WIGWAM MUTUAL WATER COMPANY

Source Water Protection Plan

El Paso County, Colorado

June 1, 2013

Compiled by

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Smith & Callaghan LLC

For the Midway Community Water provider:

Wigwam Mutual Water Company ID# CO 0121470

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EXECUTIVE SUMMARY

The Midway community is served by one community water system known as the Wigwam Mutual Water Company. Wigwam values clean, high quality drinking water supply and decided to work collaboratively with area stakeholders to develop a Source Water Protection Plan to protect its water source in the Fountain Watershed. During the months of February 2013 to June 2013, five stakeholder meetings were held in El Paso, Colorado, to encourage local public participation. The planning process attracted interest and participation from 20 people including local citizens, water operators, government, conservation groups, and agency representatives. This group comprised the Fountain Valley Planning Team (the Planning Team or Team).

The Team reviewed and updated the Source Water Assessment completed by the Colorado Department of Public Health and Environment. The Assessment included the delineation of the source water protection areas, potential sources of contaminants, and the susceptibility of the water sources to these contaminants.

The Planning Team identified the issues of concern within the Source Water Protection Area that could impact their drinking water sources: Tunneling, Stormwater Runoff, Ash Disposal Sites, Irrigated Fields, Underground Storage Tanks, Septic Systems, Livestock, Sewage Lagoons, Solid Waste and Tire Leachate, Road Spills, Residential Practices, Gravel Pits, Land Use, Private Wells, Oil and Gas Wells, and Electric Generation and Distribution.

The Planning Team discussed several possible management approaches that could be implemented within the protection area to help reduce the risk of potential contamination to the community's source water. Voluntary implementation of source water management approaches at the local level (i.e. county) applies an additional level of protection to the drinking water supply by taking preventive measures to protect the source water. The Planning Team established a "common sense" approach in identifying and selecting the most feasible source water management activities to implement locally. These management practices included in this Plan are recommended by the Team to reduce the risk of potential contaminants to the Source Water Protection Area and protect the drinking water source for the Midway community.

At the completion of this plan, the Planning Committee determined four summary BMPs that should be placed at top priority for the SWPP. They are as follows:

1. Since the Water Protection Source is located on the fringe of the Fountain Creek Aquifer and is a shallow well, the Planning Team is concerned that a drop in water elevation may curtail a sufficient flow of water to maintain the existing pumping rate as a result of tunneling. If the well is able to maintain its existing pumping rate, the increase in turbidity would overrun the existing capacity of the filtering system within the treatment plant. The Planning Team suggest the water provider work with the owner of the tunneling project to create a comprehensive backup plan prior to start of construction, acceptable to water provider, that will be executed should the tunneling work impact the water provider's existing pumping and treatment operation.

2. Encourage the industry to comply with and implement all actions in the approved Storm Water Management Plan to prevent or minimize storm runoff impacts to the source waters, to educate all employees and subcontractors on the location of the source water protection areas, emergency response plans, storm water management plan, and spill response plans, and work with Wigwam Mutual Water Company to implement safeguards against negative impact on Source Waters.

3. Educate the public by sending out information to residents in the SWPP zone as to what general contamination impacts are associated with septic systems, livestock, irrigated fields, and residential practices and how to protect source waters including individual wells. Educate them on how to call 911 and report spills.

4. Wigwam shall continue to maintain and update the SWPP as necessary and continue to educate the public and industries, and work on issues of concern with respect to Wigwam's source waters and work with government entities to assist in the efforts to protect the Source Waters.

Representatives of Wigwam Mutual Water Company would review quarterly what BMPs to use in the future. Wigwam's first action meeting is scheduled for December 2nd, 2013. At this first meeting the Wigwam representatives will decide which management approaches to implement during 2014.

The Colorado Rural Water Association's Source Water Protection Specialist, Dylan Eiler, helped facilitate the source water protection planning process. The goal of the Association's Source Water Protection Program is to assist rural and small communities served by the public water systems to reduce or eliminate the potential risks to drinking water supplies through the development of Source Water Protection Plans, and provide assistance for the implementation of prevention measures.

INTRODUCTION

The Midway community is served by one water system, the Wigwam Mutual Water Company. The Service Area for the water provider is located in the Northwestern corner of Pueblo County and the Southwestern corner of El Paso County, Colorado. The community realized that in order to protect the source of its drinking water, it needed to work together to develop a protection plan to prevent possible contamination of this valuable resource. Proactive planning and prevention are essential to both the long-term integrity of its water system and limiting its costs and liabilities.

Table 1. Contact Information

PWS ID	PWS Name	Name	Address	City	ST	Zip	Phone
Co 0121470	Wigwam Mutual Water Company	Gary Smith	2454 Waynoka Road	Colorado Springs	Co	80915	7196380456

Purpose of the Source Water Protection Plan

The Source Water Protection Plan (SWPP) is a tool for the Midway community to ensure clean and high quality drinking water sources for current and future generations. This Source Water Protection Plan is designed to:

Create an awareness of the community's drinking water sources and the potential risks to water quality within the watershed;

Encourage education and voluntary solutions to alleviate pollution risks;

Promote management practices to protect and enhance their drinking water supply;

Provide for a comprehensive action plan in case an emergency threatens or disrupts the community water supply.

Developing and implementing source water protection measures at the local level (i.e. county) will complement existing regulatory protection measures implemented at the state and federal governmental levels by filling protection gaps that can only be addressed at the local level.

Public Participation in the Planning Process

Public participation is vitally important to the overall success of Colorado's Source Water Assessment and Protection (SWAP) program. Source water protection was founded on the concept that informed citizens, equipped with fundamental knowledge about their drinking water source and the threats to it, will be the most effective advocates for protecting this valuable resource. Local support and acceptance of the plan is more likely where local stakeholders have actively participated in the development of their protection plan.

During the months of February 2013 to May 2013, five stakeholders meetings were held. The first meeting was held at the East Library in Colorado Springs. The second meeting was held at PPIR Facility in Fountain, Colorado to encourage local public participation in the planning process. Local stakeholders were sent letters of invitation to participate with follow-up email reminders of meeting dates. The source water protection planning process attracted interest and participation from 20 people including local citizens, water operators, government, industry, and agency representatives. Input from the following list of Planning Team participants was greatly appreciated.

Table 2. Fountain Valley Source Water Protection Plan Participants

Participants	Affiliation	Participants	Affiliation
Gary Smith	Wigwam Mutual Water Co	Guy Kathe	PPIR
Keith DeVore	Wigwam Mutual Water Co	Mike McCarthy	El Paso County Public Health Dept.
Dylan Eiler	Colorado Rural Water Assoc.		
Jack Arrington	MRPOA		
Bruce Clabaugh	Waste Management		
Rodney Gabol	Waste Management		
Jane Ham	CDot		
Ron Woolsey	City of Fountain		
Bob Boileau	PPIR		
Bill Park	PPIR		
Becky Bain	Wigwam Mutual Water Co		
Brian Whitehead	Colorado Springs Utilities CSU		
Edwin Kurkowski	MRPOA		
Craig Clark	CDot		
Melissa Matusio	Hanover Fire Dept		
Jo Chapman	Hanover Fire Dept		
Mike Fink	City of Fountain		
Lisa Kudryk	City of Fountain		

Protection Plan Development

The source water protection planning effort consisted of public Planning Team meetings and individual meetings with water operators, government, and agency representatives. Information discussed at the meetings helped the Team develop an understanding of the issues affecting source water protection for the Midway Community. The Team then made recommendations for management approaches to be incorporated into a protection plan. In addition to the Planning Team meetings, data and other information pertaining to source water protection areas was gathered via public documents, internet research, phone calls, emails, and field trips to the protection area. A summary of the meetings is presented below.

Figure 1. The Planning Team meetings attracted interest and participation from 15 people.

Table 3. Presentations and Planning Team Meetings

Date	Purpose of Meeting
1/15/2013	Presentation of the Source Water Protection Planning process to the Wigwam Mutual Water Company
2/6/2013	First meeting with presentation on the process of developing a Source Water Protection Plan for the Midway community. Review of the State's Source Water Assessment and discussion of the delineation of the source water protection area and review the 1st draft which represented issues of concern.
3/6/2013	Second meeting with discussion on the State's delineation of the Source Water Protection Area, inventory of potential sources of contamination, and grant funding.
4/3/2013	Third meeting with presentation of protection area maps, supply watershed for management areas, tunneling, storm water runoff, ash disposal sites, irrigated fields, underground storage tanks, septic systems, livestock, sewage lagoons, solid waste and tire leachate, road spills, railroad spills, residential practices, gravel pits, land use, private wells, oil and gas wells, and electric generation and distribution concerns. Comments were made about the final proposed BMP's.
5/1/2013	Fourth meeting was open to public. All residents of the Midway Community were invited.
5/2/2013	Fifth meeting - develop an action plan for implementation of BMPs.

WATER SUPPLY SETTING

Location

The Midway community is located in Northwestern Pueblo County and Southwestern El Paso County in central Colorado. Pueblo County has a land area of 2,388 square miles and a population of 155,000. The County seat, located in the city of Pueblo, is approximately 40 miles south of the City of Colorado Springs accessed by Interstate 25. Colorado Springs is the County seat of El Paso County which has a land area of 2,126 square miles and a population of 618,800.

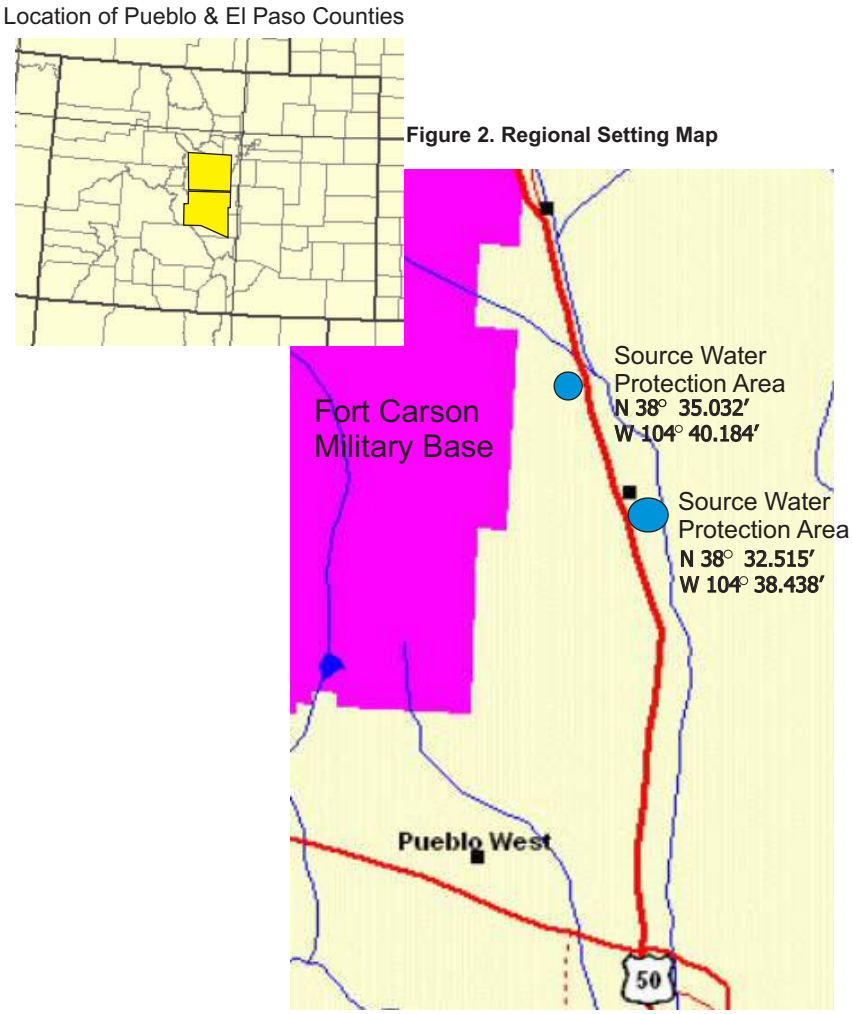


Figure 2. Regional Setting Map

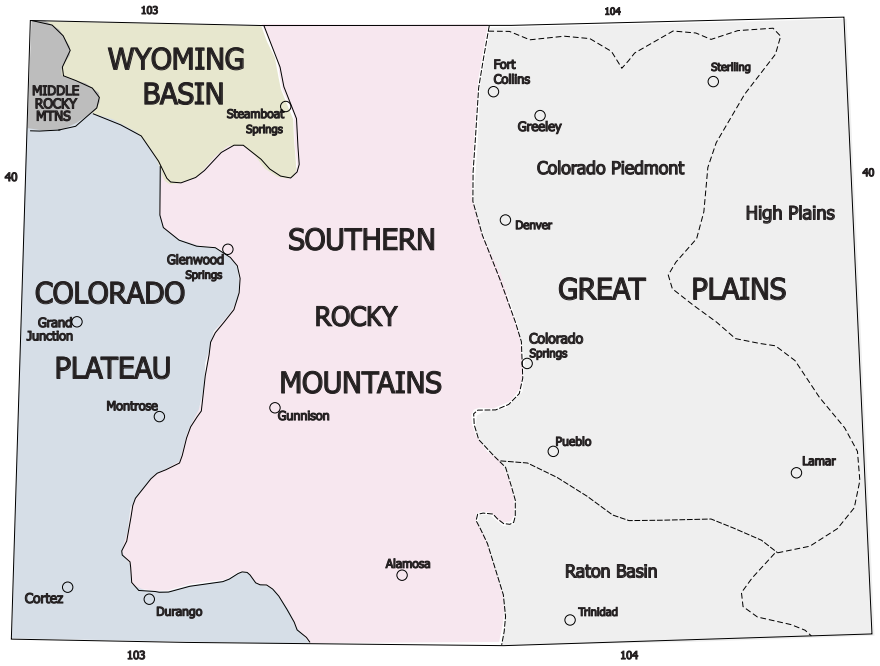
SOURCE: FEDERALATLAS

Physiography

The Midway community's source water protection area is located within the physiography sub-area called the Colorado Piedmont. The Colorado Piedmont lies in the Great Plains Province. The Colorado Piedmont is geologically and topographically distinct from other of parts of the West. The "Colorado Piedmont" is the geologic term for an area along the base of the foothills of the Front Range in north central Colorado. The region consists of a broad hilly valley of the South Platte River, as well as along the Arkansas River southward from Colorado Springs.

The Colorado Piedmont elevation is lower than the foothills, but also slightly lower elevation than the High Plains to the east. According to current geologic theory, the Piedmont was formed approximately 28 million years ago, during the broad bowing of the North American Plate that lifted the continent between present day Kansas and Utah to its present elevation of approximately 5000 feet. This uplift resulted in increased stream flow and rapid erosion on the eastern side of the Rocky Mountains. The erosion scraped away the top layer of Upper Cretaceous sandstone (which still exists as the top layer on the High Plains), exposing the underlying layer of Pierre Shale, which had been formed during the Cretaceous, when shallow sea covered present-day Colorado. In some areas of the Piedmont, a loose veneer of Pleistocene gravel overlay shale which accumulated during glaciation in the mountains, when streams descending onto the Piedmont became overburdened with sediment (Source: Roadside Geology of Colorado, Halka Chronic, Mountain Press 1980)

Figure 3. Physiographic Provinces of Colorado



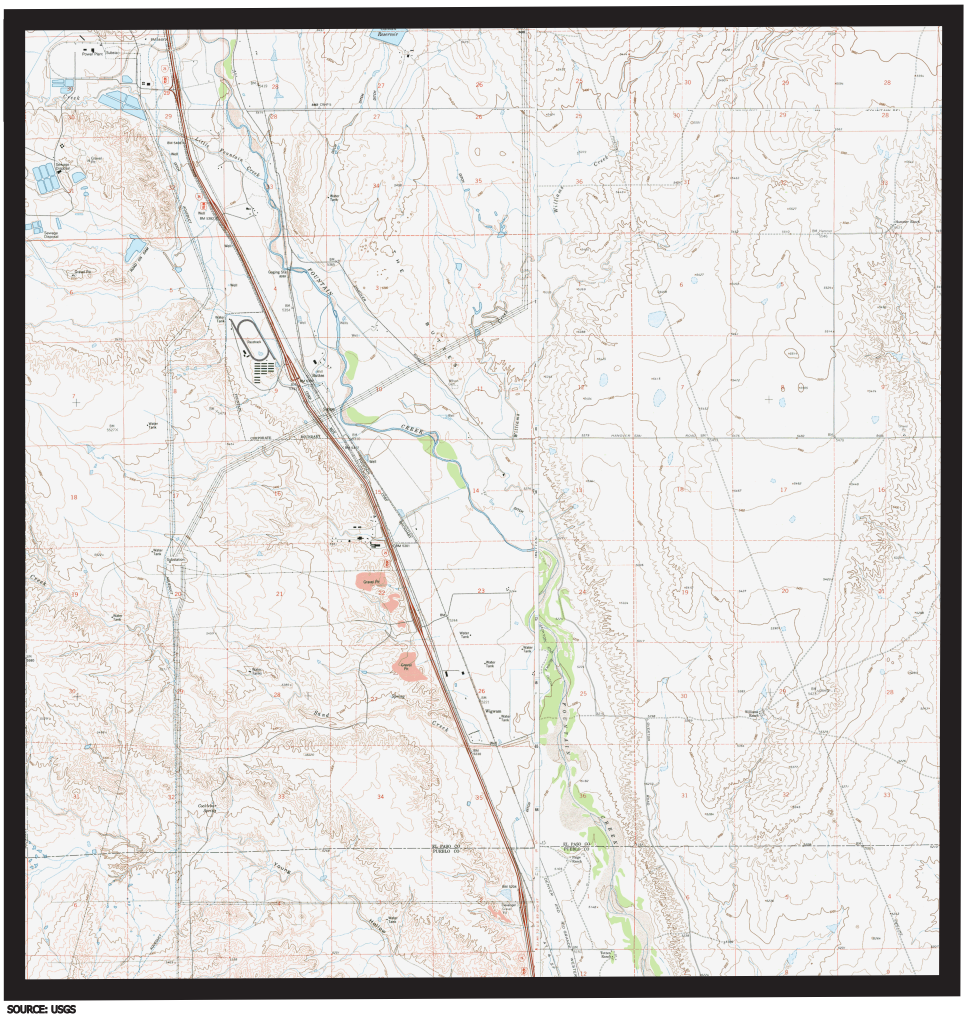
SOURCE: GROUND WATER ATLAS OF COLORADO

Topography

The source water protection area lies within the Fountain watershed. Emerging gradually from the plains of Kansas and Nebraska, the high plains of Colorado slope gently upward for a distance of some 200 miles from the eastern border to the base of the foothills of the Rocky Mountains. The eastern portion of the State is generally level to rolling prairie broken by occasional hills and bluffs. Although subtle when compared to the high mountains of the Rockies, there are also important topographic features across eastern Colorado. Two major river valleys dissect eastern Colorado, the south Platte River in northeastern Colorado and the Arkansas River to the southeast. Higher ground extends eastward from the Rockies between river valleys. High ground also extends eastward along the New Mexico border to the south and along the Wyoming and Nebraska borders to the north. These features have an impact on temperatures, wind patterns and storm tracks in all seasons of the year.

Elevations along the eastern border of Colorado range from about 3,350 feet at the lowest point in the State where the Arkansas River crosses into Kansas to near 4,000 feet. Elevations increase towards the west to between 5,000 and 6,500 feet where the plains meet the Front Range of the Rocky Mountain chain. Here elevations rise abruptly to 7,000 to 9,000 feet. Backing the foothills are the mountain ranges above 9,000 feet with the higher peaks over 14,000 feet. The most dramatic feature is Pikes Peak near Colorado Springs where elevations rise abruptly from less than 5,000 feet near Pueblo in the Arkansas Valley to over 14,000 feet at the top of the mountain. During the summer months, this topographic feature becomes a "thunderstorm machine" as thunderstorms develop almost any day that humidity is sufficiently high.

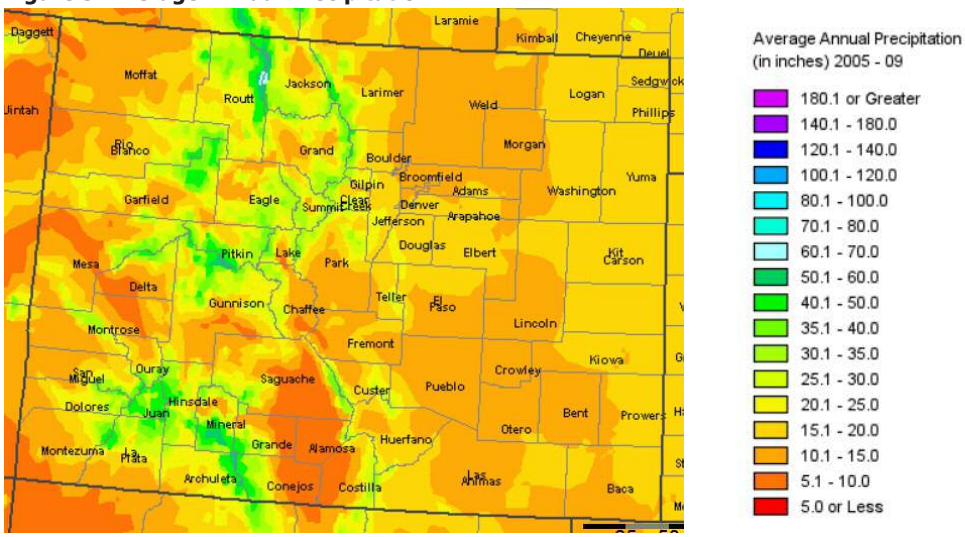
Figure 4. Topography of the Source Water Protection Area



SOURCE: USGS

Climate

Figure 5. Average Annual Precipitation

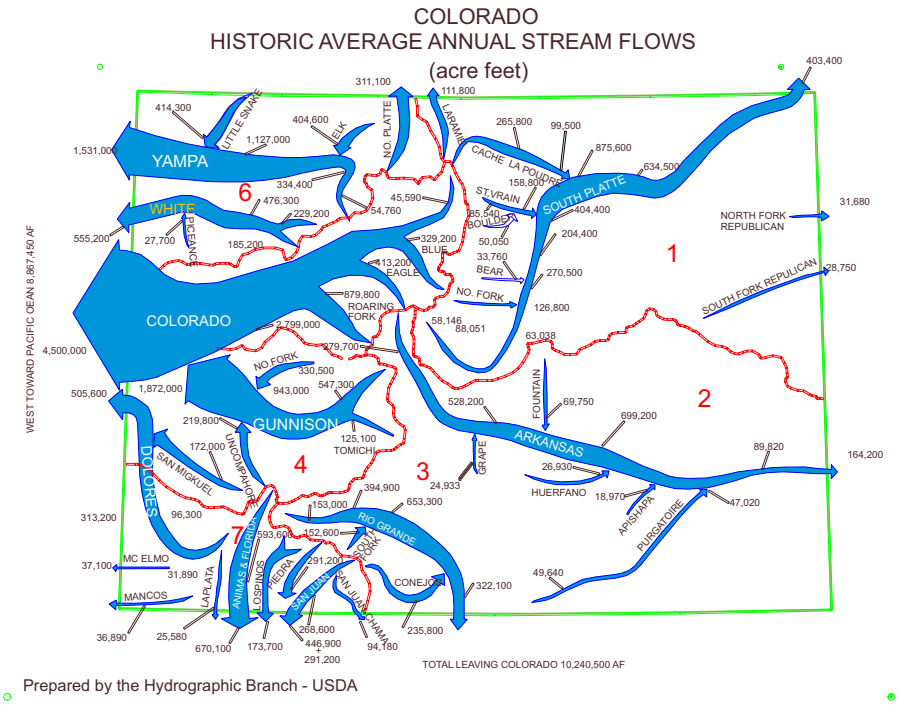


SOURCE: COLORADO ATLAS

The climate of the Eastern Plains is with low humidity and moderate precipitation, usually from 12 to 25 inches annually. The area is known for its abundant sunshine and cool nights, which give this area a great average diurnal temperature range. The difference between the highs of the day and the cool of nights can be considerable as warmth dissipates to the space during clear nights, the heat radiation not being trapped by clouds. Denver has one of the highest number of annual sunshine hours and clear days of major cities in the United States, the sunshine hours being comparable to Miami, Florida.

In summer, this area can have many days above 95° F and often 100° F. On the plains, the winter lows usually range from 25° F to -23° F. About 75% of the precipitation falls within the growing season, from April to September, but this area is prone to droughts. Most of the precipitation comes from thunderstorms, which can be severe, and from major snowstorms that occur in the winter, and early spring. Otherwise, winters tend to be mostly dry and cold.
The Midway area has an average elevation of 5300 feet and an average precipitation of 12 inches.
SOURCE: COLORADO CLIMATE CENTER, DEPT OF ATMOSPHERIC SCIENCE

Figure 6. Average Annual Water Runoff in Colorado



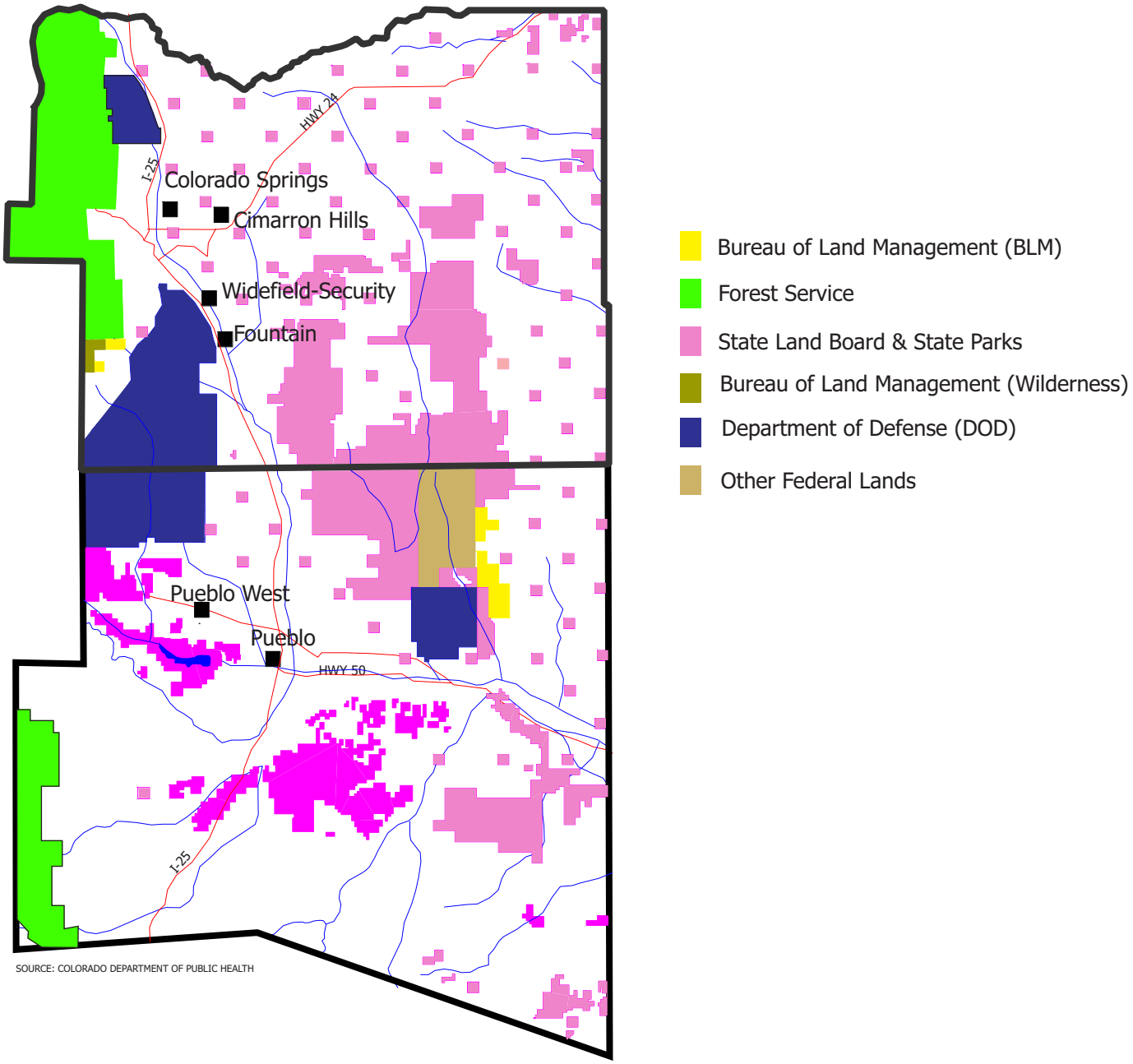
Prepared by the Hydrographic Branch - USDA

Land Ownership

El Paso County encompasses 2,126 square miles consisting of private land, federal land, state lands, and several military installations. Government lands are managed by the U.S. Department of Agriculture's Forest Service, U.S. Department of Interior's Bureau of Land Management, Bureau of Reclamation, State of Colorado, and Colorado Parks and Wildlife. There are several Military facilities such as: U.S. Air Force Academy, Cheyenne Mountain, North American Aerospace Defence Command, Peterson Air Force Base, Schriever Air Force Base, and Fort Carson Army Base. State and Federal Parks include Cheyenne Mountain State Park, and Pike National Forest.

