Doak

This map unit makes up about 19% of the survey area. It is on mesas, plateaus, and terraces. It has deep, nearly level to moderately steep, well-drained to somewhat excessively drained soils. The slope ranges from 0-30%. The elevation is 5,500' to 6,400'. The area receives an average of 6"-10" of annual precipitation. The major soils of this unit are *Shiprock*, *Sheppard*, and *Doak* soils. The patterns of these soils show slight to severe limitations for development. Development

limitations include the slope, cutbanks cave, shrink-swell, and low strength. This unit is generally good for development. Site-specific studies are required to allow for development.

4: Haplargids-Blackstone-Stumble

This unit makes up about 3% of the study area. It is on terraces, mesas, and plateaus in the northern part of the survey area. It has very shallow to deep, nearly level to steep, well-drained to excessively drained soils. The slope ranges from 0-50%. The area receives an average of 6"-13" of annual precipitation. The major soils of this unit are *Haplargids*, *Blackstone*, and *Torriorthents* soils. The patterns of these soils vary. This complex of soils contains mostly *Torriorthents* soil, which has very slight limitations. Other soils have severe limitations, particularly in the *Blackstone* areas. Development limitations include cutbanks cave, low strength, shrink-swell, and extremely clayey conditions. Generally, this unit is not favorable for development. However, site-specific studies may allow for development.

5: Blancot-Notal

This unit makes up about 10% of the study area. It is on valley sides, valley bottoms and fans. It has deep, nearly level to gently sloping, well-drained to somewhat excessively drained soils. The slope ranges from 0-5%. The elevation is 5,600' to 6,400'. The area receives an average of 6"-10" of annual precipitation. The major soils of this unit are *Blancot* and *Notal* soils. The patterns of these soils show moderate to severe limitations. Development limitations include cutbanks cave, low strength, shrink-swell, and extremely clayey conditions. Generally, this unit is not favorable for development, but site-specific studies may allow for development.

6: Sheppard-Huerfano-Notal

This unit makes up about 15% of the study area. It is on uplands, bottomlands, and fans. It has shallow to deep, nearly level to steep, well-drained to somewhat excessively drained soils. The slope ranges from 0-40%. The elevation is 5,500'-6,400'. The area receives an average of 6"-10" of annual precipitation. The major soils of this unit are *Sheppard*, *Huerfano*, and *Notal* soils. The patterns of these soils show slight to severe limitations. Development limitations include cutbanks cave, depth to rock, shrink-swell, and extremely clayey conditions. Much of the areas in this map unit has severe limitations, however, there are other areas in this unit that can be developed with only slight limitations. Site-specific studies are required to allow for development.

7: Travessilla-Rock Outcrop-Weska

This unit makes up about 16% of the study area. It is on hills, mesas, and plateaus. It has very shallow to deep, nearly level to extremely steep and well-drained soils. The slope ranges from 0-100%. The elevation is 4,800'-7,200'. The area receives an average of 6"-13" of annual precipitation. The major soils of this unit are *Travessilla*, *Rock Outcrop*, and *Weska*. The patterns of these soils show severe limitations, including depth to rock and slope. This unit is generally not good for development, but site-specific studies may allow for development.

8: Badland-Rock Outcrop-Monierco

This unit makes up about 16% of the study area. This area is on uplands. It has shallow, nearly level to gently sloping, well-drained soils. The slope ranges from 0-100%. The elevation is 4,800'- 7,200'. The area receives an average of 6"-10" of annual precipitation. The major soils of this unit are *Badland*, *Rock Outcrop*, and *Monierco* soils. The patterns of these soils show moderate to severe limitations. Development limitations include depth to rock and low strength. Generally, these areas are not good for development, but site-specific studies may allow for development.

C. Issues and Recommended Approaches

Values and Concerns Expressed in County Survey and Town Hall

The presence of trash and junk and in particular, junk cars, has been one of the issues ranked highest by residents of San Juan County through the county survey, the Growth Management Plan Town Hall meeting, sub-area meetings, and other public meetings.

