East Mountain Area
Environmental Quality Profile

Prepared in June 2005

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Executive Summary

In this report, the authors reviewed environmental data sources for the East Mountain area, as defined by the 2000 U.S. Census and the zip codes that are contained within the East Mountain area: 87059, 87008, and 87047. The boundaries of the East Mountain area are the county boundary on the North, South, and East side, and the foothills beginning at Carnuel and spreading east.

The East Mountain area is primarily rural with a large percentage of public lands. Vacant lots are developing quickly which is causing a large increase in population. The population is primarily non-Hispanic white with a median household income higher than the U.S.

Water quality and quantity are major concerns of East Mountain residents. Many residents are concerned about the taste of their water, and feel that the water stains their plumbing fixtures. In many areas, the water level is dropping and causing some wells to go dry. There are some polluted wells due to the large number of septic systems and the geology of the area. The major pollutant found in wells in this area is nitrate, caused by leaking septic systems and fertilizer runoff. There are a large number of septic systems in the East Mountain area and the newer developments are moving towards community wastewater systems due to wastewater regulation restrictions.

Air quality is another major concern of East Mountain residents. In Bernalillo County, the Albuquerque Air Quality Division is responsible for implementing the Clean Air Act. The only air monitoring station in the East Mountain area was placed at the Roosevelt Middle School in Tijeras from Spring 2002 through June 2004. The monitoring was done because of concern over the Rio Grande Portland cement plant. Overall findings showed that the pollution in the East Mountain area did not exceed any standards. The primary sources of air pollution in the East Mountains include vehicle traffic, wood burning, and the cement plant.

Residents of the East Mountains use the East Mountain Transfer Station in Tijeras and the Torrance/Bernalillo landfill for disposal of waste. There is a problem with illegal dumping in the East Mountain area as there is in the rest of Bernalillo County. There have been eleven leaking underground storage tanks in the area, but all have been or are being cleaned up, or are being monitored. There are no superfund sites in the East Mountain area. The County has information on four hazardous waste handlers in the area.

Vector diseases are an important environmental factor in the East Mountain area because of its rural nature. Some diseases that have been found in the East Mountain area include West Nile Virus, Plague, and Tularemia.

The 61 food establishments in the East Mountain area are regulated by Bernalillo County, Office of Environmental Health.

I. The East Mountains

The East Mountain area is primarily composed of the land east of the Sandia and Manzano mountain ranges. This area encompasses 210,000 acres or 321 square miles that reaches the eastern borders of Bernalillo County.

The East Mountain area is primarily rural with the primary zoning classification for private land of A-2, Rural Agricultural Zone (minimum lot size 2 acres). Much of this land has not been developed yet, but is in the process. The Cibola National Forest covers 33 percent of the East Mountain area and offers extensive recreation opportunities. The Department of Energy (DOE) owns 18,675 acres of the East Mountain area and uses it for a variety of purposes such as safety and security buffers for the Kirtland Air Force base. The other land in the East Mountain area is composed of reservation land owned by the Isleta Pueblo (20,000 acres), New Mexico State Land Office, City of Albuquerque Open Space, and Bernalillo County Open Space (Bernalillo County Zoning, Building, Planning, and Environmental Health Dept., 2005).

According to the 2000 census, the population of the East Mountain area is 17,268. This is a 42.8 percent increase in population since 1990. The population is primarily non-Hispanic white with a median household income of $56,033 in the 87059 zip code, $61,250 in the 87008 zip code, and $61,641 in the 87047 zip code; these are all above the US median household income of $41,994 (Census, 2000).

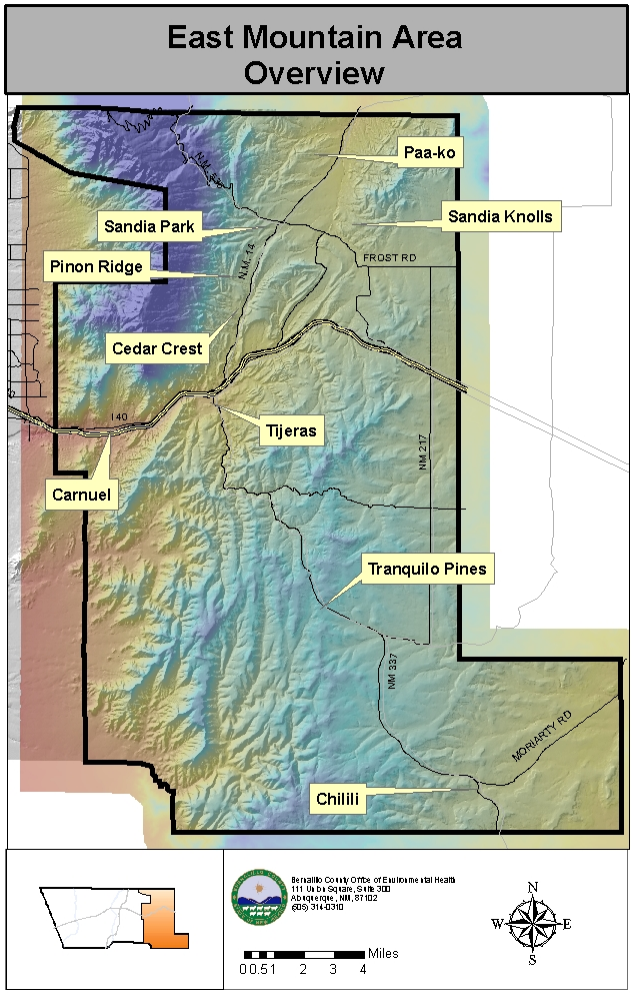

Figure 1-East Mountain Area Overview

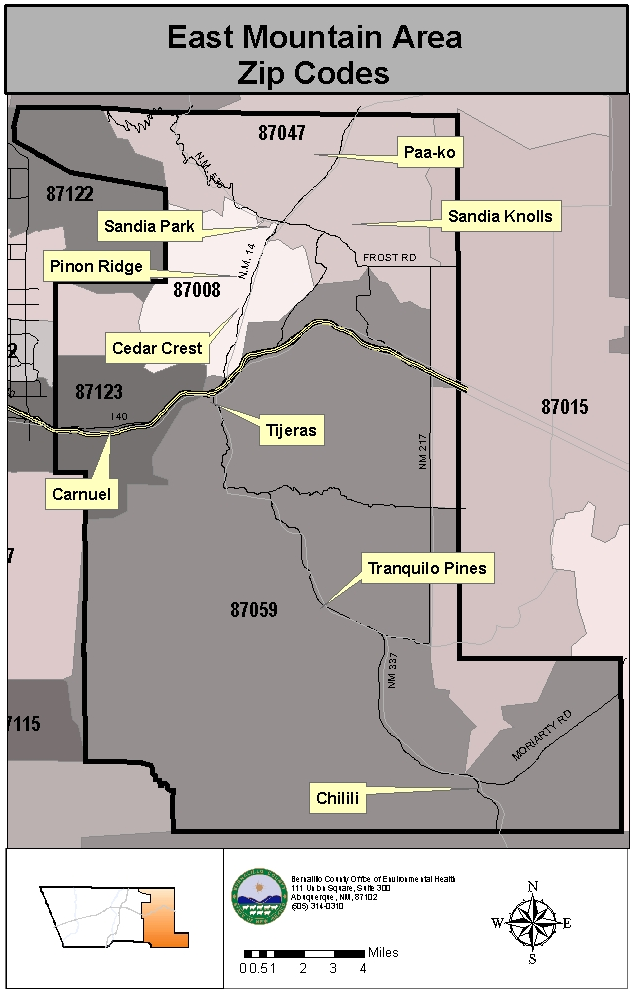

Figure 2-East Mountain Area Zip Codes

A. Water Quality

1. Groundwater and Drinking Water

The primary source of drinking water in Bernalillo County is groundwater. East Mountain residents use a variety of different water systems for their homes, including private wells, shared wells, community water systems, hauled water, and rainwater. Of 457 people polled for the "Perceptions of Water Quality" study prepared in 2002, 39.4% of East Mountain residents use a private individual well, 12.3 % use well sharing which is when more than one household share a well, 45.5% were on a community system, and 2.8% were unsure of the source of their water (University of New Mexico, Bureau of Business and Economic Research, 2002).