Pueblo County encompasses 2,388 square miles consisting of private land, federal and state land. Military sites include Fort Carson Army Base, and the Army Depot. Lake Pueblo State Park is also located within Pueblo County. Federal lands also include San Isabel National Forest, and Green Mountain Wilderness Area.

Figure 7. Land Ownership in El Paso/ Pueblo Counties



SOURCE: COLORADO DEPARTMENT OF PUBLIC HEALTH

Land Use

Land use within El Paso County primarily consists of urban development, tourism, recreation, insurance companies, educational institutions, religious organizations, and light and heavy industry. There is some agriculture in the Fountain Valley area with ranching on the upper plains and mountainous areas. Several Military Bases are located in El Paso County as well.

El Paso County has a variety of natural resources which have been the basis for its economy over time. Early settlers in the county developed gold ore reduction plants to process gold ore from Cripple Creek. As a result of the ore processing, small gauge railroads were built and coal mining was developed on the front range to support such operations.

Land use within Pueblo County primarily consists of urban and rural development, recreation, light and heavy industry. There is agriculture in the Arkansas Valley area with ranching on the upper plains. There is one military base and one Department of Transportation Rail Center located in Pueblo County.

Land Administration

Most of the land use decisions for the unincorporated areas of El Paso and Pueblo Counties are made by their respective Board of Commissioners with recommendation from their respective County Planning Commission and department staff. The Department of Planning and Community Development administers, on behalf of the Board of County Commissioners, each county's respective land use regulatory systems. Each Department coordinates issues relating to physical land use and development activities in their respective counties as well as long range planning.

Each county's master plan provides a framework for decision making and serves as a guide to development within the unincorporated areas of each county. The master plan provides a look at the natural resources and infrastructure of each county; at the issues, needs and opportunities the respective county and citizens are facing; and recommended activities the county can undertake to implement citizen's visions for the future of its area.

Population and Growth

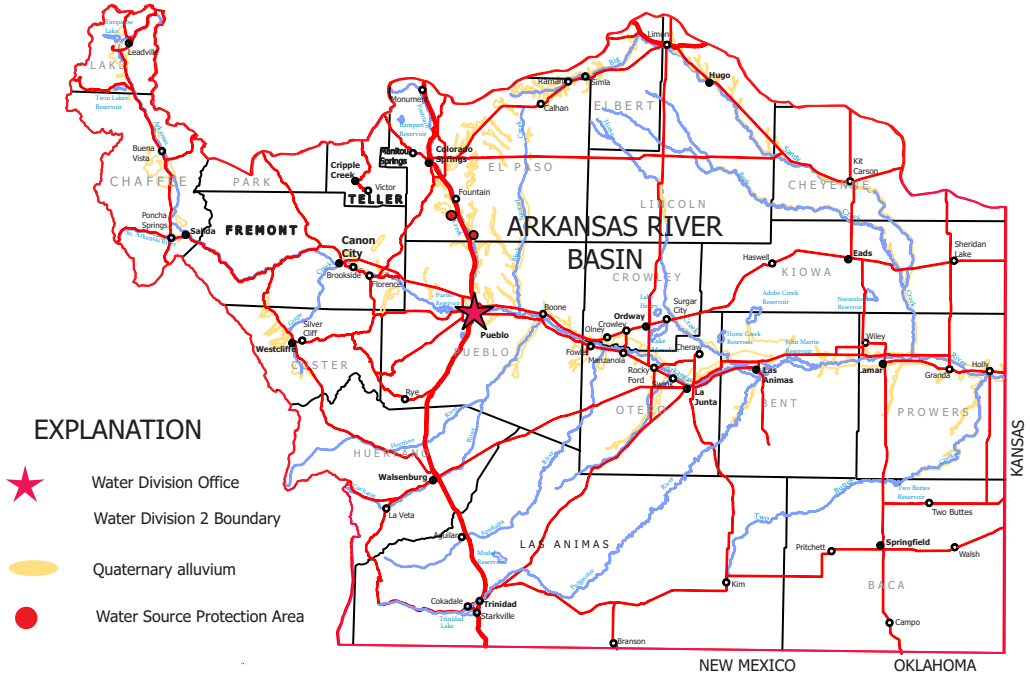
Both El Paso and Pueblo Counties have experienced a growth in their populations. From 1990 to 2000, El Paso County's population grew from 397,014 to 516,929. Over this ten year period El Paso County grew 30.2%. From 2000 to 2010, El Paso County's population grew from 516,929 to 622,263. Over this ten year period El Paso County's population increased by 105,334, a 20.3% increase which is significantly less than the previous decade. From 1990 to 2000, Pueblo County's population grew from 123,051 to 141,472. Over this ten year period Pueblo County grew 14.97%. From 2000 to 2010, Pueblo County's population grew from 141,472 to 159,063. Over this ten year period, Pueblo County's population increased by 17,591, a 12.43% increase which is also significantly less than the previous decade.

WATER QUALITY SETTING

Hydrology

The source waters for the Midway Community originates from a chief tributary that is the Fountain Creek in the northwest-central portion of the Arkansas River Basin at an altitude of approximately 8,400 feet. The Arkansas River Basin of southeastern Colorado encompasses approximately 28,273 square miles, extending from the Continental Divide in the west to the Kansas state line in the east and to the New Mexico and Oklahoma state lines to the south. The watershed comprises portions of 16 counties: Kiowa, Cheyenne, Elbert, Lincoln, Crowley, El Paso, Pueblo, Chaffee, Park, Fremont, Custer, Teller, Bent, Powers, Las Animas, and Baca (Figure 8). Management of the waters in the Arkansas River Basin is under the jurisdiction of Colorado Water Division 2. The Division Engineer and Water Court are located in Pueblo. In addition to the Fountain Creek tributary, there are two other tributaries, the Huerfano River and the Purgatoire. It drains the southeastern part of Colorado, as well as a large portion of the central mountains. The subbasins include: Upper Arkansas River, Middle Arkansas River, Fountain Creek, Lower Arkansas River, and the Cimarron River.

Figure 8. Map of the Arkansas River Basin with location of the Midway Community protection area.

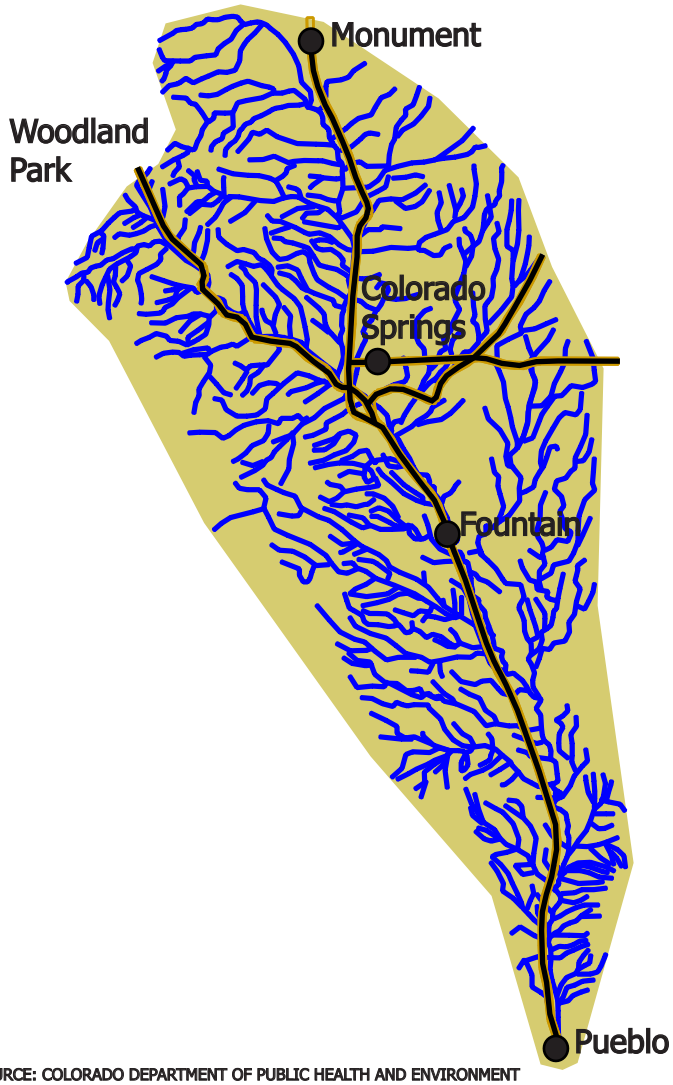


SOURCE: GROUND WATER ATLAS OF COLORADO

Stream Segments

The source water protection areas are part of the Fountain Watershed, a sub-basin of the Arkansas River, with the Hydrologic Unit Code 110200030406. The Midway area's source water is from the Fountain Creek Watershed which drains into the Arkansas River at Pueblo.

Figure 9. Map of stream segments within the Fountain Watershed of the Arkansas River.



SOURCE: COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT

Water Quality Standards

Under the Clean Water Act, every state must adopt water quality standards to protect, maintain and improve the quality of the nation's surface waters. The State of Colorado's Water Quality Control Commission has established water quality standards that define the goals and limits for all waters within their jurisdictions. Colorado streams are divided into individual stream segments for classification and standards identification purposes (Table 4). Standards are designed to protect the associated classified uses of the streams (Designated Use). Stream classifications can only be downgraded if it can be demonstrated that the existing use classification is not presently being attained and cannot be attained within a twenty year time period [Section 31.6(2)(b)]. A Use Attainability Analysis must be performed to justify the downgrade.

Table 4. Water Bodies within the Source Water Protection Area classified by WQCC and their Designated Uses

Segment	Portion of Segment	Classifications
COARFO04	All tributaries of Fountain Creek which are not within the boundaries of National Forest or Air Force Academy lands, including all wetlands, lakes, and reservoirs, from a point immediately above the confluence with Monument Creek to the confluence with the Arkansas River, except for the specific listing in segment 6.	Aq Life Warm 2 Recreation E Agriculture
COARFO06	Mainstem of Monument Creek, from the boundary of National Forest lands to the confluence Fountain Creek.	Aq Life Warm 2 Recreation E Water Supply Agriculture

SOURCE: COLORADO WATER QUALITY CONTROL COMMISSION

Aquatic Life Warm 2: Refers to waters that are not capable of sustaining a wide variety of cold or warm water biota, including sensitive species, due to physical habitat, water flows or levels, or uncorrectable water quality conditions that result in substantial impairment of the abundance and diversity of species.

Agriculture: Refers to waters that are suitable for irrigation or livestock use.

Water Supply: These surface waters are suitable (through standard water treatment would become suitable) for potable water supplies.

F Recreation E: Theses surface waters are used for primary contact recreation or have been used for such activities since November 28, 1975.

The Fountain Creek has been listed as impaired, in that the Water Quality Control Commission has identified water bodies where there is reason to suspect water quality problems. These segments are placed on a Monitoring and Evaluation list for further studies (Table 5).

Table 5. Water Bodies Identified for Monitoring and Evaluation

Segment	Portion of Segment	Parameter
COARFO04	All Fountain Creek	E.coli (May-Oct)

SOURCE: COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT WATER QUALITY CONTROL COMMISSION

Midway Community

The Midway Community is a small rural community that covers a large area on the Front Range of Colorado located in the northwestern corner of Pueblo, County and the southwestern corner of El Paso County along Interstate Highway 25 at an average elevation of 5,300 feet. It lies within the Fountain Valley Basin at Longitude 38 32' N, and Latitude 104 41' W.

The Midway Community is a bedroom community that serves the Cities of Pueblo, Colorado Springs, and Fountain, as well as the Fort Carson Military Base. The area is not incorporated except for the Wigwam Mutual Water Company, which is a nonprofit consumer owned water utility licensed by the Colorado Department of Public Health and Environment as a community water system to serve the Midway Community.

The Wigwam Mutual Water Company is governed by a five-member Board of Directors and managed by Gary Smith at the company's office located at 2454 Waynoka Road, Colorado Springs, Colorado 80915. Wigwam Mutual Water Company was established in 2005 to provide safe and reliable water to the Midway community in an economical, efficient and responsible manner now and in the future.

Figure 10. Midway Community

Water Supply and Use

The primary water supply source for the Wigwam system are two alluvial wells (Table 6). The first well, MRPOA #1, is located south of the PPIR racetrack. It has a current production capacity of 120 gallon per minute (gpm) with the future pumping capacity of 400 gallons per minute (gpm). Water treatment for this well currently includes filtration through bag filter units and chlorination. The second well, CR #1, is located approximately three miles south and has an existing pumping capacity of 120 gallons per minute (gpm) with future pumping capacity of 240 gallons per minute (gpm). Water treatment for the second well includes two carbon filter chambers with chlorination. Water from both wells are pumped through a water transmission line to a 250,000 gallon water storage tank approximately four miles west and to a second 30,000 gallon water storage tank located 4 miles south. Water distribution lines extend from the tank sites to the existing homes within the service area. Both wells are under the influence of surface water.

Table 6. Well Water Sources

Well Name	Permit Number	Permitted Plumping Rate (gals)	CDPHE Source ID	Location (coords)	Elevation (feet)	Well Depth (feet)	Water Depth (feet from top)
MRPOA #1	52578F 56724F	150	121470 001	N 38 35.032' W 104 40.184'	5362	39	19
CR #1	64950F	300	121470 002	N 38 32.515' W 104 38.438'	5267	37	8

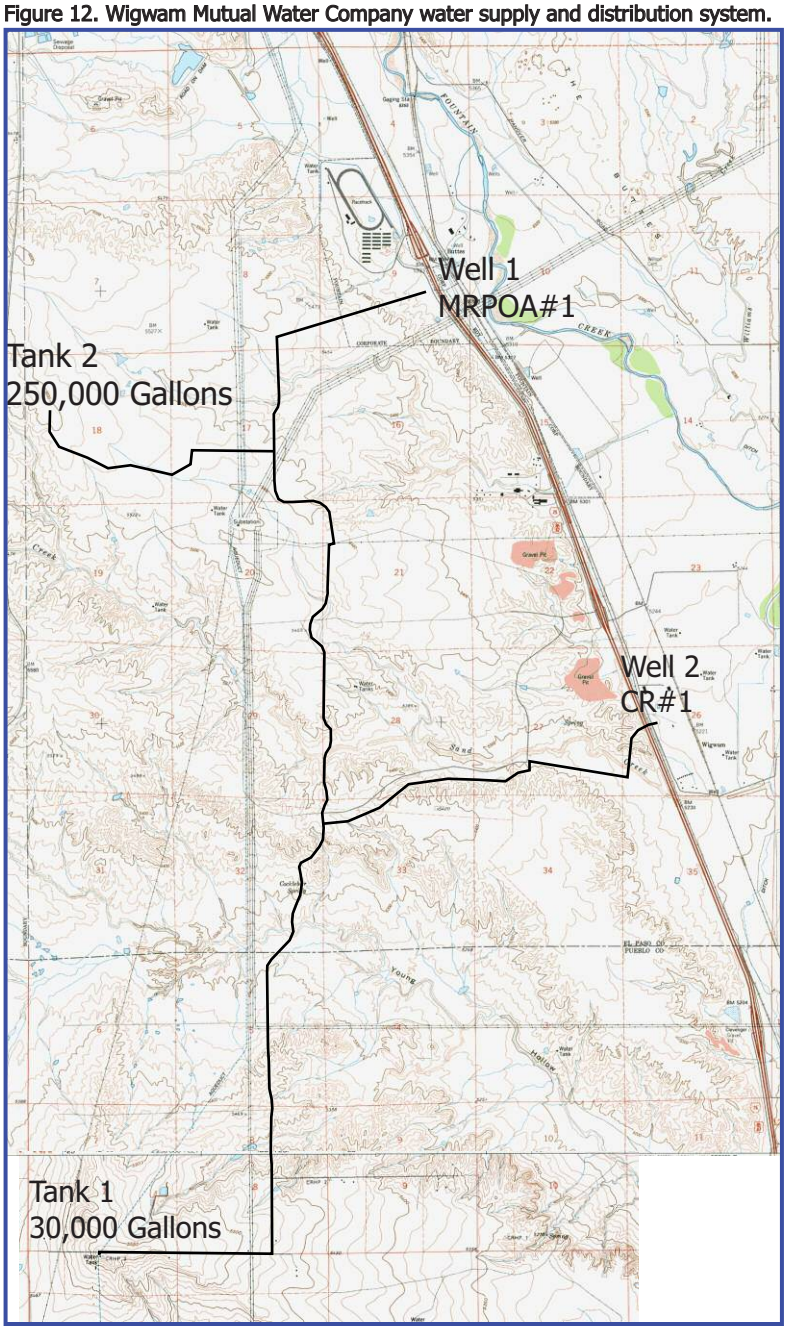
Figure 11.

SOURCE: WIGWAM MUTUAL WATER CO.

From the water tanks water is distributed to Midway residents via a network of underground pipelines to 375 taps of which 373 are residential and two are commercial.

The average daily demand is 50,000 gallons. Peak usage during the summer is August with an average of 58,000 gallons per day. The lowest usage month is February with a peak usage of 45,700 gallons per day. The system has the current capacity of providing 345,000 gallons per day. Wigwam Mutual Water Company provides an Annual Drinking Water Quality Report (CCR) to the public which provides information on the results of their water monitoring program. The 2012 report for the year 2011 is available at Wigwammutualwatercompany.org.

Figure 12. Wigwam Mutual Water Company water supply and distribution system.



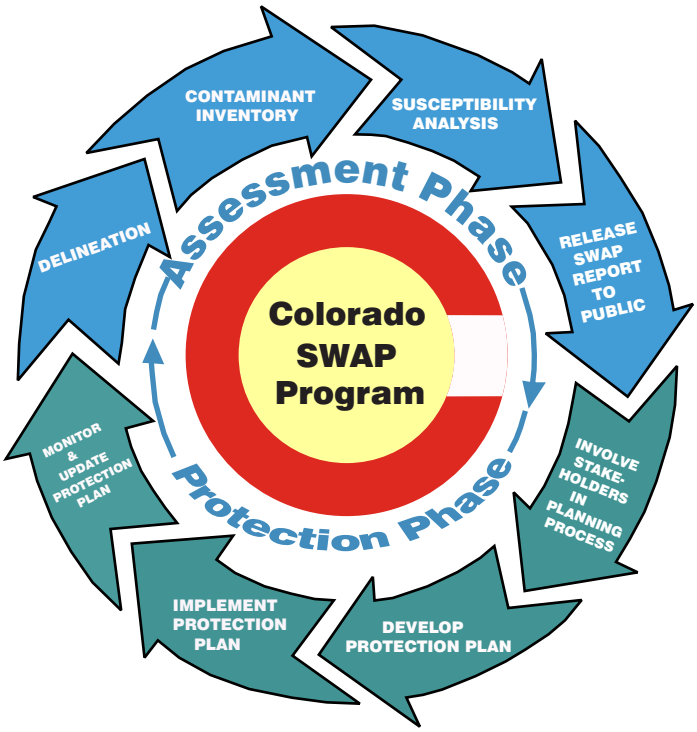
SOURCE: WIGWAM MUTUAL WATER COMPANY

OVERVIEW OF COLORADO'S SWAP PROGRAM

Source water assessment and protection came into existence in 1996 as a result of Congressional re-authorization and amendment of the Safe Drinking Water Act. The 1996 amendments required each state to develop a source water assessment and protection (SWAP) program. The Water Quality Control Division, an agency of the Colorado Department of Public Health and Environment (CDPHE), assumed the responsibility of developing Colorado's SWAP program. The SWAP program protection plan will be integrated with the existing Colorado Wellhead Protection Program that was established in amendments made to the federal Safe Drinking Water Act (SDWA, Section 1428) in 1986. Wellhead protection is a preventative concept that aims to protect public groundwater wells from contamination. The Wellhead Protection Program and the SWAP program have similar goals and will combine protection efforts in one merged program plan.

Colorado's SWAP program is a two-phased process designed to assist public water systems in preventing potential contamination of their untreated drinking water supplies. The two phases include the Assessment Phase and the Protection Phase as depicted in the upper and lower portions of Figure 16, respectively.

Figure 13. Source Water Assessment and Protection Process



Source Water Assessment Phase

As depicted in the upper portion of Figure 13, the Assessment Phase for all public water systems consists of four primary elements.

1. Delineating the source water assessment area for each drinking water source;

2. Conducting a contaminant source inventory to identify potential sources of contamination within each of the source water assessment areas;

3. Conducting a susceptibility analysis to determine the potential susceptibility of each public drinking water source to the different sources of contamination and;

4. Reporting the results of the source water assessment to the public water system and the general public.

The Assessment Phase involves understanding where the Midway community source water comes from, what contaminant sources potentially threaten the water sources, and how susceptible each water source is to potential contamination. The susceptibility of an individual water source is analyzed by examining the properties of its physical setting and potential contaminant source threats. The resulting analysis calculations are used to report an estimate of how susceptible each water source is to potential contamination.

Source Water Protection Phase

The Protection Phase is a voluntary, ongoing process in which the Midway community has been encouraged to voluntarily employ preventive measures to protect its water supply from the potential sources of contamination to which it may be most susceptible. The Protection Phase can be used to take action to avoid unnecessary treatment or replacement costs associated with potential contamination of the untreated water supply. Source water protection begins when local decision-makers use the source water assessment results and other pertinent information as a starting point to develop a protection plan. As depicted in the lower portion of Figure 16, the source water protection phase for all public water systems consists of four primary elements.

1. Involving local stakeholders in the planning process;

2. Developing a comprehensive protection plan for all their drinking water sources;

3. Implementing the protection plan on a continuous basis to reduce the risk of potential contamination of the drinking water sources; and

4. Monitoring the effectiveness of the protection plan and updating it accordingly as future assessment results indicate.

The water system and the community recognize that the Safe Drinking Water Act grants no statutory authority to the Colorado Department of Public Health and Environment or to any other state or federal agency to force the adoption or implementation of source water protection measurers. This authority rest solely with local communities and local governments. The source water protection phase is an ongoing process as indicated in Figure 16. The evolution of the SWAP program is to incorporate any new assessment information provided by the public water supply systems and update the protection plan accordingly.

SOURCE WATER ASSESSMENT RESULTS

The Colorado Department of Public Health and Environment assume the lead role in conducting the source water assessments for public water systems in Colorado. The Midway community drinking water providers received their source water assessment report in November 2004 and have reviewed the report along with the Source Water Protection Planning Team. These assessments results were used to guide the development of appropriate management approaches to protect their source water from potential contamination. A copy of the source water assessment summary report can be obtained by contacting the water system or by downloading a copy from the Colorado Department of Public Health and Environment's SWAP program web site located at: http://www.colorado.gov/cs/satellite/cdphe-wq/cbon/1251596793639 . The Source Water Assessment Area as delineated by the Colorado Department of Public Health and Environment was used as a starting point to define the criteria in determining the delineation of the Protection Area.

Source Water Protection Area Delineation

A source water protection area is the surface area from which contaminants are reasonably likely to reach a water source. Delineation is the process used to identify and map the sources of contaminates that may influence the water supply to shallow wells. The purpose of delineating a Source Water Protection Area is to determine the recharge area that supplies water to a public water source. The delineated source water assessment area provides the basis for understanding where the community's source water and potential contaminant threats originate, and where the community has chosen to implement its source water protection measures in an attempt to manage the susceptibility of their source water to potential contamination. The configuration of the protection zones were influenced by the dominant under flow of the Fountain aquifer.

The Planning Team reviewed the State's assessment and locations of the water sources for the Midway community and determined that one of the wells was not included in the assessment. The Midway community also decided to include these delineated areas within a Source Water Supply Protection Area, which is defined as the source water protection area that the community has chosen to implement its protection measures to reduce the risk of potential contaminants to these water sources.

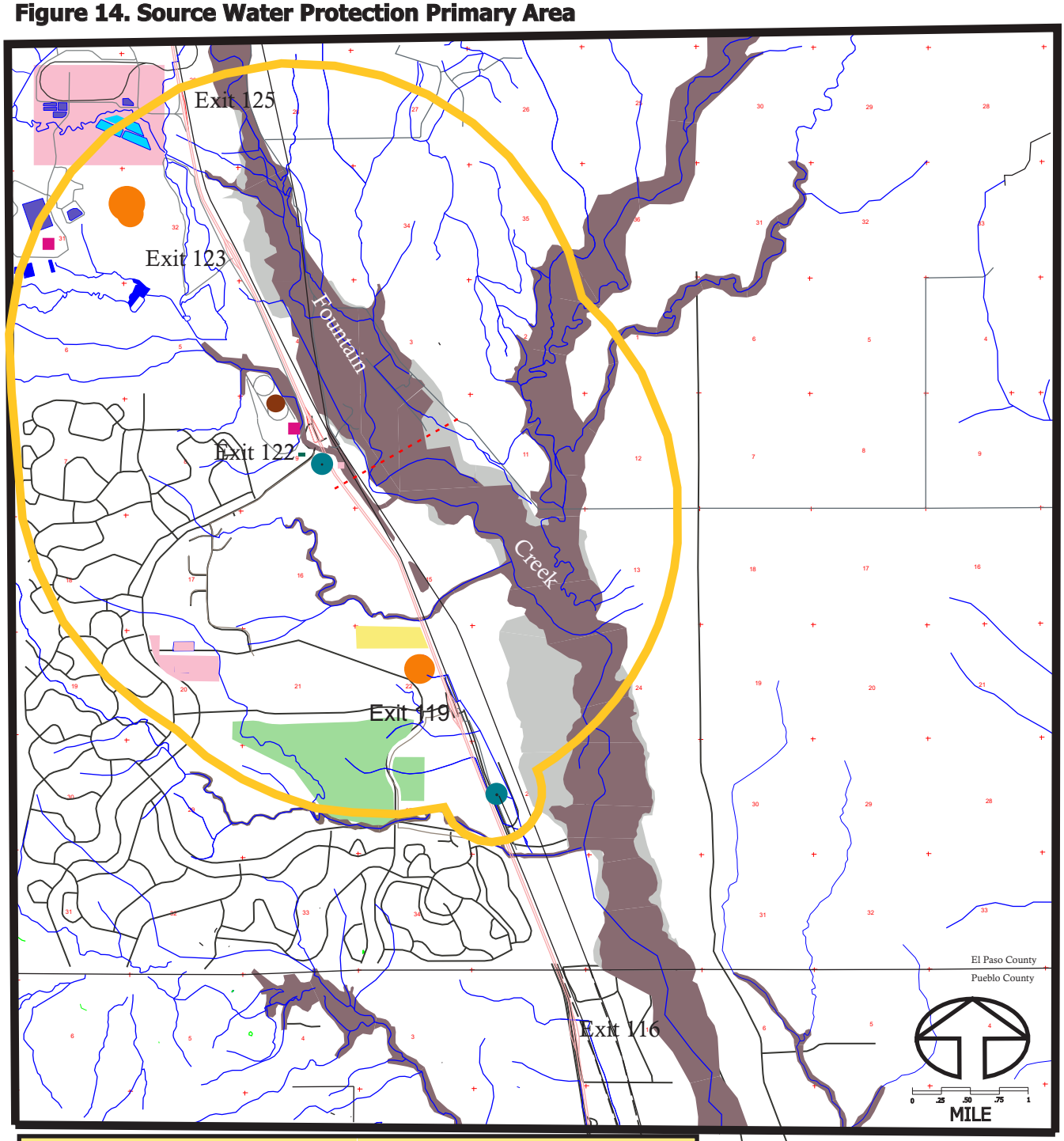
Source Water Protection Area

The source water protection areas around the wells were delineated as two sensitivity zones defined as:

1) Primary Zone is a 2.5 mile radius around the water source well extending one mile upstream to include any upstream contamination concerns.