Trash and Junk

In the past, there may not have been convenient areas designated throughout the county for legal trash disposal and illegal dumping became a problem. San Juan County now has a number of different programs and places for people to dispose of their trash.

Because the county has free disposal for county residents at the Crouch Mesa Landfill and at 11 convenience stations throughout the county, there is little incentive for people to recycle. A county environmental tax of 1/8 of 1% of the gross receipts tax funds free trash disposal at the landfill and convenience stations. It should be noted that city residents must pay a fee at the landfill, but not at the convenience stations; however, city properties have trash pick-up services. Residents will not recycle unless required to do so either by law or by social standards of the community.

In the past, the county operated a recycling program over a period of seven years. Wal-Mart built containers for the program and Waste Management was under contract to operate the program. Unfortunately, trash was also dumped into the dumpsters and Waste Management had to dispose of the mixed recycled waste in the landfill since it could not be separated.

There is not enough staff to run a recycling center, which needs a person to monitor recycling and prevent trash dumping into the recycling bins. Also, the long distances involved made hauling the collected recyclables from Farmington too costly to justify the effort.

Aztec and Farmington do have their own city recycling programs. Waste Management has bins at the landfill for aluminum cans (two 1½-yard bins) and newsprint (two 6-yard bins) that it takes to the Farmington Recycling Center.

The CUPID (Clean Up and Prevention of Illegal Dumping Sites) program has

been in place for the last five years. It is a cooperative effort of San Juan County, Waste Management, and the oil and gas industry to clean up trash on public lands. Between 3,000 and 4,000 dumpsterloads of trash were collected. In the fall of 2006, the county assumed responsibility for the program.

San Juan County Public Works Department picks up junk cars, appliances, and even items as large as mobile homes at no charge, through a voluntary program to clean up properties and prevent illegal dumping. Since many residents may not be familiar with the program, it should be publicized.

Waste Management has trash pick-up service in Farmington and the county, and Transit Waste contracts for trash pick-up for Aztec and Bloomfield. There is a charge for all curbside trash pickup. As previously mentioned, convenience centers are free.

Oil and Gas Industry

The level of the oil and gas industry's protection of the environment has frequently sparked controversy. While the oil and gas industry argues that it incurs great expense because of over-regulation to protect the environment, others, including environmentalists, ranchers, and other property owners argue that environmental regulations need to be extended.

"Split estate status" of oil and gas wells on private property has sometimes led to mineral rights owners impacting surface rights owners' use of land. Property owners own surface rights, but not necessarily subsurface rights. Because oil companies often own the subsurface rights for a property or can lease them from an owner of these rights, they can drill on a property owner's land with or without their permission. In the past, no compensation was legally required, although the companies often paid the surface owner a small reimbursement to maintain good relations. The only obligation to the surface property owner was to post a bond to restore the land after the well was closed.

Beginning in July 2007, HB 827, the Surface Owners Protection Act, will give surface owners added protection and compensation for damages to their property. Under the act:

1. Surface owners who do not own the mineral rights below their property must be notified 30 days prior to beginning any drilling-related operations.
2. Surface owners must receive a description of proposed oil and gas operations so they can evaluate the potential impacts to their property.
3. Oil and gas operators must compensate landowners for the use of their property, and pay for any damages caused by activities like drilling and road building.
4. The act will also require oil and gas operators to clean up after themselves when they're done.

Current law requires no prior notice of operations to the surface owner. By passing the surface owners protection act, New Mexico becomes the only state to require companies to provide landowners with extensive

information about pending oil and gas drilling. New Mexico also becomes the only state to mandate compensation for such a broad range of damages and use, including loss of agricultural production and income, reduced land value, lost use, and access to the surface owner's land. Combined with the duty to reclaim the land once oil and gas operations have ceased, this is the most complete set of surface owner protections in the country. (State of New Mexico, Office of the Governor, March 2007)

Another concern of property owners is the possibility of contamination of groundwater near wells. While the industry contends that it takes all the steps required by federal and state laws and makes every effort to prevent such contamination, others, including some ranchers, say that the industry has not effectively policed itself. In response to complaints, the New Mexico Oil and Gas Association has established a set of policies for the oil companies called the Good Neighbor Initiatives program. A toll-free number is available for reporting problems.

