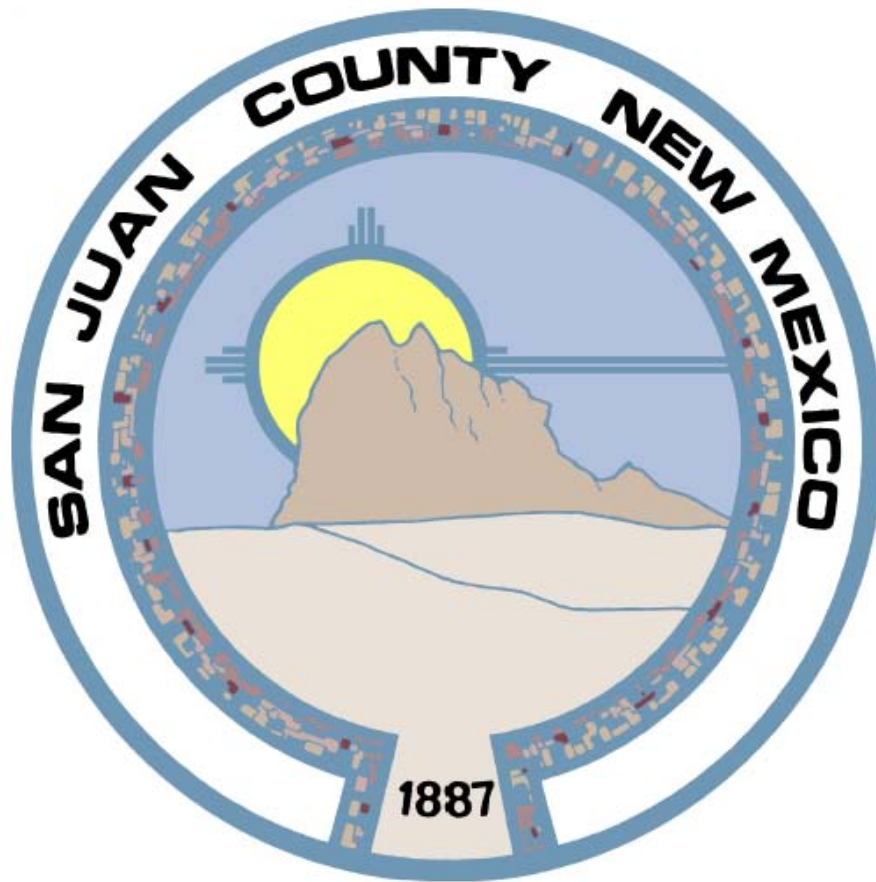


**San Juan Mitigation Project
2004**



**Part III
Implementation Strategies**

Part III

Implementation Strategies

INTRODUCTION

Upon completing the risk identification and analysis of the existing hazards in San Juan County, Aztec, Bloomfield, and Farmington, the working group considered potential mitigation strategies. The first stage of this process was the establishment of goals and objectives concerning each identified hazard. Goals are defined as general long-range statements that refer to the overall approach to a specific problem. Objectives are concerned with specific approaches and steps to be taken in arriving at the established goals.

Once the goals and objectives were established for each identified hazard, specific action plans were developed to achieve each objective leading to the overall goal. FEMA has grouped mitigation strategies into six broad categories: prevention, property protection, public education and awareness, natural resource protection, emergency services, and structural projects.

Prevention is the foundation of mitigation. Preventive actions that eliminate the hazardous condition that threatens the community eliminate the threat itself. These types of actions can be implemented in many forms, including administrative and regulatory actions such as zoning and building codes. Such actions prevent additional potential damages by restricting development and use of hazardous areas such as flood plains, or requiring builders to utilize specific construction applications that will reduce or eliminate a hazard.

Property protection refers to the modification of existing structures to reduce or eliminate a hazard's potential dangers. One example would be elevating a building in order to raise its ground floor above the projected 100-year flood level.

Public education and awareness are designed to make the community's citizens aware of local hazards and provide them with information that they can use to mitigate the situation. These types of programs include outreach projects, real estate disclosure, and education of both children and adults.

Natural resource protection includes actions that will reduce damage to natural systems or help to preserve or restore them. Typical actions could be forest thinning projects, erosion control, or watershed management.

Emergency services are actions that provide protection of the community and property during an actual hazard event. Such actions include early warning systems, emergency response agencies, and the protection of critical infrastructure.

Structural projects refer to the actual building of structural elements that reduce or eliminate the hazard's impact. Such structures include retaining walls, flood control dams, or storm shelters.

In order to create mitigation strategies for each of the three identified hazards, flooding, drought, wildfire, and hazardous material spills, input was sought from the working group, the public in the form of a public hearing, the county and participating governing bodies, the New Mexico Office of Emergency Management mitigation office, and surrounding counties and states. Agencies and departments identified as having a role in the completion of specific objectives were also given the opportunity to provide additional input into the final part of this process, the implementation plan.

The implementation plan is designed to project possible completion dates for the strategies developed for each hazard. It provides for progress reports concerning these projects, evaluation of each project's success, and an annual report to each jurisdiction's governing body of the overall mitigation process within San Juan County, Aztec, Bloomfield, and Farmington. Based on evaluation of the progress reports and successful completion of the mitigation objectives, new objectives can be established to continue the hazard mitigation process. Since mitigation is an ongoing process as each hazard is eliminated or reduced to a satisfactory level, other hazards identified as requiring mitigation will be added, new strategies will be developed, and goals and objectives established.

FLOODING

Section 1. San Juan County

San Juan County has recently identified the county's emergency manager as having the responsibility of being the county's floodplain manager, with the goal of bringing San Juan County into the National Flood Insurance Program. At this time no building restrictions exist in San Juan County concerning construction in floodplains and the exact number of structures presently in the floodplain is unknown. The creation of ordinances concerning limiting future building within the floodplains will reduce the potential threat of loss of life and flood damage.

The present floodplain maps for San Juan County were last updated in 1988. During the elapsed time some waterways have been altered in part by natural erosion and also by construction and waterway encroachment.

Goals and objectives to resolve these problems are as follows.

Goal:

1. Control future structural encroachment in identified floodplains in San Juan County.

Objectives:

- 1.1 Enact legislation for San Juan County restricting construction within the identified county floodplains.
- 1.2 Seek an update of floodplain maps for San Juan County.

Goal:

2. Reduce the damage caused by flash flooding in San Juan County.

Objectives:

- 2.1 Enact legislation for San Juan County concerning the responsibility for keeping waterways clear of debris and vegetation that can magnify the effects of flooding.
- 2.2 Identify and plan for bank stabilization projects along waterways in the county.

Action Plans:

1. **Building/zoning codes.** The County Commission will enact building/zoning codes that restrict building within the county's identified floodplains. Such legislation will require a review and approval of all future construction by the county floodplain manager.

Funding Source:
San Juan County

Responsible Agencies:
San Juan County Commission
San Juan County Attorney
San Juan County Floodplain Manager

Achievable results. By enacting legislation that restricts future construction in floodplains, the county will see a reduction in the potential loss of life and property caused by flooding. In addition, if flooding does occur and structures presently in floodplains are destroyed, their replacement within the floodplain can be restricted or eliminated in order to avoid repetitive loss. Presently there are an estimated 6,250 persons living within the floodplain in San Juan County. In addition, there are 1,240 family structures, 48 business structures, and 60 other types of structures. The median value of a family residence in New Mexico is approximately \$104,000 which means that the aggregate value of the family residences presently in the floodplain is approximately \$128,960,000. If flooding were to occur, resulting damage could easily reach \$130,000,000, which does not

include the contents of the residences, the loss of the 48 businesses, or the other 60 structures.

The institution of floodplain regulations within the county floodplain will not correct the present situation, and the value of these residences will increase due to the inflation of the structures' values. However, no new exposure would be created due to restrictions in the construction of new buildings in floodplain areas. In addition, if a flood were to occur, the rebuilding of presently at-risk structures will be regulated in such a way as to reduce or even eliminate the possibility of repetitive losses.

2. **Updating floodplain maps.** A petition to FEMA requesting the updating of San Juan County floodplain maps will be made. The present maps for San Juan County and its incorporated areas date from 1978 to 1988.

Funding Source:
FEMA

Responsible Agencies:
San Juan County Floodplain Manager
FEMA

Achievable results. By updating the floodplain maps for San Juan County, a more comprehensive inventory can be established showing the existence of structures in floodplains. Additionally, due to erosion and other types of construction, new areas susceptible to flooding will be identified. The floodplain maps for San Juan County were last evaluated 25 years ago in 1978. Since then, and in the absence of floodplain regulations, there has been uncontrolled construction in the floodplain. In addition to new construction, the waterways have been altered to provide extended building sites. Altering the waterways has created new areas of flooding outside the known floodplains established in the 1978 maps. Updating the maps will provide the county floodplain management with an accurate assessment of the floodplains as they exist today.

The median value of residential structures in New Mexico is \$104,000, and the estimated aggregate value of residential structures within the established floodplains of the 1978 survey is approximately \$128,960,000. It is presently unknown if additional properties are at risk of flooding. The establishment of floodplain management regulations will be much more effective with updated floodplain maps. Updated maps will also ensure that no new construction takes place within the floodplain, which will reduce exposure to flood damage.

3. **Waterway cleaning legislation.** The County Commission will enact legislation that establishes the need to keep San Juan County waterways clear of undesirable vegetation.

Funding Source:
San Juan County

Responsible Agencies:
San Juan County Commission
San Juan County Attorney
San Juan County Floodplain Manager
U.S. Army Corp of Engineers

Achievable results. The establishment of legislation requiring property owners to maintain the waterways on their property will reduce the potential for flooding by allowing unrestricted flow of water. In addition to keeping the waterways open for the free flow of water, such maintenance will reduce the potential of illegal dumping in the waterways.

Unfortunately, many waterways that run through areas accessible by vehicle are used for debris disposal. Although such dumping of debris is illegal, it is difficult to enforce these laws when local law enforcement is already overextended in its normal role of criminal abatement. When such dumping occurs in waterways on public land, county public works assets can be utilized in its removal. However, when dumping occurs in waterways running through lands under private ownership, the owners have no obligation to clean up the debris. This accumulation of debris restricts the water flow through these areas and can cause flooding. In addition, if this debris moves down the waterway during flooding, it can block culverts or other bottlenecks downstream, causing further flooding downstream from its original source.