2) Area of Interest consists of the tributary drainage 5 miles upstream of each well to include any upstream contamination concerns.

Figure 14. Source Water Protection Primary Area

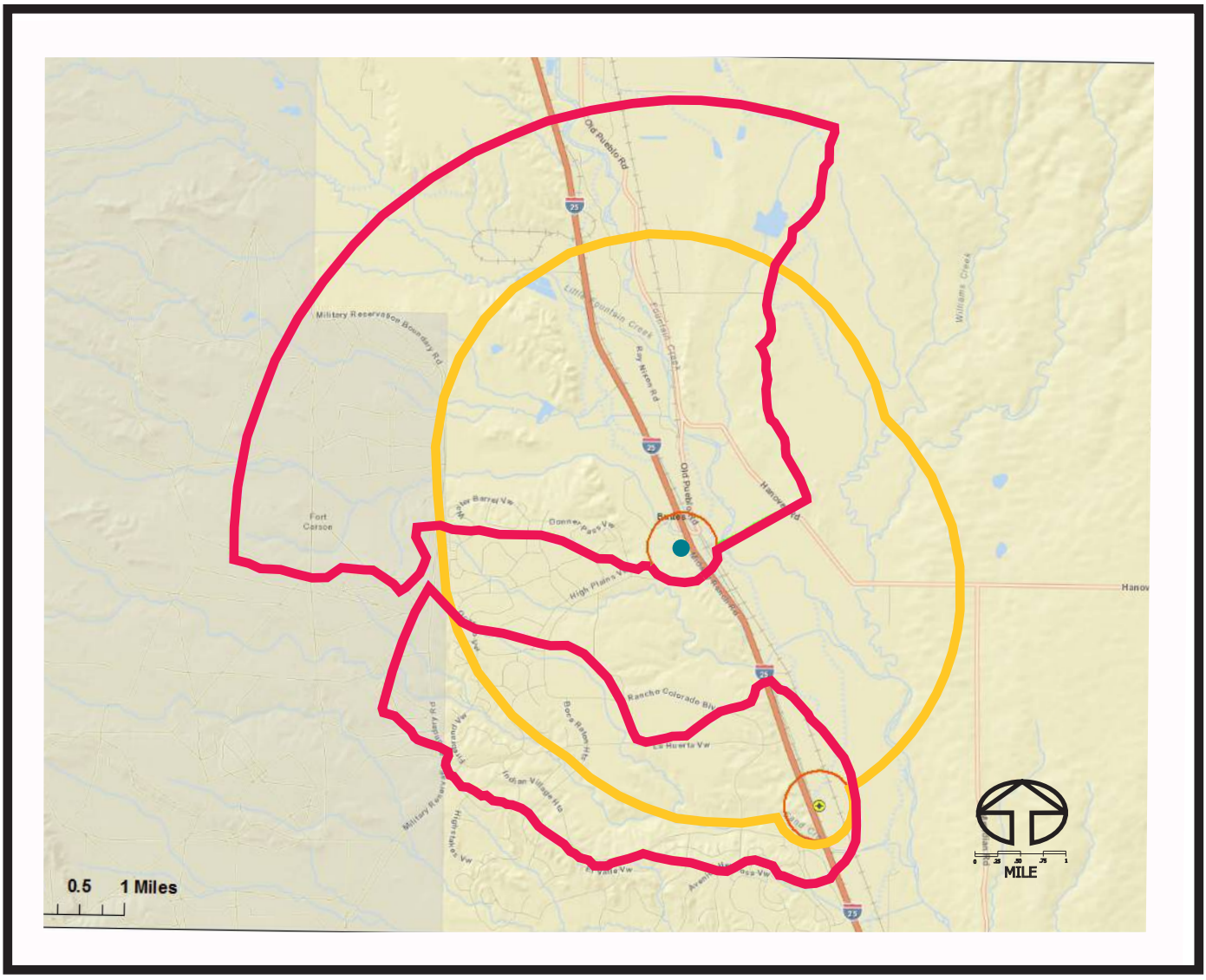


LEGEND

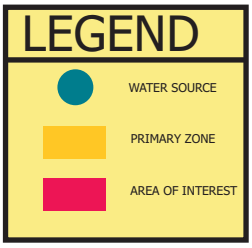
- WATER SOURCE
- PRIMARY ZONE
- POWER PLANT SITE / SUBSTATION
- SOLID WASTE AND TIRE LANDFILL SITES
- HEAVY LIVESTOCK USE
- RACE TRACK
- ASH PONDS
- SEWAGE LAGOON & SEWAGE TREATMENT PLANT
- FLOOD ZONE A
- FLOOD ZONE X
- STREAM OR CREEK
- ROADS
- INTERSTATE 25 HIGHWAY
- RAILROAD TRACK
- GRAVEL MINING OPERATION
- IRRIGATED FIELDS
- COLORADO SPRINGS SDS TUNNEL CROSSING

SOURCE: SMITH & CALLAGHAN

Figure 15. Source Water Protection Area With Area Of Interest



SOURCE: SMITH & CALLAGHAN



Contaminant Source Inventory

Notice
The information contained in this "Plan" is limited to that available from public records and the water supplier. Other "potential contaminants sites" or threats to the water supply may exist in the source water assessment area that are not identified in this "Plan." Identification of a site as "potential contaminant site" should not be interpreted as one that will necessarily cause contamination of the water supply.

In 2001-2002 a contaminant source inventory was conducted by the Colorado Department of Public Health and Environment to identify selected potential sources of contamination that might be present within the source water assessment areas. Discrete contaminant sources were inventoried using a recent land us/land cover and transportation maps of Colorado, along with selected state regulatory databases. The contaminant inventory was completed by mapping the potential contaminant sources with the aid of a Geographic Information System (GIS).

The results were provided to the water systems as part of the source water assessment process. The water providers were asked to voluntarily review the inventory information, field-verify selected information about existing and new discrete contaminant sources, and provide feedback on the accuracy of the inventory.

The WQCD's assessment process used the terms "discrete" and "dispersed" potential sources of contamination. A discrete source is a facility that can be mapped as a point, while a dispersed source covers a broader area such as a type of land use (crop land, forest, residential, etc.). Contaminant health concerns for the discrete and dispersed sources of contaminants are included in the Appendices of this report.

Discrete Potential Sources of Contamination
The State's contaminant source inventory results showed no discrete potential sources of contamination.

Dispersed Potential Sources of Contamination
The contaminant source inventory indicates the following type of dispersed contaminant sources were indentifed within the source water assessment areas analyzed:

Land uses identified in the State's Assessment:

- Commercial/Industrial/Transportation
- Row Crops
- Pasture/Hay
- Oil/Gas Wells
- Road Miles

Priority Chart of Concerns

The Planning Committee identified additional concerns, while not finding some mentioned in the Colorado Department of Public Health and Environment's original Contaminant Source Inventory. The following concerns have been prioritized and rated as High, Median, or Low in level of concern.

Table 7. Priority Chart of Concerns

Priority	Concern	Rating
1	Tunneling	High
2	Storm Water Runoff	High
3	Ash Disposal Sites	High
4	Irrigated Fields	High
5	Underground Storage Tanks	High
6	Septic Systems	High
7	Livestock	Medium
8	Sewage Lagoons	Medium
9	Solid Waste and Tire Leachate	Medium
10	Road Spills	Medium
11	Railroad Spills	Medium
12	Residential Practices	Medium
13	Gravel Pit	Low
14	Land Use	Low
15	Private Wells	Low
16	Oil and Gas Wells	Low
17	Electric Generation and Distribution	Low

See Contaminants Health Concerns in Appendices.

Susceptibility Analysis of Water Sources

The Wigwam Mutual Water Company's Source Water Assessment Report contained a susceptibility analysis [1] to identify how susceptible an untreated water source could be contaminated from potential sources of contamination inventoried within its source water assessment area. The analysis looked at the susceptibility posed by individual potential contaminant sources and the collective or total susceptibility posed by all of the potential contaminant sources in the source water assessment area. The CDPHE developed a susceptibility analysis model for surface water sources and ground water sources under the influence of surface water, and another model for groundwater sources. Both models provided an objective analysis based on the best available information at the time of the analysis. The two main components of the CDPHE's susceptibility analysis are:

1. Physical Setting Vulnerability Rating - This rating is based on the ability of the groundwater flow to provide a sufficient buffering capacity to mitigate potential contaminant concentrations in the water source.

2. Total Susceptibility Rating - This rating is based on two components: the physical setting vulnerability of the water source and the contaminant threat.

Upon review of the susceptibility analysis, the Planning Committee determined that the Physical Setting Vulnerability Rating and the Total Susceptibility Rating needed to be updated to more accurately reflect the current situation. A new water source had been built since the time of the original susceptibility analysis by the CDPHE.

Table 8. Updated Susceptibility Analysis

Source ID #	Source Name	Source Type	Total Susceptibility Rating	Physical Setting Vulnerability Rating
121470 001	**MRPOA #1**	**Groundwater Under Influence of Surface Water**	**High**	**Moderate**
121470 002*	**CR #1**	**Groundwater Under Influence of Surface Water**	**High**	**Moderate**

***This site to be assigned by the CDPHE in the near future.**

1. The susceptibility analysis provides a screening level evaluation of the likelihood that a potential contamination problem could occur rather than an indication that a potential contamination problem has or will occur. The analysis is NOT a reflection of the current quality of the untreated source water, nor is it a reflection of the quality of the treated drinking water that is supplied to the public.

Discussion of Issues of Concern

The Planning Team reviewed the information presented in the State's assessment, discussed other potential sources of contaminants not included in the assessment, and identified issues of concern within the source water protection areas on which to focus their management approaches.

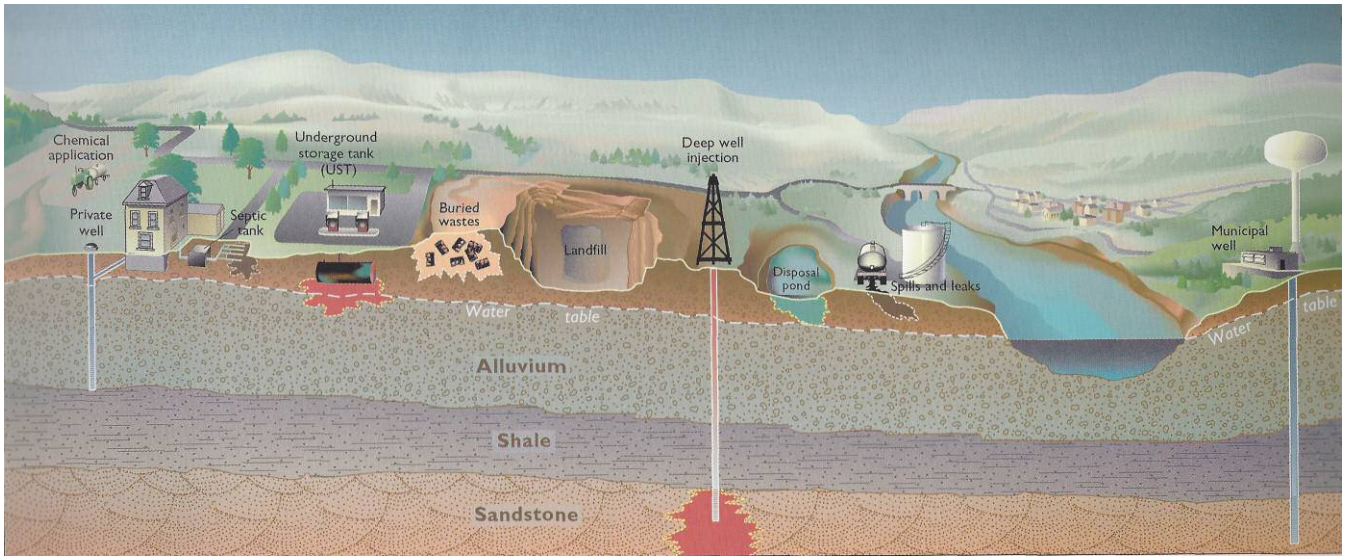
Issues of concern include:

Tunneling
Storm Water Runoff
Ash Disposal Sites
Irrigated Fields
Underground Storage Tanks
Septic Systems
Livestock
Sewage Lagoons
Solid Waste and Tire Leachate
Road Spills
Railroad Spills
Residential Practices
Gravel Pit
Land Use
Private Wells
Oil and Gas Wells
Electric Generation and Distribution

Surface and Ground Water Contaminants

Many types of land uses have the potential to contaminate source waters: spills from tanks, trucks, and railcars; leaks from buried containers; failed septic systems, buried or injection of wastes underground; use of fertilizers, pesticides, and herbicides; road salting; and polluted urban and agricultural runoff. While catastrophic contaminant spills or releases can wipe out a water source, ground water degradation can result from a plethora of small releases of harmful substances. According to the USEPA, nonpoint-source pollution (when water runoff moves over or into the ground, picking up pollutants and carrying them into surface and ground water) is the leading cause of water quality degradation (GWPC, 2008)

Figure 16. Schematic drawing of potential sources of contaminants to surface and ground water.



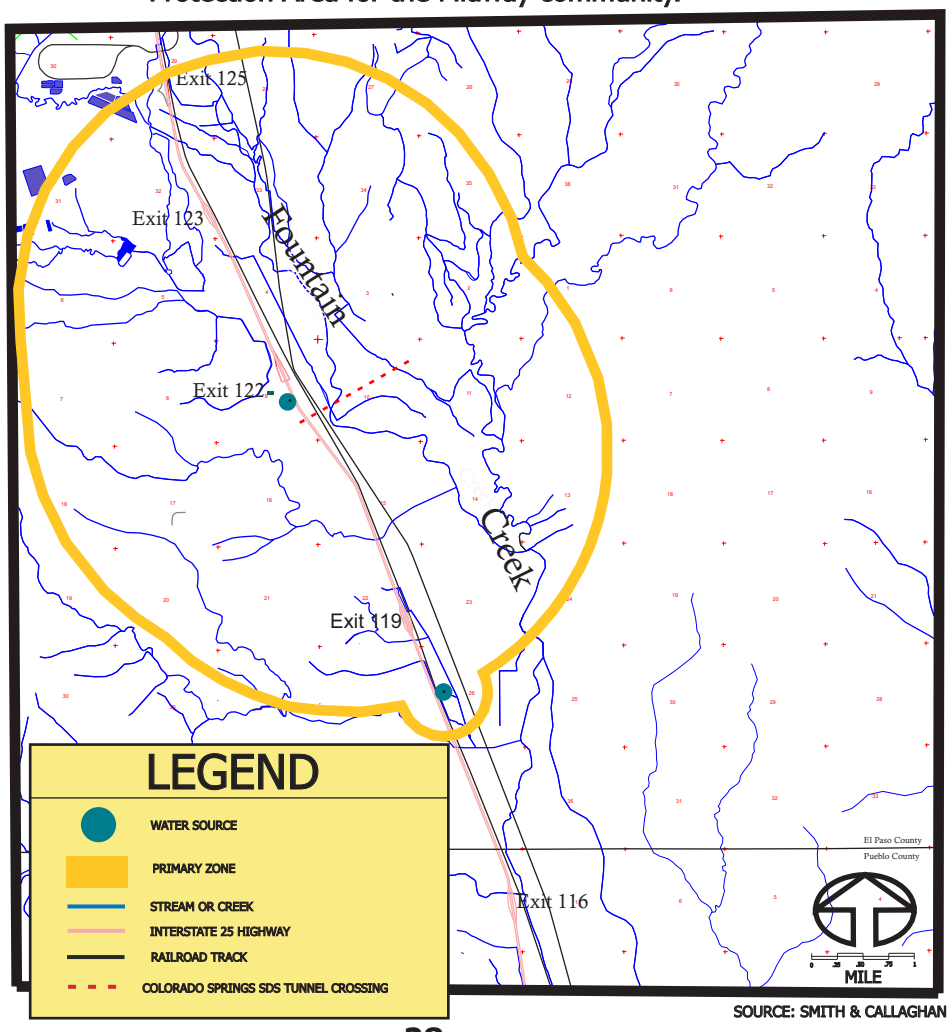
Tunneling

Tunneling the Fountain Creek Aquifer

Big scale tunneling is a large underground excavation created to allow placement of large conduits for utilities or transportation. This type of construction can have negative effects on the surrounding environment. When excavating through or near an aquifer level, contamination of water can occur with the release of heavy metals and benzenes , and the substantial increase in turbidity levels or accumulation of silt particles in bodies of water adjacent to the work area. Sediment loading from tunneling has been identified as a significant degradation to source waters. The natural hydro pressure line has been known to drop in elevation during the construction phase of the project.

Since Wigwam Mutual Water Company's Well #1 is located on the fringe of the Fountain Creek Aquifer and is a shallow well, the Planning Team is concerned that a drop in water elevation may curtail a sufficient flow of water to maintain the existing pumping rate. If the well were able to maintain its existing pumping rate, the increase in turbidity would overrun the existing capacity of the filtering system within the treatment plant. The Planning Team suggests the water provider work with Colorado Springs Utilities to assist the water provider in financing completion of a second treatment plant downsteam to provide a backup source water for the Midway community water system, or provide an emergency plan prior to start of construction, acceptable to water provider, that will be executed should the tunneling impact the water provider's existing pumping and treatment operation.

Figure 17. Map of the Tunnel Construction near Source Water Protection Area for the Midway community.



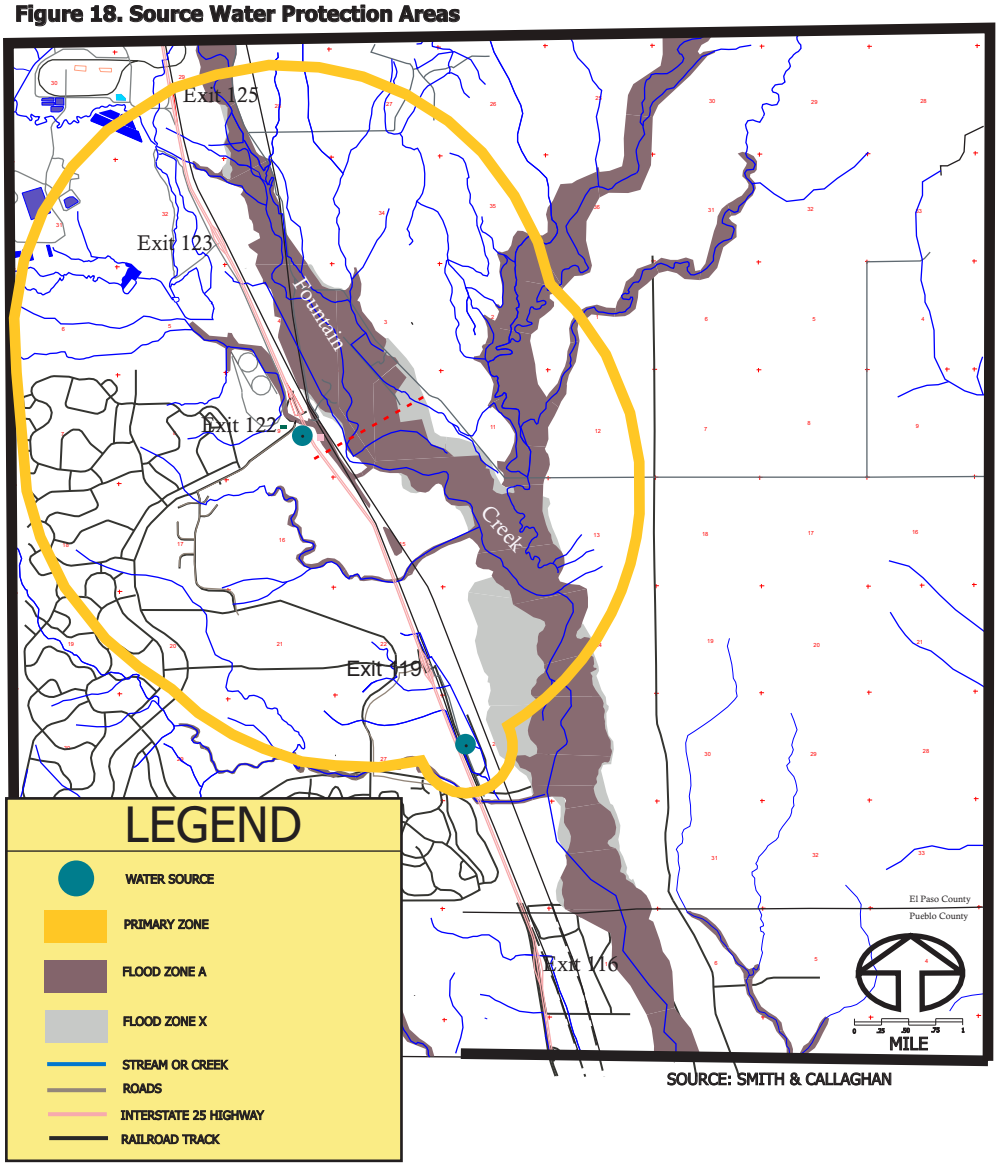
Discussion of Issues of Concern

Storm Water Runoff

Storm water is a vehicle that transfers large quantities of upstream sediment and pollutants, including sewage, from major drainage basins down into the Fountain Creek Watershed. Adding to the problem were large fires in recent history that make hillside soils more susceptible to erosion. In addition, ash from the fires created water quality issues downstream. Uncontrolled flood water can cause greater creek bank erosion within the Fountain Watershed.

Upstream metro districts need to build and maintain storm water runoff infrastructure in order to curtail future damage to the Fountain Watershed. New methods of controlling storm water runoff should be explored.

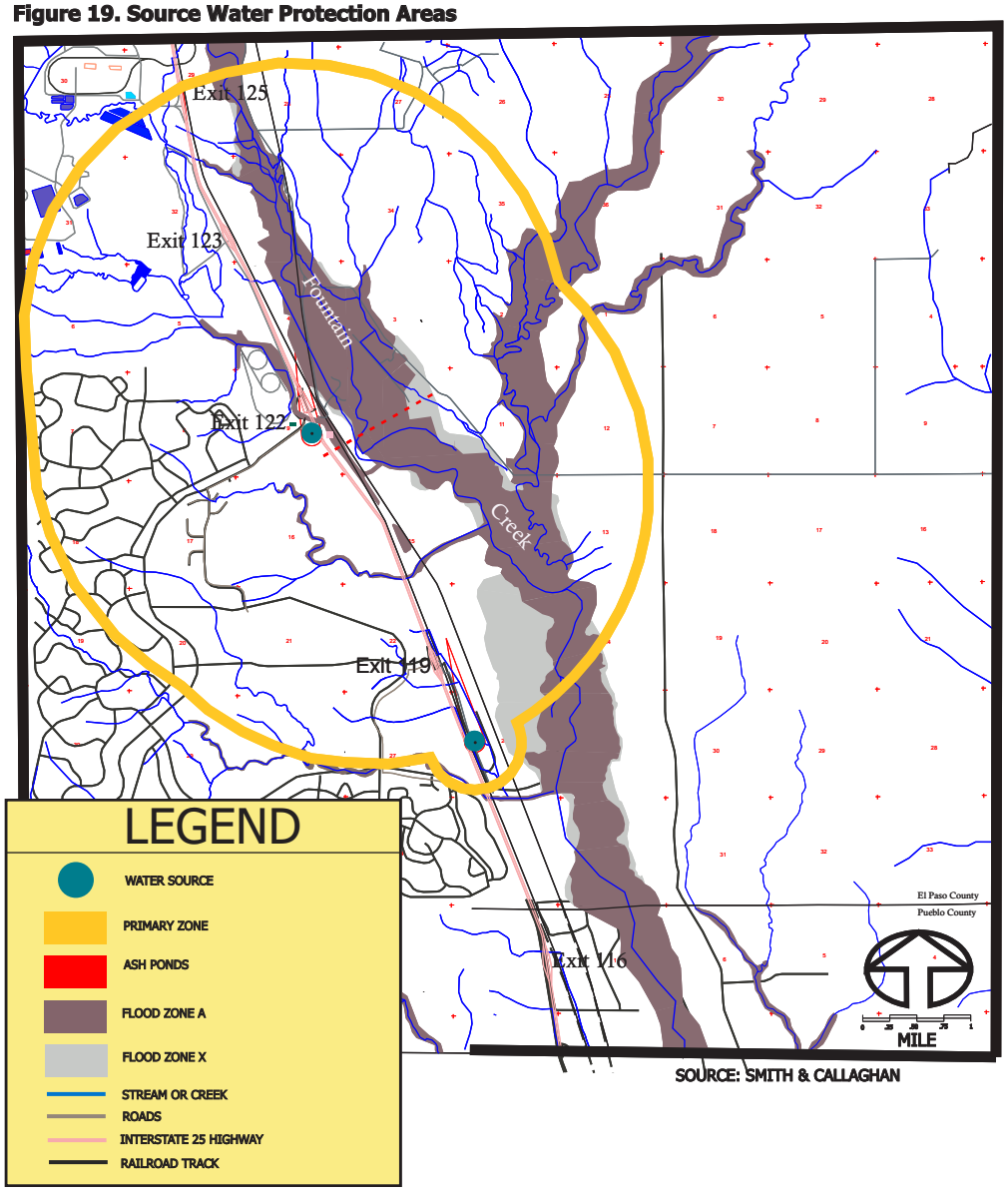
Figure 18. Source Water Protection Areas



Ash Disposal Sites

Ash is a product generated from coal fired electric generation plants and disposed in ash collection ponds held back by earth dams. Soil, ground water, pond water, and pond sediment can be contaminated with coal ash containing several toxic metals including arsenic, barium, mercury, selenium, and thallium. These metals pose a risk to wildlife and potential cancer risks to humans. The Planning Team is concerned that a dam collapse will allow millions of gallons of ash sludge to enter the Fountain Creek Watershed.

Figure 19. Source Water Protection Areas



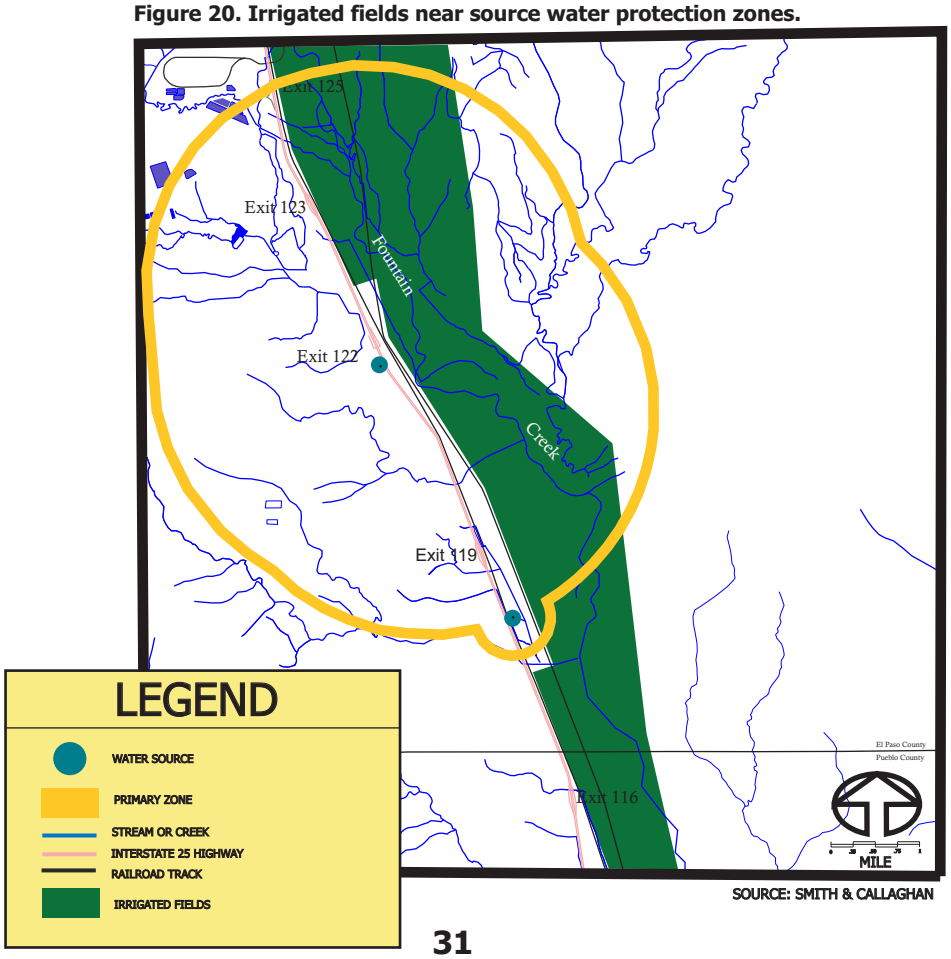
Irrigated Fields

Agricultural lands lie with the Primary Zone protection area along Fountain Creek. Some of the land is irrigated crop land with irrigation runoff occurring back into Fountain Creek. Farmers and ranches in this protection area may use chemicals to fertilize their crop lands. The two main components of fertilizer is biologically transformed to nitrate that is highly soluble in water and can readily be absorbed and used by plants. Soluble nitrate is highly mobile and can move with water out of the soil. Excess fertilizer use and poor application methods over irrigated crop lands can cause fertilizer movement into surface and ground waters.