Another issue may arise if plans to increase the number of wells in the county are pursued. "Downspacing" refers to placing more wells into an area. For example, the policy previously designated that wells could only be drilled at the rate of one well per 320 acres, in order to protect scenic land quality. The area for one well was then reduced in practice to 160 acres, and now the rate is one well per 80 acres. Proposals for both public and private lands reduce the rate to as little as one well per 20 acres because it is more cost effective to drill a well in a proven oil field than to drill exploratory wells in new areas. It is recommended that the county encourage the oil and gas industry to use methods such as directional drilling when possible to avoid conflicts with property owners.

County residents have expressed strong concerns about the noise of pumps and compressors, the use of existing roads and creation of new roads causing erosion, extent of the footprint of well pads, visual impacts, and security of well sites.

The importance of this industry to the local and state economies cannot be overstated. As such, it will continue to be a major economic force in San Juan County. The county needs to be diligent in ensuring that the industry maintains its facilities at the highest level of compliance with environmental standards. Criteria should be developed and established best practices in monitoring wells, well roads, and their impacts on local residents in urban and urbanizing areas of the unincorporated county.

Other communities, including Farmington, Aztec and La Plata County, Colorado, have required permits for new well sites. It is in the general interests of San Juan County to create a permit process for new well sites on private lands, allowing the county to assure that higher standards are met.

Cooperation with the Bureau of Land Management in Road Management, Land Disruption, and Land Disposition

The Bureau of Land Management is the largest public land agency operating in San Juan County. According to the 2003 Farmington Resource Management Plan of the BLM, over 2,597,193 acres are open to oil and gas development.

In the plan, the agency identified approximately 340,118 acres of public lands for disposal, while it identified another 178,237 acres adjacent to Specially Designated Areas (SDA) for acquisition. These areas are usually set aside because they contain archaeological sites or habitat for endangered species. Other acreage has been set aside for coal mining and off-road vehicle use.

The BLM is largely responsible for oversight of the oil and gas industry on public lands. As such, the county should work with the BLM on various issues to benefit its citizens.

Air Quality

San Juan County has serious air quality issues. Both the state and federal governments are involved in efforts to mitigate the effects from the major sources of pollutants in the county — coal-fired power plants and oil and gas industry equipment and facilities.

The Air Quality Bureau of the New Mexico Environment Department operates two monitoring stations in San Juan County that measure ozone, an EPA-designated criteria. Ozone is a colorless gas that can cause respiratory distress and other health impacts at elevated levels in the Farmington area. It is monitored at two sites, one west of Farmington near PNM's San Juan Generating Station and one north of Bloomfield near the Bloomfield Gas Corridor. Elevated ozone concentrations are generally not recorded in rural areas; concentrations that exceed standards are usually found in highly urbanized areas, for example, Houston or Los Angeles. The monitors near Farmington were initially sited to gain air quality data for dispersion modeling input to predict nitrogen dioxide concentrations (destructive to tropospheric ozone and harmful to human health) from industrial sources in San Juan County. The monitors are now being used to monitor ozone.

Concentrations of ozone in the Farmington area are higher than concentrations in other parts of the state (including Albuquerque). The Environment Department has formed a team, the Four Corners Ozone Task Force, to research and analyze these elevated concentrations in San Juan County. If the concentration of ozone exceeds the National Ambient Air Quality Standards (NAAQS) in San Juan County, EPA could designate the area as "non-attainment" for ozone. The state of New Mexico would then be required to submit a plan to bring the area back into attainment with the standard:

The non-attainment designation would require a federal permitting program for new and modified large industrial sources in San Juan County that emit volatile organic compounds and nitrogen oxides. This permitting program requires more stringent controls called "Lowest Achievable

Emission Rate" (LAER), emissions offsets for increased emissions of nitrogen oxides and volatile organic compounds, certification of compliance and visibility analyses. Unlike the Best Available Control Technology requirements for larger sources with emissions in areas designated as attainment, LAER does not allow industrial facilities to take into account the economic cost of controls in determining the control level required for a new or modifying source of air pollution. Given the many oil and gas sources in San Juan County that emit these pollutants, a non-attainment designation would have a significant impact in the area. The Department will continue to monitor and research ambient ozone levels and trends near Farmington to plan for any changes in the attainment status of the area.