Instituting an obligation for private landowners to clear waterways will ensure that debris-caused flooding is reduced or eliminated when such regulations are in place and enforced.

4. **Bank stabilization projects.** The banks of arroyos, rivers, and other waterways in San Juan County will be inspected for erosion. Once an inventory of these areas has been made, a priority list will be created for the stabilization of problem banks based on the potential to cause damage due to further erosion.

Funding Source:
San Juan County
New Mexico Highway Department
U.S. Army Corps of Engineers

Responsible Agencies:
San Juan County Floodplain Manager
San Juan County Public Works Department
U.S. Army Corps of Engineers

Achievable results. The stabilization of waterway banks can reduce or eliminate the dangers of erosion during times of flooding. Such stabilization can prevent the undercutting of foundations, which is a major source of structural damage during floods.

When flooding occurs, over time the power of the water rushing through the county's waterways erodes soil along its banks and changes the course of the waterway. The use of riprap and other bank stabilization techniques can reduce or even eliminate the erosion caused during flooding. Many county roads throughout San Juan County use low water crossings instead of the more costly culverts, bridges, or other elevated roadways. In addition, some of these roadways run parallel to waterways. When flooding occurs in areas without bank stabilization in place, these road surfaces can be washed out and possibly destroyed. The application of bank stabilization in these areas can reduce or eliminate the need to rebuild these roads after flooding occurs. These bank stabilization projects will reduce the possibility of repetitive loss.

Section 2. Aztec

Aztec is subject to riverine flooding along the Animas River and the Hampton Arroyo. The floodplain in the area including Aztec runs through the downtown and into the city's residential areas. This floodplain contains numerous historical structures built prior to the concept of floodplain management. Although Aztec does have floodplain management regulations in place, their management is based on floodplain maps dating from 1988. Since 1988, additional areas have been annexed into the city limits that are still shown as part of the county and outside the boundaries of current city floodplain maps.

Along with the exposure of historic structures in Aztec to flooding damage, two highways, N.M. 516 and N.M. 550, fall within the floodplain. Therefore, a 100-year flood in Aztec would block the highways until the water level recedes and flood debris is cleared from the roadways. The economic losses from such a flood would affect areas well outside of Aztec itself.

Goals and objectives to resolve these problems are as follows.

Goal:

1. Establish an accurate floodplain management plan for Aztec.

Objectives:

- 1.1 Seek updated floodplain maps for Aztec.
- 1.2 Enact legislation to restrict future growth into floodplains in Aztec.

Goal:

2. Reduce the risk of flooding by maintenance of Aztec's waterways.

Objectives:

- 2.1 Ensure that waterways in Aztec are free of debris or vegetation that will restrict the free flow of water.
- 2.2 Establish the responsibility for maintaining clean waterways on private property.

Goal:

3. Prevent future flood risk to presently-established areas of downtown Aztec.

Objectives:

- 3.1 Evaluate the present dynamics that cause flooding in historic downtown Aztec.
- 3.2 Develop plans to prevent the potential for future flooding in historic downtown Aztec.

Action Plans:

1. **Updating floodplain maps.** FEMA will be sent a petition requesting that the Aztec floodplain maps be updated.

Funding Source:
FEMA

Responsible Agencies:
San Juan County Floodplain Manager
Aztec Floodplain Manager
FEMA

Achievable results. By updating Aztec's floodplain maps, a more comprehensive inventory can be established showing structures existing in the floodplains. In addition, new areas susceptible to flooding due to erosion and other types of construction will be identified.

The floodplain maps for Aztec were last evaluated 15 years ago in 1988. Since then, the city has annexed areas into the city limits that had no prior floodplain regulations. Some of these annexed areas are at risk of flooding. Altering the waterways in some of these areas has created new areas of flooding outside the

known floodplains established in the 1988 maps. Updating the floodplain maps will enhance the city's ability to manage the floodplains and mitigate potential damages.

- 2. Building/zoning codes.** Revise the existing building/zoning codes so that newly incorporated areas of the city that are not presently covered by the current floodplain maps can be regulated.

Funding Source:
City of Aztec

Responsible Agencies:
Aztec City Council
Aztec City Attorney
Aztec Floodplain Manager

Achievable results. The inclusion of all incorporated areas under Aztec's current floodplain restrictions will restrict further growth into known floodplains. Enacting such legislation will reduce the overall cost to repair damages from future floods. In this legislation, all comprehensive planning for the city's future development will be required to consider identified hazard locations and ensure that development into these areas is restricted or eliminated. In addition, the replacement of structures destroyed by future floods can be restricted, thereby eliminating or reducing repetitive loss.

Many areas that have been annexed into the city have historically had no regulatory restrictions concerning building into floodplains. As these areas are annexed, restrictions on future development in the floodplains will be established. Further areas under consideration for annexation will be compared against the city's established floodplain management system.

- 3. Clear waterways.** Establish legislation emphasizing the need for maintaining clear waterways in Aztec. This legislation will identify property owners as being responsible for maintaining clear waterways existing on their property. This legislation will further establish the authority to enforce the requirement for maintaining clear waterways and the penalties for noncompliance.

Funding Source:
City of Aztec

Responsible Agencies:
Aztec City Council
Aztec City Attorney
Aztec Floodplain Manager
Aztec Public Works Department
U.S. Army Corps of Engineers

Achievable results. The enactment of a clear waterway policy will ensure that debris and undesirable vegetation is removed from the waterways. Clearing of these obstructions will reduce the potential for flooding by allowing floodwaters to move easily through waterways without choke points which create bank overflow.

Unfortunately, many waterways that run through areas accessible by vehicle are used for debris disposal. Although such dumping of debris is illegal, it is difficult to enforce these laws when local law enforcement is already overextended in its normal role of criminal abatement. When such dumping occurs in waterways on public land, county public works assets can be utilized in its removal. However, when dumping occurs in waterways running through lands under private ownership, the owners have no obligation to clean up the debris. This accumulation of debris restricts the water flow through these areas and can cause flooding. In addition, if this debris moves down the waterway during flooding, it can block culverts or other bottlenecks downstream, causing further flooding downstream from its original source.

Instituting an obligation for private landowners to clear waterways will ensure that debris-caused flooding is reduced or eliminated when such regulations are in place and enforced.

4. **Maintenance of public area waterways.** Waterways located in areas of public ownership will be inspected annually to ensure that they are free of debris or vegetation that could restrict the free flow of floodwaters.

Funding Source:
City of Aztec

Responsible Agencies:
Aztec Public Works Department
Aztec Floodplain Manager

Achievable results. As with waterways in areas of private ownership, those that are located in the public domain require periodic clearing. By ensuring that all waterways, storm drainage systems, and culverts remain clear of debris and unwanted vegetation, the city will ensure unrestricted flow of floodwaters and reduce the chance of flooding. In addition, unrestricted waterways will help prevent damage to roadways and bridges due to the pressure created by the force of the water.

Maintaining clear waterways will reduce the chance of flooding by ensuring that storm drainage systems and waterways function properly. Unlike the waterways running through private property, areas in the public sector can be cleared with greater speed based on the availability of city manpower and equipment.

- 5. Identify flood causes.** In addition to updating Aztec's floodplain maps, the causes of flooding in Aztec will be completely reevaluated to update and further understanding of the dynamics within the city that cause and contribute to flooding.

Funding Source:

City of Aztec
U. S. Army Corps of Engineers
FEMA

Responsible Agencies:

Aztec City Engineer
Aztec Floodplain Manager
U.S. Army Corps of Engineers

Achievable results. The re-evaluation of flooding dynamics in Aztec, after updating the floodplain maps, will identify any previously unidentified causes for flooding in the city. This assessment will be used to develop a specific project or series of projects to mitigate Aztec's flood hazards. The present floodplain maps have identified Aztec's downtown commercial and residential areas threatened by flooding. Projects will also be developed to reduce or eliminate this threat.

There are presently numerous historically important buildings in Aztec's risk areas. The reduction or complete elimination of the threat of flooding in these areas could prevent damage to these structures, thereby ensuring their place in Aztec's community history.

Updating the floodplain maps and carefully examining them will provide the city's floodplain manager with information that can be used to guide the future of Aztec's comprehensive planning and economic growth, as well as identify and correct any new dynamics that create additional flood exposure.

Section 3. Bloomfield

Bloomfield is mostly subject to flash flooding and not riverine flooding. Many structures exist within both the 100- and 500-year floodplains. Restrictions on future building in these floodplains are hampered by outdated floodplain maps. In addition, new areas of San Juan County with existing floodplain problems have been annexed into the city. Bloomfield's present flood control ordinances do not allow its floodplain manager to control growth in areas lying beyond the boundaries of the current floodplain maps. As a result, the new annexed areas with floodplain problems do not fall under the city's floodplain management system.

The city's waterways become constricted by debris and undesirable vegetation. Presently there is no mechanism in place to (a) establish the need for waterway maintenance, and

(b) identify who is responsible for such maintenance. There is also a continuing problem with the erosion of waterway banks. Bank stabilization projects can reduce or eliminate the loss of these banks, leading to the reduction of loss during flooding.

Goals and objectives to resolve these problems are as follows.

Goal:

1. Establish a current floodplain map for Bloomfield.

Objectives:

- 1.1 Seek updated floodplain maps for Bloomfield.

Goal:

2. Restrict future growth into city floodplains.

Objectives:

- 2.1 Enact legislation to restrict future growth into floodplains in Bloomfield.

Goal:

3. Eliminate and reduce flooding by maintaining waterways.

Objectives:

- 3.1 Enact legislation establishing the need for maintaining clear waterways and fix responsibility for this maintenance.
- 3.2 Identify waterways that require clearing and ensure that this maintenance is accomplished.

Goal:

4. Stabilize areas of public waterway banks that are being degraded due to erosion.

Objectives:

- 4.1. Identify and stabilize public waterway banks that are being eroded.
- 4.2 Create and prioritize projects to stabilize identified erosion areas.

Action Plans:

- 1. Updating floodplain maps.** A petition to FEMA requesting the updating of Bloomfield floodplain maps will be made.

Funding Source:
FEMA

Responsible Agencies:
San Juan County Floodplain Manager
Bloomfield Floodplain Manager
FEMA

Achievable results. By updating Bloomfield's floodplain maps, a more comprehensive inventory can be established for the existence of structures in floodplains. Additionally, new areas susceptible to flooding due to erosion and other types of construction will be identified.