The goal is to minimize nutrient losses from agricultural lands. This can be achieved by developing a comprehensive nutrient management plan and using only the types and amounts of nutrients necessary to produce the crop, applying nutrients at the proper times and with proper methods, and following proper procedures for fertilizer storage and handling.

The Planning Team recommends public education to encourage best management practices for agricultural operations to minimize detrimental impacts on the land and water within the source water protection areas.

Figure 20. Irrigated fields near source water protection zones.



SOURCE: SMITH & CALLAGHAN

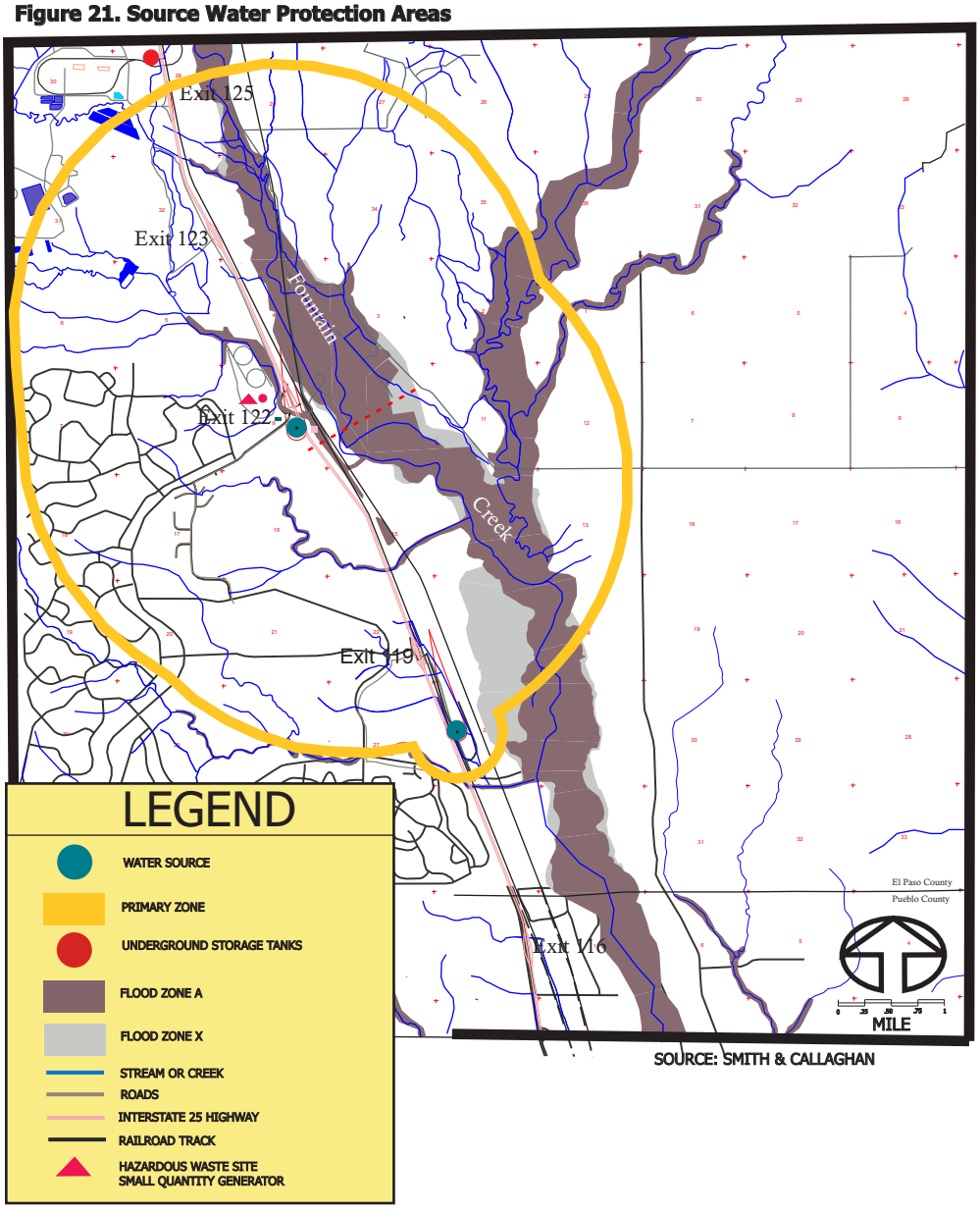
Discussion of Issues of Concern

Underground Storage Tanks

There are several issues surrounding underground storage tanks (USTs) that include, but not be limited to: environmental, safety, economic and legal. Such issues have increased concerns among communities. The more pressing concerns involving USTs are: soil and groundwater contamination; fire risk and tank collapse; and contamination cleanup.

The USTs installed in the 1970s and 1980s were installed using old technology with less concerns about installation and environmental issues. Present day concerns, such as contaminated soil, may not have been anticipated. Many tanks were not designed to be stored underground. Consequently, several tanks of that time encountered today are defective by modern standards.

Figure 21. Source Water Protection Areas



SOURCE: SMITH & CALLAGHAN

Septic Systems

Currently, there are residences within the Source Water Protection Area with septic systems, also called individual sewage disposal systems (ISDSs). If managed improperly, these residential septic systems can contribute excessive nutrients, bacteria, pathogenic organisms, and chemicals to the groundwater. There are an estimated 300 septic systems within the protection area. The Planning Team recommends developing an inventory of owners of septic systems in the protection area, providing education on proper septic maintenance, and working closely with the County Health Department.

Pharmaceuticals and Personal Care Products

Pharmaceuticals and Personal Care Products (PPCPs) have been showing up in our nations' drinking water sources. Chemicals that we use every day in homes, industry, and agriculture - including detergents, disinfectants, fragrances, fire retardants, nonprescription and prescription drugs, and pesticides - can enter Colorado's streams and ground water with wastewater. These wastewater chemicals can be released to the environment through discharges including individual septic disposal systems. The human health and environmental effect of wastewater chemicals are not well understood, and standards to protect human health or aquatic life have not been established for most of these chemicals (Sprague, et al, 2005).

There is a potential for PPCPs to enter the ground water from these systems. The Planning Team recommends public education to those owners to prevent these chemicals from entering the source waters for the Midway community. Best Management Practices (BMPs) may include: the proper disposal of nonprescription and prescription drugs, and the maintenance of septic systems.

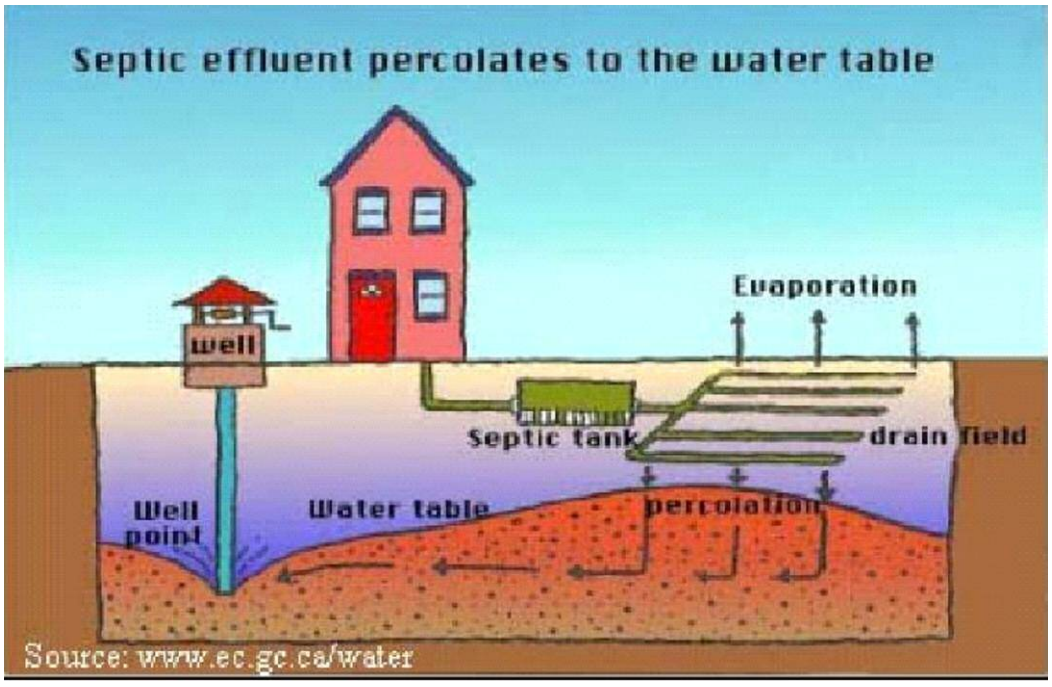


Figure 22. Septic System maintenance is important to the protection of public water supplies.

Livestock and Wildlife Use

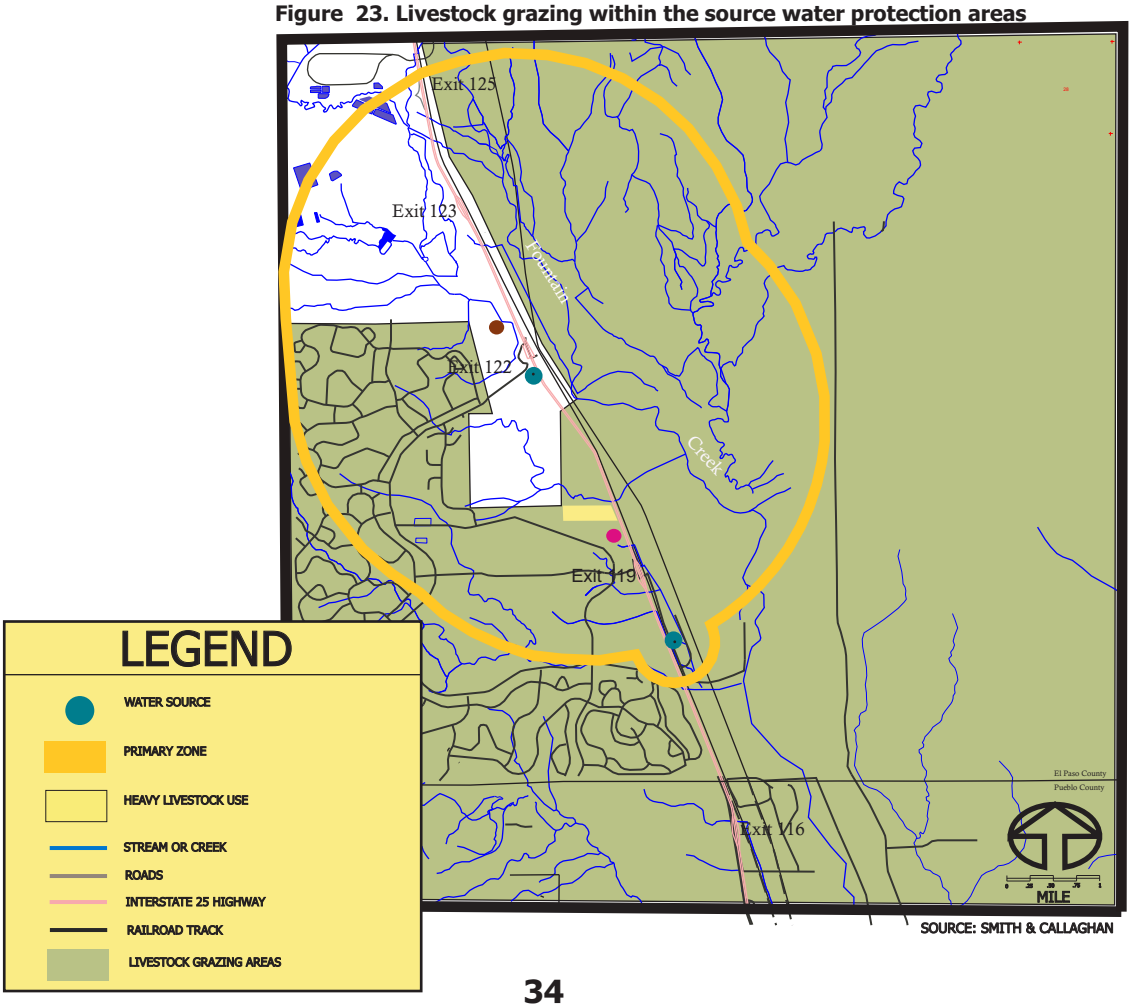
Livestock grazing occurs within the private lands in the watershed.

Within the Midway community on private lands within the source water area, livestock grazing can impact riparian health, stream-channel conditions, upland infiltration and erosion, and water quality. The most common livestock-caused impacts include fecal/bacterial contamination, sedimentation, and increased temperatures. Livestock grazing activities with the highest potential for direct and indirect impacts to water resources include long-term concentrated grazing in riparian areas, and trampling/trailing near water sources. Direct bank damage may add large amounts of sediment directly into streams, especially in wet meadow streams or erosive topography that is prone to gully formation. Free livestock access to streams and riparian areas can be a major source of pathogens to surface water (i.e. E.coli and Cryptosporidium).

Horses and wildlife can also be the sources of many of the same issues as cattle, especially fecal/bacterial contamination, sedimentation and impacts to water sources. Wildlife and those horseback riding activities not requiring a special use permit are not as easily regulated as livestock grazing.

The Planing Team recommends monitoring riparian and water quality health impacts on lands within the watershed, and encouraging the general public to use BMPs to minimize source water impacts.

Figure 23. Livestock grazing within the source water protection areas



SOURCE: SMITH & CALLAGHAN

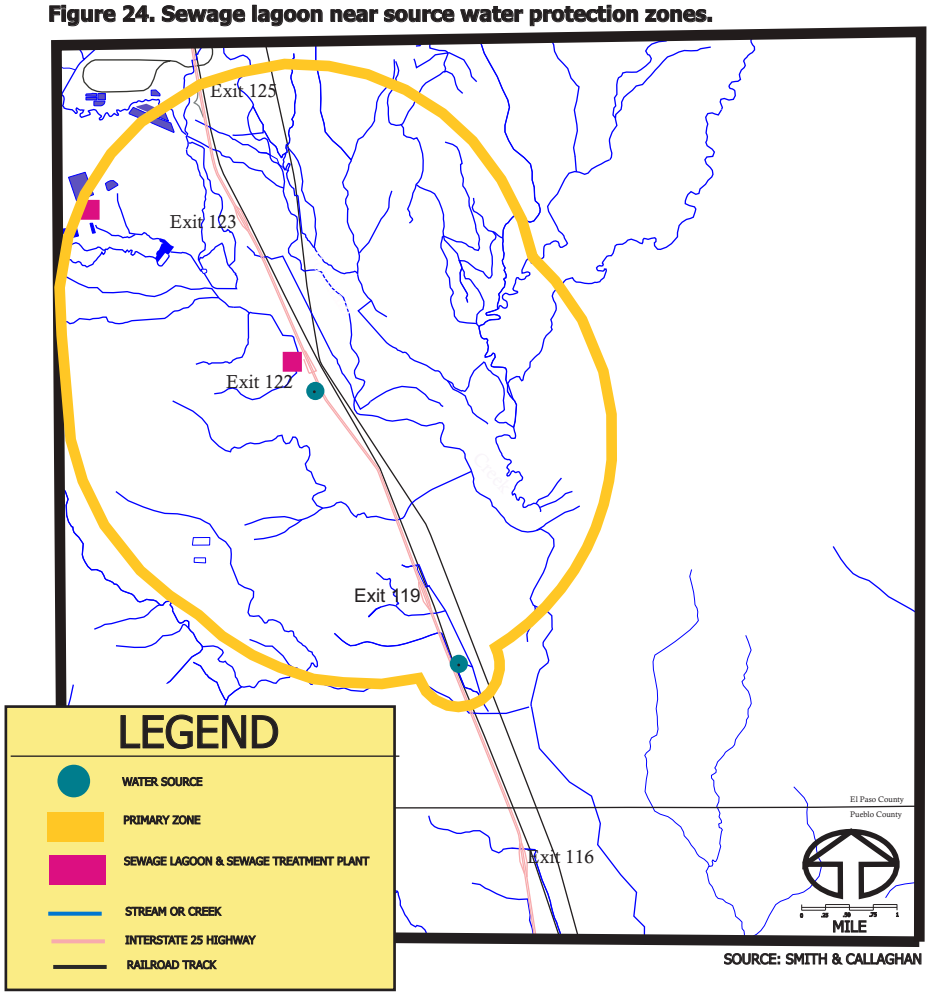
Sewage Lagoons and Waste Water Treatment Plants

Sewage lagoons should be built with additional capacity to handle the 100 year storm event with 2 feet of free board remaining, and not be built within a flood plain or near source water protection areas.

Located within the Primary Zone of the source water protection area is a commercial lagoon that serves the Pike Peak International Raceway (PPIR). This sewage lagoon has the potential for impacting the protection area which is a concern to the Planning Team. The lagoon has the potential for leaking into ground water. Soil near the lagoon could contain coliform bacteria. The Planning Team recommends that it work with PPIR to encourage frequent removal of septage and monitor ground water adjacent to the lagoon for possible contamination.

Approximately five miles upstream is the discharge point for the Lower Fountain Metropolitan Sewage Disposal District. The Planning Team recommends that contact information be exchanged with the Metro District and a copy of the SWPP be provided to the District in case of a spill event.

Figure 24. Sewage lagoon near source water protection zones.

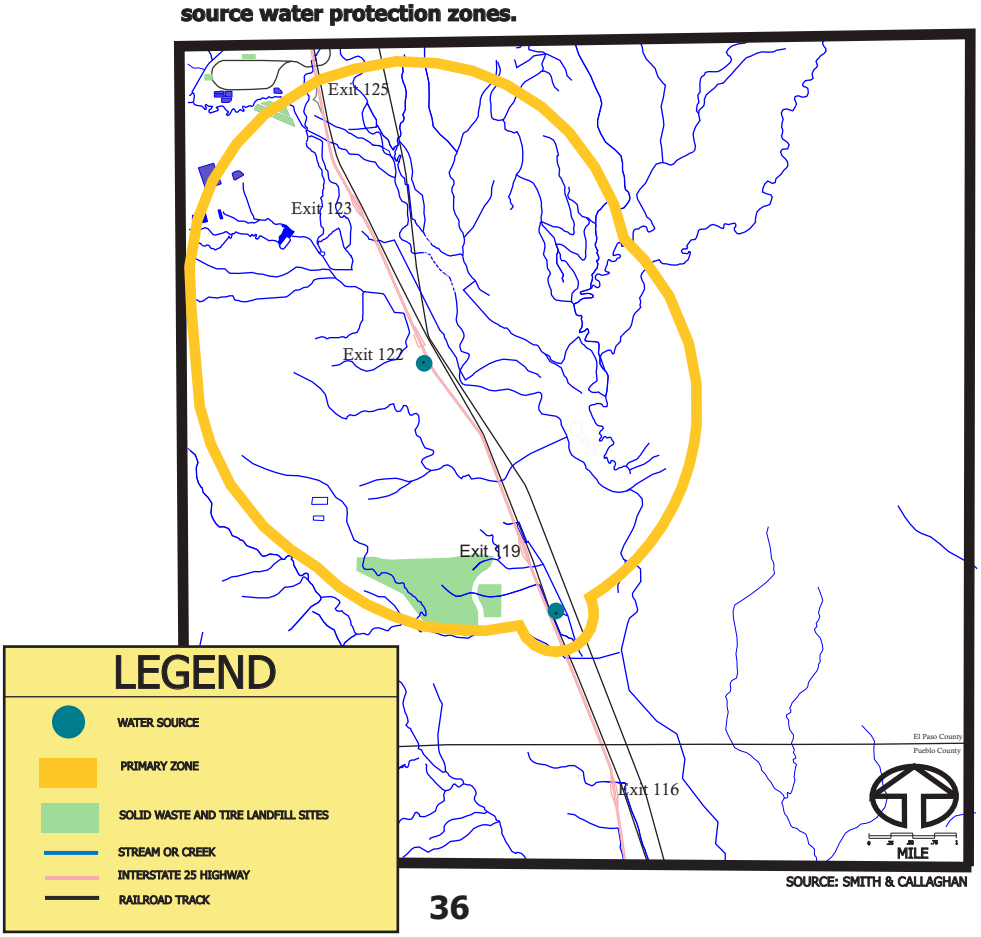


Solid Waste and Tire Leachate Sites

Solid waste landfills are a necessity in modern day society. Solid waste landfills and tire fill sites are regulated differently than hazardous waste landfills. These types of landfills are designed to minimize the risk of environmental contamination. Solid waste landfills and tire fill sites may represent long term threats to groundwater and surface water in that they may have a connection. Much of the concern revolves around leachate, the watery solution that results after water passes through a landfill. The landfill located in the Midway community has a 2 foot clay liner designed to contain leachate to a central area where it can be pumped out. When on the surface, tires can attract disease carrying rodents and mosquitoes. The attraction is not the tire, but the water and organic material. Tire fires spew noxious smoke and create runoff of toxic oil, dangerous heavy metals and soot. Tire fires are not caused by heat and oxygen. Fires are caused by an ignition source and once ignited the components of the tire and available oxygen make it very difficult to manage.

The Planning Team has a concern with the solid waste landfill with respect to possible contamination in the future of the source water area. Wells located adjacent to the solid waste landfill should be monitored at all times to determine if contamination is occurring. Sufficient fire protection shall be included in the tire fill operation plan to curtail any future fire that may lead to contamination of runoff into the source waters.

Figure 25. Solid waste landfill and Tire monofill near source water protection zones.



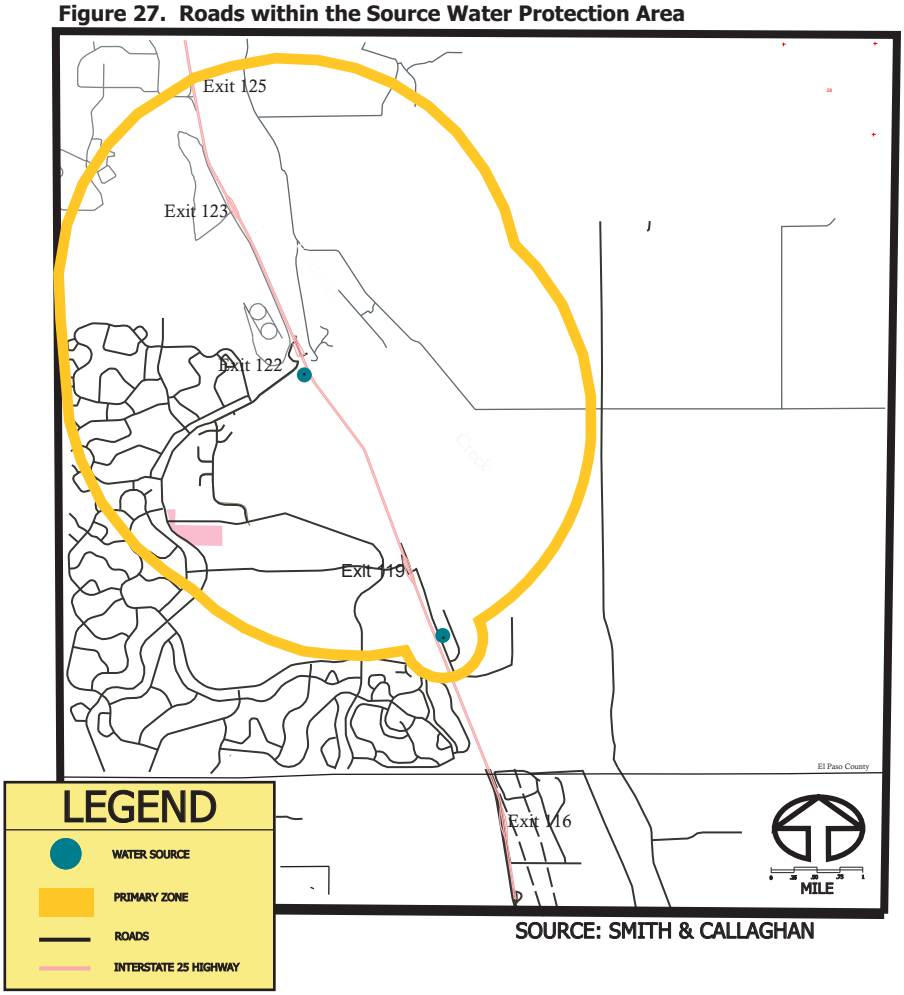
SOURCE: SMITH & CALLAGHAN

Roads: Spills and Sediment

The source water protection area is served by the Interstate Highway, Public and Private Roads. The proximity of these routes to the source waters is illustrated in Figure 27 below. Within this rural area, spills may occur from trucks that transport fuels, waste and other hazardous materials potentially contaminating the source waters. The Planning Team recommends educating the public on how to respond to a hazardous spill as well as working with local emergency response teams to ensure that any spills within the protection areas be effectively contained and re-mediated.

The construction and maintenance of roads has been recognized as a potential source of sediment in watersheds. Roads can change natural run-off patterns by increasing the amount of impervious surface in a watershed, intercepting overland flow, and routing this water directly into streams. Sediment is the major pollutant associated with non-surfaced roads. Sediment loading into streams can result in impacts to the ecological health of the stream as well as higher water treatment costs for public water suppliers (SJNF, 2007). The Planning Team recommends the use of proper road BMP's and management approaches to prevent the transport of sediment into the stream system. The Planning Team will also provide the County Transportation Department and CDOT with a map of the protection area.

Figure 27. Roads within the Source Water Protection Area



SPILL REPORTING

Where a transportation accident/incident results in product/fuel spill, reporting and clean-up by the responsible party is necessary:

If the amount of petroleum fuel spilled exceeds 25 gallons, or other reportable quantity according to EPA SARA Title III, List of Lists; and/or
The spilled materials have impacted or threaten to impact waters of the state; and/or,
If the incident fits the conditions outlined in the information provided at the following Uniform Resource Locator (URL) link:

www.cdphe.state.co.us/emp/spillsandrelease.htm#_Transportation_Accidents

Notification should be provided immediately to:

CDPHE 24-hour spill reporting number: 1.877.518.5608
National Response Center (NRC): 1.800.424.8802
Designated Emergency Response Authority (The Colorado State Patrol) 9-1-1
Colorado State Patrol 1.303.239.4501
Cdot Water Quality Hot Line: 1.303.512.4426

Any accidental discharge to a sanitary sewer system must be reported immediately to the local sewer authority and the affected wastewater treatment facility.

If the spill has affected surface water, downstream water users should be notified immediately. This may be coordinated with the CDPHE through the 24-hour spill reporting line.

If the spill did or may affect waters of the State, in addition to calling the numbers listed above, two copies of a written notification report within five days must follow to:

Greg Stasinos
Hazardous Materials and Waste Management Division
Colorado Department of Public Health and Environment
4300 Cherry Creek Drive South
Denver, Colorado 80200
Email: gstasino@smtpgate.dphe.state.co.us
Phone: 303.692.3023
Fax: 303.759.5355

Written notification of any reportable transportation accident involving a release of hazardous materials also must be provided to the U.S. Department of Transportation within 30 days (49 CFR 171.16). Send written notification to:

Information Systems Manager, DHM-63
Pipeline and Hazardous Materials Safety Administration
U.S. Department of Transportation
Washington, D.C. 20590-0001
202.366.4000

Or, complete an electronic Hazardous Material Incident Report at the following URL link:

http://hazmatonline.volpe.dot.gov/incident/.