(Source: New Mexico Environment Department Web site:
www.nmenv.state.nm.us)

According to Scorecard², a pollution information web site, San Juan County is ranked in the top 10% of worst counties in the United States for toxic releases to the environment. It is also in the top 10% of worst counties in the United States for PM-2.5 emissions (power plants are the major contributor), PM-10³ emissions (power plants are the major contributor), sulfur dioxide emissions (power plants are the major contributor), volatile organic compound emissions (oil and gas industry facilities), and in the top 20% of worst counties in the United States for carbon monoxide emissions (power plants and oil and gas facilities are the major contributors). All of these pollutants are threats to human health, the land, and watersheds.

San Juan County should investigate the tools and methods at its disposal to address the presence of these industries and their negative consequences to the county. Solutions may include dialogue to work together to find solutions or may require regulation, where possible, through zoning and other ordinances. In extreme cases, it may require litigation to protect the health and welfare of the citizens of the county.

Specifically, clean up of area power plants would help improve air and water quality in the county. Recently, an agreement was reached between the Sierra Club and the EPA to develop enforceable pollution limits for the Four Corners Power Plant by April 30, 2007.

Surface Water Quality in Rivers of the County

The San Juan Watershed Group (SJWG) began meeting in August of 2001. The Meridian Institute was contracted by the New Mexico Environment Department (NMED) to work with SJWG on the San Juan Basin Watershed Management Plan,

2 Scorecard (<http://www.scorecard.org>) is a pollution information Web site that integrates over 400 scientific and governmental databases to generate customized profiles of local environmental quality and toxic chemicals. All data sources are cited in its reports with applicable links to on-line references. The U.S. Environmental Protection Agency is the largest single source of information.

3 PM-2.5 and PM-10 are two different measures of particulate sizes in the air. The smaller the particulate matter (2.5) measured in microns, the more harmful the particulates are to human health. Dangers include aggravation of existing respiratory and cardiovascular disease, damage to lung tissue, and contribution to cancer and premature death.

due to concerns over water quality in the Animas, La Plata and San Juan Rivers. The Plan was released on January 11, 2005. According to the plan, the Surface Water Quality Bureau (SWQB) of the New Mexico Environment Department has identified one or more pollutants in all parts of the San Juan, Animas, and La Plata Rivers.

Excess nutrients (nitrogen and phosphorus) in the Animas (downstream from Aztec) and La Plata rivers cause excess algae, which use up oxygen and cause fish to suffocate. SJWG considers excess algae a significant water quality problem for agriculture, as the algae can interfere with irrigation. Excess nutrients were assigned a medium water quality priority because nutrient enrichment in the Animas River may affect the flavor and smell of drinking water from the river and may also negatively affect aquatic life in the La Plata River.

The lower reaches of the Animas, La Plata, and San Juan Rivers have all exceeded federal standards for fecal coliform bacteria and *Escherichia coli* (*E. coli*) levels. *E. coli* in the San Juan River could pose a significant health risk for swimmers or children who might ingest the water. Another concern is possible *E. coli* in irrigation water and the potential for crop contamination. SJWG believes that fecal coliform bacteria and *E. coli* numbers in the San Juan River from the Hogback to Largo Canyon, and in the lower Animas River, are the highest priority water quality problem in the San Juan Basin.

Among the potential sources of this pollution are poorly maintained septic systems, livestock and wildlife (especially geese, whose feces may contain viable *E. coli* and other fecal coliforms), urban runoff, and even domestic cats and dogs. Livestock and wildlife may be the primary source.