According to a report prepared in June of 2002 for the Office of Environmental Health by the University of New Mexico Bureau of Business and Economic Research, residents of Bernalillo County have many different perceptions of their water quality. In the East Mountains, 81% of those polled agreed or strongly agreed that unfiltered water from their faucet was safe to drink. 13.5% disagreed or strongly disagreed that unfiltered water from their faucet was safe to drink; 5.1% either didn't know or had no opinion.

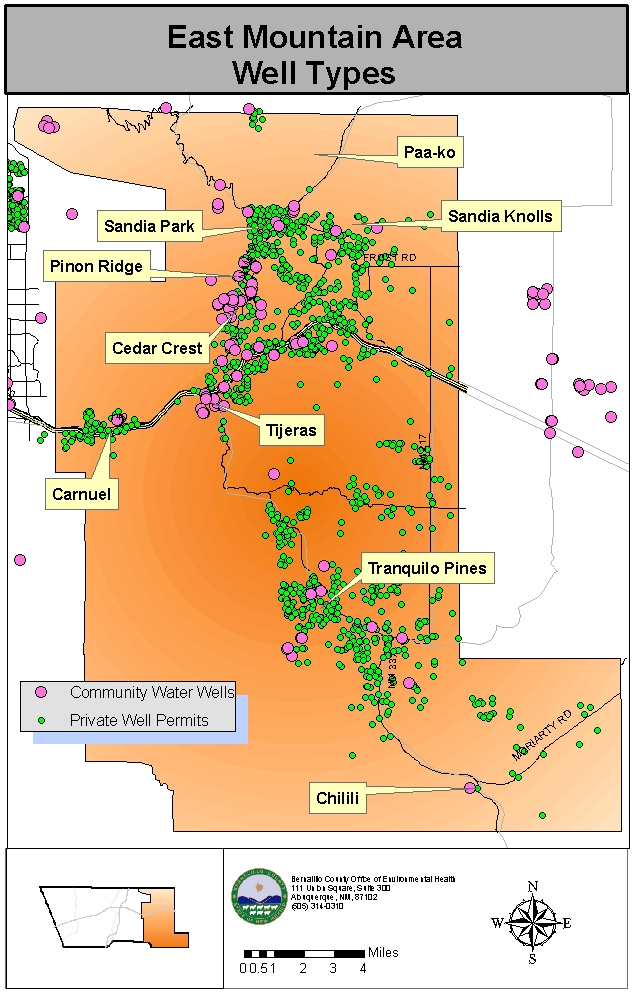

Figure 3-East Mountain Area Well Types

14.6% of East Mountain residents polled agreed or strongly agreed that their unfiltered faucet water would make them ill if they drank it. 45.7% of East Mountain residents do not like the taste of the unfiltered water that comes from their faucet. 51.5% of those polled stated that the water in their home stained their plumbing fixtures too much.

In July of 2004, the Bernalillo County, Infrastructure Planning and Geo-Resources Department published a Water Resources Data Report. As part of this study, four groundwater monitoring wells were drilled in 1997. These wells were designed to assess the effects of septic systems in a geologic fractured aquifer setting. The study describes a geologic fractured aquifer setting as "one where groundwater characteristics are highly complex, and contaminants have the capability of traveling at a high rate, thus causing a high groundwater contamination threat." The wells are located in the northern section of the East Mountains at Pinon Ridge, Sierra Vista, and Sandia Park. The study included data on the quantity and quality of groundwater.

Table 1-Average Annual Water Level Decline

Pinon Ridge No.1	1.4 feet/year
Sierra Vista	No significant decrease
Sandia Park No.1	4.3 feet/year
Sandia Park No.2	5.4 feet/year

At the Pinon Ridge well, between September 1997 and June 2004, the water level declined by an average of 1.4 feet per

year. The Sierra Vista well showed variation in well depth that is typical of a fractured bedrock aquifer where water levels vary over a short period of time. The Sandia Park number 1 well showed a decrease in average water depth of 4.3 feet per year. The study attributed this decline to the greater demand on the aquifer due to an increased number of wells and lower winter precipitation. The Sandia Park number 2 well showed an average decline of 5.4 feet per year also attributed to increased water usage and decreased aquifer recharge.

Table 2-Water Quality East Mountains 1997-2003

	Total Dissolved Solids (mg/l)	Nitrate (mg/l)	Iron (mg/l)
Secondary & Primary Drinking Water Standards	**500**	**10**	**0.3**
Pinon Ridge No. 1	800-1030	<10	<0.3
Sierra Vista	1024	<10	6.6
Sandia Park No. 1	1004-1470	<10	<0.3
Sandia Park No. 2	<500	<10	<0.3

Groundwater quality data for these wells was collected from 1997 through 2003. There were eighteen water quality parameters tested for in this study. The Pinon Ridge well exceeded the secondary drinking water standards for total dissolved solids (TDS); the results showed an increase in concentration from 800 to 1030 mg/l from 1998 to 2003. TDS can cause water to be corrosive towards metals. The water quality at the Sierra Vista well exceeded the secondary drinking water standard for TDS and for iron. The well showed TDS concentrations of 1024 mg/l and iron concentrations of 6.6 mg/l. It is unlikely that high concentrations of iron in the water pose a health threat because there is a nutritional requirement of 10 to 15 mg a day for adult men and women. However, iron comes from other sources as well. The secondary standard for iron of 0.3mg/l is based on discoloration of laundry and a metallic taste (AWWA, p. 2.29). The Sandia Park number one well also exceeded the secondary drinking water standards of TDS with a concentration of 1470 mg/l. The Sandia Park number two well showed no exceedance of drinking water standards during the monitoring period (1997-2003).

Concentrations of nitrate can increase due to septic systems, farm fertilizer, or feed lots. The likely source of nitrate in the East Mountains is septic systems. When nitrate is combined with saliva in adults, 10% is converted to nitrite, which can cause two chemical reactions; induction of methemoglobinemia and the potential formation of carcinogenic nitrosamines or nitrosamides (AWWA, p. 2.31). Methemoglobinemia is commonly referred to as "blue baby syndrome" and is the inability of blood to oxygenate the body resulting in asphyxiation.

The United States Geological Survey (USGS) conducted testing in the East Mountains at 24 wells in 1995, 1997, 1998, and from 2001-02. Nitrate concentrations in two of the wells were larger than the primary drinking water standards of 10 mg/l in 1998 and 2002. This study is consistent with other studies that show there are pockets of wells in the East Mountains that are contaminated with nitrates.

Bernalillo County, Office of Environmental Health did extensive groundwater monitoring at Pinon Ridge Subdivision in 2002. There were 46 wells sampled and 70% were impacted by on-site wastewater systems. However, none of these wells exceeded the primary drinking water standards for nitrate of 10 mg/l. The maximum nitrate concentration was 4.2 mg/l.

It is important to regularly test your well for coliform bacteria and nitrate to assure your drinking water is safe. See Appendix A for a list of certified laboratories for drinking water analysis. There are several methods of treating a contaminated well including chlorination and using a filtration system. See Appendix B for procedures for well disinfection.

2. Septic Systems

Because of the rural nature of the East Mountain area, the majority of wastewater systems are septic systems. As of February 15, 2005 there were 4,775 approved wastewater permits in the East Mountain area. There are also a large number of existing unpermitted wastewater systems. This number is estimated by the Bernalillo County, Office of Environmental Health to be in the hundreds. The important considerations for septic tank location and effectiveness include: 1) the type of soil available for the drainfield, 2) how the drainfield is constructed, and 3) the depth to bedrock.