Railroad: Spills

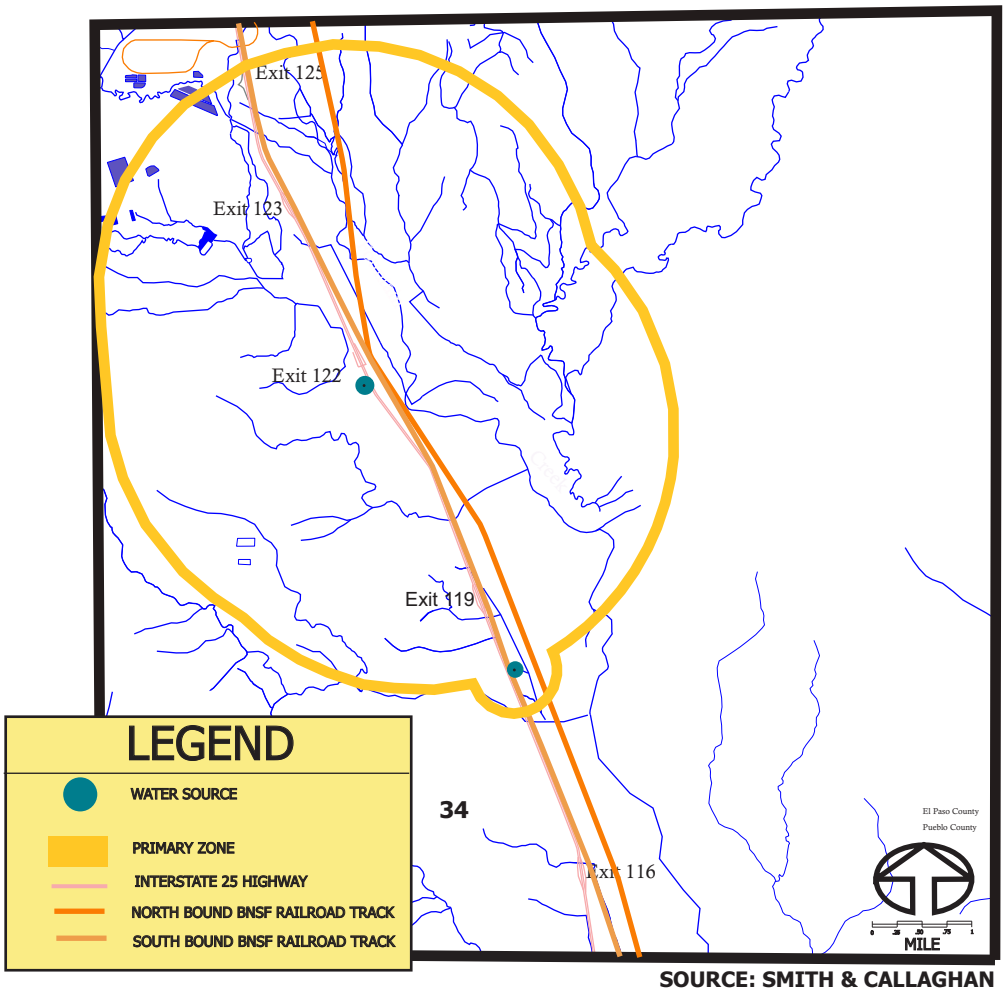
Passing through the water protection area are two BNSF rail tracks, one northbound and the other southbound. The proximity of these two railroad track routes to the source water is illustrated in Figure 27.

Spills along these two routes is a concern to the Planning Team in that contamination of the source water from material such as coal may occur. Coal contains heavy metals, radioactive compounds, mercury, and carcinogens with the potential to severely degrade water supply.

The Railroad does not indicate to local emergency officials the types of shipments along these routes.

The Planning Team recommends that all local agencies associated with source water protection work with the Railroad to protect the Source Water areas from future spills along the routes.

Figure 27. Railroad routes through source water protection zones.

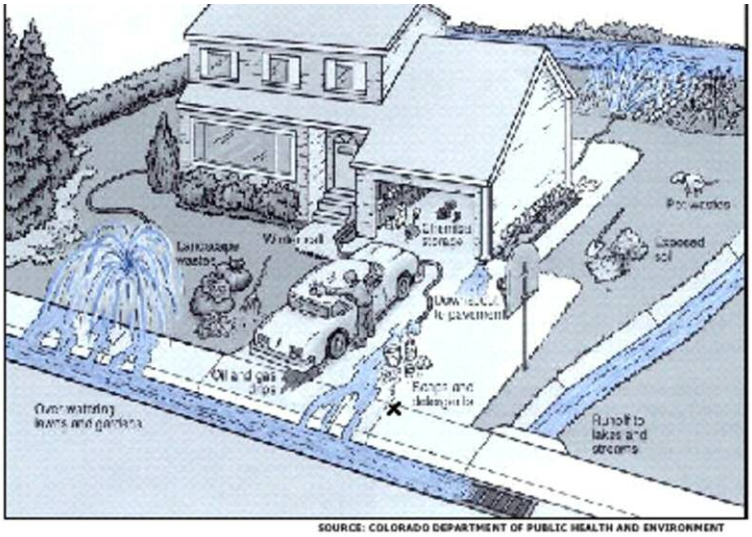


SOURCE: SMITH & CALLAGHAN

Discussion of Issues of Concern

Residential Practices

The Midway community Water Protection Area includes many rural residential dwellings. Common household practices may cause pollutants to run off residential property and enter the surface or ground water as indicated in the picture below. Prevention of ground water contamination requires education, public involvement, and people motivated to help in the effort. Educating the community and decision makers is one of the challenges and cornerstone of this protection plan. Public education will help people understand the potential threats to their drinking water source and motivate them to participate as responsible citizens to protect their valued resources.



SOURCE: COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT

Figure 28. Common household practices may cause pollutants to runoff residential property and enter the surface or ground water.

Residents within the source protection area can help protect their drinking water source by:

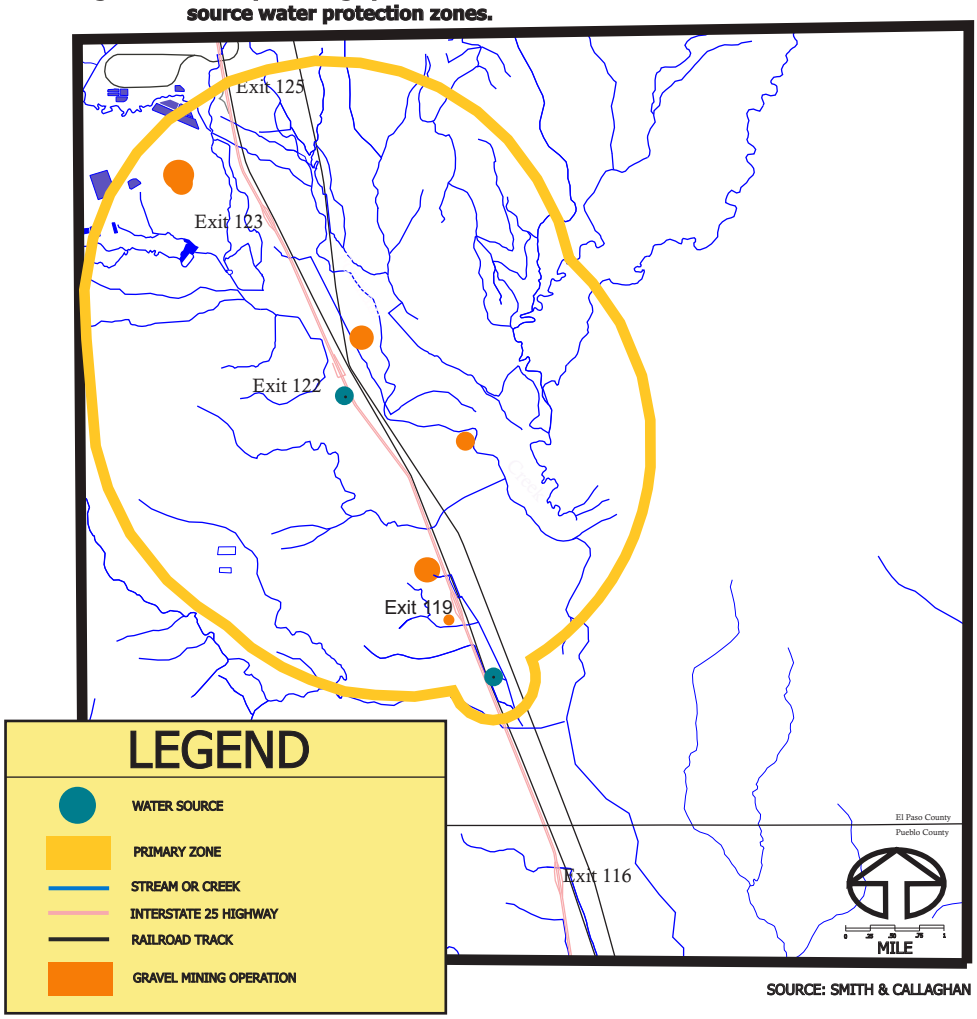
Using Water Wisely - Use it sparingly. Check for plumbing leaks, use water-saving showerheads and faucets and water lawns mornings or evenings.
Proper Management of Chemicals - Properly dispose of household chemicals like cleaning supplies, paints, solvents and lawn and garden chemicals. Call your local Health Department for disposal options. Don't pour waste chemicals onto the ground or into sinks or toilets.
Use Fertilizers, Herbicides and Pesticides Properly- Apply chemicals according to label instructions and avoid runoff. Do not exceed recommended application rates.
"Put Used Oil in Its Place" - If you change your own motor oil, place the used oil in a clean, leakproof, reusable container with a tight-fitting cap. Don't mix oil with water, gasoline, antifreeze, solvents, or other substances. Take the material to a recycling center for proper disposal.
Don't Use the Drain - Do not dispose of automotive chemicals (gasoline, antifreeze, waste oil, brake fluid, cleaning solvents, etc.), paints or other pollutants into floor drains, storm drains, or onto the ground. Many floor drains and storm drains discharge above groundwater. Wastes discharged onto the ground often seeps into ground water.

Gravel Pit Mining Operation

Gravel pits are land excavations created to extract non-renewable sand and gravel resources. Their construction and operation can have negative effects on the surrounding environment. The operational activity of a gravel pit exposes land to erosion. Erosion leads to water sedimentation, which is the accumulation of silt particles in bodies of water. Gravel pits are usually excavated in floodplains next to streams. The gravel pit operation can change groundwater turbidity levels. Sediment loading from gravel mines to streams and wetlands has been identified as a source of significant degradation to source waters. Because mines are required to wash some materials on site and also control dust, some mines use millions of gallons of scarce groundwater to perform these tasks. Although dust control is necessary at these mines, the use of potable water for dust suppression must be weighed against the increasing demands of domestic water use.

Sediment runoff is a concern to the Planning Team and they request that the State require gravel mining sites within the subject source water protection area to install silt fences or sediment basins to capture sediments on permitted property.

Figure 29. Gravel pit mining operation near source water protection zones.

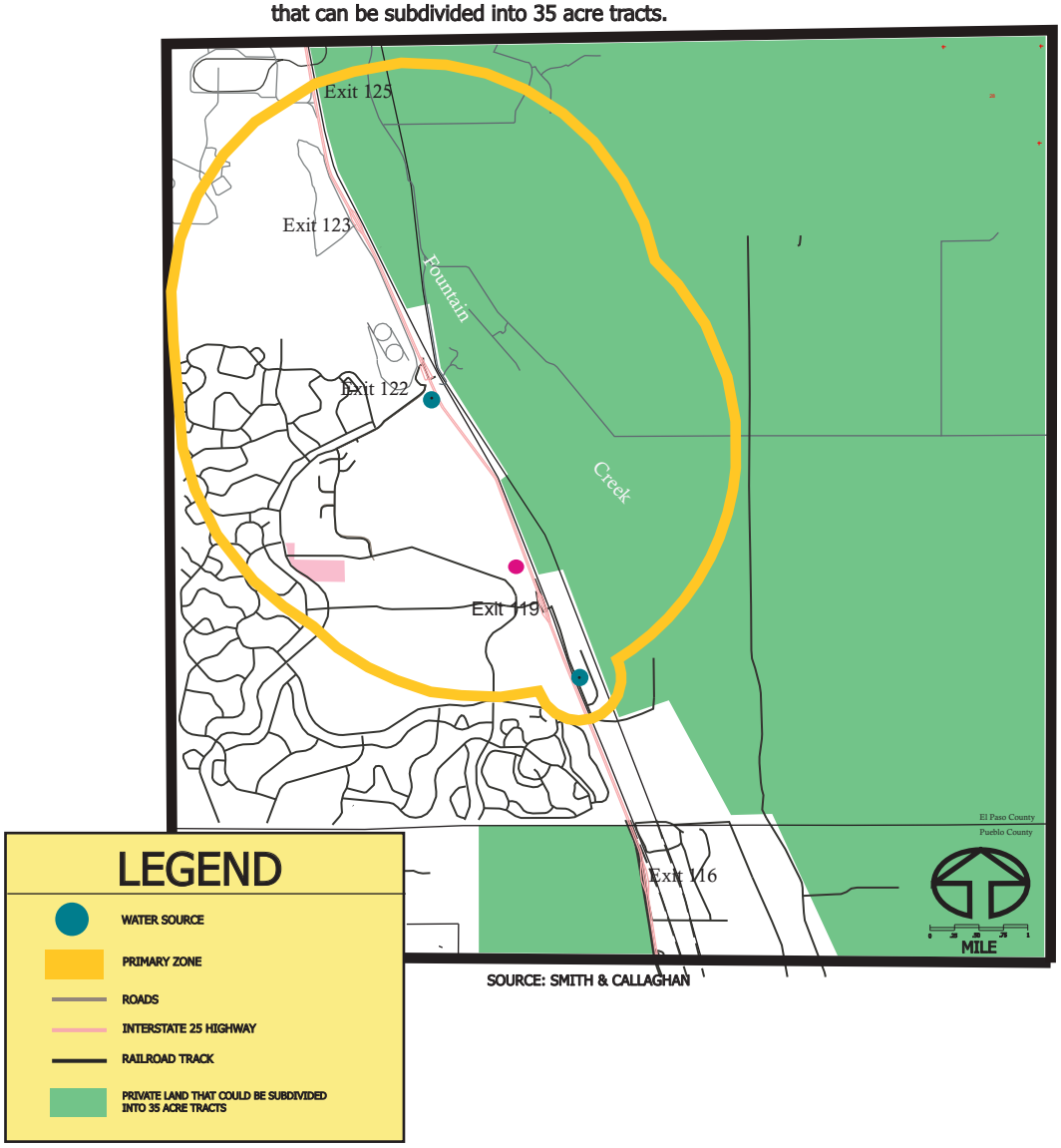


SOURCE: SMITH & CALLAGHAN

Land Use: Growth and Development

Currently, the State of Colorado law allows the subdivision of property into lots with a minimum of 35 acres without county review. There are some large land tracts within the protection area that could be divided into these 35 acre parcels as indicated in the map of private property parcels within the Source Water Protection Area (Figure 23). Future land use and growth with the protection area and the potential for water quality impacts from these changes is a concern to the Planning Team. The Planning Team recommends that decision makers within El Paso County be encouraged to consider source water protection when they make land use decisions including additional subdivision in this area.

Figure 30. Map of Private Property within the Water Protection Area for the Midway community that can be subdivided into 35 acre tracts.



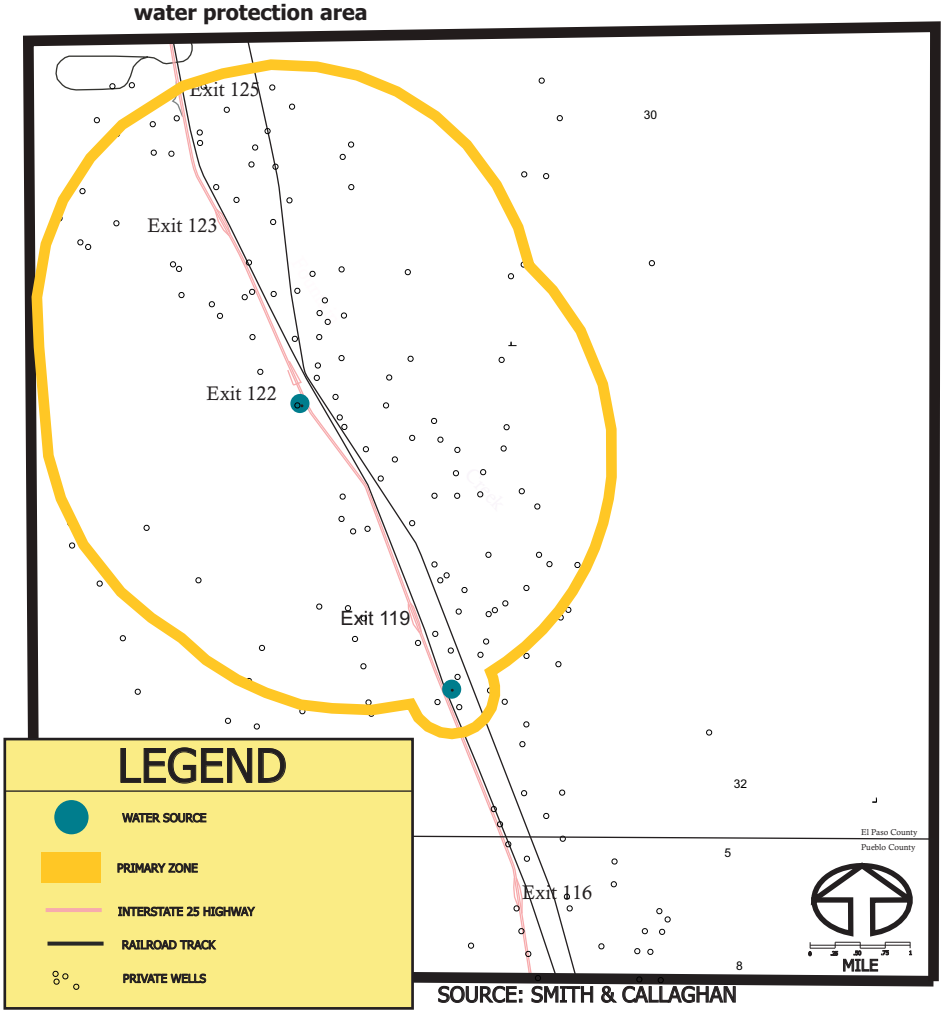
SOURCE: SMITH & CALLAGHAN

Private Water Wells

There are some wells within the Source Water Protection Area that provide drinking water to residents of the Midway community. The Planning Team is concerned about the condition of these private wells and whether any of these wells are abandoned. The age of the wells is a factor when considering the potential for contamination of their water supply. Contaminants that infiltrate from the surface are more likely to pollute old shallow, uncased wells than deep wells with properly installed casings. Abandoned wells are often an easy and direct route for contaminants to enter the ground water. In addition, they pose a liability for the owner; it is not unheard of for livestock or small children to fall into an abandoned well.

The Planning Team recommends that an inventory be taken of all the private wells within the SWPP, the condition of these wells be assessed to evaluate their potential for contamination to the aquifer, and that abandoned wells be properly capped.

Figure 31. Private wells within the Midway Community source water protection area



Oil and Gas Wells

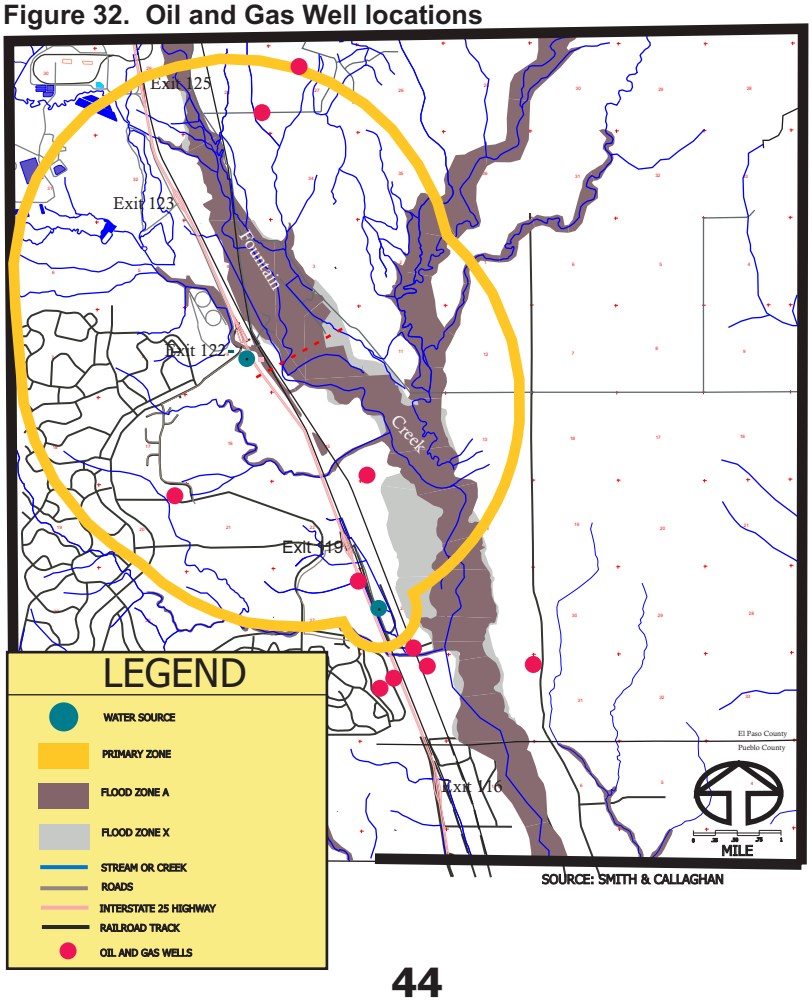
Although many areas of Colorado are experiencing an oil and gas boom, there is currently no oil and gas drilling within the Midway Area's source water protection area. The potential for oil and gas development in the protected area is low.

Colorado Oil and Gas Conservation Commission: Rule 317
The oil and gas industry in Colorado is regulated by the Colorado Oil and Gas Conservaton Commission (COGCC). The mission of the COGCC is to promote responsible development of Colorado's oil and gas natural resources.

Rule 317, protects public water systems by protecting the source of their drinking water. It creates protection zones, combined with performance requirements applicable within 5 miles upsteam of surface water intake. The most protected Internal Buffer Zone is located within 300 feet of a water segment and is a drilling excluding zone. Enhanced drilling and production requirements also apply in areas 0.5 miles from the water supply segment, in an Intermediate and Extended Buffer Zone.

Effective May 1, 2013, Rule 609 applies to oil and gas wells in which a permit to drill is submitted. The rule does not apply to an existing oil and gas well that is repermitted for use as a dedicated injection well. Part b of 609 requires intial baseline smaples and subsequent monitoring samples collected from available water sources within 0.5 miles radius of a proposed oil and gas well based on four sampling options by the operator. Sampling results shall be provided to the land owner, well owner, and to the Director of COGCC.

Figure 32. Oil and Gas Well locations



Electric Generation and Distribution Facilities

Electrical Sub-Stations (Continued)

Transformer water deluge fire suppression poses an environmental risk of its own. Water suppression, if improperly applied, could increase pollution by washing spilled oil, burning oil, or other fire debris into the adjacent waterway.

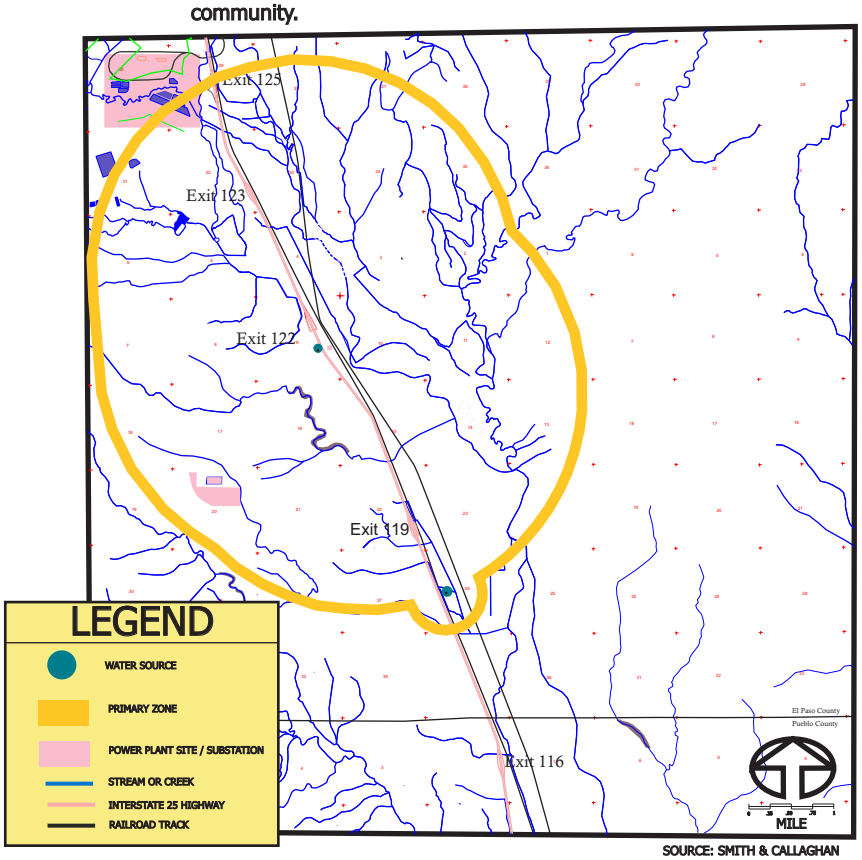
Transformers and other electrical equipment such as capacitors and bushings may contain polychlorinated biphenyls (PCB). Current regulations forbid spilling any amount of PCBs into waterways, emphasizing the need for effective containment.

Effective oil and water containment systems are essential in light of current environmental laws. The CFR 40, Parts 110 and 112, require that appropriate oil containment and diversionary structures be provided to prevent discharged oil from reaching navigable waters.

Transformers can leak oil under normal operation or during maintenance. Rain and snow can flush this oil into waterways if not contained. Release of larger amounts of oil is to be expected in the event of a transformer fire and tank rupture and must be contained consistent with the standards.

The Planning Team recommends that all local agencies associated with source water protection work with the electric utilities to protect the Source Water areas from future spills from their sites.

Figure 33. Map of the Electric Generation and Distribution Facilities for the Midway community.



Electric Generation and Distribution Facilities

Coal Fired Electric Generation Plants

Coal fired power plants, which produce almost half of the country's electricity, have significant impacts on water quantity and quality in the United States. Water is used to cool the steam used to make electricity in the power plant, and to control pollution from the plant. Even dry-cooling systems require water for system maintenance, cleaning, and blowdown.

Burning coal emits quantities of pollutants, including sulfur dioxide, nitrous oxides, and mercury. Sulfur dioxide and nitrous oxides can mix with rain and snow to form acid rain. This mixture increases the acidity of lakes and streams and can harm or kill plants and animals. Mercury is a potent neurotoxin that reduces intelligence and otherwise impairs the brain development of infants and children, and has been linked to heart problems. According to the U.S. EPA, coal plants are the source of over half of the anthropogenic emissions of mercury to the air in the U.S. After leaving the smoke stack, the mercury falls to earth and accumulates in water bodies and subsequently in the tissues of fish and of people and animals that consume those fish.

Coal Ash is another substance emitted from coal power plants in large quantities. Sludge and coal ash wastes are often disposed of in unlined landfills and reservoirs. Heavy metals and toxic substances contained in this waste can contaminate drinking water supplies and harm local ecosystems.

Pollution control equipment on power plants, called "scrubbers," can reduce the emissions of sulsulfur dioxide to the atmosphere by using a mixture of limestone and water to absorb pollutants.

Natural Gas Electric Generation Plants

There is now a shift from reliance on coal-fired steam turbine generator to combined cycle plants fueled by natural gas which will have a profound effect on the power sector's water demands. NGCC plants consume one-tenth to one-half of fresh water as conventional coal plants.

NGCC plants do however generate briny flowback and produce water with high solids content with sometimes naturally occurring radioactive material.

Electrical Sub-stations

The risk of a catastrophic fire within a property inspected, tested, and maintained electrical sub-station is small.

However, unforeseen events such as design defects, voltage surges, lighting strikes, structural damage, rapid unexpected deterioration of insulation, sabotage, and even maintenance errors can and do lead to transformer fires and the consequences can be severe.