Mercury has been identified in fish tissues in all three tributaries, and all lakes and reservoirs in the San Juan Basin (source: SJWG). Mercury contamination is more commonly found in still waters such as lakes and reservoirs, where it accumulates over time. It is unusual to find it at significant levels in flowing water such as rivers. The source of much of the mercury loading in the San Juan River may be from the release of water into it from the bottom of Navajo Reservoir.

The San Juan River is one of only two rivers in New Mexico under a fish consumption advisory. There is an advisory for bass and channel catfish, but none for trout. For all edible bass species, it is recommended that the general population consume only fish that are less than 17" long (larger fish have higher concentrations of mercury) and only one to two meals per month, at most. The sensitive population (pregnant women, nursing mothers, women planning pregnancies and children under age 18) are advised to eat bass only under 13" long. The general population is advised to consume only one or two meals at most each month of channel catfish, 31" to 41" in length.

The primary source of fish tissue mercury in the San Juan Basin is probably atmospheric deposition, and runoff from historic and current mining operations. Coal-fired power plants are also a major source of mercury in the atmosphere,

according to the United States Environmental Protection Agency.

Land Disturbance

New road construction by the oil and gas industry and by private citizens needs to be monitored by the county. Improper road cuts can lead to erosion and the potential for deposition of silt into area streams and rivers to the detriment of fish.

Sand and gravel pits are also problematic and can cause harmful amounts of particulates that affect air quality. Restoring abandoned pits is also a problem. It is recommended that the county adopt guidelines for the reclamation of gravel pits such as those published by the American Society of Landscape Architects (www.asla.org/latis/pdf/Latis_rp080702a.pdf).

Green Building and Communities

The following is a compilation from Web sites describing programs that San Juan County can use in creating energy-efficient and environmentally appropriate methods for community development. These methods are associated with “green building” and “green communities.” They examine ways to increase the efficiency of energy use in buildings and water use, sustainable sources of building materials, siting of buildings, the impacts of materials on human health and the environment, and other environmental factors that might be of concern.

Community Energy Opportunity Finder

(<http://www.energyfinder.org>)

The Energy Finder is an interactive, web-based tool that enables communities to explore untapped opportunities for economic development, pollution prevention, and risk reduction through energy efficiency. It helps any community estimate these benefits and provides details to get them started on their own energy projects.

Since approximately 40 percent of the energy consumed in the U.S. is for the building sector, and about 90 percent of that energy comes from fossil fuels (coal, oil, and natural gas), increasing energy efficiency in a community can go a long way towards saving money and reducing harmful greenhouse gas emissions.

The Energy Finder mimics an expert consultant’s preliminary analysis of what a community can do to save money and create jobs through energy efficiency, but costs the community nothing.

EPA Green Communities

(<http://www.epa.gov/greenkit/basicinformation.htm>)

Green Communities is a web-based toolkit and planning guide designed to help communities access the tools and information to help them become more sustainable, Green Communities.

The Green Communities toolkit is closely linked, for many communities, to the concept of smart growth. EPA's Smart Growth web page describes smart growth as development that serves the economy, the community, and the environment. It changes the terms of the development debate away from the traditional growth-no growth question to 'how and where should new development be accommodated.'

The Goals of the Green Communities Program are:

1. to promote innovative tools that encourage successful community-based environmental protection and sustainable community development.
2. to establish partnerships with other organizations and agencies to help build community capacity and knowledge in order to create more livable communities.
3. to provide technical assistance through the web-based toolkit.

Rocky Mountain Institute

<http://www.rmi.org/sitepages/pid138.php>

Rocky Mountain Institute's Research and Consulting helps communities envision more efficient, workable designs through charrettes (intensive multi-stakeholder workshops), growth guidance, and other consulting services. It also offers complementary buildings and land and water services.

Resource Renewal Institute

<http://www.rri.org/index.php>

The Resource Renewal Institute facilitates the creation, development and implementation of practical strategies to solve the entire complex environmental problem by addressing it comprehensively. We are an incubator of transformational ideas designed to challenge and change the piecemeal way our resources are currently managed and protected. Implementing long-term policies and plans will guarantee the health of the planet and a high quality of life for future generations.