The floodplain maps for Bloomfield were last evaluated 25 years ago in 1978. Since 1978, Bloomfield has annexed many areas into the city limits. According to the San Juan County floodplain maps, which also date from 1978, some of these areas are part of the floodplain. Because Bloomfield's floodplain maps are so out of date, many of these areas can not be regulated by the city's floodplain management system. Presently only seven residential structures are identified as being in Bloomfield's floodplain. With the median value of family structures in New Mexico being \$104,000, this gives a known exposure of approximately \$728,000. It is acknowledged that the annexations that have occurred since 1978 have added additional residences to Bloomfield that are located in floodplains; however, the actual numbers are not known.

In addition, the historic unregulated growth that has taken place in San Juan County's unincorporated areas has altered some of the waterways in significant ways. By updating Bloomfield's floodplain maps, these altered waterways will be identified and a more accurate picture of the floodplains will be established.

Although structures that have already been built in the floodplain will still be there, additional construction in these areas can be avoided or highly restricted.

- 3. Building/zoning codes.** Revise the existing building/zoning codes so that newly incorporated areas of the city that are not presently covered by the city's current floodplain maps can be regulated.

Funding Source:
City of Bloomfield

Responsible Agencies:
Bloomfield City Council
Bloomfield City Attorney
Bloomfield Floodplain Manager

Achievable results. At present, newly annexed areas of Bloomfield remain controlled by the unincorporated areas of the National Flood Insurance maps. As such, the Bloomfield Floodplain Manager is unable to restrict construction and use in these areas. The inclusion of all incorporated areas under Bloomfield's current floodplain restrictions will restrict growth into known floodplain areas. Enacting such legislation will reduce the overall costs from future floods. Additionally, the replacement of structures destroyed by future floods can be restricted, thereby eliminating or reducing repetitive loss.

This legislation will establish the city's control over areas that have been annexed since the 1978 update of the floodplain maps. The ability to restrict development in flood-prone areas will ensure that inflation will be the only rising cost associated with flooding in these areas. Further, when a flood does occur in the annexed areas, the area's reconstruction can be restricted to ensure a reduced loss in the future. This legislation can also be written to affect all areas annexed by the city in the future, minimizing future costs associated with flooding.

3. **Clear waterways.** Establish legislation establishing the need to maintain clear waterways in Bloomfield. This legislation should further establish who is responsible for this maintenance and the penalties for noncompliance.

Funding Source:
City of Bloomfield

Responsible Agencies:
Bloomfield City Council
Bloomfield City Attorney
Bloomfield Floodplain Manager
Bloomfield Public Works Department
U.S. Army Corps of Engineers

Achievable results. The enactment of a clear waterway policy will ensure that debris and undesirable vegetation is removed from the waterways. Clearing these obstructions will reduce the potential for flooding by allowing floodwaters to move easily through waterways without choke points, which create bank overflow.

Unfortunately, many waterways that run through areas accessible by vehicle are used for debris disposal. Although such dumping of debris is illegal, it is difficult to enforce these laws when local law enforcement is already overextended in its normal role of criminal abatement. When such dumping occurs in waterways on

public land, county public works assets can be utilized in its removal. However, when dumping occurs in waterways running through lands under private ownership, the owners have no obligation to clean up the debris. This accumulation of debris restricts the water flow through these areas and can cause flooding. In addition, if this debris moves down the waterway during flooding, it can block culverts or other bottlenecks downstream, causing further flooding downstream from its original source.

Instituting an obligation for private landowners to clear waterways will ensure that debris-caused flooding is reduced or eliminated when such regulations are in place and enforced.

4. **Waterway assessment.** With legislation enacted to clear and maintain Bloomfield's waterways, each waterway will need to be examined in order to determine need. Once the waterways have been assessed, a priority plan can be established to ensure that they are cleared and maintained, and any necessary notices can be issued.

Funding Source:
City of Bloomfield

Responsible Agencies:
Bloomfield Floodplain Manager
Bloomfield Attorney
Bloomfield Public Works Department
U.S. Army Corps of Engineers

Achievable results. As with waterways located on privately-owned land, waterways located in the public domain require periodic clearing. By ensuring that all waterways, storm drainage systems, and culverts remain clear of debris and unwanted vegetation, the city will ensure that floodwaters are not restricted and minimize the risk of flooding. Restricted waterways can also result in damage to roadways and bridges due to the pressure created by the force of the water.

Maintaining clear waterways will reduce the chance of flooding by ensuring that storm drainage systems and waterways function properly. Unlike waterways running through private property, areas in the public sector can be cleared with greater speed based on the availability of city manpower and equipment.

5. **Bank stabilization projects.** The banks of arroyos, rivers and other waterways in Bloomfield will be inspected for erosion. Once an inventory has been made, a priority list will be created to stabilize problem banks based on their potential to cause further erosion damage.

Funding Source:

City of Bloomfield
New Mexico Highway Department
U.S. Army Corps of Engineers

Responsible Agencies:

Bloomfield Floodplain Manager
Bloomfield Public Works Department
U.S. Army Corps of Engineers

Achievable results. Stabilizing waterway banks can reduce or eliminate erosion danger during flooding. Such stabilization can prevent foundation undercutting, which is a major source of structural damage during floods.

When flooding occurs, the power of the waters rushing through Bloomfield's waterways erodes banks and changes the waterway over time. The use of riprap and other bank stabilization techniques can reduce or even eliminate the changes caused during flooding. Many county roads throughout Bloomfield use low water crossings instead of the more costly culverts, bridges, or other elevated roadways. In addition, some of these roadways run parallel to waterways. When flooding occurs in areas without bank stabilization in place, these road surfaces can be washed out and thereby destroyed. Bank stabilization can reduce or eliminate the need to rebuild roads after flooding occurs. Bank stabilization projects will reduce the possibility of repetitive loss.

Section 4. Farmington

Farmington is located on the northern bank of the San Juan and Animas Rivers. The La Plata River runs into Farmington along its western edge before joining the San Juan River in the south. Areas along all three of these rivers are known to be exposed to flood risks. As noted in the Farmington Comprehensive Plan, the city is anticipating annexation and growth south to the San Juan River and west toward the La Plata River. The annexation of these areas involves floodplains that have not been subject to floodplain management in the past. As a result of these annexations, these new areas will include structures that are built in floodplains. Identifying floodplains in the Farmington area is further complicated by the fact that floodplain maps for Farmington have not been updated since 1988, and areas that have been annexed or are under consideration for annexation have not been updated since 1978.

Farmington also has three specific areas where flooding becomes a problem. The identified areas of concern are the Crestwood Drive Crossing of the Hood Arroyo, the Navajo Crossing of the Glade Arroyo, and the Pinon Hills crossing of the La Plata River. In each of these locations two factors affecting flooding occur. First, when the amount of storm runoff passing through these waterways is particularly high, the water level will overflow the waterway's banks, causing localized flooding. Second, the culvert systems at these crossings can become overwhelmed, which not only causes an overflow of the

banks, but can also cause structural damage to the roadway. Flooding in these areas is frequent enough that these areas were immediately identified as being of concern. Each area is susceptible to flash flooding that provides for little or no warning prior to its occurrence.

Goals and objectives to resolve these problems are as follows.

Goal:

1. Establish a current floodplain map for Farmington.

Objectives:

- 1.1 Seek updated floodplain maps for Farmington.

Goal:

2. Ensure that Farmington's future growth does not expand into areas that expose the community to increased flood risks.

Objectives:

- 2.1 Incorporate all future comprehensive planning for Farmington with the San Juan County Mitigation Project.

Goal:

3. Eliminate or reduce the potential for flooding within known flood risk areas.

Objectives:

- 3.1 Develop a plan for reducing or eliminating the risk of flooding at the Navajo Crossing of the Glade Arroyo.
- 3.2 Develop a plan for reducing or eliminating the risk of flooding at the Pinon Hills Crossing of the La Plata River.
- 3.3 Develop a plan for reducing or eliminating the risk of flooding at the Crestwood Drive Crossing of the Hood Arroyo.

Goal:

4. Keep all waterways in Farmington clear of debris and unwanted vegetation.

Objectives:

- 4.1 Inspect and clear debris and unwanted vegetation from waterways in publicly-held areas.
- 4.2 Inspect and ensure that waterways on privately-held lands are clear of debris and unwanted vegetation.

Action Plans:

- 1. Updating floodplain maps.** A petition will be made to FEMA requesting the updating of Farmington floodplain maps.

Funding Source:
FEMA

Responsible Agencies:
San Juan County Floodplain Manager
Farmington Floodplain Manager
FEMA

Achievable results. By updating Farmington’s floodplain maps, a more comprehensive inventory can be established for the existence of structures in floodplains. In addition, new areas susceptible to flooding due to erosion and other types of construction will be identified.

Farmington’s floodplain maps were last evaluated in 1988, 15 years ago. Since 1988 Farmington has annexed many new areas into the city limits. Some of these areas are identified as part of the floodplain by the 1988 San Juan County floodplain maps. Because Farmington’s floodplain maps are outdated, many of these areas can not be regulated by the city’s floodplain management system. The annexations that have occurred since 1988 may have added more residences located in floodplains to Farmington. Updating the floodplain maps can assist in identifying such residences for mitigation purposes.

In addition, the historic unregulated growth that has taken place in San Juan County’s unincorporated areas has altered some of the waterways in significant ways. By updating Farmington’s floodplain maps, these altered waterways will be identified and a more accurate picture of the city’s floodplains will be established.

Although structures that were built in the floodplain will still be there, additional construction in these areas can be avoided or highly restricted, which will help mitigate increased exposure to flooding.

- 2. Comprehensive planning.** Farmington has an ongoing planning effort to ensure that its growth is done in an organized manner. It is vital that all planning efforts consider the identified hazard locations in and around Farmington to avoid increasing the community's exposure to hazard risk. To accomplish this goal, the city council will enact legislation to ensure that all future city planning will take into consideration the San Juan County Mitigation Plan, which also includes Farmington.