Fort Carson

Fort Carson elements that fall within Wigwam's Area Of Interest (AOI) include portions of Fort Carson's artillery impact area and several specialized ranges. Recent groundwater testing programs that encompassed the eastern Fort Carson Boundary indicate that no migration of explosive compounds, toxic metals or nitrate/nitrite is occurring off Fort Carson. There are several monitoring wells in the AOI.

There is one operating septic septic system and leach field within the northern extent of the AOI. A composting latrine is also planned for this area. There are no wastewater lagoons, lined or unlined, in the AOI.

There are several non-discharging vault latrines located on ranges along the boundary.

A potable water pipeline proceeds along the boundary from the Butts Army Air Field to a range several miles south of the AOI. This pipeline has been in place for many years.

There are no potable water wells in the AOI. Other than monitoring wells, no non-potable wells are known to exist.

Fort Carson has a comprehensive Spill Prevention, Control and Countermeasure Plan (SPCCP) and is prepared to rapidly and effectively respond to any fuel or hazardous material spill that might occur in the AOI. Immediate 24 hour response is provided by the Fort Carson Fire Department.

Table 9. Cost to finish WTP2.

	CR#1 Well (WTP2), Transmission Line & Treatment Plant As Completed to Date		
	Item	Unit Price	
	Transmission Line		
101	472' Pipe Bore and Sleeve	50.00	129,600.00
102	2600' 6" , 4000' 2"PVC Pipe Installed	10.00	52,000.00
104	meter pit, meter loop, meter	800.00	800.00
105	water tap for Kirkland R.O.W.	12000.00	12,000.00
106	Engineering	10000.00	10,000.00
107	Surveying	5000.00	7,000.00
108	Administration Cost	5000.00	5,000.00
109	Insurance	7000.00	7,000.00
110	Soils	3000.00	3,000.00
111	Fire Hydrant Assembly	8000.00	8,000.00
112	Sediment control and reseeding	15000.00	15,000.00
113	Fees	350.00	350.00
114	Subtotal		223,400.00
115	Contingency 10%		22,340.00
	Pipeline Subtotal		**245,740.00**
	Treatment Plant		
200	Land		100,000.00
201	Building 400 s.f.	75.00	15,000.00
202	Water Treatment Equipment Phase I		0.00
203	Radio Eqjuipment % Controls		20,000.00
204	Electric Service		40,000.00
206	Well drilling and casing		55,100.00
207	Well Pump		25,000.00
208	Well Electric & Distribution		17,500.00
209	Engineering and State Application		15,000.00
210	Soils Engineering		5,000.00
211	Chain Link Fence & Gate	11.00	15,000.00
212	Site staking		500.00
213	Gravel Road & Access Culvert		5,000.00
214	Building Plans & Engs Stamps/Consultant		20,000.00
215	Administration Cost		3,240.00
217	Contingency		5,876.00
218	Landscaping		20,000.00
219	Fees		8,000.00
	Subtotal Treatment Plant		**370,216.00**
	Total		**615,956.00**
	CR#1 Well (WTP2), Transmission Line & Treatment Plant As Required to Completed		
	Construction Costs Transmission Line (High Pressure)		
	Item	Unit Price	
116	7500' 6" PVC Pipe	20.00	150,000.00
117	7500' 12 ga Insulated location wire	0.25	1,875.00
118	Fire Hydrant Assembles	8,000.00	16,000.00
119	6" Gate Valves	1,300.00	2,600.00
120	Traffic barricades	300.00	300.00
121	Mobilization	5,000.00	5,000.00
122	Erosion Control	5,000.00	5,000.00
	Subtotal		**180,775.00**
	Contingency @10%		18,078.00
	Subtotal Hard Costs		**198,853.00**
	Soft Costs		
300	Legal Fees	200.00	0.00
301	Administrative Fees	60.00	1,680.00
302	Surveying	100.00	1,000.00
303	Engineering	5000.00	5,000.00
304	Permitting & Approvals		100.00
305	Resident Inspection		2,000.00
	Subtotal Soft Costs		**9,780.00**
	Subtotal Transmission Line		**208,633.00**
	Construction Costs WTP2		
220	Filter Cartridge / Canister Housing	8000.00	16,000.00
221	Pump Controls	1500.00	1,500.00
222	Radio Telemetry to finish	10000.00	10,000.00
223	Chlorine Gas Injection System	20000.00	20,000.00
224	Plant Steel Piping	10000.00	10,000.00
225	Electronic Logger	2500.00	2,500.00
226	Chlorine & Turbidity Analyzers	8000.00	8,000.00
227	Electric to finish	5000.00	5,000.00
228	Master Meter	2500.00	2,500.00
	Subtotal		**75,500.00**
	Contingency @10%		7,550.00
	Subtotal Hard Costs		**83,050.00**
	Soft Costs		
306	Legal Fees		0.00
307	Administrative Fees		1,000.00
308	Surveying		0.00
309	Engineering		1,000.00
310	Permitting & Approvals		8,000.00
311	Resident Inspection		1,000.00
	Subtotal		**11,000.00**
	Total Cost to complete WTP2		**94,050.00**
	Total Costs		**302,683.00**

Should Wigwam Mutual Water Company lose its only active Source Water MRPOA#1, WTP 1, the total cost to replace such source at a minimum is $302,683. This is the cost to finish WTP2 and build 7,500 feet of high pressure transmission line west of the plant. Over $600,000 has been spent on well CR#1 and WTP2 to date which would bring the total project to $918,639.00. This site is located approximately three miles south of MRPOA #1 and WTP1, on the east side of Interstate 25.

The cost to site a facility along the Fountain Creek Valley is not the only factor. To find a site at all to serve the community system would be very difficult now days. You would have to find a site where, (a) water would be available for a well and a least 600 feet from other existing wells, (b) land would be available for a well site and treatment plant, (c) reasonable access, and (d) availability of electricity. All these factors could increase the cost of the replacement facility.

The location of Well CR#1 and WTP2 was selected for the possibility of drilling a successful well and its location off a frontage road near the Fountian Creek main underflow. In order to connect to the Midway community water system, a transmission line had to be placed in a bore under Interstate 25 and the BNSF Railroad tracks. Wigwam must maintain ten million dollars in liability insurance a year for this crossing.

The loss of MRPOA #1 as a water source with respect to any incident, and switching over to CR#1, does not entertain the idea that the Fountain underflow would be contaminated in both water source locations. In that case the process to create a new water source or sources with transmission facilities would be in the millions.

SOURCE WATER PROTECTION MEASURES

Management Approaches

The Planning Team reviewed and discussed several possible management approaches that could be implemented within the Source Water Protection Area to help reduce the potential risks of contamination to the community's source water. The Planning Team established a "common sense" approach in identifying and selecting the most feasible source water management activities to implement locally. The focus was on selecting those protection measures that are most likely to work for this project.

The Planning Team recommends the management practices listed in Table 14, "Source Water Protection Best Management Practices" be considered for implementation by the Wigwam Mutual Water Company.

Evaluating Effectiveness of Management Approaches

The Midway community is committed to developing a tracking and reporting system to gauge the effectiveness of the various source water management approaches that have been implemented. The purpose of tracking and reporting the effectiveness of the source water management approaches is to update water system managers, consumers, and other interested entities on whether or not the intended outcomes of the various source water management approaches are being achieved, and if not, what adjustments to the protection plan will be taken in order to achieve the intended outcomes.

The Midway community is voluntarily committed to applying source water assessment and protection principles to finding and protecting new water sources in the future. This part of the larger ongoing commitment to providing the highest quality drinking water to their consumers.

The Midway community is also voluntarily committed to assisting the Colorado Department of Public Health and Environment in making future refinements to their source water assessment and to revise the Source Water Protection Plan accordingly based on any major refinements.

Table 10. Source Water Protection Best Management Practices

Issue Of Concern	Management Approach	Implementer
Septic Systems		
Public Education	1. Develop a public education program for property owners within the SWPA to provide basic information on the Source Water Protection Area Plan. Public education will include: the proper use and maintenance of their septic systems and how the source of their drinking water can be affected by an inadequately functioning septic system. An educational flier like the one published by the National Small Flows Clearinghouse (NSFC) entitled Groundwater Protection and Your Septic System can be sent to homeowners. Provide El Paso County web site link to customers: www.elpasocountyhealth.org. 2. Develop a mailing list of residents within the SWPA who have septic systems and send them educational materials.	El Paso County Health Department Wigwam Mutual Water Company
Construction & Development Permitting	1. The El Paso County Health Department will be encouraged to work closely with their County Planning and Community Development Department on subdivision review for septic systems uses and ensure that whenever a building permit is applied for, the Health Department makes sure that adequate wastewater treatment is planned for. 2. El Paso County Health Department will be encouraged to use this opportunity to educate the property owner on the link between good septic practices and protecting water.	El Paso County Health Department El Paso County Health Department
Sewage Lagoon & WWTP		
Monitor Sewage Lagoon	1. Field-check to assess the condition of the lagoon, location to the source water, and secondary containment surrounding the lagoon. 2. Educate the lagoon owners on the need to assess their storage system and develop a system that guards against leaks and spills that may potentially contaminate the water supply.	Wigwam Mutual Water Company Wigwam Mutual Water Company
Share Contact Information for event of spill.	3. Provide Lower Fountain Metropolitan Sewage Disposal District with contact information and final SWPP plant so it may know the location of Source Water for Wigwam and notify Wigwam in case of a spill into the Fountain Creek. 4. Rely on CDPHE to inspect lagoon site every three years and keep CDPHE in communication loop between lagoon owners and Wigwam.	Wigwam Mutual Water Company Wigwam Mutual Water Company

Table 10. Source Water Protection Best Management Practices

Issue Of Concern	Management Approach	Implementer
Roads: Spills & Sediment		
Road Maintenance	1. Keep informed on the road maintenance practices and schedules within the Source Water Protection Area (SWPA) including: grading, de-icing, dust abatement and Best Management Practices used. 2. Provide CDOT and El Paso County and Bridge District a copy of the Source Water Protection Plan and map of the protection area. Encourage them to use road Best Management Practices to prevent road materials from entering the source waters.	Wigwam Mutual Water Co Wigwam Mutual Water Co CDOT El Paso County Road and Bridge District
Vehicular Spills	1. Meet with the Hanover Fire Protection District to discuss their emergency response plans for responding to hazardous and non-hazardous vehicular spills within the SWPA. Include this information in the emergency plans for each water system. 2. Provide information to the local fire departments: • Importance of the Source Water Protection Plan • Location of the wells and Source Water Protection Plan • Overview of the Emergency Contingency Plan • Personnel to be notified in the event of an emergency 3. Provide Cdot, El Paso County Roads and other agencies contact information in the form of a printed form from Wigwam and procedure for spills.	Wigwam Mutual Water Co Wigwam Mutual Water Co Wigwam Mutual Water Co
Public Education	1. Educate the public on how to call "911" to report any spills within the SWPA. 2. Place signage on public roads within the protection areas to educate the public about reporting spills on the roadway.	Wigwam Mutual Water Co El Paso County Office Emergency Management El Paso County CDOT State CDOT

Table 10. Source Water Protection Best Management Practices

Issue Of Concern	Management Approach	Implementer
Land Use		
Land Use Planning and Controls	1. County land use Planners will be encouraged to overlay the Midway community's SWPA on their land use map and to refer to it during decisions on land use in the area. 2. County Commissioners and water boards and operators will recognize the identified SWPAs during their operations. 3. The Midway community drinking water providers will request to be notified by El Paso County officials of land use hearings or meetings regarding land within the SWPA and will have the opportunity to participate in the process. 4. Wigwam Mutual Water Company will provide government officials with a copy of the Source Water Protection of the protection area.	El Paso County Planning and Community Development Department El Paso County Commissioners Wigwam Mutual Water Co Wigwam Mutual Water Co El Paso County Planning and Community Development Dept. Wigwam Mutual Water Co
Land Acquisitions	1. Wigwam Mutual Water Company will keep informed of land acquisitions within the SWPA and provided information to new residents on the source water protection area.	Wigwam Mutual Water Co
Land Conservation	1. Provide information to landowners within the SWPA to educate them on the opportunities of placing a conservation easement on their land.	Planning Team
Residential Practices		
Public Education and Outreach	1. Conduct public education and outreach programs for SWPA residents to encourage practices that will protect their drinking water source. Topics may include: source water protection, household hazardous waste storage and disposal, fertilizer usage, pet waste cleanup, water conservation, car washing, and secondary containment for above ground fuel storage tanks. 2. Opportunities for public education include: newspaper articles, poster displays at local utility offices and public buildings, water bill inserts, flyers, creek festivals, public forums, workshops and community events. 3. Participate in local conservation workshops and provide materials about the Source Water Protection Plan and BMPs to prevent contamination of the source waters (i.e. NRCS Roundtable).	Wigwam Mutual Water Co Local Government Wigwam Mutual Water Co Wigwam Mutual Water Co

Table 10. Source Water Protection Best Management Practices

Issue Of Concern	Management Approach	Implementer
Agricultural & Livestock Uses		
Public Education	1. Develop a public education campaign for area residents within SWPA Zone on the relationship of their lands to the public and private drinking water supply. 2. Provide land owners with information on agricultural Best Management Practices for handling manure, chemical application, and chemical use and storage. 3. Provide land owners with information on the water quality impacts of grazing on private lands within the creeks and on stream banks. Education material will encourage the use of Best Management Practices (BMPs) on: alternative stock watering, creating a buffer zone between the cattle and the creek, and bioengineering stream bank stabilization practices. 4. Education techniques may include: workshops, mailings and community meetings/workshops, and demonstration projects. 5. The local NRCS Field Office and the local Conservation District will provide site visits (upon request) to residents with the SWPA to evaluate their agricultural practices and provide educational outreach.	Wigwam Mutual Water Co Soil Conservation District NRCS and Farm Organizations NRCS as consultants NRCS as consultants NRCS as consultants Soil Conservation District
Livestock Grazing	1. Minimize the effects of livestock grazing on water sources within the Midway community source water protection area 2. Take an inventory of grazing operations within the SWPA zone	Wigwam Mutual Water Co Wigwam Mutual Water Co
Private Water Wells		
Evaluate condition of wells	1. Gather information on how many wells (private, public, stock) exist within the SWPA. Information may obtained from the State Department of Water Resources, local residents, or GIS databases. Work with El Paso/Pueblo Counties assessor's office to inventory number and location of wells. 2. Send out a survey to residents within the SWPA to gather information about the location and condition of their wells and the activities around the well that may affect the quality of their drinking water supply or the public water supply.	Wigwam Mutual Water Co Wigwam Mutual Water Co
Public Education	1. Provide information to residents within the SWPA on how they can protect both private and public water supplies. 2.Provide information to residents within the SWPA on how to secure and cap wells that are temporarily not being used and permanent plugging of wells that are being abandoned.	Wigwam Mutual Water Co Wigwam Mutual Water Co

Table 10. Source Water Protection Best Management Practices

Issue Of Concern	Management Approach	Implementer
Water Utility		
Water Supply Wells	1. Perform regular inspection of the wells. 2. Protect areas around the wells with fencing and signage.	Wigwam Mutual Water Co Wigwam Mutual Water Co
Water Operations	1. Ensure that the water treatment plant is properly managed, operated and maintained to prevent contamination of the drinking water. 2. Store chemicals properly at the treatment plants. 3. Ensure that all employees are familiar with the Source Water Protection Plan, emergency and contingency plan, and hazardous spill response. 4. Placement of Federal Offense Warning signs at the treatment plant.	Wigwam Mutual Water Co Wigwam Mutual Water Co Wigwam Mutual Water Co Wigwam Mutual Water Co
Public Education	1. Develop a mailing list of land owners and residents within the protection area. 2. Provide Information concerning the SWPP in the annual Consumer Confidence 3. Report (CCR). Insert an additional letter or paragraph in the CCR about the 4. Completed SWPP and information on how they can help prevent pollutants from entering the source waters.	Wigwam Mutual Water Co Wigwam Mutual Water Co

Table 10. Source Water Protection Best Management Practices

Issues of Concern	Management Approach	Implementer
Gravel Mining Operation		
Information Sharing and Public Outreach	1. Stay informed of any potential gravel mining operation within the protected area and become involved in the public process to encourage BMPs to protect water quality. 2. Encourage industry representative to share information about their operation within the source water protection area by inviting them to participate in the Midway Community Source Water Protection Planning Team meetings. 3. Encourage the local community to become actively involved in participating in local and regional mining operation forums. 4. Encourage industry to educate all employees and subcontractors on the location of the source water protection areas, Emergency Response Plans, Storm Water Management plans, and Spill Response Plans. 5. Encourage gravel mining operators to notify Wigwam Mutual Water Company of confirmed groundwater exceedances.	Planning Team Wigwam Mutual Water Company El Paso County Planning Team Industry Representatives Planning Team Industry Representatives Planning Team Industry Representatives Wigwam Mutual Water Co
Storm Water Runoff and Sediment	1. The Planning Team will encourage the industry to comply with and implement all actions in the approved Strom Water Management Plan to prevent or minimize storm runoff impacts to the source waters.	Planning Team Industry Representatives
Spill Prevention	1. The Planning Team will encourage the industry to: a. Administer a Spill Prevention, Control, and Countermeasures Plan to prevent surface water and ground water contamination, b. Immediately notify the Wigwam Mutual Water Company of any spills, and c. Use proper equipment & vehicle maintenance BMPs to prevent chemicals or fluids from contaminating ground water.	Planning Team Industry Representatives

Table 10. Source Water Protection Best Management Practices

Issues of Concern	Management Approach	Implementer
Landfill Operations		
Information Sharing and Public Outreach	1. Stay informed of any potential landfill operation within the protected area and become involved in the public process to encourage BMPs to protect water quality. 2. Encourage industry representative to share information about their operation within the source water protection area by inviting them to participate in the Midway Community Source Water Protection Planning Team meetings. 3. Encourage the local community to become actively involved in participating in local and regional mining operation forums. 4. Encourage industry to educate all employees and subcontractors on the location of the source water protection areas, Emergency Response Plans, Storm Water Management plans, and Spill Response Plans. Add the SWPP to the industries Operations Plan, and share data on a regular basis. 5. Encourage Waste Management to notify Wigwam Mutual Water Co. of confirmed ground water exceedances and if equipment spills exceed 25 gallons of fuel or chemicals.	Planning Team Wigwam Mutual Water Company El Paso County Planning Team Industry Representatives Planning Team Industry Representatives Wigwam Mutual Water Company Industry Representatives
Storm Water Runoff and Sediment	1. The Planning Team will encourage the industry to comply with and implement all actions in the approved Strom Water Management Plan to prevent or minimize storm runoff impacts to the source waters.	Planning Team Industry Representatives
Spill Prevention	1. The Planning Team will encourage the industry to: a. Administer a Spill Prevention, Control, and Countermeasures Plan to prevent surface water and ground water contamination, b. Immediately notify the Wigwam Mutual Water Company of any spills, and c. Use proper equipment & vehicle maintenance BMPs to prevent chemicals or fluids from contaminating ground water.	Planning Team Industry Representatives

Table 10. Source Water Protection Best Management Practices

Issues of Concern	Management Approach	Implementer
Railroad		
Information Sharing and Public Outreach	1. Stay informed of any potential railroad operation within the protected area and become involved in the public process to encourage BMPs to protect water quality. 2. Encourage industry representative to share information about their operation within the source water protection area by inviting them to participate in the Midway Community Source Water Protection Planning Team meetings. 3. Encourage industry to educate all employees and subcontractors on the location of the source water protection areas, Emergency Response Plans, Storm Water Management plans, and Spill Response Plans. 4. Work with local fire departments to coordinate with Burlington Northern & Union Pacific railroads.	Wigwam Mutual Water Company El Paso County Industry Representatives Industry Representatives Wigwam Mutual Water Company
Storm Water Runoff and Sediment	1. The Planning Team will encourage the industry to comply with and implement all actions in the approved Strom Water Management Plan to prevent or minimize storm runoff impacts to the source waters.	Planning Team Industry Representatives
Spill Prevention	1. The Planning Team will encourage the industry to: a. Administer a Spill Prevention, Control, and Countermeasures Plan to prevent surface water and ground water contamination, b. Immediately notify the Wigwam Mutual Water Company of any spills, and c. Use proper equipment & vehicle maintenance BMPs to prevent chemicals or fluids from contaminating ground water.	Planning Team Industry Representatives

Table 10. Source Water Protection Best Management Practices

Issues of Concern	Management Approach	Implementer
Electrical Generation and Distribution		
Information Sharing and Public Outreach	1. Stay informed of any potential electrical generation and distribution operation within the protected area and become involved in the public process to encourage BMPs to protect water quality. 2. Encourage industry representatives to share information about their operation within the source water protection area by inviting them to participate in the Midway Community Source Water Protection Planning Team meetings. 3. Encourage industry to educate all employees and subcontractors on the location of the source water protection areas, Emergency Response Plans, Storm Water Management plans, and Spill Response Plans. 4. The Electrical Generation and Distribution entities are Fountain Valley Power, DOE, CSU, and Mountain View Electric Association. Add Wigwam to their emergency notification lists.	Fire District Wigwam Mutual Water Company Industry Representatives Wigwam Mutual Water Company Industry Representatives Industry Representatives
Storm Water Runoff and Sediment	1. The Planning Team will encourage the industry to comply with and implement all actions in the approved Storm Water Management Plan to prevent or minimize storm runoff impacts to the source waters.	Industry Representatives
Spill Prevention	1. The Planning Team will encourage the industry to: a. Administer a Spill Prevention, Control, and Countermeasures Plan to prevent surface water and ground water contamination, b. Immediately notify the Wigwam Mutual Water Company of any spills, and c. Use proper equipment & vehicle maintenance BMPs to prevent chemicals or fluids from contaminating ground water.	Industry Representatives
Tunneling		
Prior to Work	1. Colorado Springs Utilities (CSU) shall provide, prior to beginning of construction of tunneling project, a written comprehensive emergency plan to Wigwam, acceptable by Wigwam, that states how CSU will provide backup water supply to Wigwam's service area during the period that Wigwam's pumping and treatment levels are or have been affected as a result of CSU's construction and drilling of the SDS project phase crossing Interstate 25, the railroad tracks, and Fountain Creek. The backup water supply plan shall be made a condition of the El Paso County permit for the construction of said SDS project phase.	Industry Representatives
Monitor Existing Treatment Plant and Well	1. Monitor the Existing Well MRPOA #1 during tunnel construction to determine if water levels have dropped, affecting historical pumping rates. 2. Monitor the Water Treatment Plant during tunnel construction to determine of the history turbidity volume has increased. 3. Should the historic pumping rate be found to be affected during tunnel construction or if the historic turbidity values have increased during the time of construction of the tunnel, the Industry Representative shall be notified.	Wigwam Mutual Water Company Wigwam Mutual Water Company Wigwam Mutual Water Company

Table 10. Source Water Protection Best Management Practices

Issues of Concern	Management Approach	Implementer
Other Adjacent Entities with Environmental Concerns		
Information Sharing and Public Outreach	1. Stay informed of any potential military operation within the protected area and become involved in the public process to encourage BMPs to protect water quality. 2. Encourage military representatives to share information about their operation within the source water protection area by inviting them to participate in the Midway Community Source Water Protection Planning Team meetings. 4. Encourage the military to educate all Soldiers, employees and subcontractors on the location of the source water protection areas, Emergency Response Plans, Storm Water Management plans, and Spill Response Plans. 5. Share contact information between the Military and water provider that notification can be made immediately after an event. Share contact information between the Fountain Valley Water Shed District and water provider to stay abreast of each other's efforts.	Wigwam Mutual Water Company Fort Carson Planning Team Military Representatives Military Representatives Wigwam Mutual Water Company Military Representatives Fountain Valley Water Shed District
Storage Tanks		
Catalog	1. Private and Regulated Tanks	Wigwam Mutual Water Company
Inventory	1. Regulated Tanks 2. Site Inventory Storage Tanks with a capacity of 500 gallons or more with no secondary containment.	Wigwam Mutual Water Company Wigwam Mutual Water Company
Educate	1. Educate the public about secondary containment for storage tanks with a capacity greater than 500 gallons or even less than 500 gallons.	Wigwam Mutual Water Company
Vehicle for Public Information		
Realtors	1. Contact Agents that work in area to educate buyers.	Wigwam Mutual Water Company

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APPENDICES

Contingency Plans*

Table A-1 Discrete Contaminant Types

Table A-2 Discrete Contaminant Types SIC Related

Table B-1 Dispersed Contaminant Sources

Table C-1 Contaminants Associated with Common PSOC's

Notice: This public document will only include information that is not deemed sensitive to the safety and operation of the individual community's water plan operation. Appendices marked with a * are only included in the Public Utility's report or kept on file at their office. Items in the Appendices are included on a CD located in the back pocket of this report. These documents can be reprinted.