The Leadership in Energy and Environmental Design (LEED) - U.S. Green Building Council

<http://www.usgbc.org/DisplayPage.aspx?CategoryID=19>

The Leadership in Energy and Environmental Design (LEED) Green Building Rating System™ is the nationally accepted benchmark for the design, construction, and operation of high performance green buildings. LEED gives building owners and operators the tools they need to have an immediate and measurable impact on their buildings' performance. 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.

LEED provides a roadmap for measuring and documenting success for every building type and phase of a building lifecycle.

The 2030 Challenge

http://www.architecture2030.org/open_letter/index.html

Credible scientists give us 10 years to be well on our way toward global greenhouse gas (GHG) emissions reductions in order to avoid catastrophic climate change. Yet there are hundreds of coal-fired power plants currently on the drawing boards in the US. Seventy-six percent (76%) of the energy produced by these plants will go to operate buildings. As Architecture 2030 has shown, buildings are responsible for almost half (48%) of all energy consumption and GHG emissions annually; globally the percentage is even greater. Immediate action in the Building Sector, and a concerted global effort, are essential if we are to avoid hazardous climate change.

Stabilizing emissions in this Building Sector, and then reversing them to acceptable levels over the next ten years, is key to keeping global warming to approximately a degree centigrade (°C) above today's level. To accomplish this Architecture 2030 has issued The 2030 Challenge asking the global architecture and building community to adopt the following targets:

- That all new buildings, developments and major renovations be designed to meet a fossil fuel, greenhouse gas (GHG) emitting, energy consumption performance standard of 50% of the regional (or country) average for that building type.
- That at a minimum, an equal amount of existing building area be renovated annually to meet a fossil-fuel, greenhouse gas (GHG)-emitting, energy-consumption performance standard of 50% of the regional (or country) average for that building type (50% of the regional average through innovative design strategies, the application of renewable technologies and/or the purchase - 20% maximum - of renewable energy).
- That the fossil fuel reduction standard for all new buildings be increased to:
 - 60% in 2010
 - 70% in 2015
 - 80% in 2020
 - 90% in 2025
 - Carbon-neutral by 2030 (using no fossil-fuel GHG-emitting energy to operate)

We know these targets are readily achievable and that most developments and buildings can be designed to use only a small amount of energy at little or no additional cost through proper planning, siting, building form, glass properties and location, material selection and by incorporating natural heating, cooling, ventilation, and day-lighting strategies. The additional

energy a development or building would then need to maintain comfort and operate equipment can be supplied by renewable sources such as solar (photovoltaics, hot water heating, etc.), wind, biomass and other viable carbon-free sources.

D. Goals and Policies

1. Balance the demands for housing, transportation, and economic development with the protection of natural resources

- a. In the development of various ordinances, including zoning regulations, environmental protections and sustainable actions shall be required by the county whenever methods are available for residents or industry to do so.

2. Protect endangered and threatened species

- a. The county shall develop a habitat conservation plan to cover the numerous sensitive animal and plant species in San Juan County.
- b. The county shall support and participate in the efforts of the San Juan Watershed Group to clean up pollution in area streams and rivers that is harmful to threatened and endangered fish.
- c. The county should consider methods, including zoning and conservation easements, that encourage the designation of open space and other areas to protect wildlife habitat.
- d. The county shall support the San Juan Regional Water Commission in its efforts to protect aquatic and riparian endangered and threatened species.
- e. The county shall support the continued efforts of the San Juan River Basin Recovery Implementation Program, which has successfully restored populations of endangered fish species.