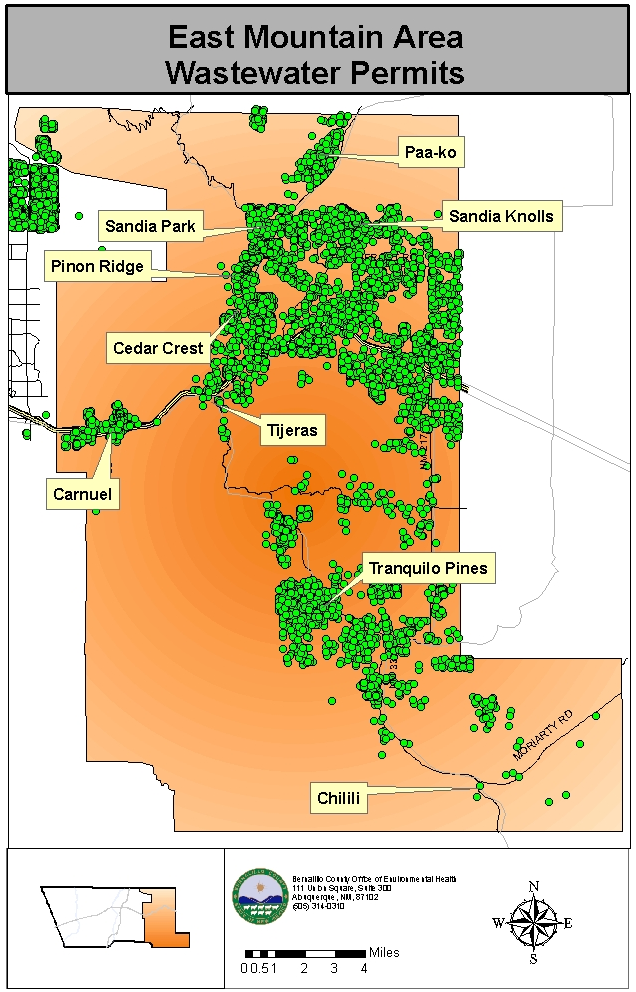

Figure 4-East Mountain Area Wastewater Permits

3. Permitted Groundwater Discharge

The New Mexico Environment Department and the Bernalillo County, Office of Environmental Health regulate facility discharges released into the ground. The New Mexico Water Quality Control Commission regulations specify the requirements for a facility to discharge into groundwater. Discharge includes any sewage or pollutants. The facility is required to have a permit if it discharges more than 2,000 gallons of liquid waste a day. There is one permitted facility in Edgewood, four in Cedar Crest, three in Sandia Park, and eight in Tijeras. See Appendix B for a list of these facilities.

4. Surface Water

The primary sources for surface water in the East Mountains are ephemeral streams that flow when there are periods of rainfall, a few ponds, and springs. Precipitation is the primary source for recharge to surface water. The East Mountains get variable precipitation in the form of rain or snow. Table 3 shows annual average precipitation at three long-term National Oceanic and Atmospheric Administration (NOAA) sites in the East Mountains (Blanchard, USGS).

Table 3- Annual, Average Precipitation in the East Mountain Area (1933-2003, data collection gaps exist in this date range)

Location (Elevation)	Annual Average Precipitation
Sandia Ranger Station (6,300 feet)	14.94 inches
Sandia Park (7,020 feet)	19.06 inches
Sandia Crest (10,680 feet)	23.07 inches

B. Air Quality

1. Introduction

The 1990 Clean Air Act allows the U.S. EPA to set limits on air pollutant concentrations. These limits are also known as the National Ambient Air Quality Standards (NAAQS). See Appendix C for the NAAQS. There are two types of standards; primary standards that work to protect public health and secondary standards that work to protect public welfare, including the environment. Criteria air pollutants include carbon monoxide, nitrogen dioxide, ozone, lead, particulate matter (PM10 and PM2.5), and sulfur dioxide.

Individual states are responsible for the implementation of the 1990 Clean Air Act. However, in Bernalillo County, the Albuquerque Air Quality Division is responsible for implementation of the act. The Albuquerque Air Quality Division issues permits, regulates compliance and enforcement, monitors air quality, and provides education and outreach.

Air pollution affects air quality. Exposure to polluted air can cause a variety of health problems including burning eyes, nose and throat irritations, other respiratory irritations, and exasperated health problems for people who have a chronic upper respiratory disease, like asthma. Certain populations are more sensitive to the effects of air pollution, including children, the elderly, persons affected by chronic lung diseases, and adults who spend a lot of time

outside. Exposure to certain air pollutants at high levels can cause cancer (American Cancer Society, 2002), birth defects such as heart abnormalities (Robak, 2001), and injury to the respiratory system. There are many sources of air pollution in Bernalillo County including vehicle exhaust, dust particles from disturbed soil, and industrial site emissions.

Fine and coarse particulate are common air pollutants. The particulate designation refers to both solid and liquid particulate. Fine particulate is referred to as PM2.5 and refers to the size of particle, which in this case is 2.5 microns or less in diameter. PM10 refers to coarse particulate that is 10 microns or less in diameter. Fine particulate has been shown to be more detrimental to health than coarse particulate because it can be inhaled more deeply into the lungs. People who are sensitive to fine particulate include older adults, those with heart and lung conditions, and children. Fine particulate include acids, metals, petroleum byproducts, and diesel soot, these emissions come from vehicles, coal power generation, and home heating. Coarse particulate, or PM10, comes from soot, dust, and smoke, and can be a health hazard because these particulates can be inhaled into and accumulate in the respiratory system (Plain English Guide to the Clean Air Act, 1993).

2. Monitoring Stations

The Albuquerque Air Quality Division placed an air monitoring station at Roosevelt Middle School, located in Tijeras during the spring and summer of 2002; this monitoring was extended through June of 2004 because of additional U.S. EPA funding. Roosevelt Middle School, along with the Rio Grande Portland cement plant, are located in a narrow valley that is subject to inversions that can trap pollutants. The reason for the placement of the air monitoring station was because of concerns by parents and teachers that the emissions from the cement plant were contributing to their children's illnesses.

During early 2002, monitoring of coarse particulate (PM10) and fine particulate (PM2.5) was done at the Roosevelt Middle School air monitoring station. When the grant was extended in 2004, the monitoring station continued to test for PM10, and PM2.5, and began testing for carbon monoxide (CO), nitrogen oxides (NOX), toxics, and metals. Toxics that were monitored for included chloromethane, dichloromethane, Freon 11, Freon 12, benzene, toluene, xylene, and 1-2-4-trimethylbenzene. Metals that were monitored for included arsenic, beryllium, cadmium, chromium, lead, manganese, and nickel.

The executive summary of the Tijeras/Roosevelt Middle School Ambient Air Monitoring Project states, "Although the plant contributes emissions to the ambient air, the ambient air monitoring data collected at Roosevelt did not measure elevated levels of criteria pollutants. Inter-data comparisons with other City of Albuquerque ambient air monitoring network stations indicated the overall criteria and non-criteria pollutant levels measured in Tijeras were much less. The amount and type of pollutants appear to be more consistent with those from automotive traffic."

The results of this study showed daily averages of PM10 and PM2.5 particulates less than 20% of the National Ambient Air Quality Standards (see Appendix C). The East Mountain area showed less pollution than the industrial areas of Albuquerque and similar pollution levels as Uptown Zuni Park and Westside Taylor Ranch (Jarmillo, 2004).

3. Sources of Emissions

The Albuquerque Air Quality Division also permits stationary air pollution sources. The primary sources of emissions in the East Mountain area include vehicle traffic, wood burning, and the cement plant owned by the Groupo Cementos de Chihuahua or more commonly referred to as the Rio Grande Portland cement plant. Pollutants that are released from diesel vehicles include benzene, hexane, formaldehyde, mercury, arsenic, chromium, and furans.

The Rio Grande Portland cement plant is the primary industrial polluter in the East Mountains. According to the 2002 Facility Release Report published by the U.S. EPA, the cement plant released 2,574 pounds of pollutants in 2002. These emissions included 2,309 pounds of point source pollutants and 265 pounds of fugitive air pollutants. A point source refers to a pollutant entering the environment from a specific source such as a factory. Fugitive air emissions or non-point source emissions refer to pollutants entering the environment from a broad area or from scattered sources. The point source emissions included 250 lbs. of chromium, 1,048 lbs. of lead, 750 lbs. of manganese, 11 lbs. of mercury, and 250 lbs. of nickel. The fugitive air emissions included 5 lbs. of chromium, 5 lbs. of lead, 250 lbs. of manganese, and 5 lbs. of nickel. The total release of dioxin or dioxin-like compounds totaled 1.575 grams or 0.003 pounds (epa.gov). Dioxins are an unwanted by-product of industrial processes and cause many adverse health effects including skin lesions, altered liver functions, and impairment of the immune system (World Health Organization [WHO], 1999).

The Albuquerque Air Quality Division has permitted fourteen emitters in the East Mountain area (Figure 5). Source emitters include industries such as gas stations, cement manufacturing plants, crushers, emergency generators, and concrete manufacturers.