Funding Sources:

City of Farmington

Responsible Agencies:

Farmington City Council
Farmington City Attorney
Farmington City Planning
Farmington City Engineer
Farmington Floodplain Manager

Achievable results. Enacting legislation requiring that all expansion in Farmington takes into consideration appropriate sections of the San Juan County Mitigation Plan will ensure that expansion does not occur in areas previously identified as hazard locations. In addition, the city's planning efforts will be required to consider this plan when designating zoning codes or when considering petitions for zoning changes.

Although this legislation will not reduce present exposure to existing hazards, it will ensure that there is no increase in exposure. This legislation will also assist in reducing repetitive loss due to flooding by prohibiting the rebuilding of structures without appropriate flood-proofing measures.

- 3. Navajo Crossing.** An examination of the flooding dynamics for the Glade Arroyo at Navajo Crossing will determine possible solutions. A project plan will then be created to reduce or avoid potential future flooding.

Funding Sources:

City of Farmington
U.S. Army Corps of Engineers

Responsible Agencies:

Farmington City Council
Farmington City Engineer
Farmington Floodplain Manager
U.S. Army Corps of Engineers

Achievable results. The results of this project will be to reduce or eliminate the flooding potential on the Glade Arroyo at Navajo Crossing. One solution would

be to create an upstream retention pond; another would be to redesign the crossing to eliminate the current restriction in water flow. The elimination of this bottleneck will reduce the likelihood of damage to local structures and potential disruption of traffic flow during flooding.

4. **Pinon Hills Crossing.** An examination of the flooding dynamics for the La Plata River at Pinon Hills will determine possible solutions. A project plan will then be created to reduce or avoid potential future flooding.

Funding Sources:

City of Farmington
U.S. Army Corps of Engineers

Responsible Agencies:

Farmington City Council
Farmington City Engineer
Farmington Floodplain Manager
U.S. Army Corps of Engineers

Achievable results. The results of this project will be to reduce or eliminate the flooding potential on the La Plata River at Pinon Hills. One solution would be to create an upstream retention pond; another would be to redesign the crossing to eliminate the current restriction in water flow. The elimination of this bottleneck will reduce the likelihood of damage to local structures and potential disruption of traffic flow during flooding.

5. **Crestwood Drive Crossing.** An examination of the flooding dynamics for the Hood Arroyo at Crestwood Drive will determine possible solutions. A project plan will then be created to reduce or avoid potential future flooding.

Funding Sources:

City of Farmington
U.S. Army Corps of Engineers

Responsible Agencies:

Farmington City Council
Farmington City Engineer
Farmington Floodplain Manager
U.S. Army Corps of Engineers

Achievable results. The results of this project will be to reduce or eliminate the flooding potential on the Hood Arroyo at the Crestwood Drive Crossing. One solution would be to create an upstream retention pond; another would be to redesign the crossing to eliminate the current restriction in water flow. The elimination of this bottleneck will reduce the likelihood of damage to local structures and potential disruption of traffic flow during flooding.

6. **Clear waterways.** Introduce legislation establishing the need to maintain clear waterways in Farmington. This legislation should further establish who is responsible for this maintenance and the penalties for noncompliance.

Funding Source:
City of Farmington

Responsible Agencies:
Farmington City Council
Farmington City Attorney
Farmington Floodplain Manager
Farmington Public Works Department
U.S. Army Corps of Engineers

Achievable results. The enactment of a clear waterway policy will ensure that debris and undesirable vegetation are removed from the waterways. Clearing these obstructions will reduce the potential for flooding by allowing floodwaters to move easily through waterways without choke points, which create bank overflow.

Unfortunately, many waterways that run through areas accessible by vehicle are used for debris disposal. Although such dumping of debris is illegal, it is difficult to enforce these laws when local law enforcement is already overextended in its normal role of criminal abatement. When such dumping occurs in waterways on public land, county public works assets can be utilized in its removal. However, when dumping occurs in waterways running through lands under private ownership, the owners have no obligation to clean up the debris. This accumulation of debris restricts the water flow through these areas and can cause flooding. In addition, if this debris moves down the waterway during flooding, it can block culverts or other bottlenecks downstream, causing further flooding downstream from its original source.

Instituting an obligation for private landowners to clear waterways will ensure that debris-caused flooding is reduced or eliminated when such regulations are in place and enforced.

7. **Clean public waterways.** Waterways lying in the publicly-held areas of Farmington will be inspected annually for the presence of debris or unwanted vegetation. Upon the completion of this inspection, debris and vegetation will be cleared based on its priority and the availability of manpower and equipment.

Funding Source:
City of Farmington

Responsible Agencies:
Farmington City Council
Farmington Public Works
Farmington Floodplain Manager

Achievable results. As with waterways lying in areas of private ownership, those that are located within the public domain require periodic cleaning. By ensuring that all waterways, storm drainage systems, and culverts remain clear of debris and unwanted vegetation, the city will ensure that the flow of floodwaters is not restricted, which can cause additional flooding. Restricted waterways can also result in damage to roadways and bridges due to the pressure created by the force of the water.

Maintaining clear waterways will reduce the chance of flooding by ensuring that storm drainage systems and waterways function properly. Unlike waterways running through private property, areas in the public sector can be cleared with greater speed based on the availability of city manpower and equipment.

DROUGHT

Section 1. San Juan County

Presently San Juan County has very few measures in place to deal with the problems of drought. While some cities have drought plans that restrict the use of water during drought conditions, county residents are free to use water as they like. These types of restrictions are generally based on a sliding scale, with higher restrictions occurring as drought conditions worsen or having the restrictions relaxed as the drought conditions improve. Implementing a realistic plan of water restrictions and providing for its enforcement will not only help make the available water last longer, it will also help prevent an area's water system from being overstressed. As the demand for water increases, the stress on water pipes increases, which in turn increases the possibility of pipe failure and service interruptions.

The amount of water use within San Juan County is further restricted based on water rights. No matter how much water may flow through the Animas and San Juan Rivers, county residents are not permitted unlimited access to it. These water rights restrictions also apply to ground water usage. Presently the amount of water being used in the unincorporated areas of San Juan County is not being monitored, and the actual amount of water being used is unknown.

A further source of water use in San Juan County is the large number of irrigation ditches, many of which are unlined. The United States Department of Agriculture has identified unlined irrigation ditches as a major source of water waste.

Goals and objectives to resolve these problems are as follows.

Goal:

1. Establish measures that can reduce water use during drought conditions in San Juan County.

Objectives:

- 1.1. Enact legislation regarding water use during drought conditions that raises the level of restriction as drought conditions become more severe.
- 1.2. Establish a public education and awareness program to provide residents with information concerning drought and water conservation.

Goal:

2. Identify water conservation measures that can reduce the overall water usage within San Juan County in order to maintain the county's ability for growth.

Objectives:

- 2.1 Identify all unlined irrigation ditches within San Juan County and develop a plan to line them.
- 2.2 Enact legislation concerning the mandatory use of low flow toilets and showerheads in all new construction within the unincorporated areas of the county.
- 2.3 Enact legislation concerning the mandatory use of gray water recovery systems in all new construction within the unincorporated areas of the county.
- 2.4 Provide public education concerning water wise programs and vegetation.
- 2.5 Provide rebates for the conversion of existing home toilets and showerheads to low flow systems and the retrofitting of gray water recovery systems.

Action Plans:

1. **Drought usage restrictions.** The County Commission will draft a water use restriction program based on a sliding scale with increasingly restrictive measures based on the severity of existing drought conditions.

Funding Source:
San Juan County

Responsible Agency(s):
San Juan County Commission

Achievable results: By enacting a sliding scale of water restrictions based on the severity of a drought, the available water will be used in a more efficient manner. It is understood that sustaining human life is of primary importance during drought conditions. Therefore, the loss of ornamental landscaping becomes acceptable in order to meet the basic water needs of county residents. Presently there are no formal water restrictions in place in the county. Therefore, residents can use water any way they want. By enacting water restrictions, the use of the water that is available can be regulated.

Legislation of this type has been instituted in many areas of New Mexico to reduce the stress on available water resources that occurs during drought conditions. The need for such legislation is due to the fact that the threat of drought is always present in the Southwest, and must be recognized as an event that will continue to be cyclic in San Juan County.

2. **Public education and awareness program.** The county will provide information to the media for release to the public concerning the state of drought conditions and the level of water restrictions in force at any given time. In addition, information concerning water conservation will be provided to the public through the use of pamphlets, school age and adult education, and public meetings.

Funding Sources:
State of New Mexico Engineer's Office
San Juan County

Responsible Agency(s):
San Juan County
San Juan County Public Schools

Achievable results: The public will be better educated about the need for water use restrictions and the actions they can take in order to conserve water during drought conditions. This knowledge will assist in assuring voluntary compliance with the instituted water restrictions.

A similar public education program has been instituted in Albuquerque, which lies on the Rio Grande River. As the largest community in New Mexico, there is a high demand on available water. The public education initiative in Albuquerque has resulted in a significant reduction in water usage in the service area of the municipal water system. A similar reduction of water use in San Juan County can also be expected. This reduction in demand will allow for a longer period of growth in San Juan County before reaching the restrictions to growth based on available water rights.

3. **San Juan County irrigation ditch inventory and lining program.** Establish the number of unlined irrigation ditches that exist in San Juan County and the amount of use they receive. A priority schedule for lining the irrigation ditches will be established based on their amount of use.

Funding Sources:

San Juan County
Irrigation districts

Responsible Agency(s):

San Juan County Extension Agent
San Juan County County Public Works Department
San Juan County Commission

Achievable results: Lining irrigation ditches will reduce the amount of water that is wasted prior to its intended arrival at agricultural locations. Presently most irrigation ditches in San Juan County are unlined dirt canals. As a result, there is a significant loss of water caused by absorption and evaporation. If these ditches were lined, the loss of water due to absorption could be avoided, but evaporation would continue to be an issue. If these ditches were completely enclosed, the loss of water from absorption and evaporation would be eliminated.

4. **Required installation of low flow toilets and showerheads.** The County Commission will enact legislation requiring the use of low flow toilets and showerheads in all new construction within the unincorporated areas of the county.