3. Protect the land and water from trash and junk pollution, while preserving the scenic landscape of San Juan County

- a. The county shall pass an ordinance prohibiting junk cars on private property, except for licensed commercial auto salvage yards.
- b. The county shall continue to publicize its property clean-up program, including the free removal of junk vehicles and other large items.
- c. The county should implement a recycling program to reduce the amount of trash disposed of in the county landfill.
- d. The county shall continue to provide free transfer stations at strategic points throughout the county for the convenience of residents to safely dispose of trash and lessen illegal dumping.
- e. The county shall support and assist voluntary clean ups with funds for items such as trash bags, and provide pick-up and disposal of the collected trash.
- f. Whenever possible, the county shall enforce penalties for illegal disposal of refuse, litter, garbage, and hazardous waste as outlined in Amended Ordinance No. 4 of the San Juan County Legal Ordinances.
- g. The county shall develop a program for the collection and disposal of hazardous waste on a regular basis.

- h. The county shall continue and coordinate the Clean Up Illegal Dump Sites (CUPID) program in cooperation with the oil and gas industry to remove both large and small items from San Juan County's public lands.
- 4. To the extent possible, protect land, people, and wildlife from environmental hazards and damage caused by gas and oil well**
- a. While recognizing and appreciating the importance of the gas and oil industry to the local and state economy, the county shall encourage all parties, government agencies and industries alike, to pursue efforts that result in the least possible amount of damage to the environment of San Juan County.
 - b. The county shall establish regulations and a permit process for gas and oil wells to address protection of residents from noise from gas well pumps and compressors, abatement of visual impacts of gas and oil infrastructure, security fencing and service roads.
 - i. Requirements for noise abatement and other measures will vary depending on the proximity of wells to existing residential development or future residential development planned in designated growth areas.
 - c. The county shall develop guidelines to minimize construction of new roads that will only serve gas and oil wells. Any new roads approved shall be engineered to minimize erosion and contain runoff from the road surface.
 - d. The county should encourage the gas and oil industry to reduce traffic to and from sites as much as possible, and perhaps schedule traffic for times when residents are less active. Excessive traffic should be avoided during evening and early morning hours. Steps should be taken to abate noise levels and dust from dirt roads affecting nearby residents.
 - e. Due to global climate change, the county should encourage the gas and oil industry to develop and implement methods to contain or eliminate the release of methane gas into the atmosphere.
 - f. The county shall support state Oil and Conservation Division regulation of the gas and oil industry to protect groundwater and surface water resources from pollution by well-drilling and extraction activities.
 - g. The county should encourage the gas and oil industry to protect wildlife and livestock from hazards associated with their activities. Options include fencing off areas with contaminated water, urging truck drivers to be cautious of livestock and wildlife on backcountry roads, and avoiding disturbing birds and other animals during nesting and breeding season.
 - h. The county should support passage of a bill by the state of New Mexico to protect surface rights relevant to gas and oil industry facilities.
- 5. Partner with the Bureau of Land Management to protect the environment, promote consistent land uses, and promote targeted land disposition**
- a. The county supports BLM land trades and sales in areas designated as county growth areas (Crouch Mesa and Kirtland) for targeting urban

growth in appropriate upland areas.

- b. The county and BLM shall work cooperatively to mitigate, to the extent possible, the impacts of environmental damage to the land on which oil and gas wells are located, including the roads serving them.
- c. The county and the BLM should work cooperatively on road surfacing, bridges and maintenance, especially on roads that access gas and oil wells on public land.
- d. The county should encourage the BLM to develop stricter standards for the establishment of defined roads, particularly to gas and oil well sites, that minimize land disturbance and to allow for better control of livestock with cattle guards and fencing.
- e. The county shall encourage the BLM to establish maximum disturbance envelopes around oil and gas sites that are an adequate, but not excessive size.
- f. The county should seek development of various recreation areas on BLM lands for both local residents and tourists.
- g. The county shall insist that the BLM comply with its own recommendations and regulations for surface reclamation and environmental protection of areas in regards to gas and oil drilling.
- h. The BLM should identify areas for potential open space in areas mainly targeted for land trades or sale for such purposes as recreation or habitat protection for wildlife.
- i. The county and the BLM shall work together on master planning new communities on lands to be privatized.