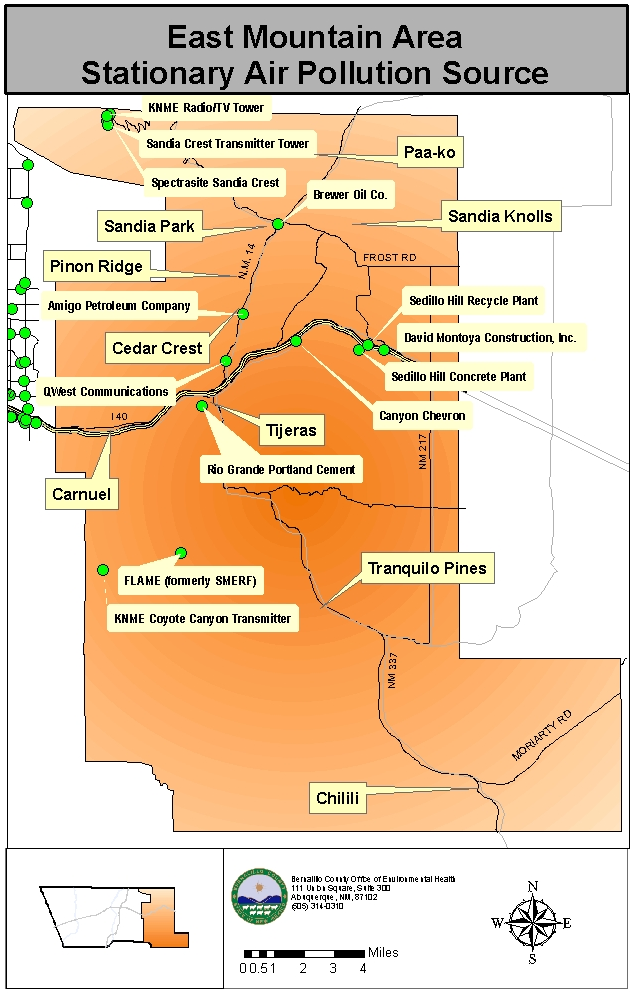

Figure 5- East Mountain Area Stationary Air Pollution Source

4. Allergens

The pollen from trees in the East Mountain area causes problems for many residents. The months of March through September are considered Albuquerque's pollen season. The primary pollen producing trees in order of highest daily pollen count are Mulberry, Juniper, Elm, Cottonwood, and Ash. There are ordinances that restrict the planting of certain types of trees in the City of Albuquerque, but not in the East Mountain area. The best way to control pollen exposure is to monitor the pollen count web page, hosted by the City of Albuquerque, Air Quality Division. On high pollen count days, protect yourself by staying indoors, or wearing a dust mask (City of Albuquerque, 2005).

C. Waste Management

1. Solid Waste

Municipal waste is trash that consists of items such as food scraps, newspapers, product packaging, construction, and demolition waste. Household hazardous waste is waste that includes items that are often labeled as toxic, flammable, reactive or corrosive. Illegal dumping is the disposal of waste in an unpermitted area; the waste can be municipal or hazardous waste.

a. Landfills

The majority of the waste generated by people ends up in landfills. There are three landfills that serve the entire

population of Bernalillo County, the Cerro Colorado landfill, the Southwest landfill, and the Torrance/Bernalillo County landfill. The Cerro Colorado landfill is a municipal landfill that accepts household waste. The Southwest landfill accepts only construction debris. Bernalillo County also has an agreement with Torrance County, which is located East of Bernalillo County, that allows East Mountain residents to take waste to the Torrance/Bernalillo County landfill. The New Mexico Environment Department regulates the landfills. There are three convenience centers located in Bernalillo County. Trash disposed at the convenience centers is transported to the Cerro Colorado landfill. The convenience center located in the East Mountains is the East Mountain Transfer Station located in Tijeras.

b. Illegal Dumping

The Bernalillo County, Office of Environmental Health categorizes trash accumulation complaints and illegal dumping complaints separately. In 2004, the office received 161 trash complaints, 39 illegal dumping complaints, and 19 illegally dumped hazardous waste complaints. Illegal dumpsites can have a variety of health and environmental impacts depending on the type of waste disposed.

2. Household Hazardous Waste

Household hazardous waste is any material that is toxic, flammable, corrosive, or reactive. These materials cannot be thrown out in the trash because they pose a threat to human health, can injure sanitation workers, and negatively impact the environment. A product is deemed hazardous if the label contains words such as "toxic", "danger", "warning", or "caution". Here are some things to consider when purchasing or using hazardous materials: 1) buy small amounts so you only have what you need, and 2) donate leftover product to someone else that can use it. To dispose of hazardous waste, it must be taken to a collection center. Bernalillo County has periodic household hazardous waste collection events in certain areas of the county. Between April 1995 and October 2004, the county collected a total of 135,422 pounds of household hazardous waste in the East Mountains, at a cost of $69,892.25. In 2004, the county collected 14,440 pounds of hazardous waste in the East Mountains, at a cost of $13,893.60. Envirosolve, Inc. and Rinchem, Inc. are contractors used by the county household hazardous waste program.

3. Leaking Underground Storage Tank Sites

The U.S. EPA requires that sites contaminated by leaking underground storage tanks (LUST) be cleaned up to restore and protect ground water. Many underground storage tanks are tanks used for petroleum storage. Chemicals found in petroleum can contaminate the ground water and soil and pollute the air if the chemicals vaporize. However, the biggest threat posed by LUST sites is the contamination of ground water by gasoline by-products. There have been two leaking underground storage tanks in Cedar Crest and nine in Tijeras as of January 2005. However, seven of these have been cleaned up and require no further action, two are in the clean-up stage, one is being investigated, and one is

being monitored by the responsible party with New Mexico Environment Department oversight (New Mexico Environment Department, 2005).

4. Superfund Sites

The Comprehensive Environmental Response Compensation and Liability Act (CERCLA), also known as Superfund, is a law that created a tax on chemical and petroleum industries. This law gave U.S. EPA the ability to respond to releases of hazardous substances that could have negative impacts on human health or the environment. The tax money collected is used to clean up abandoned hazardous waste sites when a responsible party cannot be identified. There are no superfund sites in the East Mountain area.

5. Resource Conservation and Recovery Act Sites

The Environmental Resource Conservation and Recovery Act (RCRA) works to protect human health and the environment from the potential hazards of hazardous waste disposal. RCRA requires that all generators, transporters, treaters, storers and disposers of hazardous wastes provide information to the U.S. EPA about their activities. The U.S. EPA has information on three hazardous waste handlers in the 87059 zip code, and one in the 87008 zip code.

D. Vector Control

1. Introduction

Animals and insects that transmit disease to humans are called vectors. Vector borne diseases of concern to Bernalillo County residents include plague, Hantavirus, Tularemia, and West Nile Virus. The City of Albuquerque, Environmental Health Department and the Bernalillo County, Office of Environmental Health co-manage the joint City/County Vector Control Program. The program actively monitors for plague and conducts surveillance for St. Louis and Western Equine encephalitis. In addition, the program uses larvicides, adulticides, and mosquito larvae eating fish to control the mosquito population.

2. Plague

Plague can be transmitted through the bite of a plague-infected flea, through the handling of plague-infected tissues of sick or dead animals, or by inhaling droplets from pneumonic patients. Human plague cases have occurred in eastern Bernalillo County and in the western foothills of the Sandias. Symptoms of plague vary, but generally include weakness, headache, fever and chills. See Appendix E for a comparison of Plague throughout New Mexico.

3. Hantavirus

Hantavirus is a virus that causes Hantavirus Pulmonary Syndrome (HPS), a serious and often fatal infection of the lungs. Field rodents, particularly deer mice, are carriers of the virus. Humans can contract Hantavirus when the urine,

saliva, or feces of infected mice are either inhaled or rubbed into the eyes, enter the body through cuts in the skin or through rodent bites. Hantavirus can also be contracted by ingesting food contaminated by infected rodents. Symptoms and potential warning signs include sudden fever, muscle aches, headache, stomach pain, difficulty breathing, coughing, nausea, and vomiting. From 1993 to January 2005, 384 cases of Hantavirus have been discovered in the United States, with 63 of those cases contracted in New Mexico. Of those 63 cases, 27 resulted in death. One of these cases was in the East Mountain area. See Appendix F for a map of Hantavirus cases by county.

4. Tularemia

Tularemia is commonly known as rabbit fever and can be found in rabbits or rodents and then transmitted to humans. Tularemia is caused by a bacterium and is similar to plague. Transmission of tularemia is through blood and tissue of infected animals. Humans usually contract the disease while handling dead animals without gloves or from the bite of infected ticks or deer flies. It is especially important for hunters to wear gloves while cleaning animals.