Funding Source:

San Juan County

Responsible Agency(s):

San Juan County Commission
San Juan County Attorney's Office

Achievable results: The mandatory use of low flow toilets and showerheads will reduce the amount of water used on a daily basis. Initial benefits would be modest but would increase over the long term. Most toilets in use today use approximately 7 gallons of water per flush, while a low flow toilet uses less than 2 gallons per flush. The construction industry estimates that a low flow toilet saves approximately 10,000 gallons of water annually. Based on San Juan County's projected population increasing from a 2000 population of 113,801 to approximately 122,564 by 2010, there will be 8,763 more residents in the county. Based on an average family size of 4, this means that there could be approximately 2,190 new families in San Juan County. If each of these families resides in a home with one toilet, the estimated annual water use for toilets alone is 219,000,000 gallons. Not all of these families will reside in newly-constructed

residential units. However, an average of 80 residential building permits is issued in the county each year. If all newly-constructed houses were required to use low flow toilets and showerheads, based on one toilet per unit, there would be savings of 800,000 gallons of water for newly-constructed structures. Based on the projected number of structures that would be built by 2010, 560, approximately 5,600,000 gallons of water would be conserved in that year alone. Overall water savings would actually be much higher, as this example does not take into account low flow showerheads or other water saving measures.

Low flow showerheads also reduce the amount of water used by a household. The average amount of water used in a shower accounts for approximately 22% of household water use. Based on the present water usage of a standard showerhead, the average family will use approximately 42,000 gallons of water per year for showers. A low flow showerhead reduces this amount by approximately 50%, or 21,000 gallons of water. Based on an increase of 2,190 new families in San Juan County by the year 2010, the use of low flow showerheads would save approximately 45,990,000 gallons of water annually. Adding this saving to that of the use of low flow toilets, the annual water savings would be approximately 51,590,000 gallons by 2010.

5. **Required installation of gray water recovery systems.** The County Commission will enact legislation requiring the installation of gray water recovery systems in all new construction within the unincorporated areas of the county.

Funding Source:
San Juan County

Responsible Agency(s):
San Juan County Commission
San Juan County Attorney's Office

Achievable results: The mandatory use of gray water recovery systems will reduce the amount of water used on a daily basis. Initial benefits would be modest but would increase over the long term. Gray water is water that has been used for washing and is no longer considered to be potable, but it is not in the same category of waste water as toilet water. A gray water recovery system captures the non-toilet water used and recycles it for use in irrigation. In 2003 the State of New Mexico enacted legislation that allows the use of gray water for irrigation use. Average household water usage is approximately 186,363 gallons annually, including standard toilet use of approximately 12,000 gallons. By recycling gray water, approximately 160,000 gallons of water would be available annually for irrigation use. Considering the projected number of new residences in San Juan County by 2010, the reduction in municipal water use would be significant. Based solely on the construction of 560 new homes by 2010, there could be a savings of almost 90,000,000 gallons annually.

- 6. Conversion Rebate Program.** The county will institute a rebate program designed to provide county residents with an incentive to replace older toilets and showerheads with low flow units. An additional incentive program will be developed concerning the installation of gray water recovery systems.

Funding Source:
San Juan County

Responsible Agency(s):
San Juan County Commission
San Juan County Attorney
San Juan County Planning Office

Achievable results: These programs will further the conservation efforts in water usage and help sustain growth for the county. The estimated savings of 90,000,000 gallons of water annually, based on requiring the use of gray water recovery systems in newly-constructed residences, will be further enhanced by encouraging owners of older homes to convert to low flow toilets, showerheads, and gray water recovery systems. The result of this savings will extend the amount of economic development and growth that can take place in the county.

Section 2. Aztec

The City of Aztec presently has legislation that restricts the use of water during drought conditions. These regulations include a sliding scale of water restrictions based on the severity of the drought. Aztec has also instituted the requirement of low flow toilets and showerheads in all new construction. Each of these actions will continue to benefit Aztec in obtaining its goal for water conservation and sustainable growth. However, additional legislation and projects can provide for further drought relief and overall water conservation for the city. Presently the State of New Mexico has approved the use of gray water for use in irrigating landscapes. Legislation for the mandatory installation of gray water recovery systems will further reduce the amount of potable water being used to irrigate landscapes within the city.

Goals and objectives to further these objectives and institute others are as follows.

Goals:

1. Identify water conservation measures that can reduce the overall water usage in Aztec in order to maintain the city's ability for growth.

Objectives:

- 1.1 Provide rebates for the conversion of existing home toilets and showerheads to low flow systems and the retrofitting of gray water recovery systems.
- 1.2 Enact legislation concerning the mandatory use of gray water recovery systems in all new construction within the city.
- 1.3 Provide public education concerning water wise programs and vegetation.
- 1.4 Enact legislation restricting the amount of non-drought resistant landscaping materials that can be installed in newly created landscaping.

Action Plans:

1. **Conversion Rebate Program.** A rebate program will be developed to provide city residents with an incentive to replace older toilets and showerheads with low flow units. An additional incentive program will be developed concerning the installation of gray water recovery systems.

Funding Source:
City of Aztec

Responsible Agency(s):
Aztec City Council
Aztec City Attorney
Aztec City Planning Office

Achievable results: These programs will further the conservation efforts in water use and help sustain growth for the city. Based on average use of 10,000 gallons per toilet and 21,000 gallons per showerhead, each residence that converts to a low flow toilet and showerhead would save approximately 31,000 gallons of water annually. Such programs are already in place in Santa Fe and Albuquerque, resulting in significant water savings. In addition to average savings of 31,000 gallons of water per year, each residence that converts to low flow systems will place lower demands on the waste water system.

2. **Required installation of gray water recovery systems.** The City Council will enact legislation requiring the installation of gray water recovery systems in all new construction in the city.

Funding Source:
City of Aztec

Responsible Agency(s):
Aztec City Commission
Aztec City Attorney

Achievable results: The mandatory use of gray water recovery systems will reduce the amount of water used on a daily basis. Initial benefits would be modest but would increase over the long term. The use of a gray water recovery system can save as much as 160,000 gallons of water per residence per year. In Aztec, the projected population growth by 2010 will increase the number of households by approximately 780. Based on 50% of these families building a new residence, there would be a projected savings of up to 62,000,000 gallons of reusable water annually. Saving this water will not only extend the city's growth capability from available water rights, but it will further lower demands on both the deliverable water system and the waste water system. Lower stress on these systems could further extend their operational life prior to the need for expansion.

3. **Public education.** The city will institute a program for school age children and adults designed to provide information concerning wise water usage and recommendations concerning drought resistant vegetation for use in both residential and commercial landscapes.

Funding Sources:

City of Aztec

New Mexico State Engineer's Office

Responsible Agency(s):

Aztec City Planning Office

San Juan County Extension Agent

New Mexico State Engineer's Office

Achievable results: This program would provide a long-term change in attitude concerning the appropriate use of the city's limited water resources. Presently non-native vegetation with a high demand for water is typically used for landscaping in most areas of the southwest, including Aztec. The presence of an extended drought throughout the southwest has redirected thinking concerning landscaping with native plants that require less water. In addition, many other wasteful water use habits are being reevaluated. Limited water resources in the southwest, coupled with a growing need for water due to population growth and irrigation, requires that new water conservation measures become the normal operating philosophy for both public and private water use.

Programs that expose the public to water conservation techniques, including use of native, drought-resistant vegetation, can reduce overall water use considerably. Over the last several years, Albuquerque has successfully implemented a public education program on water conservation, resulting in a 10% reduction in annual water use.

4. **Restrictions on landscaping materials.** The city will enact legislation to limit the amount of non-drought resistant vegetation that can be used in new landscape projects based on a specific percentage of the overall area to be landscaped.

Funding Sources:

Private contractors
City of Aztec

Responsible Agency(s):

Aztec City Council
Aztec City Attorney
Aztec City Planning Office
Aztec Parks and Recreation Department

Achievable results: This program will allow for a more realistic use of native and other drought-resistant landscaping vegetation that will reduce the water usage in landscape maintenance. At present, all commercial construction projects are required to dedicate a certain amount of the overall construction site to landscaping. This requirement is an effort to ensure that the urban environment's quality of life is maintained. Generally the landscaping portion of a project has relied on high water use vegetation in order to create a pleasant environment. By enacting legislation that requires landscaping but restricts the types of vegetation that can be used to drought-resistant varieties, overall demand for water will be reduced. The water savings for this type of legislation is dependent on the scale of the project, and no specific projections can be made for resulting benefits. However, what is certain is that this type of water usage can be reduced.

Section 3. Bloomfield

Presently Bloomfield has a sliding scale of water use restrictions that are based on the severity of drought conditions. Establishing this type of legislation to reduce the demand for water usage becomes critical during periods of sustained drought. However, additional reductions in annual water use can be achieved through the institution of legislation requiring the installation of low flow toilets and gray water recovery systems, educating the public in water conservation measures, and restricting use of non-native, high water demand landscape materials.

Drought is a normal occurrence in the southwest, and New Mexico's present drought conditions are nothing new. As Bloomfield's population continues to increase, the limit of available water rights will be reached. Instituting water conservation measures now will help enable Bloomfield's future growth.

Goals and objectives to further these measures and institute others are as follows.

Goals:

1. To provide for the long-term conservation of water resources within Bloomfield.

Objectives:

- 1.1 Create an incentive program for the conversion of older toilets and showerheads to low flow systems.
- 1.2 Create a public education program concerning the use of drought resistant landscaping vegetation.
- 1.3 Enact legislation for the mandatory installation of gray water recovery systems in new construction projects.

Action Plans:

1. **Conversion rebate program.** The city will develop a rebate program to provide city residents with an incentive to replace older toilets and showerheads with low flow units. An additional incentive program will be developed concerning the installation of gray water recovery systems.

Funding Source:

City of Bloomfield

Responsible Agency(s):

Bloomfield City Council

Bloomfield City Attorney

Bloomfield City Planning Office

Achievable results: These programs will further the conservation efforts in water use and help sustain growth for the city. Based on average use of 10,000 gallons per toilet and 21,000 gallons per showerhead, each residence that converts to a low flow toilet and showerhead would save approximately 31,000 gallons of water annually. Such programs are already in place in Santa Fe and Albuquerque, resulting in significant water savings. In addition to average savings of 31,000 gallons of water per year, each residence that converts to low flow systems will place lower demands on the waste water system.

2. **Public education.** A program for school age children and adults will be designed to provide information concerning wise water usage and recommendations concerning drought resistant vegetation for use in both residential and commercial landscapes.