TABLE A-1
CONTAMINANT TYPES ASSOCIATED WITH REGULATED DISCRETE CONTAMINANT SOURCES

Discrete Contaminant Source Type	Acute Health Concerns							Chronic Health Concerns									Aesthetic Concerns
	Miroorganisms	Nitrate/Nitrite	Pesticides	Semi-volatile Organic Compounds (SVOCs)	Volatile Organic Compounds (VOCs)	Lead	Ammonia / Nitric Acid	Herbicides	Pesticides	Volatile Organic Compounds (VOCs)	Non-metal Inorganic Compounds	Metals - Primary Drinking Water (other than lead)	Radionuclides	Turbidity	Other Inorganic Compounds	Other Organic Compounds	Secondary Drinking Water Contaminants
EPA Superfund Sites (NPL & NPLRF)			x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
EPA Abandoned Contaminated Sites (CERCLA)			x	x	x	x	x	x	x	x	x	x			x	x	x
EPA Hazardous Waste Sites (HWSQG)			x	x	x	x	x	x	x	x	x	x			x	x	x
EPA Hazardous Waste Sites (HWLQG)			x	x	x	x	x	x	x	x	x	x			x	x	x
EPA Hazardous Waste Sites (HWTSD)			x	x	x	x	x	x	x	x	x	x			x	x	x
EPA Chemical Inventory / Storage Sites (SARA)				x	x	x	x			x		x			x	x	x
EPA Toxic Release Inventory Sites (TRI)				x	x	x	x			x		x			x	x	x
Permitted Wastewater Discharge Sites (PCS)	x	x	x	x	x	x	x	x	x	x	x	x		x	x	x	x
Aboveground, Underground and Leaking Storage Tank Sites (TANKFAC)					x					x							
Solid Waste Sites (SWSITE)	x	x	x	x	x	x	x	x	x	x	x	x		x	x	x	x
Existing / Abandoned Mine Sites (MASMIL)	x				x	x	x			x		x		x	x		x
Concentrated Animal Feeding Operations (CAFO)	x	x					x								x	x	x
Other Facilities (OGFAC)				x	x					x					x	x	x
Other Facilities (WHP)				x	x					x		x			x	x	x

TABLE A-2
CONTAMINANT TYPES ASSOCIATED WITH SIC-RELATED DISCRETE CONTAMINANT SOURCES

SIC Code	Discrete Contaminant Source Type	Acute Health Concerns							Chronic Health Concerns									Aesthetic Concerns
		Miroorganisms	Nitrate/Nitrite	Pesticides	Semi-volatile Organic Compounds (SVOCs)	Volatile Organic Compounds (VOCs)	Lead	Ammonia / Nitric Acid	Herbicides	Pesticides	Volatile Organic Compounds (VOCs)	Non-metal Inorganic Compounds	Metals - Primary Drinking Water (other than lead)	Radionuclides	Turbidity	Other Inorganic Compounds	Other Organic Compounds	Secondary Drinking Water Contaminants
021101	LIVESTOCK FEEDING	x	x					x								x	x	x
072103	AERIAL APPLICATORS			x					x	x	x					x	x	
075205	DOG & CAT KENNELS	x	x					x								x		x
075211	PET BOARDING	x	x					x								x		x
078206	LAWN & GROUNDS MAINTENANCE		x	x					x	x						x	x	
078212	SEEDING & FERTILIZING CONTRACTORS		x	x					x	x						x	x	
138905	OIL FIELD SERVICE				x	x	x	x			x		x			x	x	x
149901	MINING COMPANIES					x	x	x				x	x		x	x		x
161106	ASPHALT & ASPHALT PRODUCTS				x	x		x			x				x	x	x	x
171107	SEPTIC TANKS/SYSTEMS-CLEANING/REPAIRING	x	x													x	x	x
208201	BREWERS					x		x			x					x	x	
208401	WINERIES					x		x			x					x	x	
239698	AUTOMOTIVE TRIMMING/APPRL FINDINGS (MFR)				x	x	x				x		x			x	x	x
243102	MILLWORK (MANUFACTURERS)				x	x					x		x			x	x	x
245201	LOG CABINS HOMES & BUILDINGS (MFRS)				x	x	x	x			x		x		x	x	x	
259901	FURNITURE-MANUFACTURERS				x	x	x	x			x		x			x	x	
271101	NEWSPAPERS (PUBLISHERS)				x	x	x				x	x	x					x
272102	PUBLISHERS-PERIODICAL				x	x	x				x	x	x					x
273101	PUBLISHERS-BOOK				x	x	x				x	x	x					x
274119	MULTIMEDIA (MANUFACTURERS)				x	x	x				x	x	x					x
275202	PRINTERS				x	x	x	x			x	x	x			x	x	x
275203	POSTERS (MANUFACTURERS)				x	x	x				x	x	x					x
275902	SCREEN PRINTING				x	x	x				x	x	x					x
279601	ENGRAVERS-PLASTIC WOOD & ETC				x	x	x				x		x					x
308901	MOLD MAKERS				x	x	x	x			x		x			x	x	x
308906	PLASTICS-FABRICATING/FINISH/DECOR-MFRS				x	x	x	x			x	x	x			x	x	x
311101	TANNERS (MANUFACTURERS)				x	x					x		x			x		x
327209	CONCRETE PRODS-EX BLOCK & BRICK (MFRS)					x					x		x			x	x	x
344106	STEEL-STRUCTURAL (MANUFACTURERS)				x	x	x	x			x	x	x			x	x	x
344403	SHEET METAL FABRICATORS				x	x	x	x			x	x	x			x	x	x
354405	MOLDS (MANUFACTURERS)				x	x	x	x			x		x			x	x	x
356907	AUTOMATION SYSTEMS & EQUIPMENT-MFRS				x	x	x	x			x		x			x	x	x
357908	COPYING MACHINES & SUPPLIES-MFRS				x	x	x	x			x	x	x			x	x	x
359903	MACHINE SHOPS				x	x	x	x			x	x	x			x	x	x
366398	RADIO/TV BROADCASTING/COMM EQUIP (MFRS)				x	x	x	x			x	x	x			x	x	x

TABLE A-2
CONTAMINANT TYPES ASSOCIATED WITH SIC-RELATED DISCRETE CONTAMINANT SOURCES

SIC Code	Discrete Contaminant Source Type	Acute Health Concerns							Chronic Health Concerns									Aesthetic Concerns
		Miroorganisms	Nitrate/Nitrite	Pesticides	Semi-volatile Organic Compounds (SVOCs)	Volatile Organic Compounds (VOCs)	Lead	Ammonia / Nitric Acid	Herbicides	Pesticides	Volatile Organic Compounds (VOCs)	Non-metal Inorganic Compounds	Metals - Primary Drinking Water (other than lead)	Radionuclides	Turbidity	Other Inorganic Compounds	Other Organic Compounds	Secondary Drinking Water Contaminants
369902	ELECTRIC EQUIPMENT-MANUFACTURERS				x	x	x	x			x	x	x			x	x	x
371401	AUTOMOBILE PARTS & SUPPLIES-MFRS				x	x	x	x			x		x			x	x	x
399903	MANUFACTURERS				x	x	x	x			x	x	x			x	x	x
401101	RAILROADS				x	x	x		x		x		x		x	x	x	x
422101	GRAIN ELEVATORS		x	x	x				x	x	x							
422501	STORAGE		x	x	x	x			x	x	x					x	x	
422505	WAREHOUSES-MERCHANDISE & SELF STORAGE										x							
422603	RECREATIONAL VEHICLES-STORAGE	x	x								x	x	x					x
458104	AIRCRAFT SERVICING & MAINTENANCE				x	x	x	x			x	x	x			x	x	x
458106	AIRPORTS				x	x			x		x	x	x			x	x	x
461201	PIPE LINE COMPANIES					x		x	x		x	x	x			x	x	x
491101	ELECTRIC COMPANIES				x	x	x	x	x		x	x	x			x	x	x
492501	GAS COMPANIES					x		x	x		x	x	x			x	x	x
494102	WATER & SEWAGE COMPANIES-UTILITY	x	x		x	x	x	x	x		x	x	x			x	x	x
495302	GARBAGE COLLECTION	x	x	x	x	x	x		x	x	x	x	x		x	x	x	x
503208	CONCRETE PRODUCTS (WHOLESALE)										x		x		x	x	x	x
503211	SAND & GRAVEL (WHOLESALE)					x		x				x	x		x			x
508520	HYDRAULIC EQUIPMENT & SUPPLIES (WHOL)										x		x					x
508522	INDUSTRIAL EQUIPMENT & SUPPLIES (WHOL)					x					x	x	x					x
509312	RECYCLING CENTERS (WHOLESALE)	x	x				x		x		x		x					x
517203	DIESEL FUEL (WHOLESALE)				x						x							x
517208	GAS-LIQUEFIED PETRO-BTTLD/BULK (WHOL)																	x
517210	GASOLINE & OIL-WHOLESALE					x					x							x
519114	FERTILIZERS (WHOLESALE)		x	x						x						x	x	
519803	PAINT-WHOLESALE					x					x					x	x	
521128	CONCRETE-READY MIXED					x					x		x			x	x	x
521138	HOME CENTERS		x	x	x	x	x	x	x	x	x					x	x	x
526101	LAWN & GARDEN EQUIP & SUPPLIES-RETAIL		x	x		x			x	x	x							
526104	GARDEN CENTERS		x	x	x	x			x	x	x				x			
526137	ENGINES-GASOLINE					x					x							
541103	CONVENIENCE STORES				x	x					x							
551102	AUTOMOBILE DEALERS-NEW CARS					x	x				x	x				x	x	
551103	AUTOMOBILE DEALERS-USED CARS					x	x				x	x				x	x	
554101	SERVICE STATIONS-GASOLINE & OIL					x					x							
655302	CEMETERIES		x			x			x	x						x	x	

TABLE A-2
CONTAMINANT TYPES ASSOCIATED WITH SIC-RELATED DISCRETE CONTAMINANT SOURCES

SIC Code	Discrete Contaminant Source Type	Acute Health Concerns							Chronic Health Concerns									Aesthetic Concerns
		Miroorganisms	Nitrate/Nitrite	Pesticides	Semi-volatile Organic Compounds (SVOCs)	Volatile Organic Compounds (VOCs)	Lead	Ammonia / Nitric Acid	Herbicides	Pesticides	Volatile Organic Compounds (VOCs)	Non-metal Inorganic Compounds	Metals - Primary Drinking Water (other than lead)	Radionuclides	Turbidity	Other Inorganic Compounds	Other Organic Compounds	Secondary Drinking Water Contaminants
703203	CAMPS	x	x						x						x	x	x	x
703301	CAMPGROUNDS	x	x						x						x	x	x	x
721201	CLEANERS					x					x					x	x	
751401	AUTOMOBILE RENTING & LEASING					x					x							
753201	AUTOMOBILE BODY-REPAIRING & PAINTING					x	x	x			x	x	x			x	x	x
753204	AUTOMOBILE RESTORATION-ANTIQUE & CLASSIC					x	x	x			x	x	x			x	x	x
753701	TRANSMISSIONS-AUTOMOBILE				x	x					x	x	x			x	x	x
753801	AUTOMOBILE REPAIRING & SERVICE				x	x	x	x			x	x	x			x	x	x
753810	ENGINES-REBUILDING & EXCHANGING				x	x	x	x			x	x	x			x	x	x
753811	RECREATIONAL VEHICLES-REPAIRING & SVC	x	x		x	x	x	x			x	x	x			x	x	x
753812	TRUCK-REPAIRING & SERVICE				x	x	x	x			x	x	x			x	x	x
753903	WHEEL ALIGNMENT-FRAME & AXLE SVC-AUTO					x					x		x			x	x	x
753914	BRAKE SERVICE										x	x	x			x	x	x
754201	CAR WASHING & POLISHING												x		x			
754203	AUTOMOBILE DETAIL & CLEAN-UP SERVICE												x		x			
754205	CAR WASHING & POLISHING-COIN OPERATED												x		x			
754903	AUTOMOBILE LUBRICATION SERVICE				x	x					x							x
769957	LAWN MOWERS-SHARPENING & REPAIRING				x	x					x	x	x			x	x	x
769967	MOTORCYCLES & MOTOR SCOOTERS-RPR & SVC				x	x	x	x			x	x	x			x	x	x
769985	BATHTUBS & SINKS-REPAIRING & REFINISHING				x	x		x			x		x			x	x	x
799201	GOLF COURSES-PUBLIC		x			x			x	x	x				x	x	x	
799706	GOLF COURSES-PRIVATE		x			x			x	x	x				x	x	x	
799968	STABLES	x	x					x							x			x
806202	HOSPITALS					x	x				x	x	x	x		x	x	x
807101	LABORATORIES-MEDICAL					x	x				x	x	x	x		x	x	x
809907	HEALTH SERVICES					x	x				x	x	x	x		x	x	x
873402	LABORATORIES-TESTING				x	x	x				x	x	x	x		x	x	x
873419	RADON TESTING & CORRECTION										x		x					x
962102	STATE GOVERNMENT-TRANSPORTATION PROGRAMS				x	x	x				x	x			x	x	x	x
971101	FEDERAL GOVERNMENT-NATIONAL SECURITY				x	x	x				x	x		x				x
ALL OTHER SIC CODES	GENERIC SIC DEFAULT				x	x	x	x			x	x	x			x	x	x

TABLE B-1
POTENTIAL SOURCES OF CONTAMINATION

Source	Contaminant*
COMMERCIAL / INDUSTRIAL	
Automobile, Body Shops/Repair Shops *CONTAM. HAZARD: B*	**Arsenic**, Ammonium Persulfate, **Barium**, **Benzene**, **Cadmium**, **Chlorobenzene**, **Copper**, Creosote, **cis 1,2-Dichloroethylene**, **trans 1,2-Dichloroethylene, 1,4-Dichlorobenzene or P-Dichlorobenzene**, Ethylene Glycol, **Lead**, Flouride, **1,1,1-Trichloroethane or Methyl Chloroform**, **Dichloromethane or Methylene Chloride**, **Nickel**, Nitric Acid, Phosphoric Acid (Ortho-), Sulfuric Acid, 1,1,2,2-Tetrachloroethane, **Tetrachloroethylene or Perchlorethylene (Perk)**, **Trichloroethylene or TCE**, Tin, **Xylene (Mixed Isomers)**
Boat Repair/Refinishing *CONTAM. HAZARD: A*	Ammoniacal Copper Arsenate, **Benzene**, **Cadmium**, Chromated Copper Arsenic, **Coliform bacteria**, Copper Quinolate, ***Cryptosporidium parvum***, Epoxy, ***Giardia lamblia***, Isopropanol, **Lead**, ***Legionellae* sp.**, **Mercury**, **Nitrate**, **Nitrite**, Polyurethane, **Vinyl Chloride**, Viruses
Cement/Concrete Plants *CONTAM. HAZARD: B*	Acetone, **Barium**, **Benzene**, **Dichloromethane or Methylene Chloride**, **Ethylbenzene**, Ethylene Glycol, **Lead**, Methanol, **Styrene**, Sulfuric Acid, **Tetrachloroethylene or Perchlorethylene (Perk)**, **Toluene**, **Xylene (Mixed Isomers)**
Chemical/Petroleum Processing *CONTAM. HAZARD: B*	Acetone, **Acrylamide**, **Arsenic**, **Atrazine**, **Alachlor**, Aluminum (Fume or Dust), Ammonia, **Barium**, **Benzene**, **Cadmium**, **Carbofuran**, **Carbon Tetrachloride**, Chlorine, Chlorine Dioxide, **Chlorobenzene**, Chloroform, **Copper**, Creosote, **Cyanide**, Captan, **2,4-D**, **1,2-Dibromoethane or Ethylene Dibromide (EDB)**, 1,2-Dichlorobenzene or O-Dichlorobenzene, **1,4-Dichlorobenzene or P-Dichlorobenzene**, **1,1-Dichloroethylene or Vinylidene Chloride**, cis 1,2 Dichloroethylene, **Dichloromethane or Methylene Chloride**, **Di(2-ethylhexyl) adipate**, **Di(2-ethylhexyl) phthlate**, **1,2-Dichloroethane or Ethylene Dichloride**, **Dioxin**, **Endrin**, **Epichlorohydrin**, Ethane, Ethylenzene, Ethylene, Ethylene Glycol, Freon 113 or 1,1,2-Trichloro-1,2,2-trifluoroethane, Formaldehyde or K157, **Hexachlorobenzene**, **Hexachlorocyclopentadiene**, Hydrochloric Acid or Muriatic Acid, Hydroquinone, Hydrogen Peroxide, Isopropyl Alcohol (Manufacturing, Strong-Acid Process), Kerosene, **Lead**, **Mercury**, Methanol, **Methoxychlor**, Naphthalene or K156, **Nickel**, Nitric Acid, Oxamyl (Vydate), **Polychlorinated Biphenyls**, Phosphoric Acid Ortho-, **Selenium**, Sodium Cyanide, **Styrene**, Sulfate, Sulfuric Acid, 1,1,2,2-Tetrachloroethane, **Tetrachloroethylene or Perchlorethylene (Perk)**, **Toluene**, Toluenediisocyanate (Mixed Isomers), **1,2,4-Trichlorobenzene**, **1,1,1-Trichloroethane or Methyl Chloroform**, **Trichloroethylene or TCE**, **Vinyl Chloride**, **Xylene (Mixed Isomers)**, Zinc (Fume or Dust)

* **Bold** Denotes that contaminant is a National Primary Drinking Water Contaminant

TABLE B-1
POTENTIAL SOURCES OF CONTAMINATION (cont.)

Source	Contaminant*
COMMERCIAL / INDUSTRIAL	
Construction/Demolition *CONTAM. HAZARD: B*	Acetone, **Arsenic**, **Asbestos**, Ammonia, Ammoniacal Copper Arsenate, **Benzene**, **Cadmium**, Chloride, Chromated Copper Arsenic, **Copper**, Copper Quinolate, **Cyanide**, **cis 1,2-Dichloroethylene**, **trans 1,2-Dichloroethylene, Dichloromethane or Methylene Chloride**, Epoxy, Fluorides, Formaldehyde or K157, **Lead**, Lindane, Methanol, **Nickel**, Polyurethane, Phosphoric Acid Ortho-, **Selenium**, Sodium **Cyanide**, Sulfuric Acid, 1,1,2,2-Tetrachloroethane, **Tetrachloroethylene or Perchlorethylene (Perk)**, **1,1,1-Trichloroethane or Methyl Chloroform**, **Trichloroethylene or TCE**, Turbidity, **Xylene (Mixed Isomers)**, Zinc (Fume or Dust)
Dry Cleaners/Dry Cleaning *CONTAM. HAZARD: B*	Amyl Acetate, Flourocarbon 113 (Freon), Peroxide, **Tetrachloroethylene or Perchlorethylene (Perk)**, **1,1,1-Trichloroethane or Methyl Chloroform**, 1,1,2-Trichloroethane
Dry Goods Manufacturing *CONTAM. HAZARD: A*	Acetone, Ammonia, **Barium**, **Benzene**, **Cadmium**, Chlorine, **Copper**, **Dichloromethane or Methylene Chloride**, **Di(2-ethylhexyl) phthlate**, Formaldehyde or K157, Hydrochloric Acid or Muriatic Acid, Isopropyl Alcohol (Manufacturing Strong-Acid Process), **Lead**, Methanol, **1,1,1-Trichloroethane or Methyl Chloroform**, Nitric Acid, **Polychlorinated Biphenyls**, Sulfuric Acid, **Tetrachloroethylene or Perchlorethylene (Perk)**, **Toluene**, Toluene Diisocyanate (Mixed Isomers), **Trichloroethylene or TCE**, **Xylene (Mixed Isomers)**
Electrical/Electronic Manufacturing *CONTAM. HAZARD: B*	Acetone, Aluminum (Fume or Dust), Ammonia, Ammonium Persulfate, Amyl Acetate, **Antimony**, **Arsenic**, **Barium**, **Benzene**, Boric Acid, **Cadmium**, Chlorine, **Chlorobenzene**, Chloroform, **Copper**, **Cyanide**, Calcium Flouride, **Carbon Tetrachloride**, **1,2-Dichlorobenzene or O-Dichlorobenzene**, **1,2-Dichloroethane or Ethylene Dichloride**, **cis 1,2-Dichloroethylene**, **trans 1,2-Dichloroethylene, Dichloromethane or Methylene Chloride**, **Di(2-ethylhexyl) phthlate**, **Ethylbenzene**, Ethylene Glycol, Freon 113 or 1,1,2-Trichloro-1,2,2-trifluoroethane, Formaldehyde or K157, Hexachlorophene, Hydrochloric Acid or Muriatic Acid, Isopropyl Alcohol (Manufacturing, Strong-Acid Process), **Lead**, **Mercury**, Methanol, Naphthalene or K156, **Nickel**, Nitric Acid, **Polychlorinated Biphenyls**, Phosphoric Ac id Ortho-, **Selenium**, **Styrene**, Sulfate, Sulfuric Acid, Sodium Cyanide, 1,1,2,2-Tetrachloroethane, **Tetrachloroethylene or Perchlorethylene (Perk)**, **1,1,1-Trichloroethane or Methyl Chloroform**, 1,1,2-Trichloroethane, **Trichloroethylene or TCE**, **Thallium**, **Toluene**, Toluene Diisocyanate, (Mixed Isomers), **Vinyl Chloride**, **Xylene (Mixed Isomers)**, Zinc (Fume or Dust)

* **Bold** Denotes that contaminant is a National Primary Drinking Water Contaminant

TABLE B-1
POTENTIAL SOURCES OF CONTAMINATION (cont.)

Source	Contaminant*
COMMERCIAL / INDUSTRIAL	
Fleet/Trucking/ Bus Terminals *CONTAM. HAZARD: A*	Acetone, **Arsenic**, **Acrylamide**, **Barium**, **Benzene**, **Benzo(a)pyrene**, **Cadmium**, **Chlorobenzene**, Chloroform, Creosote, **Cyanide**, **Carbon Tetrachloride**, **2,4-D**, **1,2-Dichlorobenzene or O-Dichlorobenzene**, **1,4-Dichlorobenzene or P-Dichlorobenzene**, **1,2-Dichloroethane or Ethylene Dichloride**, **cis 1,2-Dichloroethylene**, **trans 1,2-Dichloroethylene, Dichloromethane or Methylene Chloride**, **Di(2-ethylhexyl) phthlate**, **Epichlorohydrin**, Formaldehyde or K157, **Heptachlor (and Epoxide)**, Hydrochloric Acid or Muriatic Acid, **Lead**, Lindane, **Mercury**, Methanol, **Methoxychlor**, Naphthalene or K156, **Pentachlorophenol**, Phosphoric Acid Ortho-, Propylene Dichloride or **1,2-Dichloropropane**, **Selenium**, **Styrene**, Sulfuric Acid, Sodium Cyanide, **Toxaphene**, 1,1,2,2-Tetrachloroethane, **Tetrachloroethylene or Perchlorethylene (Perk)**, **Toluene**, Toluene Diisocyanate (Mixed Isomers), **1,1,1-Trichloroethane or Methyl Chloroform**, **Trichloroethylene or TCE**, **Vinyl Chloride**, **Xylene (Mixed Isomers)**
Food Processing *CONTAM. HAZARD: B*	**Arsenic**, Ammonia, **Benzene**, **Cadmium**, Chlorine, Chloroform, **Copper**, **Carbon Tetrachloride**, **Dichloromethane or Methylene Chloride**, Formaldehyde or K157, Hydrochloric Acid or Muriatic Acid, **Lead**, **Mercury**, Methanol, Nitric Acid, **Picloram**, Phosphoric Acid Ortho-, Sulfuric Acid, Sodium Cyanide, **Tetrachloroethylene or Perchlorethylene (Perk)**, **Toluene**, Toluene Diisocyanate (Mixed Isomers), **1,1,1-Trichloroethane or Methyl Chloroform**, **Trichloroethylene or TCE**, **Xylene (Mixed Isomers)**
Funeral Services/Graveyards *CONTAM. HAZARD: B*	**Atrazine**, Benomyl, Chlorpyrifos, Diazinon, **Diquat**, **Glyphosate**, **Dichloromethane or Methylene Chloride**, Nitrosamine, Phosphates
Furniture Repair/Manufacturing *CONTAM. HAZARD: B*	Ammoniacal Copper Arsenate, **Barium**, Chromated Copper Arsenic, Copper Quinolate, **1,2-Dichloroethane or Ethylene Dichloride**, **Dichloromethane or Methylene Chloride**, Epoxy, **Ethylbenzene**, Freon 113 or 1,1,2-Trichloro-1,2,2-trifluoroethane, **Lead**, **Mercury**, **Nickel**, Polyurethane, Phosphoric Acid Ortho-, **Selenium**, Sodium Cyanide, 1,1,2,2-Tetrachloroethane, **Trichloroethylene or TCE**, Tin
Gas Stations *CONTAM. HAZARD: A*	**Benzene, cis 1,2-Dichloroethylene**, **trans 1,2-Dichloroethylene, Dichloromethane or Methylene Chloride**, **Ethylbenzene**, Ethylene Glycol, **Lead**, 1,1,2,2-Tetrachloroethane, Methanol, **Tetrachloroethylene or Perchlorethylene (Perk)**, **Trichloroethylene or TCE, Toluene, Xylene (Mixed Isomers)**
Hardware/Lumber/Parts Stores *CONTAM. HAZARD: B*	Acetone, Aluminum (Fume or Dust), Ammonia, Ammoniacal Copper Arsenate, **Barium**, **Benzene**, **Cadmium**, Captan, Chlorine, **Chlorobenzene**, Chloroform, Chromated Copper Arsenic, **Copper**, Copper Quinolate, **Dichloromethane or Methylene Chloride**, **Di(2-ethylhexyl)adipate**, **Di(2-ethylhexyl) phthlate**, **1,4-Dichlorobenzene or P-Dichlorobenzene**, **Ethylbenzene**, Ethylene Glycol, Freon 113 or 1,1,2-Trichloro-1,2,2-trifluoroethane, Hydrochloric Acid or Muriatic Acid, **Lead**, **Mercury**, Methanol, **Nickel**, Nitric Acid, Polyurethane, Phosphoric Acid Ortho-, Sulfuric Acid, **Tetrachloroethylene or Perchlorethylene (Perk)**, **1,1,1-Trichloroethane or Methyl Chloroform**, **Trichloroethylene or TCE**, **Toluene**, **Xylene (Mixed Isomers)**

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TABLE B-1
POTENTIAL SOURCES OF CONTAMINATION (cont.)

Source	Contaminant*
COMMERCIAL / INDUSTRIAL	
Historic Waste Dumps/Landfills *CONTAM. HAZARD: B*	**Atrazine**, **Alachlor**, Benomyl, Chlorpyrifos, **Carbofuran**, **cis 1,2-Dichloroethylene**, **trans 1,2-Dichloroethylene, Diquat**, **Dalapon**, Diazinon, Epoxy, **Glyphosate**, **Dichloromethane or Methylene Chloride**, Manganese, **Nitrate**, **Nitrite**, Nitrosamine, Oxamyl (Vydate), Peroxide, Phosphates, **Picloram**, Sulfate, **Simazine**, 1,1,2,2-Tetrachloroethane, **Tetrachloroethylene or Perchlorethylene (Perk)**, **Trichloroethylene or TCE**, Tin
Home Manufacturing *CONTAM. HAZARD: B*	Acetone, **Arsenic**, Ammonia, Ammoniacal Copper Arsenate, **Barium**, **Benzene**, **Cadmium**, Chlorine, **Chlorobenzene**, Chloroform, Chromated Copper Arsenic, **Copper**, Copper Quinolate, **Carbon Tetrachloride**, **1,2-Dichlorobenzene or O-Dichlorobenzene**, **cis 1,2-Dichloroethylene**, **trans 1,2-Dichloroethylene, Dichloromethane or Methylene Chloride**, **Di(2-ethylhexyl) phthlate**, Epoxy, **Ethylbenzene**, Formaldehydeor K157, Hydrochloric Acid or Muriatic Acid, **Lead**, **Mercury**, Methanol, Naphthalene or K156, **Nickel**, Nitric Acid, Polyurethane, Phosphoric Acid Ortho-, **Selenium**, **Styrene**, Sulfuric Acid, **Tetrachloroethylene or Perchlorethylene (Perk)**, **1,1,1-Trichloroethane or Methyl Chloroform**, **Trichloroethylene or TCE**, 1,1,2,2-Tetrachloroethane, **Toluene**, Turbidity, **Xylene (Mixed Isomers)**
Injection Wells *CONTAM. HAZARD: B*	**Atrazine**, **Alachlor**, Benomyl, Bromine, Chlorpyrifos, Cyanuric Acid, Calcium Hypochlorate, Chlorine, **Carbofuran**, **Dalapon**, **cis 1,2-Dichloroethylene**, **trans 1,2-Dichloroethylene, Dichloromethane or Methylene Chloride**, **Diquat**, Diazinon, **Endothall**, Flouride, **Glyphosate**, Hydrochloric Acid or Muriatic Acid, Iodine, Isopropanol, Methanol, Nitrosamine, Oxamyl (Vydate), Peroxide, Phosphates, **Picloram**, **Simazine**, Sodium Carbonate, Sodium Hypochlorate, Sulfate, 1,1,2,2-Tetrachloroethane, **Tetrachloroethylene or Perchlorethylene (Perk)**, **Trichloroethylene or TCE**, Tin
Junk/Scrap/Salvage Yards *CONTAM. HAZARD: B*	**Barium**, Benomyl, **Benzene**, Boric Acid, Chlorpyrifos, Chromated Copper Arsenic, **Copper**, cis **Dalapon**, 1,2-Dichloroethylene, **Diquat**, Diazinon, Epoxy, Ethylene Glycol, **Glyphosate**, Isopropanol, **Lead**, **N** Manganese, **ickel**, Nitric Acid, Nitrosamine, **Polychlorinated Biphenyls**, Phosphates, Sulfate, **Simazine**, **Trichloroethylene or TCE**, 1,1,2,2 - Tetrachloroethane, **Tetrachloroethylene or Perchlorethylene (Perk)**, Tin

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TABLE B-1
POTENTIAL SOURCES OF CONTAMINATION (cont.)