Symptoms of Tularemia can appear from two to ten days after exposure and can include fever, headache, chills, weakness, swollen and tender lymph nodes, and an open sore or ulcer at the site of infection. It is important to begin antibiotic treatment as soon as possible. Tularemia has been found in the East Mountain area, North Albuquerque Acres, and Sandia Heights. (City of Albuquerque Bio-Disease Management, 2005).

5. West Nile Virus

West Nile Virus is a mosquito-borne disease that is transmitted by the bite of a mosquito. The disease usually occurs in the summer and fall. The symptoms of West Nile Virus can be severe in about 1 of 150 people, but usually presents itself as mild or without symptoms. Severe symptoms include high fever, headache, neck stiffness, stupor, disorientation, coma, tremors, convulsions, muscle weakness, vision loss, numbness, and paralysis. Milder symptoms include fever, headache, body aches, nausea, vomiting, and sometimes swollen lymph glands or a skin rash on the chest, stomach and back. Infection spreads through the bite of a mosquito and very infrequently through transfusions, transplants, and mother-to-child (during pregnancy and through breast milk). You are more likely to get sick if you are over fifty or spend a lot of time outside. The best prevention is to use insect repellant that contains DEET, have adequate screens on your windows and doors, remove mosquito breeding sites from around your home (standing water), and stay inside during dusk and dawn (CDC, 2005). According to the CDC, there were 17 positive cases of West Nile Virus in Bernalillo County in 2004 and 88 cases in the state of New Mexico. The majority of these cases occurred from July through September. Out of 14,883 mosquito samples tested in Bernalillo County in 2004, 38 tested positive for West Nile. There were three horses that tested positive for West Nile

Virus in Bernalillo County in 2004. Overall, there was a decrease in the number of West Nile Virus cases from 2003 in Bernalillo County, when there were 35 positive human cases, 46 out of 9,908 mosquito pools testing positive, and 36 positive equine (horse) cases. See Appendix G for a map of West Nile Virus cases by county for 2004.

E. Food Quality

1. Introduction

The Bernalillo County, Office of Environmental Health inspects the sanitation and safety of 61 food service establishments in the East Mountain area. All food service establishments have one of three priority codes; low, medium, or high. High priority establishments are considered high risk because of the type of complex food preparation steps that are involved which in turn, may be consumed by the elderly or children (e.g., day cares centers or senior citizen meal sites). There are 13 high priority establishments in the East Mountain area. There are 26 medium priority establishments, these include establishments like fast food restaurants, mobile food vendors and hamburger stands. Low priority establishments include vendors that sell pre-packaged foods such as bars and convenience stores. There are 22 low priority food service establishments in the East Mountain area.

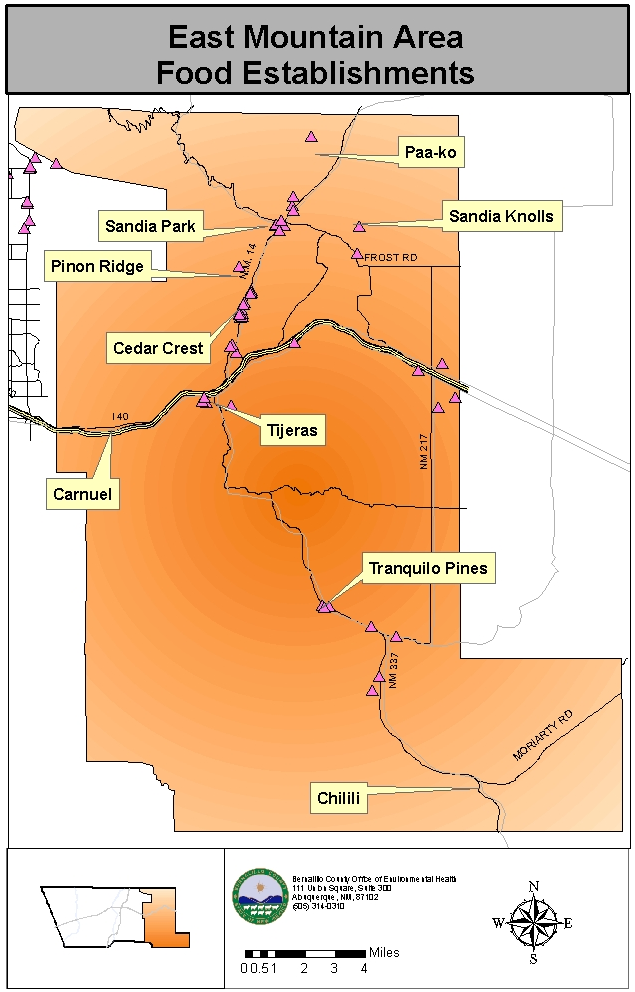

Figure 6-East Mountain Area Food Establishments

2. Inspections

Inspections are conducted to ensure that food service establishments are complying with the Food Service Sanitation Section of the Bernalillo County Health and Sanitation Code (also known as the Food Safety Ordinance) in an effort to prevent foodborne illness. Upon inspection, food service establishments are issued a green "A" or red "C" sticker. Establishments that display a green sticker are in compliance with the Food Safety Ordinance. On the other hand, establishments that display a red sticker have been downgraded and are not in compliance with the Food Safety Ordinance and have been issued a time period with which to come into compliance. To obtain information on why an establishment has received a red sticker, contact the Bernalillo County, Office of Environmental Health at (505) 314-0310.

3. Hazard Analysis Critical Control Point Program

The Hazard Analysis Critical Control Point (HACCP) is a technique that is used to monitor and control food safety hazards. The goal of HACCP is to prevent problems from occurring during the harvesting, preparation, and consumption of foods. Critical points along the food preparation process are identified and monitored to ensure food is safe to consume. The seven basic principles of HACCP are: hazard analysis, critical control point (CCP) identification, establishing critical limits, monitoring procedures, corrective actions, verification procedures, and record-keeping and documentation. This is an effective, step-by-step procedure for vendors and food inspectors to use in ensuring food safety.

4. Foodborne Illness

Foods or beverages that are contaminated with pathogens, chemicals, or that have been adulterated can cause foodborne illnesses. Symptoms of a foodborne illness vary and can include nausea, vomiting, diarrhea, stomach cramps, fever, headache, chills, and muscle aches. Foodborne illnesses can be especially serious for children, pregnant women, the elderly, and immune compromised people (such as people with HIV and people receiving chemotherapy treatment). Serious infections can result in death. If you suspect you have contracted a foodborne illness from a food establishment, contact the Bernalillo County, Office of Environmental Health at (505) 314-0310.

F. Forest Health

1. Wildland Fire

Wildfire is a very real threat to East Mountain residents. There are several steps you can take at your home to protect yourself from fires. The steps you can take as a home owner include the creation of a defensible zone, the planting of Fire Wise landscaping, the use of appropriate building materials, and the maintenance of an annual checklist to assure your home is "Fire Wise" (New Mexico State University, 2005).

Defensible space is used to maintain a zone around your home that is free of combustible materials or is limited to those that will slow the spread of fire. Treating, removing, or reducing plant or building materials accomplishes this.

Fire Wise landscaping consists of certain types of grasses and plants that do not burn easily. Fire Wise grasses are those that are primarily native, longer growing, and need less maintenance.

Appropriate building materials in your defensible zone are those that reduce the likelihood of your house burning. The roof material plays a large factor in your home's ability to resist fire. You should build your roof out of a non-combustible material such as metal, concrete shingles, or clay. Homes built out of brick or stucco resist fire much more than homes built from wood. You can also avoid locating your home in fire vulnerable areas, such as ridge tops, canyons, or areas between highpoints on a ridge. For more information on appropriate building materials or locations contact your local State Forestry Office or fire department. The State Forestry Office for Bernalillo County can be reached at (505) 867-2334.

The Annual checklist serves to help you determine if any additional maintenance is necessary due to an ever-changing environment. An example of this checklist can be found in Appendix H.

You can access brochures and more information on these topics from the New Mexico State University, Defensible Zone web page located at http://cahe.nmsu.edu/defensible_zone/protect/checklist.html. To access current information on fire activity, weather, prescribed burns, and general information on fire in the Southwest, go to the Southwest Area Wildland Fire Operations web page at http://gacc.nifc.gov/swcc.