Funding Sources:

City of Bloomfield

New Mexico State Engineer's Office

Responsible Agency(s):
City Planning
County Extension Agent
New Mexico State Engineer's Office

Achievable results: This program would provide a long-term change in attitude concerning the appropriate use of the city's limited water resources. Presently non-native vegetation with a high demand for water is typically used for landscaping in most areas of the southwest, including Bloomfield. The presence of an extended drought throughout the southwest has redirected thinking concerning landscaping with native plants that require less water. In addition, many other wasteful water use habits are being reevaluated. Limited water resources in the southwest, coupled with a growing need for water due to population growth and irrigation, requires that new water conservation measures become the normal operating philosophy for both public and private water use.

3. **Required installation of gray water recovery systems.** The City Council will enact legislation requiring the installation of gray water recovery systems in all new construction within the city.

Funding Source:
City of Bloomfield

Responsible Agency(s):
Bloomfield City Council
Bloomfield City Attorney

Achievable results: Mandatory use of gray water recovery systems will reduce the amount of water used on a daily basis. Initial benefits would be modest but would increase over the long term. The use of a gray water recovery system can save as much as 160,000 gallons of water per residence per year. In Bloomfield, the projected population growth by 2010 will increase the number of households by approximately 406. Based on 50% of these families building a new residence, there would be a projected savings of up to 32,480,000 gallons of reusable water annually. Saving this water will not only extend the city's growth capability from available water rights, but it will further lower demands on both the deliverable water system and the waste water system. Lower stress on these systems could further extend their operational life prior to the need for expansion.

Section 4. Farmington

Presently Farmington has a sliding scale of water use restrictions that are based on the severity of drought conditions. Establishing this type of legislation to reduce the demand for water usage becomes critical during periods of sustained drought. However, additional reductions in annual water use can be achieved through the institution of legislation requiring the installation of low flow toilets and gray water recovery systems,

educating the public in water conservation measures, and restricting use of non-native, high water demand landscape materials.

Drought is a normal occurrence in the southwest, and New Mexico's present drought conditions are nothing new. As Farmington's population continues to increase, the limit of available water rights will be reached. Instituting water conservation measures now will help enable Farmington's future growth. As the largest incorporated area in San Juan County, Farmington is one of the county's largest water users. Farmington's projected population increase will add as many as 1,500 new households by 2010. The city's average of 123 new residential building permits annually represents over 850 new homes in Farmington by 2010.

Goals and objectives to further these objectives and institute others are as follows.

Goals:

1. To provide for the long-term conservation of water resources within Farmington.

Objectives:

- 1.1 Create an incentive program for the conversion of older toilets and showerheads to low flow systems.
- 1.2 Create a public education program concerning the use of drought resistant landscaping vegetation.
- 1.3 Enact legislation for the mandatory installation of gray water recovery systems in new construction projects.

Action Plans:

1. **Conversion rebate program.** A rebate program will be developed to provide city residents with an incentive to replace older toilets and showerheads with low flow units. An additional incentive program will be developed concerning the installation of gray water recovery systems.

Funding Source:
City of Farmington

Responsible Agency(s):
Farmington City Council
Farmington City Attorney
Farmington City Planning Office

Achievable results: These programs will further conservation efforts in water use and help sustain the city's growth. Based on average use of 10,000 gallons

per toilet and 21,000 gallons per showerhead, each residence that converts to a low flow toilet and showerhead would save approximately 31,000 gallons of water annually. Such programs are already in place in Santa Fe and Albuquerque, resulting in significant water savings. In addition to average savings of 31,000 gallons of water per year, each residence that converts to low flow systems will place lower demands on the waste water system.

2. **Public education.** A program will be created for school age children and adults designed to provide information concerning wise water usage and recommendations concerning drought resistant vegetation for use in both residential and commercial landscapes.

Funding Sources:

City of Farmington
New Mexico State Engineer's Office

Responsible Agency(s):

Bloomfield City Planning Office
San Juan County Extension Agent
New Mexico State Engineer's Office

Achievable results: This program would provide a long-term change in attitude concerning the appropriate use of the city's limited water resources. Presently non-native vegetation with a high demand for water is typically used for landscaping in most areas of the southwest, including Farmington. The presence of an extended drought throughout the southwest has redirected thinking concerning landscaping with native plants that require less water. In addition, many other wasteful water use habits are being reevaluated. Limited water resources in the southwest, coupled with a growing need for water due to population growth and irrigation, requires that new water conservation measures become the normal operating philosophy for both public and private water use.

3. **Required installation of gray water recovery systems.** The City Council will enact legislation requiring the installation of gray water recovery systems in all new construction within Farmington.

Funding Source:

City of Farmington

Responsible Agency(s):

Farmington City Council
Farmington City Attorney

Achievable results: The mandatory use of gray water recovery systems will reduce the amount of water used on a daily basis. Initial benefits would be

modest but would increase over the long term. The use of a gray water recovery system can save as much as 160,000 gallons of water per residence per year. In Farmington, the projected population growth by 2010 will increase the number of households by approximately 850. Based on 50% of these families building a new residence, there would be a projected savings of up to 68,000,000 gallons of reusable water annually. Saving this water will not only extend the city's growth capability from available water rights, but it will further lower demands on both the deliverable water system and the waste water system. Lower stress on these systems could further extend their operational life prior to the need for expansion.

WILDFIRE

Section 1. San Juan County and all Participating Jurisdictions

San Juan County, Aztec, Bloomfield, and Farmington all face a similar problem with wildfires within the urban/wild land interface along the Animas, La Plata, and San Juan Rivers. The riverbanks and surrounding areas are overgrown, creating a huge source of potential fuel in the event of a wildfire. Potential mitigation projects for each jurisdiction all involve thinning vegetation and creating defensible space around all structures.

Goal:

1. Reduce or eliminate the danger of wildfire within the urban/wild land interface of San Juan County.

Objectives:

- 1.1 Identify areas of the river bottom in the public domain and create priorities and thinning projects to reduce the potential for wild land fire throughout the county.
- 1.2 Provide private landowners in the river bottom area with information concerning the necessity for clearing potential fuel from their land and instructions for creating defensible space around all structures.

Action Plans:

1. **Public land clearing program.** All public lands along the banks of the Animas, La Plata, and San Juan Rivers will be inspected and cleared as necessary in order to reduce the potential fuel load existing in these areas.

Funding Sources:

San Juan County
City of Aztec
City of Bloomfield
City of Farmington

Responsible Agencies:

County/City Emergency Managers
County/City Fire Departments
County/City Public Works
County/City Parks and Recreations

Achievable results: Clearing public lands along the rivers of excess fuel load will significantly reduce the potential for a major urban/wild land fire. In addition, if the local governments want private property owners to create defensible space on their properties by reducing fuel load, the county's demonstration of such actions may spur landowners to follow suit. Further benefits of such brush-clearing projects include increasing areas available for public activity along the river bottoms and reducing the amount of debris that could become water-borne during flooding.

2. **Private property defensible space.** All local jurisdictions will institute a public education program, such as Fire Wise, concerning the need for defensible space around structures in the urban/wild land interface. This program will be carried out through public service announcements and directed mailings to property owners identified as having land within the urban/wild land interface.

Funding Sources:

County/City jurisdictions

Responsible Agencies:

County/City Public Information Officers
County/City Emergency Managers

Achievable results: Introducing a Fire Wise program for property owners along the river bottoms will highlight the necessity for reducing the area's fuel load. There will be positive results throughout the entire area, even if only some of these land owners comply with the program.

In addition to mitigating potential fire hazard, removing the excess fuel load will also reduce problems that occur during flooding. The accumulation of debris in culverts and similar areas restricts water flow, creating backups and, in some cases, damage to structures and roadways. Removing this debris will decrease collateral damage that occurs during flooding events, as well as wildfire.

The median value of a family residence in New Mexico is approximately \$104,000, which means that the aggregate value of the family residences presently in the major wild land fire areas is approximately \$128,960,000. If fire were to occur, resulting damage could easily reach \$130,000,000, which does not include the contents of the residences, the loss of the 48 businesses, or the other 60 structures. It is, however, acknowledged that it would be unlikely that the entire area threatened by fire would be destroyed during any one occurrence.

HAZARDOUS MATERIAL MITIGATION

Section 1. San Juan County

Presently the exact type and amount of hazardous material being transported through San Juan County has not been established. In addition, there are no designated hazardous material transport routes or legislation mandating the use of such routes. In order to ensure the safety of the residents of the county, additional information is needed.

Goal:

1. To determine the risk facing San Juan County regarding the transport of hazardous material through the county.

Objectives:

- 1.1 Identify the amount and types of hazardous material presently moving through the county.
- 1.2 Determine the most critical locations where hazardous material transport accidents have been occurring within San Juan County.
- 1.3 Develop a bypass route that will eliminate the transport of hazardous material through the most heavily populated areas of the county.

Goal:

2. To reduce the risks to the residents of San Juan County during the accidental release of hazardous material within the county.

Objectives:

- 2.1. Educate the public about actions to take during a HAZMAT incident.
- 2.2. Improve the emergency communications system in order to provide a reverse 911 alert system for the county and its jurisdictions.

Action Plans:

1. **San Juan County HAZMAT transport survey.** Conduct a 30-day hazardous material transport survey within San Juan County. This survey will detail the number and types of hazardous material transports traversing San Juan County during one month. The survey will include the number and types of transports moving through the county, the roadway on which they were observed, and the identity of the hazardous material being carried.

Funding Sources:

San Juan County
New Mexico State Highway Department

Responsible Agency(s):

San Juan County Fire Department
San Juan County Emergency Manager

Achievable results: This survey will provide a more accurate understanding of the amounts, types, and routes used in the transport of hazardous material through the county. This information can be used to create additional strategies in the mitigation of potential HAZMAT events. Although this action will not in itself reduce the risk of a HAZMAT event, it will assist in establishing a foundation for future actions. Knowledge concerning the specific types of hazardous materials being transported through the county will ensure that appropriate evacuation zones are determined in the event of a HAZMAT situation. This information will also assist in the future planning for construction of public facilities or approval of private construction projects. This survey will not decrease the existing danger in San Juan County of public exposure to hazardous material, but it can prevent an increase in the potential threat.

2. **San Juan County HAZMAT response survey.** Statistical data will be collected over a six-month period to examine the location of the most serious traffic accident locations in San Juan County with a concentration on identified HAZMAT routes within the county. In addition, the survey will document all accidents involving hazardous material transport and the type of material being carried.