6. Improve and maintain air quality in San Juan County

- a. As coal burning power plants may be the main source of pollutants in the local airshed and a major pollutant (mercury) in area lakes and streams, the county shall work cooperatively with the power companies and other government agencies, including tribes, to improve the air quality of San Juan County.
- b. The county supports “no net gain” in air pollution emitted from power plants in San Juan County. Possible steps and/or options which should be considered include:
 - i. Shut down one or both of the older power plants
 - ii. Support adding the Desert Rock Power Plant, achieving the highest standards of controlling polluting emissions
 - iii. Support no new power plants, including Desert Rock
 - iv. Add the Desert Rock Power Plant while reducing air pollution from the other two power plants
- c. The county supports steps to minimize environmental damage by coal mining, including mitigation of air pollution from the mining equipment.

7. Clean up pollution in area rivers and streams and keep them clean

- a. The county shall participate in the efforts of the San Juan Watershed Group and support implementation of the San Juan Basin Watershed Plan developed by the group.

- b. The county shall actively develop a plan in cooperation with other government agencies to remove trash and junk from riparian areas, especially items such as junk cars that have the potential to pollute area waterways.
- c. The county shall be diligent in enforcing the anti-littering and illegal dumping ordinance along area waterways.

8. Protect communities from the dangers of wildfires

- a. The county shall follow the recommendations in the San Juan Basin Community Wildfire Protection Plan (CWPP), including but not limited to:
 - i. The county fire chief shall work with the Farmington, Bloomfield, and Aztec fire chiefs to provide oversight and implementation of the CWPP.
 - ii. The county shall seek funding for projects identified as priorities in the CWPP that decrease hazardous vegetative fuels and thereby reduce the spread and intensity of wildfires.
 - iii. The county shall seek funding for training additional firefighters and developing a comprehensive emergency response plan in coordination with the municipalities and other government entities such as the BLM.
 - iv. The county shall initiate a dialogue with the BLM for programmatic consultation to implement fuel reduction treatments in areas of high wildland fire risk from thick stands of salt cedar and Russian olive, as recommended in the CWPP.
 - v. The county shall work with local communities to develop public outreach and education for residents and visitors alike, to heighten awareness and understanding of the threats and other issues that wildland fire and invasive riparian species pose to San Juan County.
 - vi. The county shall work with local communities to support and seek opportunities for local contractors to start new businesses or to expand existing businesses in the fire prevention/fuels reduction arena, as well as for the use of vegetative material removed during wildland fuel mitigation projects.

9. Protect communities and structures from potential flooding and minimize disturbance of floodways

- a. The county should assist in educating the public about the dangers of flooding through publications and publicity.
- b. The county should identify and periodically update mapping of floodplain areas in the county with assistance from the Federal Emergency Management Agency (FEMA), in accordance with the San Juan County Flood Damage Protection Ordinance.
- c. The county shall develop ordinances and regulations prohibiting building in or too near arroyos and other drainages.

10. Minimize and mitigate land disturbance

- a. The county shall require a permit for new gravel pits as a land use

- item in zoning. As part of the ordinance, the county shall require the reclamation of gravel pits once operations have ceased on the site.
- b. The county shall encourage the BLM to establish stricter standards on public land for the reclamation of sand and gravel pits that restore the environmental and aesthetic qualities of the land.
 - c. The county shall require approval by permit for new road construction. Guidelines should be developed that ensure that potential erosion from new road construction is minimized.
 - d. The county shall implement terrain management standards in its subdivision regulations.
 - e. The county shall develop requirements for grading/land disturbance permits for land disturbance activities, including but not limited to road cuts, development site work, large landscaping projects and installation of utilities. The threshold for disturbance activities (amount of land area or cubic yards of earth) shall be established in the ordinance.
 - f. As coal is an abundant resource in San Juan County, the county shall encourage the reclamation of all coal mining operations.

11. Partner with Navajo Nation Chapters on Environmental Issues.

- a. It is in the best interests of the county and the Navajo Nation to work cooperatively on many environmental issues that cross jurisdictional boundaries, such as air quality and watershed protection. The county shall pursue such actions in its future land use and other planning efforts.

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