2. Bark Beetle

a. General

New Mexico is experiencing piñon and ponderosa pine tree mortality due to several species of the *Ips* beetle and the western pine beetle. The beetles are approximately 1/8th inch in length. Several factors influence an outbreak of the bark beetle including drought and high tree density. These beetles normally only attack diseased or weakened trees. Trees are attacked by the beetle boring through the bark and laying eggs within. When the eggs hatch, the larvae feed on the soft inner bark. The beetle will introduce a "blue stain" fungus to the tree that clogs nutrient and water pathways. Needles will begin to turn color within a month of the infestation. Once the beetles have left the tree it no longer poses a threat to other trees (USDA Forest Service, 2004).

Figure 7- Western Pine Beetle

b. Treatment

Nothing can be done to save a tree after it has been attacked by bark beetles and infested with the blue stain fungus. If killing the beetles under the bark is desired, the infested tree must be cut down and treated by peeling the bark from the logs; burning, chipping, shredding, or burying the logs; or piling the logs in direct sunlight and covering with clear plastic to produce a temperature high enough to kill the beetles. The beetles feed within the inner bark, so drenching the roots with insecticides is not effective.

If you have high-value trees you must protect, an annual application of carbaryl and permethrin based insecticides can be used. The entire surface of the trunk and large limbs must be thoroughly sprayed for this to be effective.
Due to the extent of the outbreaks and the capacity for the bark beetle to reproduce very quickly, according to the USDA Forest Service an effective large-scale control program is not feasible. However, reduction of tree density, disposal of woody debris, and prescribed fire will improve forest health and reduce the likelihood of a bark beetle outbreak or wildfire (USDA Forest Service, 2004).

For a copy of the New Mexico Bark Beetle Epidemics Fact Sheet published by the Southwestern Region, USDA Forest Service, visit: http://www.fs.fed.us/r3/resources/health/beetle/index.shtml.

3. Invasive Species

An "invasive species" is defined as a species that is

1) non-native (or alien) to the ecosystem under consideration *and*

2) whose introduction causes or is likely to cause economic or environmental harm or harm to human health. (Executive Order 13112).

Invasive species can be plants, animals, and other organisms (e.g., microbes). Human actions are the primary means of invasive species introductions.

Some of the invasive plants or "weeds" we have in New Mexico include Russian knapweed, Canada thistle, African rue, Saltcedar or Tamarask, and leafy spurge. Invasive weeds can "choke out" the native species. Some of these

plants are poisonous to livestock and wildlife, and can be toxic to native plants. These plants spread so easily because they are not native to this area and have no natural predators. See Appendix I for a map representing the threat of invasive species in New Mexico.

Invasive weeds or noxious weeds are spread when the seeds attach to people, vehicles, or animals. Some invasive weeds are spread because they have very pretty flowers and people plant them in their gardens.

Removal of invasive weeds is a very costly and difficult battle. According to Richard Lee, weed scientist with NMSU's Cooperative Extension Service, "we're losing land in the West to weed infestation at a rate of more than 200 acres per hour, 5,000 acres per day. If we choose to ignore the problem, it will only get worse."

What can you do? When landscaping, it is important to plant only native species. You should be able to find out from your local nursery what plants are native to New Mexico and safe to plant. Pack animals can spread invasive weeds into the backcountry. To avoid this, a weed-free hay is sold that should be fed to the animal before and during a trip into the mountains. Across the state, professionals are using mechanical, chemical and biological methods to control invasive weeds. One biological method in use is the introduction of Aphthona flea beetles that feed on the leafy spurge. Removal of invasive weeds and replacement with native varieties is a mechanical method being utilized.

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Appendix A- Drinking Water Analysis Labs in Albuquerque

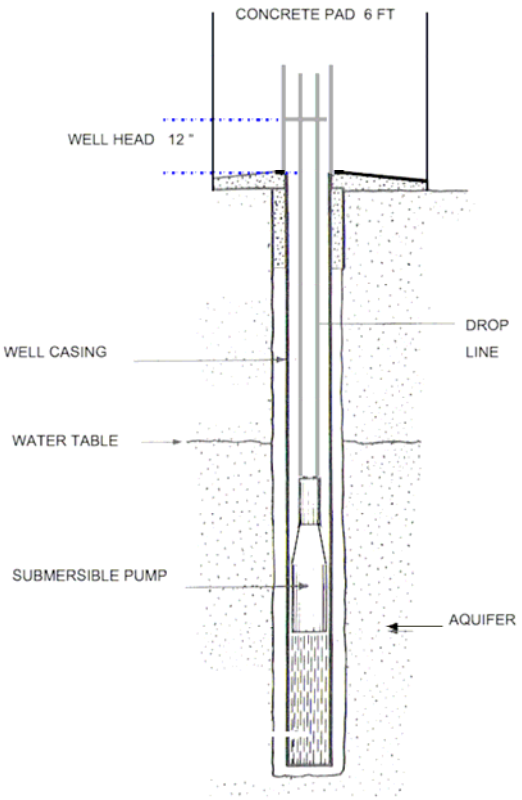
Certified Laboratories for Drinking Water Analyses

<http://www.nmenv.state.nm.us/dwb/Certified_labs.html>

Albuchemist Laboratory	Microbiology	Albuquerque, NM	(505) 268-7367
Albuquerque Water Quality	Microbiology	Albuquerque, NM	(505) 873-6249
Assaigai Analytical Laboratories	Microbiology/Chemical	Albuquerque, NM	(505) 345-8964
Alta Analytical	Dioxin	El Dorado Hills, CA	(916) 933-1640
Kramer & Associates Lab	Microbiology	Albuquerque, NM	(505) 881-0423
NM Department of Health, Scientific Laboratories Division	Microbiology/Chemical	Albuquerque, NM	(505) 841-2500
Triangle Laboratories	Dioxin	Research Triangle Park, NC	(919) 544-5729

Appendix B- Well Disinfection Procedures

Diagram 1: Well Head



Well Disinfection

The purpose of disinfection is to destroy organisms that can be harmful to your health. The type and extent of disinfection used is determined by the source and condition of the water to be treated. Both **CHLORINE RESIDUAL** and **CONTACT TIME** are very important in effectively killing pathogens.

2004

Procedures for disinfecting your well (see diagram on reverse side)

To properly disinfect wells follow these procedures:

1. Pump well water to the ground surface until water is relatively clear.
2. Stop pump.
3. Add household chlorine bleach directly into the well casing (see Table 1). **Do not use scented bleach or any swimming pool products containing stabilized chlorine.**
4. Let the well water sit for 30 minutes to allow the chlorine to settle in the well water, then flush well by starting and stopping the pump several times in order to wash down the inside of the casing and the drop line with chlorinated water.
5. Open the taps at the farthest ends of the water system until a chlorine odor is detected, then close taps.
6. Let the chlorinated water stand in the well, the storage tank, and any piping in the house for at least 24 hours.
7. Pump well water to the ground surface until there is no chlorine odor in the water being drained.
8. The water should then be tested for bacteria to ensure that it is safe for drinking.

Table 1
Household Bleach Required to Disinfect 100 Feet of Pipe @ 50 parts per million

Diameter of Pipe or Casing (in inches)	Chlorine Compound
	5 % Available Chlorine (Household Bleach)
2	2 Ounces
4	9 Ounces
6	20 Ounces
8	2 1/8 Pints

Source: (1994). *Disaster field manual*. Carmichael, CA: California Association of Environmental Health Administrators