Funding Source:

San Juan County

Responsible Agency(s):

San Juan County Emergency Manager
Farmington Fire Department

Achievable results: This survey will provide information concerning specific locations where the potential for a transportation-related HAZMAT event may take place. An examination of this data may identify specific actions that can be taken to reduce the danger of future HAZMAT events. Knowing where hazardous material transportation accidents are most likely to occur will allow detailed analysis of the dynamics causing collisions. Such information may lead to appropriate redesign of the transportation route at those locations. Further, information about the specific types of materials that have been involved in these collisions provides the Farmington Fire Department an opportunity to assess and refine its response capabilities to these incidents.

3. **San Juan County HAZMAT route.** Based on the results of Actions 1 and 2, a long-term solution to the accidental release of hazardous material within the populated areas of San Juan County may indicate the construction of a bypass that will ensure that such traffic avoids the Aztec, Bloomfield, and Farmington areas. Such a route would ideally run southeast from U.S. 64 prior to reaching Farmington, and join U.S. 550 south of Bloomfield. In addition to the design and construction of such a route, legislation shall be enacted to mandate the use of this route by all HAZMAT carriers traversing San Juan County.

Funding Sources:

San Juan County
New Mexico State Highway Department

Responsible Agency(s):

San Juan County Engineer
San Juan County Sheriff's Department
Farmington Fire Department
New Mexico State Highway Department

Achievable results: The construction of a specific hazardous material route through San Juan County would reduce the risk of a HAZMAT incident affecting the most heavily populated areas of the county. Although it is impossible to completely eliminate the risk of a HAZMAT event, this action would minimize the risk to the residents of the county as much as possible. Constructing an alternate hazardous material transportation route is the only way to ensure that accidents involving large amounts of hazardous material affect the minimum number of residents in San Juan County. An alternate route will never completely eliminate the possibility of a hazardous material release in a populated area of the county; however, it will minimize such exposure.

4. **Public education program.** Public education meetings will be designed and conducted to provide the county's residents with information concerning the actions they should take prior to and during a HAZMAT event. This education will be in the form of pamphlets, public meetings, and exercises.

Funding Source:

San Juan County

Responsible Agency(s):

San Juan County PIOA
San Juan County Emergency Manager
Farmington Fire Department

Achievable results: Public education will provide county residents with knowledge that will allow them to take steps independent of the formal emergency response to reduce their risk of exposure during a HAZMAT incident. In many cases, the quick actions of individual citizens can reduce their exposure risk during a hazardous material release. Public understanding of what to do in this type of emergency can reduce the number of inquiries that must be handled by the communications center during a HAZMAT event, also reducing the public's fear associated with an incident and easing the burden on emergency responders.

5. **Reverse 911 system.** Funding will be sought in order to purchase a reverse 911 system for use within San Juan County and its included jurisdictions in order to provide rapid warning of HAZMAT incidents and provide instructions as to what actions residents should take for their safety.

Funding Sources:

San Juan County
U.S. Department of Justice

Responsible Agency(s):

San Juan County Emergency Manager
San Juan County Sheriff's Department

Achievable results: The installation of a reverse 911 system will provide rapid dissemination of information to county residents during a HAZMAT event. The ability to communicate emergency information in this manner will reduce the actual number of response personnel required to perform this function. During a hazardous material release incident, rapidly evacuating a populated area may be necessary to save lives and prevent injury. Using a reverse 911 system can provide rapid dissemination of safety information to those living in the affected area. This type of system can also be used during other emergency response situations where rapid dissemination of information will assist the area's law enforcement efforts.

Section 2. Aztec

Presently all transports moving through Aztec travel along U.S. 550 and S.R. 516. The fact that these routes intersect and move through downtown Aztec creates the potential for a major HAZMAT event. However, at this time, the exact types and amount of hazardous material moving through Aztec have not been established.

Goal:

1. To determine the risk facing Aztec due to the transport of hazardous material through the city.

Objectives:

- 1.1. Identify the amount and types of hazardous material presently moving through the city.
- 1.2. Determine the most critical locations where hazardous material transport accidents are occurring in Aztec.
- 1.3. Develop a bypass route that will eliminate the transport of hazardous material through Aztec.

Goal:

2. To reduce risks to the residents of Aztec during the accidental release of hazardous material within the city.

Objective:

- 2.1. Educate the public about actions to take during a HAZMAT incident.

Action Plans:

1. **Aztec HAZMAT transport survey.** Conduct a 30-day hazardous material transportation survey in Aztec. This survey will detail the number and types of hazardous material transports traversing Aztec during one month. The survey will include the number and types of transports moving through the city, the roadway on which they were observed, and the identity of the hazardous material being carried. In addition, this information will be added to the San Juan County HAZMAT transport survey.

Funding Sources:

City of Aztec
New Mexico State Highway Department

Responsible Agency(s):

Aztec Emergency Manager
New Mexico State Highway Department

Achievable results: This survey will provide a more accurate understanding of the amounts, types, and routes used in the transport of hazardous material through the city. This information can be used to create additional strategies in the mitigation of potential HAZMAT events. Although this action will not in itself reduce the risk of a HAZMAT event, it will assist in establishing a foundation for future actions. Knowledge concerning the specific types of hazardous materials being transported through the city will ensure that appropriate evacuation zones are determined in the event of a HAZMAT situation. This information will also

assist in the future planning for construction of public facilities or approval of private construction projects. This survey will not decrease the existing danger in Aztec of public exposure to hazardous material, but it can prevent an increase in the potential threat.

2. **Aztec HAZMAT response survey.** Statistical data will be collected over a six-month period to examine the location of the most serious traffic accident locations in Aztec concentrating on identified HAZMAT routes. In addition, the survey will document all accidents involving hazardous material transport and the type of material being carried. Information gathered in this survey will be added to the San Juan County HAZMAT response survey.

Funding Source:
City of Aztec

Responsible Agency(s):
Aztec Emergency Manager
Farmington Fire Department

Achievable results: This survey will provide information concerning specific locations where the potential for transportation-related HAZMAT events may take place. An examination of this data may identify specific actions that can be taken to reduce the danger of future HAZMAT events. Knowing where hazardous material transportation accidents are most likely to occur will allow detailed analysis of the dynamics causing collisions. Such information may lead to appropriate redesign of the transportation route at those locations.

Response to hazardous material releases in Aztec is handled by the Farmington Fire Department, which serves as a regional resource. Further, information about the specific types of materials that have been involved in these collisions provides the Farmington Fire Department an opportunity to assess and refine its response capabilities to these incidents.

3. **Aztec HAZMAT route.** Based on the results of Actions 1 and 2, a long-term solution to the accidental release of hazardous material in Aztec may indicate the construction of a bypass that will ensure that such traffic will be routed around the city. In addition to the design and construction of such a route, legislation shall be enacted to mandate the use of this route by all HAZMAT carriers traversing Aztec.

Funding Sources:
City of Aztec
New Mexico State Highway Department

Responsible Agency(s):
Aztec City Engineer

Aztec Police Department
Farmington Fire Department
New Mexico State Highway Department

Achievable results: The construction of a specific hazardous material route for Aztec would reduce the risk of a HAZMAT incident affecting the city. Although it is impossible to completely eliminate the risk of a HAZMAT event, this action would minimize the risk to the residents of the city. In addition, the construction of such a bypass would be done in cooperation with San Juan County, Bloomfield, and Farmington. Constructing an alternate hazardous material transportation route is the only way to ensure that accidents involving large amounts of hazardous material affect the minimum number of residents in Aztec. An alternative route will never completely eliminate the possibility of a hazardous material release in a populated area of the city; however, it will minimize such exposure.

- 4. Public education program.** Public education meetings will be designed and conducted to provide Aztec's residents with information concerning the actions they should take prior to and during a HAZMAT event. This education will be in the form of pamphlets, public meetings, and exercises.

Funding Sources:

San Juan County
City of Aztec

Responsible Agency(s):

Aztec Emergency Manager
San Juan County Emergency Manager
Farmington Fire Department

Achievable results: Public education will provide city residents with knowledge that will allow them to take steps independent of the formal emergency response that will reduce their risk of exposure during a HAZMAT event. In many cases, the quick actions of individual citizens can reduce their exposure risk during a hazardous material release. Public understanding of what to do in this type of emergency can reduce the number of inquiries that must be handled by the communications center during a HAZMAT event, also reducing the public's fear associated with an incident and easing the burden on emergency responders.

Section 3. Bloomfield

Presently all transports moving through Bloomfield travel along U.S. 550 and U.S. 64. The fact that these routes intersect and move through downtown Bloomfield creates the potential for a major HAZMAT event. However, at this time, the exact types and amount of hazardous material moving through Bloomfield have not been established.

Goal:

1. To determine the risk facing Bloomfield by the transport of hazardous material through the city.

Objectives:

- 1.1 Identify the amount and types of hazardous material presently moving through the city.
- 1.2 Determine the most critical locations where hazardous material transport accidents are occurring within Bloomfield.
- 1.3 Develop a bypass route that will eliminate the transport of hazardous material through the city.

Goal:

2. To reduce the risks to the residents of Bloomfield during the accidental release of hazardous material within the city.

Objective:

- 2.1 Educate the public about actions to take during a HAZMAT incident.

Action Plans:

1. **Bloomfield HAZMAT transport survey.** Conduct a 30-day hazardous material transport survey in Bloomfield. This survey will detail the number and types of hazardous material transports traversing Bloomfield for one month. The survey will include the number and types of transports moving through the city, the roadway on which they were observed, and the identity of the hazardous material being carried.

Funding Sources:

City of Bloomfield
New Mexico Highway Department

Responsible Agency(s):

Aztec Emergency Manager
New Mexico Highway Department

Achievable results: This survey will provide a more accurate understanding of the amounts, types, and routes used in the transport of hazardous material through the city. This information can be used to create additional strategies in the mitigation of potential HAZMAT events. Although this action will not in itself

reduce the risk of a HAZMAT event, it will assist in establishing a foundation for future actions. Information gathered in this survey will be added to the San Juan County HAZMAT transport survey. Knowledge concerning the specific types of hazardous materials being transported through the city will ensure that appropriate evacuation zones are determined in the event of a HAZMAT situation. This information will also assist in the future planning for construction of public facilities or approval of private construction projects. This survey will not decrease the existing danger in Bloomfield of public exposure to hazardous material, but it can prevent an increase in the potential threat.