Appendix C- Permitted Groundwater (GW) Discharge Facilities

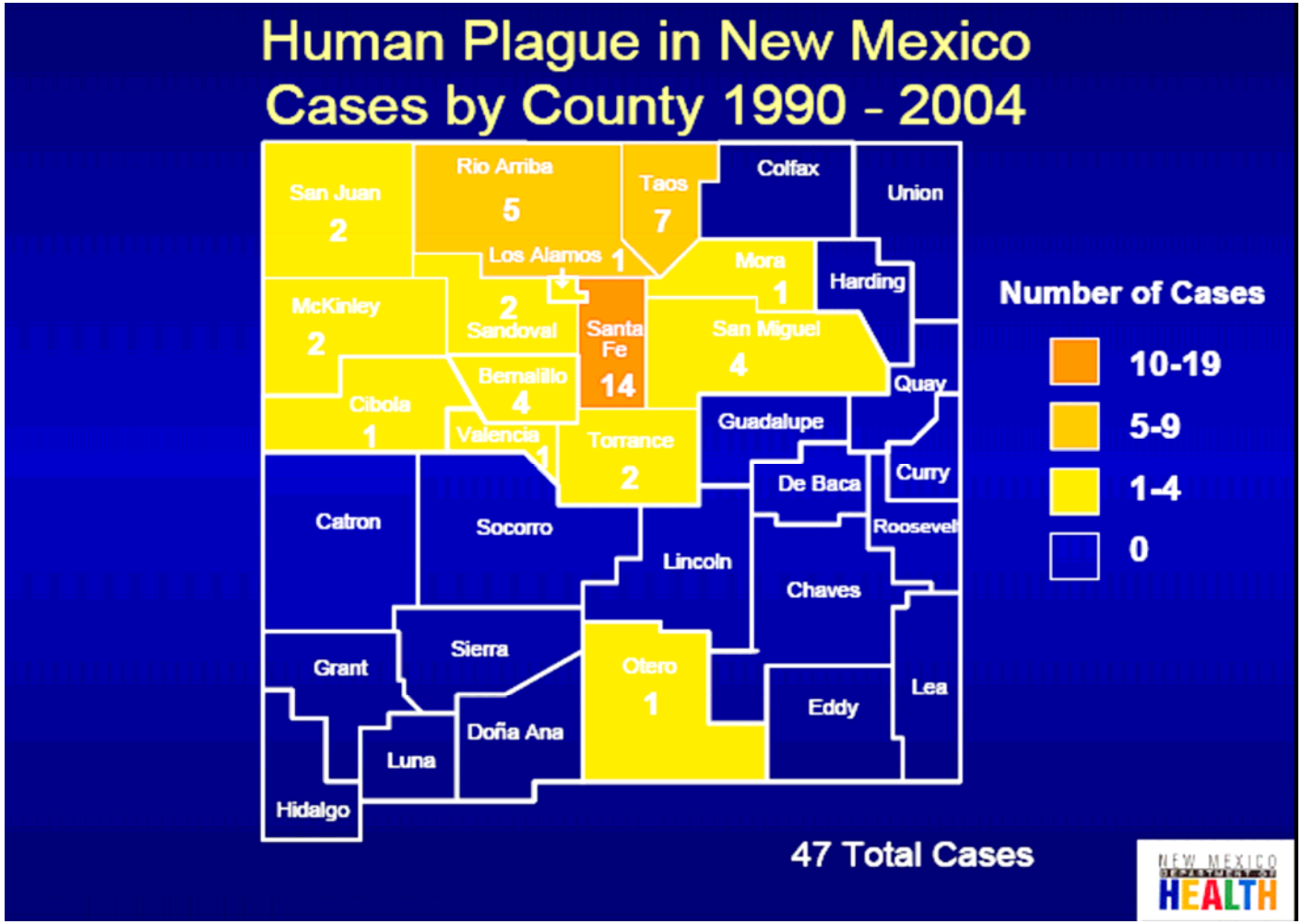
Municipality	County	Facility Type	Waste Type	Gallons Per Day	Depth to GW	Current Permitting Activity	Activity Status	Activity Status Date
Cedar Crest	Bernalillo	Vehicle/Equipment Wash	Industrial	1500	20	Discharge Permit	Case Canceled with No Further Action	4/11/1989
Cedar Crest	Bernalillo	FOOD-Restaurant	Domestic	4,500	100	DP-Renewal	Application Received	8/19/2001
Cedar Crest	Bernalillo	Educational Institution	Domestic	6,285	120	DP-Renewal	Fee Received	8/28/2003
Cedar Crest	Bernalillo	Amusement/Recreation Service	Domestic	12,900	380	DP-Renewal	Comment Period Ended	2/5/2005
Edgewood	Bernalillo	Truck Stop	Domestic	2,500	150	Discharge Permit	Issued	4/20/2001
Sandia Park	Bernalillo	Retail/Commercial	Domestic	8,970	100	DP-Modification	Deemed Administratively Complete	12/27/2004
Sandia Park	Bernalillo	Retail/Commercial	Domestic	10,000	210	DP-New	Deemed Administratively Complete	9/3/2003
Sandia Park	Bernalillo	Educational Institution	Domestic	10,000	80	Discharge Permit	Case Canceled with No Further Action	3/6/2001
Tijeras	Bernalillo	Vehicle/Equipment Wash	Industrial	200	30	Discharge Permit	Issued	1/16/2001
Tijeras	Bernalillo	Educational Institution	Domestic	2,288	70	Discharge Permit	Terminated	4/10/1997
Tijeras	Bernalillo	Hydrocarbon Remediation of GW	Industrial	6,000	50	Discharge Permit	Terminated	5/29/2001
Tijeras	Bernalillo	Mobile Home Park/Subdivision	Domestic	8,000	70	DP-Renewal	Deemed Administratively Complete	8/20/2004
Tijeras	Bernalillo	Mobile Home Park/Subdivision	Domestic	9,000	53	DP-Renewal	Deemed Technically Complete	11/19/2004
Tijeras	Bernalillo	AMU-Campground/RV Park	Domestic	11,580	173	DP-New	Issued	12/23/2003
Tijeras	Bernalillo	Educational Institution	Domestic	12300	26	Discharge Permit	Case Canceled with No Further Action	8/28/1992
Tijeras	Bernalillo	Mobile Home Park/Subdivision	Domestic	31800	> 207	DP-Renewal	Fee Received	2/26/2003

New Mexico Environment Department, Ground Water Quality Bureau
<http://www.nmenv.state.nm.us/gwb/gwqbhome.html>

Appendix D- National Ambient Air Quality Standards (NAAQS)

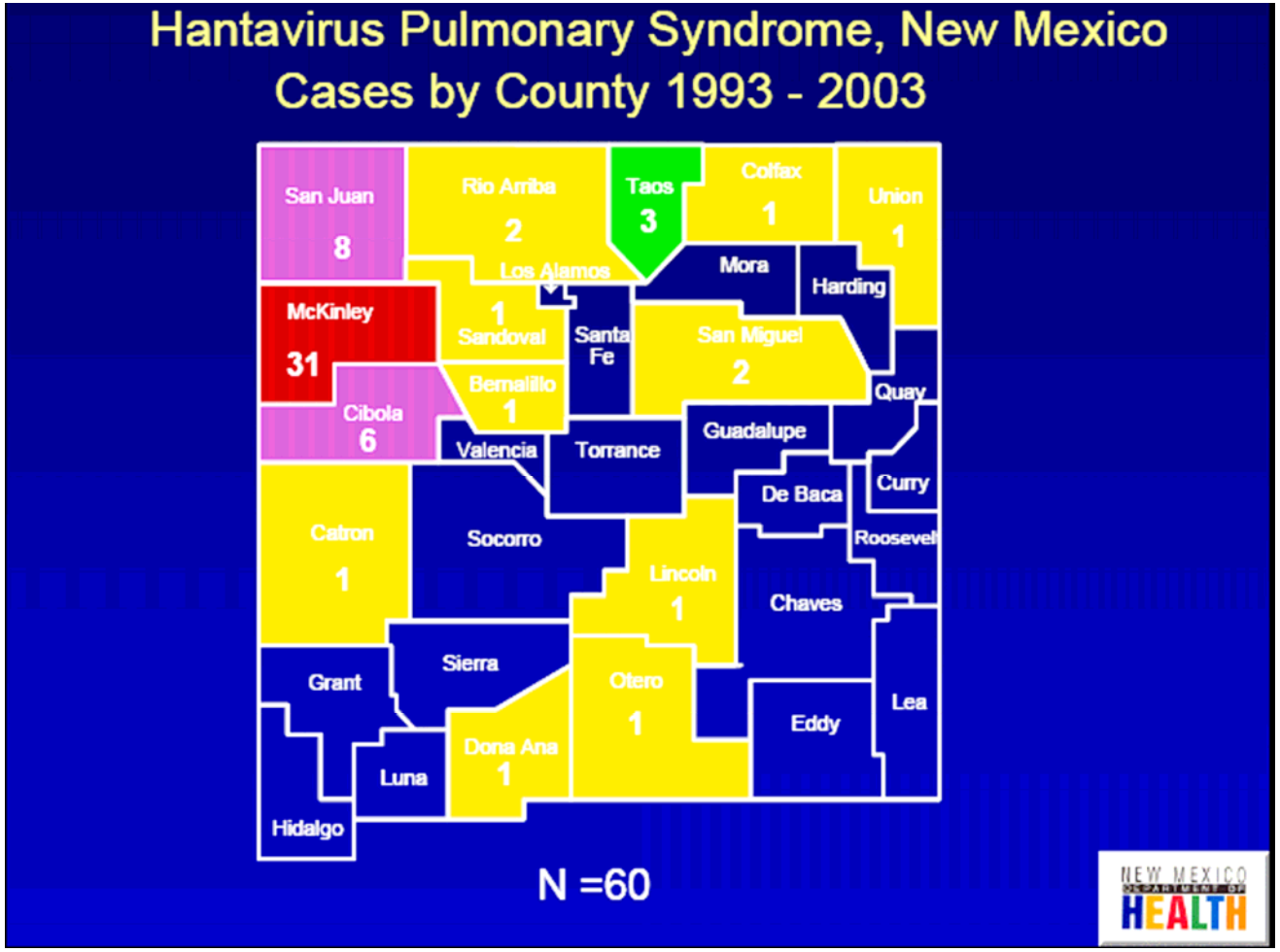
Pollutant	**Primary Standard** (Health-Based)		**Secondary Standard** (Welfare-Based)	
	Type of Average	*Standard Level Concentration*	*Type of Average*	*Standard Level Concentration*
PM10	Annual Arithmetic Mean	50 ug/m3		Same as primary standard
	24 hr average not to be exceeded more than once per year on average over 3 years	150 ug/m3		Same as primary standard
PM2.5	Spatial and annual arithmetic mean in area	15 ug/m3		Same as primary standard
	98^{th} percentile of the 24 hr average	65 ug/m3		Same as primary standard
O3	Maximum daily 1 hr average to be exceeded no more than once per year averaged over 3 consecutive years	0.12 ppm		Same as primary standard
	3 yr average of the annual fourth highest daily 8 hr average	0.08 ppm		Same as primary standard
NO2	Annual Arithmetic Mean	0.03 ppm		Same as primary standard
SO2	Annual Arithmetic Mean	0.03 ppm	3 hr	0.50 ppm
	24 hr average	0.14 ppm		
CO	8 hr (not to be exceeded more than once per year)	9 ppm		No secondary standard
	1 hr (not to be exceeded more than once per year)	35 ppm		No secondary standard
Lead	Maximum quarterly average	1.5 ug/m3		Same as primary standard