2. **Bloomfield HAZMAT response survey.** Statistical data will be collected over a six-month period to examine the location of the most serious traffic accident locations in the city with a concentration on identified HAZMAT routes. In addition, the survey will document all accidents involving hazardous material transport and the type of material being carried.

Funding Source:
City of Bloomfield

Responsible Agency(s):
Bloomfield Emergency Manager
Bloomfield Police Department
Farmington Fire Department

Achievable results: This survey will provide information concerning specific locations where the potential for transportation-related HAZMAT events may take place. An examination of this data may identify specific actions that can be taken to reduce the danger of future HAZMAT events. Information gathered in this survey will be added to the San Juan County HAZMAT response survey. Knowing where hazardous material transportation accidents are most likely to occur will allow detailed analysis of the dynamics causing collisions. Such information may lead to appropriate redesign of the transportation route at those locations.

Response to hazardous material releases in Bloomfield is handled by the Farmington Fire Department, which serves as a regional resource. Further, information about the specific types of materials that have been involved in these collisions provides the Farmington Fire Department an opportunity to assess and refine its response capabilities to these incidents.

3. **Bloomfield HAZMAT route.** Based on the results of Actions 1 and 2, a long-term solution to the accidental release of hazardous material within the populated areas of Bloomfield may indicate the construction of a bypass that will ensure that such traffic avoids the city.

Funding Sources:

City of Bloomfield
New Mexico State Highway Department

Responsible Agency(s):

Bloomfield City Engineer
Bloomfield Police Department
Farmington Fire Department
New Mexico State Highway Department

Achievable results: The construction of a specific hazardous material bypass route for Bloomfield would reduce the risk of a HAZMAT incident affecting the city. Although it is impossible to completely eliminate the risk of a HAZMAT event, this action would minimize the risk to city residents. In addition, the construction of such a bypass would be done in cooperation with San Juan County, Aztec, and Farmington. Constructing an alternate hazardous material transportation route is the only way to ensure that accidents involving large amounts of hazardous material affect the minimum number of residents in Bloomfield. An alternative route will never completely eliminate the possibility of a hazardous material release in a populated area of the city; however, it will minimize such exposure.

4. **Public education program.** Public education meetings will be designed and conducted to provide the city's residents with information concerning the actions they should take prior to and during a HAZMAT event. This education will be in the form of pamphlets, public meetings, and exercises.

Funding Sources:

San Juan County
City of Bloomfield

Responsible Agency(s):

Bloomfield Emergency Manager
San Juan County Emergency Manager
Farmington Fire Department

Achievable results: Public education will provide city residents with knowledge that will allow them to take steps independent of the formal emergency response that will reduce their risk of exposure during a HAZMAT event. In many cases, the quick actions of individual citizens can reduce their exposure risk during a hazardous material release. Public understanding of what to do in this type of emergency can reduce the number of inquiries that must be handled by the communications center during a HAZMAT event, also reducing the public's fear associated with an incident and easing the burden on emergency responders.

Section 4. Farmington

Presently all transport moving through Farmington travels through the downtown either via Main and Broadway or via U.S. 64. Due to the fact that all of these routes move through heavily populated areas of Farmington, the potential for a major HAZMAT event would place the residents at extreme risk. However, at this time the exact types and amount of hazardous material moving through Farmington have not been established.

Goal:

1. To determine the risk facing Farmington by the transport of hazardous material through the city.

Objectives:

- 1.1. Identify the amount and types of hazardous material presently moving through the city.
- 1.2. Determine the most critical locations where hazardous material transport accidents are occurring within Farmington.
- 1.3. Develop a bypass route that will eliminate the transport of hazardous material through the most heavily populated areas of the city.

Goal:

2. To reduce the risks to the residents of Farmington during the accidental release of hazardous material within the city.

Objective:

- 2.1. Educate the public about actions to take during a HAZMAT incident.

Action Plans:

1. **Farmington HAZMAT transport survey.** Conduct a 30-day hazardous material transport survey in Farmington. This survey will detail the number and types of hazardous material transports traversing Farmington for one month. The survey will include the number and types of transports moving through the city, the roadway on which they were observed, and the identity of the hazardous material being carried.

Funding Sources:

City of Farmington

New Mexico State Highway Department

Responsible Agency(s):
Farmington Emergency Manager
New Mexico State Highway Department

Achievable results: This survey will provide a more accurate understanding of the amounts, types, and routes used in the transport of hazardous material through the city. This information can be used to create additional strategies in the mitigation of potential HAZMAT events. Although this action will not in itself reduce the risk of a HAZMAT event, it will assist in establishing a foundation for future actions. Information gathered in this survey will be added to the San Juan County HAZMAT transport survey. Knowledge concerning the specific types of hazardous materials being transported through the city will ensure that appropriate evacuation zones are determined in the event of a HAZMAT situation. This information will also assist in the future planning for construction of public facilities or approval of private construction projects. This survey will not decrease the existing danger in Farmington of public exposure to hazardous material, but it can prevent an increase in the potential threat.

2. **Farmington HAZMAT response survey.** Statistical data will be collected over a six-month period to examine the most serious traffic accident locations in the city with a concentration on identified HAZMAT. In addition, the survey will document all accidents involving hazardous material transport and the type of material being carried.

Funding Source:
City of Farmington

Responsible Agency(s):
Farmington Emergency Manager
Farmington Fire Department
Farmington Police Department

Achievable results: This survey will provide information concerning specific locations where the potential for transportation-related HAZMAT events may take place. An examination of this data may identify specific actions that can be taken to reduce the danger of future HAZMAT events. Information gathered in this survey will be added to the San Juan County HAZMAT response survey. Knowing where hazardous material transportation accidents are most likely to occur will allow detailed analysis of the dynamics causing collisions. Such information may lead to appropriate redesign of the transportation route at those locations. Further, information about the specific types of materials that have been involved in these collisions provides the Farmington Fire Department an opportunity to assess and refine its response capabilities to these incidents.

3. **Farmington HAZMAT route.** Based on the results of Actions 1 and 2, a long-term solution to the accidental release of hazardous material within the populated

areas of Farmington may indicate the construction of a bypass that will ensure that such traffic avoids Farmington.

Funding Sources:

City of Farmington
New Mexico State Highway Department

Responsible Agency(s):

Farmington City Engineer
Farmington Police Department
Farmington Fire Department
New Mexico State Highway Department

Achievable results: The construction of a specific hazardous material bypass route for Farmington would reduce the risk of a HAZMAT incident affecting the city. Although it is impossible to completely eliminate the risk of a HAZMAT event, this action would minimize the risk to city residents. In addition, the construction of such a bypass would be done in cooperation with San Juan County, Aztec, and Bloomfield. Constructing an alternate hazardous material transportation route is the only way to ensure that accidents involving large amounts of hazardous material affect the minimum number of residents in Farmington. An alternative route will never completely eliminate the possibility of a hazardous material release in a populated area of the city; however, it will minimize such exposure.

4. **Public education program.** Public education meetings will be designed and conducted to provide the city's residents with information concerning the actions they should take prior to and during a HAZMAT event. This education will be in the form of pamphlets, public meetings, and exercises.

Funding Sources:

San Juan County
City of Farmington

Responsible Agency(s):

Farmington Emergency Manager
San Juan County Emergency Manager
Farmington Fire Department

Achievable results: Public education will provide city residents with knowledge that will allow them to take steps independent of the formal emergency response that will reduce their risk of exposure during a HAZMAT event. In many cases, the quick actions of individual citizens can reduce their exposure risk during a hazardous material release. Public understanding of what to do in this type of emergency can reduce the number of inquiries that must be handled by the

communications center during a HAZMAT event, also reducing the public's fear associated with an incident and easing the burden on emergency responders.

ALTERNATIVE PLANNING: FLOODING

Section 1. San Juan County

1. As an alternative to engaging in the above mitigation strategies, San Juan County could eliminate the problems of possible repetitive loss due to floods through purchasing all properties identified as being within the county's known floodplains. This property could then be converted to recreational use, such as redeveloped into parks and woodlands. It is recognized that this is an extreme alternative and that the cost of such a project would be prohibitive.
2. San Juan County could purchase only those properties within the floodplain that are not yet developed and maintain them for recreational use in the form of nature walks and woodland areas.

Section 2. Aztec, Bloomfield, and Farmington

1. Each city could purchase all areas within the city located in known floodplains and convert these properties to recreational use. It is recognized that this project could be prohibitively expensive.
2. Aztec could refuse to annex any additional areas containing structures or planned structures lying within a known floodplain. This limited annexation approach would ensure that no new problem areas become an issue for the city.

ALTERNATIVE PLANNING: DROUGHT

Section 1. San Juan County

1. The county could convert all existing open irrigation systems to enclosed underground systems with the addition of water meters to monitor use. This type of project will further reduce the loss of water by ground absorption and evaporation as it moves through the system. In addition, the use of water meters would allow the county to monitor water usage and ensure that water users did not exceed their given water right allotments.

Section 2. Aztec, Bloomfield and Farmington

1. A no growth policy could be established in which no new construction or development would be annexed into the city. This would ensure that the city's present population would be secure at its current level of water use.

2. An increase in water prices could be instituted to discourage the community's present level of water usage. The cost of water could be increased dependent on the amount used. Heavy water users would pay higher prices in the form of a higher cost per gallon than those that use less.

ALTERNATIVE PLANNING: WILDFIRE

Section 1. San Juan County and all Participating Jurisdictions

1. All property within the river bottoms of the Animas, La Plata, and San Juan Rivers would be condemned and taken over by the county. Structures in these areas would be razed and the area would become a designated wild land preserve.
2. Legislation could be passed requiring property owners residing in the river bottoms to create defensible space around all structures on their property. Refusal to cooperate could result in fines followed by county or city crews creating the space and charging the property owner for the work.

ALTERNATIVE PLANNING: HAZMAT

Section 1. San Juan County and participating jurisdictions

1. All critical infrastructure identified as being located within areas that could be adversely affected by a hazardous material release would be relocated outside of the potential danger area. Relocating these facilities would ensure that government operations would not be interrupted due to a HAZMAT incident.
2. Any new government facilities would be required to be constructed only in areas that would not be affected by a HAZMAT incident.