Appendix E- Plague Cases by County, 1990-2004



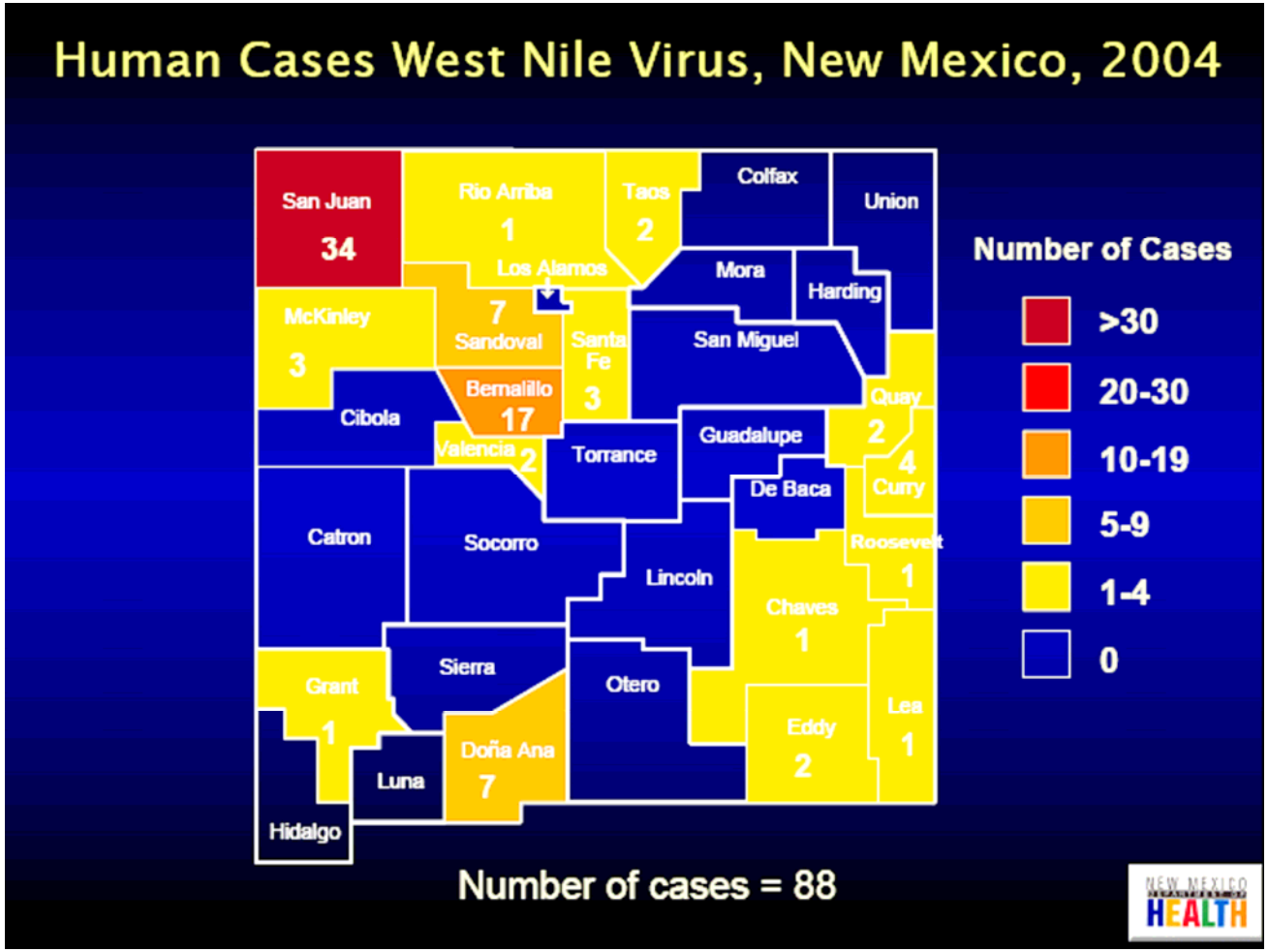
New Mexico Department of Health
http://www.health.state.nm.us/plague.html

Appendix F- Hantavirus Cases by County, 1993-2003



New Mexico Department of Health
http://www.health.state.nm.us/a-z.html

Appendix G- West Nile Cases by County, 2004



New Mexico Department of Health
http://www.health.state.nm.us/wnv.html

Appendix H- Fire Wise Checklist

New Mexico State University, Defensible Zone
http://cahe.nmsu.edu/defensible_zone/protect/checklist.html

Maintaining your Defensible Space

Your home is located in a forest that is dynamic and constantly changing. Trees and shrubs continue to grow, plants die or are damaged, new plants establish and grow, needles and leaves drop to the ground, forming duff. Like other parts of your home, defensible space requires maintenance. Use the following checklist each year to determine if additional work or maintenance is necessary.

Defensible Space and Fire Wise Annual Checklist

- Trees and shrubs are properly thinned and pruned within the defensible space. Slash from thinning is disposed.
- Roof and gutters are clear of debris.
- Branches overhanging the roof and chimney are removed.
- Chimney screens are in place and in good condition
- Grass and weeds are mowed to a low height.
- An outdoor water supply is available, complete with a hose and nozzle that can reach all parts of the house.
- Fire extinguishers are checked and in working order.
- The driveway is wide enough. Clearance of trees and branches is adequate for fire and emergency equipment. (Check with your local fire department.)
- Road signs and your name and house number are posted and easily visible.
- There is an easily accessible tool storage area with rakes, hoes, axes and shovels for use in case of fire.
- You have practiced family fire drills and your fire evacuation plan.
- Your escape routes, meeting points and other details are known and understood by all family members.
- Attic, roof, eaves, and foundation vents are screened and in good condition. Stilt foundations and decks are enclosed, screened or walled up.
- Trash and debris accumulations are removed from the defensible space.
- A checklist for fire safety needs inside the home is available from your local fire department.

Appendix I- Magnitude of Invasive Species Threats

New Mexico Department of Game and Fish, New Mexico Comprehensive Wildlife Conservation Strategies
http://fws-nmcfwru.nmsu.edu/cwcs/documents/Threats/Terrestrial_Habitats_threats.htm