Source	Contaminant*
COMMERCIAL / INDUSTRIAL	
Machine Shops *CONTAM. HAZARD: B*	Acetone, **Arsenic**, Aluminum (Fume or Dust), Ammonia, Ammonium Persulfate, **Barium**, **Benzene**, Boric Acid, **Cadmium**, Chlorine, **Chlorobenzene**, Chloroform, **Copper**, Creosote, **Cyanide**, **Carbon Tetrachloride 2,4-D**, **1,4-Dichlorobenzene or P-Dichlorobenzene**, **1,2-Dichloroethane or Ethylene Dichloride**, **1,1-Dichloroethylene or Vinylidene Chloride**, **cis 1,2-Dichloroethylene**, **trans 1,2-Dichloroethylene, Dichloromethane or Methylene Chloride**, **Di(2-ethylhexyl) phthlate**, **Ethylbenzene**, Ethylene Glycol, Flouride, Freon 113 or 1,1,2-Trichloro-1,2,2-trifluoroethane, Formaldehyde or K157, **Hexachlorobenzene**, Hydrochloric Acid or Muriatic Acid, Hydrogen Cyanide, Isopropyl Alcohol (Manufacturing, Strong-Acid Process), **Lead**, **Mercury**, Methanol, Naphthalene or K156, **Nickel**, Nitric Acid, **Polychlorinated Biphenyls**, **Pentachlorophenol**, Phosphoric Acid Ortho-, **Selenium**, Strychnine, **Styrene**, Sulfuric Acid, Sodium Cyanide, **Tetrachloroethylene or Perchlorethylene (Perk)**, TetrachloroethanB-1,1,2,2 , Tin, **Toluene**, Toluenediisocyanate (Mixed Isomers) **1,1,1-Trichloroethane or Methyl Chloroform**,1,1,2-Trichloroethane, **Trichloroethylene or TCE**, **Xylene (Mixed Isomers)**, Zinc (Fume or Dust)
Medical/Vet Offices *CONTAM. HAZARD: B*	Acetone, **Arsenic**, **Acrylamide**, **Barium**, **Benzene**, **Cadmium**, Chloroform, **Copper**, **Cyanide**, **Carbon Tetrachloride**, **Dichloromethane or Methylene Chloride**, **1,2-Dichloroethane or Ethylene Dichloride**, Ethylene Glycol, Freon 113 or 1,1,2-Trichloro-1,2,2-trifluoroethane, Formaldehyde or K157, Glutaldehyde, Hydrochloric Acid or Muriatic Acid, **Lead**, **Mercury**, Methanol, **Methoxychlor**, **1,1,1-Trichloroethane or Methyl Chloroform**, **Nickel**, Potassium Alum (dodecahydrate), Potassium Bromide, Radionuclides, **Selenium**, Silver, Sulfuric Acid, Sodium Carbonate, Sodium Cyanide, Sodium Sulfite, Sulfuric Acid, **Tetrachloroethylene or Perchlorethylene (Perk)**, **2,4,5-TP (Silvex)**, **Thallium**, Thiosulfates, **Toluene**, **Xylene (Mixed Isomers)**
Metal Plating/Finishing/Fabricating *CONTAM. HAZARD: B*	Acetone, **Antimony**, Acetylene, Aluminum (Fume or Dust), Ammonia, Ammonium Persulfate, **Arsenic**, **Barium**, **Benzene**, Boric Acid, **Cadmium**, **Carbon Tetrachloride**, Chlorine, **Chlorobenzene**, Chloroform, **Chromium**, **Copper**, **Cyanide**, **1,4-Dichlorobenzene or P-Dichlorobenzene**, **cis 1,2-Dichloroethylene**, **trans 1,2-Dichloroethylene, Dichloromethane or Methylene Chloride**, **Di(2-ethylhexyl) adipate**, **Ethylbenzene**, Ethylene Glycol, Flouride, Freon 113 or 1,1,2-Trichloro-1,2,2-trifluoroethane, Formaldehyde or K157, Hydrochloric Acid or Muriatic Acid, Hydrogen Cyanide, Isopropyl Alcohol (Manufacturing Strong-Acid Process), **Lead**, **Mercury**, Manganese, Methanol, Naphthalene or K156, **Nickel**, Nitric Acid, **Polychlorinated Biphenyls**, **Pentachlorophenol**, Phosphoric Acid Ortho-, **Selenium**, **Styrene**, Sulfate, Sulfuric Acid, Sodium Cyanide, **Tetrachloroethylene or Perchlorethylene (Perk)**, 1,1,2,2 Tetrachloroethane, **Thallium**, Tin, **Toluene**, **1,1,1-Trichloroethane or Methyl Chloroform**, 1,1,2-Trichloroethane, **Trichloroethylene or TCE**, **Vinyl Chloride**, **Xylene (Mixed Isomers)**, Zinc (Fume or Dust)

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TABLE B-1
POTENTIAL SOURCES OF CONTAMINATION (cont.)

Source	Contaminant*
COMMERCIAL / INDUSTRIAL	
Military Installations *CONTAM. HAZARD: A*	**Arsenic**, **Barium**, **Benzene**, **Cadmium**, **Chlorobenzene**, **1,2-Dichlorobenzene or O-Dichlorobenzene**, **1,2-Dichloroethane or Ethylene Dichloride**, **cis 1,2-Dichloroethylene**, **trans 1,2-Dichloroethylene, Dichloromethane or Methylene Chloride**, **Hexachlorobenzene**, **Lead**, **Mercury**, Methanol, **Methoxychlor**, **1,1,1-Trichloroethane or Methyl Chloroform**, Radionuclides, **Selenium**, **Tetrachloroethylene or Perchlorethylene (Perk)**, 1,1,2,2 Tetrachloroethane, **Toluene**, **Trichloroethylene or TCE**
Mines/Gravel Pits *CONTAM. HAZARD: B*	Ammonia, Hydrochloric Acid or Muriatic Acid, **Lead**, Naphthalene or K156, Phosphoric Acid Ortho-, **Selenium**, Sulfate, **Tetrachloroethylene or Perchlorethylene (Perk)**, Tin, **1,1,1-Trichloroethane or Methyl Chloroform**, Turbidity
Motor Pools *CONTAM. HAZARD: A*	**cis 1,2-Dichloroethylene**, **trans 1,2-Dichloroethylene, Dichloromethane or Methylene Chloride**, 1,1,2,2 Tetrachloroethane, **Tetrachloroethylene or Perchlorethylene (Perk)**, **Trichloroethylene or TCE**
Office Building/Complex *CONTAM. HAZARD: B*	Acetone, **Atrazine**, Ammonia, **Barium**, Benomyl, **Benzene**, **Cadmium**, Chlorine, Chlorpyrifos, **Copper**, **2,4-D**, Diazinon, **1,2-Dichlorobenzene or O-Dichlorobenzene**, **Dichloromethane or Methylene Chloride**, **Diquat**, **1,2-Dichloroethane or Ethylene Dichloride**, **Ethylbenzene**, Ethylene Glycol, Freon 113 or 1,1,2-Trichloro-1,2,2-trifluoroethane, Formaldehyde or K157, **Glyphosate**, Hydrochloric Acid or Muriatic Acid, Iodine, Isopropanol, Isopropyl Alcohol (Manufacturing Strong-Acid Process), **Lead**, **Mercury**, Methanol, Nitric Acid, Nitrosamine, Phosphates, Phosphoric Acid Ortho-, **Selenium**, Sulfuric Acid, **Simazine**, **Tetrachloroethylene or Perchlorethylene (Perk)**, **1,1,1-Trichloroethane or Methyl Chloroform**, **Trichloroethylene or TCE**, **Toluene**, **Vinyl Chloride**, **Xylene (Mixed Isomers)**
Photo Processing/Printing *CONTAM. HAZARD: B*	Acetone, **Acrylamide**, Aluminum (Fume or Dust), Ammonia, **Arsenic**, **Barium**, **Benzene**, **Cadmium**, **Carbon Tetrachloride**, Chlorine, **Chlorobenzene**, Chloroform, **Copper**, **Cyanide**, **1,1-Dichloroethylene or Vinylidene Chloride**, **cis 1,2-Dichloroethylene**, **trans 1,2-Dichloroethylene, Dichloromethane or Methylene Chloride**, **Di(2-ethylhexyl) phthlate**, **1,2-Dichlorobenzene or O-Dichlorobenzene**, **1,4-Dichlorobenzene or P-Dichlorobenzene**, **1,2-Dichloroethane or Ethylene Dichloride**, **1,2-Dibromoethane or Ethylene Dibromide (EDB)**, Ethylene Glycol, Freon 113 or CFC 113 or 1,1,2-Trichloro-1,2,2-trifluoroethane, Formaldehyde or K157, **Heptachlor (and Epoxide)**, **Hexachlorobenzene**, Hydrochloric Acid or Muriatic Acid, Hydroquinone, Isopropyl Alcohol (Manufacturing Strong-Acid Process), **Lead**, Lindane, **Mercury**, Methanol, **Methoxychlor**, **Nickel**, Nitric Acid, Phosphoric Acid Ortho-, Propylene Dichloride or **1,2-Dichloropropane**, **Selenium**, Sodium Cyanide, **Styrene**, Sulfuric Acid, **Tetrachloroethylene or Perchlorethylene (Perk)**, **1,1,1-Trichloroethane or Methyl Chloroform**, 1,1,2,2-Tetrachloroethane, **Toluene**, Toluene Diisocyanate (Mixed Isomers), 1,1,2-Trichloroethane, **Trichloroethylene or TCE**, **Vinyl Chloride**, **Xylene (Mixed Isomers)**, Zinc (Fume or Dust)

* **Bold** Denotes that contaminant is a National Primary Drinking Water Contaminant

TABLE B-1
POTENTIAL SOURCES OF CONTAMINATION (cont.)

Source	Contaminant*
COMMERCIAL / INDUSTRIAL	
Synthetic / Plastics Production *CONTAM. HAZARD: B*	Acetone, **Antimony**, Ammonia, **Arsenic**, **Barium**, **Benzene**, Boric Acid, **Cadmium**, Captan, **Carbon Tetrachloride**, Chlorine, **Chlorobenzene**, Chloroform, **Copper**, **Cyanide**, **1,2-Dichlorobenzene or O-Dichlorobenzene**, **1,4-Dichlorobenzene or P-Dichlorobenzene**, **1,2-Dichloroethane or Ethylene Dichloride**, **cis 1,2-Dichloroethylene**, **trans 1,2-Dichloroethylene, Dichloromethane or Methylene Chloride**, **Di(2-ethylhexyl) adipate**, **Di(2-ethylhexyl) phthlate**, **Ethylbenzene**, Ethylene Glycol, Freon 113 or CFC 113 or 1,1,2-Trichloro-1,2,2-trifluoroethane, Formaldehyde or K157, **Hexachlorobenzene**, Hydrochloric Acid or Muriatic Acid, Hydroquinone, Isopropyl Alcohol (Manufacturing, Strong-Acid Process), Kerosene, **Lead**, **Mercury**, Methanol, Methyl Chloroform or 1,1,1-Trichloroethane, **Nickel**, Nitric Acid, **Pentachlorophenol**, Peroxide, Phosphoric Acid Ortho-, **Selenium**, Sodium Cyanide, **Styrene**, Sulfuric Acid, 1,1,2,2-Tetrachloroethane, **Tetrachloroethylene or Perchlorethylene (Perk)**, **Toluene**, Toluene Diisocyanate (Mixed Isomers), **Trichloroethylene or TCE**, **Vinyl Chloride**, **Xylene (Mixed Isomers)**, Zinc (Fume or Dust)
RV/Mini Storage *CONTAM. HAZARD: B*	**Arsenic**, **Barium**, Chloroform, **Cyanide**, **2,4-D**, **Endrin**, Formaldehyde or K157, **Lead**, **Methoxychlor**
Railroad Yards/Maintenance/Fueling Areas *CONTAM. HAZARD: B*	**Atrazine**, Ammoniacal Copper Arsenate, **Barium**, **Benzene**, **Cadmium**, Chlorine, Chromated Copper Arsenic, Copper Quinolate, **Dalapon**, **1,4-Dichlorobenzene or P-Dichlorobenzene**, **cis 1,2-Dichloroethylene**, **trans 1,2-Dichloroethylene, Dichloromethane or Methylene Chloride**, Polyurethane, **Lead**, **Mercury**, TetrachloroethanB-1,1,2,2 , **Trichloroethylene or TCE**, **Tetrachloroethylene or Perchlorethylene (Perk)**
Research Laboratories *CONTAM. HAZARD: B*	Acetone, **Arsenic**, **Barium**, Benomyl, **Benzene**, **Beryllium Powder**, **Cadmium**, **Carbon Tetrachloride**, Chlorine, **Chlorobenzene**, Chloroform, **Cyanide**, **1,2-Dichloroethane or Ethylene Dichloride**, **1,1-Dichloroethylene or Vinylidene Chloride**, **cis 1,2-Dichloroethylene**, **trans 1,2-Dichloroethylene, Dichloromethane or Methylene Chloride**, **Endrin**, Freon 113 or CFC 113 or 1,1,2-Trichloro-1,2,2-trifluoroethane, Formaldehyde or K157, Glutaldehyde, Hydrochloric Acid or Muriatic Acid, Isopropyl Alcohol (Manufacturing Strong-Acid Process), **Lead**, **Mercury**, Methanol, **Polychlorinated Biphenyls**, Potassium Alum (dodecahydrate), Potassium Bromide, **Selenium**, Sulfuric Acid, Sodium Carbonate, Sodium Cyanide, Sodium Sulfite, TetrachloroethanB-1,1,2,2 , **Tetrachloroethylene or Perchlorethylene (Perk)**, **Thallium**, Thiosulfates, **Toluene**, Toluene Diisocyanate (Mixed Isomers), **1,1,1-Trichloroethane or Methyl Chloroform**, **Trichloroethylene or TCE**, **Vinyl Chloride**, **Xylene (Mixed Isomers)**

* **Bold** Denotes that contaminant is a National Primary Drinking Water Contaminant

TABLE B-1
POTENTIAL SOURCES OF CONTAMINATION (cont.)

Source	Contaminant*
COMMERCIAL / INDUSTRIAL	
Retail Operations *CONTAM. HAZARD: B*	Acetone, Ammonia, **Arsenic**, **Barium**, **Benzene**, **Cadmium**, Chlorine, **2,4-D**, **1,2-Dichloroethane or Ethylene Dichloride**, Hydrochloric Acid or Muriatic Acid, **Lead**, **Mercury**, Methanol, Naphthalene or K156, Nitric Acid, Phosphoric Acid Ortho-, **Styrene**, Sulfuric Acid, Sodium Cyanide, **Tetrachloroethylene or Perchlorethylene (Perk)**, **Toluene**, **1,1,1-Trichloroethane or Methyl Chloroform**, **Vinyl Chloride**
Underground Storage Tanks *CONTAM. HAZARD: A*	**Arsenic**, **Barium**, **Benzene**, **Cadmium**, **1,4-Dichlorobenzene or P-Dichlorobenzene**, **Lead**, **Trichloroethylene or TCE**
Wholesale Distribution Activities *CONTAM. HAZARD: A*	**Benzene**, **Lead**, **Styrene**, **1,1,1-Trichloroethane or Methyl Chloroform**
Wood Preserving/Treating *CONTAM. HAZARD: B*	Ammoniacal Copper Arsenate, Chromated Copper Arsenic, Creosote, **cis 1,2-Dichloroethylene**, **trans 1,2-Dichloroethylene,** Epoxy, Formaldehyde or K157, **Lead**, Naphthalene or K156, Polyurethane, Sulfate
Wood/Pulp/Paper Processing *CONTAM. HAZARD: A*	Acetone, Ammonia, **Arsenic**, Ammoniacal Copper Arsenate, **Barium**, **Benzene**, **Cadmium**, Chlorine, Chlorine Dioxide, **Carbon Tetrachloride**, Chloroform, Chromated Copper Arsenic, Chromic Acid, **Copper**, Copper Quinolate, **Dichloromethane or Methylene Chloride**, **Dioxin**, **1,2-Dichloroethane or Ethylene Dichloride**, Epoxy, **Ethylbenzene**, Ethylene Glycol, Formaldehyde, K157, Hydrochloric Acid or Muriatic Acid, Isopropyl Alcohol (Manufacturing Strong-Acid Process), **Lead**, **Mercury**, Methanol, Nitric Acid, **Polychlorinated Biphenyls**, Polyurethane, Phosphoric Acid Ortho-, **Selenium**, **Styrene**, Sulfuric Acid, Gas, **Tetrachloroethylene or Perchlorethylene (Perk)**, **Trichloroethylene or TCE**, **Toluene**, **1,1,1-Trichloroethane or Methyl Chloroform**, **Xylene (Mixed Isomers)**

* **Bold** Denotes that contaminant is a National Primary Drinking Water Contaminant

TABLE B-1
POTENTIAL SOURCES OF CONTAMINATION (cont.)

Source	Contaminant*
RESIDENTIAL / MUNICIPAL	
Airports (Maintenance/Fueling Areas) *CONTAM. HAZARD: B*	**Arsenic**, **Barium**, **Benzene**, **Cadmium**, Chlorine, **Carbon Tetrachloride**, cis 1,2- Dichloroethylene, **Dichloromethane or Methylene Chloride**, **Ethylbenzene**, Ethylene Glycol, Freon 113 or 1,1,2-trichloro-1,2,2-trifluoroethane, Hydrochloric Acid or Muriatic Acid, **Lead**, **Mercury**, Sulfuric Acid, **Selenium**, 1,1,2,2-Tetrachloroethane, **Tetrachloroethylene or Perchlorethylene (Perk)**, **1,1,1-Trichloroethane or Methyl Chloroform**, **Trichloroethylene or TCE**, Urea or Carbamide, **Xylene (Mixed Isomers)**
Apartments and Condominiums *CONTAM. HAZARD: A*	**Atrazine**, **Alachlor**, Benomyl, Bromine, Chlorpyrifos, **Coliform bacteria**, ***Cryptosporidium parvum***, Cyanuric Acid, Calcium Hypochlorate, Chlorine, **Diquat**, **Dalapon**, Diazinon, Epoxy, ***Giardia lamblia***, **Glyphosate**, Hydrochloric Acid or Muriatic Acid, Iodine, Isopropanol, ***Legionellae* sp.**, **Nitrate**, **Nitrite**, Nitrosamine, Oxamyl (Vydate), Phosphates, **Picloram**, Sulfate, **Simazine**, Sodium Carbonate, Sodium Hypochlorate, **Vinyl Chloride**, Viruses
Camp Grounds/RV Parks *CONTAM. HAZARD: A*	Benomyl, Chlorpyrifos, **Coliform bacteria**, ***Cryptosporidium parvum***, **Diquat**, **Dalapon**, Diazinon, ***Giardia lamblia***, **Glyphosate**, Isopropanol, ***Legionellae* sp.**, **Nitrate**, **Nitrite**, Nitrosamine, Phosphates, **Picloram**, Sulfate, **Simazine**, Turbidity, **Vinyl Chloride**, Viruses
Drinking Water Treatment *CONTAM. HAZARD: B*	**Atrazine**, **Benzene**, **Cadmium**, **Cyanide**, Flouride, Isopropyl Alcohol (Manufacturing Strong-Acid Process), **Lead**, **Polychlorinated Biphenyls**, Phosphoric Acid Ortho-, Sulfuric Acid, **Tetrachloroethylene or Perchlorethylene (Perk)**, **Toluene**, **Total Trihalomethanes**, **1,1,1-Trichloroethane or Methyl Chloroform**
Golf Courses and Parks *CONTAM. HAZARD: B*	**Arsenic**, **Atrazine**, Benomyl, **Benzene**, **Chlorobenzene**, Chlorpyrifos, **Carbofuran**, **2,4-D**, **Diquat**, **Dalapon**, Diazinon, **Glyphosate**, **Lead**, **Methoxychlor**, **Nitrate**, **Nitrite**, Nitrosamine, Phosphates, **Picloram**, **Simazine**, Turbidity
Housing *CONTAM. HAZARD: A*	**Atrazine**, **Alachlor**, Benomyl, Bromine, Chlorpyrifos, **Coliform bacteria**, ***Cryptosporidium parvum***, Cyanuric Acid, Calcium Hypochlorate, **Carbofuran**, Chlorine, **Diquat**, **Dalapon**, Diazinon, Epoxy, ***Giardia lamblia***, **Glyphosate**, Hydrochloric Acid or Muriatic Acid, Iodine, Isopropanol, ***Legionellae* sp.**, **Dichloromethane or Methylene Chloride**, **Nitrate**, **Nitrite**, Nitrosamine, Oxamyl (Vydate), Phosphates, **Picloram**, **Simazine**, Sodium Carbonate, Sodium Hypochlorate, TetrachloroethanB-1,1,2,2 , **Trichloroethylene or TCE**, Turbidity, **Vinyl Chloride**, Viruses
Injection Wells *CONTAM. HAZARD: B*	**Atrazine**, **Alachlor**, Benomyl, Bromine, Chlorpyrifos, Cyanuric Acid, Calcium Hypochlorate, Chlorine, **Carbofuran**, **cis 1,2-Dichloroethylene**, **trans 1,2-Dichloroethylene, Dichloromethane or Methylene Chloride**, **Diquat**, **Dalapon**, Diazinon, Flouride, **Glyphosate**, Hydrochloric Acid or Muriatic Acid, Iodine, Isopropanol, Methanol, Nitrosamine, Oxamyl (Vydate), Peroxide, Phosphates, **Picloram**, Sulfate, **Simazine**, Sodium Carbonate, Sodium Hypochlorate, 1,1,2,2-Tetrachloroethane, **Tetrachloroethylene or Perchlorethylene (Perk)**, Tin, **Trichloroethylene or TCE**

* **Bold** Denotes that contaminant is a National Primary Drinking Water Contaminant

TABLE B-1
POTENTIAL SOURCES OF CONTAMINATION (cont.)

Source	Contaminant*
RESIDENTIAL / MUNICIPAL	
Landfills/Dumps *CONTAM. HAZARD: B*	**Arsenic**, **Atrazine**, **Alachlor**, Ammonia, **Barium**, Benomyl, **Benzene**, **Cadmium**, Chlorine, Chlorpyrifos, **Carbofuran**, cis 1,2 Dichloroethylene, **Diquat**, Diazinon, Epoxy, Ethylene Glycol, **Glyphosate**, Hydrochloric Acid or Muriatic Acid, Isopropanol, **Lead**, Lindane, **Mercury**, Methane, **1,1,1-Trichloroethane or Methyl Chloroform**, **Dichloromethane or Methylene Chloride**, **Nitrate**, **Nitrite**, Nitrosamine, Oxamyl (Vydate), Peroxide, Phosphates, **Picloram**, **Selenium**, Sulfuric Acid, **Simazine**, 1,1,2,2-Tetrachloroethane, Tin, **Trichloroethylene or TCE**
Public Buildings and Civic Organizations *CONTAM. HAZARD: B*	Acetone, **Arsenic**, **Acrylamide**, **Barium**, **Benzene**, **Beryllium Powder**, **Cadmium**, **Carbon Tetrachloride**, Chlorine, **Chlorobenzene**, Chloroform, **Cyanide**, 2,4-D, **1,2-Dichlorobenzene or O-Dichlorobenzene**, **1,4-Dichlorobenzene or P-Dichlorobenzene**, **Dichloromethane or Methylene Chloride**, **Di(2-ethylhexyl) phthlate**, **1,2-Dichloroethane or Ethylene Dichloride**, **Endothall**, **Endrin**, **1,2-Dibromoethane or Ethylene Dibromide (EDB)**, Formaldehyde or K157, **Lead**, Lindane, **Mercury**, Methanol, **Methoxychlor**, Naphthalene or K156, **Selenium**, Sodium Cyanide, Strychnine, Sulfuric Acid, **Tetrachloroethylene or Perchlorethylene (Perk)**, **Toluene**, Toluene Diisocyanate (Mixed Isomers), **1,1,1-Trichloroethane or Methyl Chloroform**, **Trichloroethylene or TCE**, **Vinyl Chloride**, **Xylene (Mixed Isomers)**
Schools *CONTAM. HAZARD: B*	Acetone, **Arsenic**, **Atrazine**, **Acrylamide**, **Barium**, Benomyl, **Benzene**, **Beryllium Powder**, **Cadmium**, Chlorine, **Chlorobenzene**, Chloroform, Chlorpyrifos, Creosote, **Cyanide**, **Carbon Tetrachloride**, **2,4-D**, Dichloride, **1,2-Dichlorobenzene or O-Dichlorobenzene**, **1,4-Dichlorobenzene or P-Dichlorobenzene**, **Dichloromethane or Methylene Chloride**, **Diquat**, Diazinon, 1,2-Dichloroethane or Ethylene, **Endothall**, **Endrin**, Formaldehyde or K157, **Glyphosate**, Isopropanol, **Lead**, **Mercury**, Methanol, **1,1,1-Trichloroethane or Methyl Chloroform**, Naphthalene or K156, Nitrosamine, Phosphates, **Selenium**, Strychnine, Sodium Cyanide, **Tetrachloroethylene or Perchlorethylene (Perk)**, **Toluene**, Toluene Diisocyanate (Mixed Isomers), **Trichloroethylene or TCE**, **Xylene (Mixed Isomers)**
Septic Systems *CONTAM. HAZARD: B*	**Atrazine**, **Alachlor**, Benomyl, Bromine, Calcium Hypochlorate, **Carbofuran**, Chlorpyrifos, **Coliform bacteria**, ***Cryptosporidium parvum***, Cyanuric Acid, **Diquat**, **Dalapon**, Diazinon, ***Giardia lamblia***, **Glyphosate**, Hydrochloric Acid or Muriatic Acid, Iodine, Isopropanol, ***Legionellae* sp.**, Methane, **Nitrate**, **Nitrite**, Nitrosamine, **Oxamyl (Vydate)**, Peroxide, Phosphates, **Picloram**, Sulfate, **Simazine**, Sodium Carbonate, Sodium Hypochlorate, **Vinyl Chloride**, Viruses
Transportation Corridors *CONTAM. HAZARD: B*	**Dalapon**, **Picloram**, **Simazine**, Sodium, Sodium Chloride

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TABLE B-1
POTENTIAL SOURCES OF CONTAMINATION (cont.)

Source	Contaminant*
RESIDENTIAL / MUNICIPAL	
Utility Stations *CONTAM. HAZARD: B*	Acetone, **Arsenic**, **Atrazine**, **Barium**, **Benzene**, Boric Acid, **Cadmium**, Chlorine, **Chlorobenzene**, Chloroform, Creosote, **Cyanide**, **2,4-D**, **Dalapon**, **1,4-Dichlorobenzene or P-Dichlorobenzene**, **1,2-Dichloroethane or Ethylene Dichloride**, **cis 1,2-Dichloroethylene**, **trans 1,2-Dichloroethylene, Dichloromethane or Methylene Chloride**, Formaldehyde or K157, **Lead**, **Mercury**, Methanol, **Picloram**, **Simazine**, Sodium, Sodium Chloride, Sodium Cyanide, Tin, **Toluene**, 1,1,2,2- Tetrachloroethane, **Tetrachloroethylene or Perchlorethylene (Perk)**, **Trichloroethylene or TCE**, **Xylene (Mixed Isomers)**
Waste Transfer /Recycling *CONTAM. HAZARD: A*	**Coliform bacteria**, ***Cryptosporidium parvum***, ***Giardia lamblia***, ***Legionellae*** **sp., Nitrate**, **Nitrite**, **Vinyl Chloride**, Viruses
Wastewater Treatment *CONTAM. HAZARD: A*	**Cadmium**, Chloroform, **Coliform bacteria**, ***Cryptosporidium parvum***, **cis 1,2-Dichloroethylene**, **trans 1,2-Dichloroethylene, Dichloromethane or Methylene Chloride**, Flouride, ***Giardia lamblia***, Isopropanol, **Lead**, ***Legionellae*** **sp., Mercury**, **Nitrate**, **Nitrite**, **Tetrachloroethylene or Perchlorethylene (Perk) Selenium**, Sulfate, Tin, 1,1,2,2-Tetrachloroethane, **Trichloroethylene or TCE**, **Vinyl Chloride**, Viruses
Wells *CONTAM. HAZARD: B*	**Atrazine**, **Alachlor**, Benomyl, Bromine, Chlorpyrifos, Cyanuric Acid, Calcium Hypochlorate, **Carbofuran**, **Diquat**, **Dalapon**, Diazinon, Flouride, **Glyphosate**, Heptachlor Epoxide, Hydrochloric Acid or Muriatic Acid, Iodine, Isopropanol, **Dichloromethane or Methylene Chloride**, Nitrosamine, **Oxamyl (Vydate)**, Peroxide, Phosphates, **Picloram**, **Simazine**, Sodium Carbonate, Sodium Hypochlorate, Sulfate, TetrachloroethanB-1,1,2,2 , **Tetrachloroethylene or Perchlorethylene (Perk)**, Tin, **Trichloroethylene or TCE**

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TABLE B-1
POTENTIAL SOURCES OF CONTAMINATION (cont.)

Source	Contaminant*
AGRICULTURAL / RURAL	
Auction Lots/Boarding Stables *CONTAM. HAZARD: A*	**Coliform bacteria**, ***Cryptosporidium parvum***, ***Giardia lamblia***, ***Legionellae*** **sp., Nitrate**, **Nitrite**, Sulfate
Confined Animal Feeding Operations *CONTAM. HAZARD: A*	**Coliform bacteria**, ***Cryptosporidium parvum***, Freon 113 or 1,1,2-Trichloro-1,2,2-trifluoroethane, ***Giardia lamblia***, ***Legionellae*** **sp., Nitrate**, Nitric Acid, **Nitrite**, Sulfate, **Vinyl Chloride**, Viruses
Crops - Irrigated + Nonirrigated *CONTAM. HAZARD: B*	Acetone, Ammonia, **Benzene**, **2,4-D**, **Dalapon**, **Dinoseb**, **Diquat**, **Glyphosate**, Lindane, **Lead**, **Nitrate**, **Nitrite**, Phosphoric Acid Ortho-, **Picloram**, **Simazine**, Sulfuric Acid, Turbidity
Injection Wells *CONTAM. HAZARD: B*	**Atrazine**, **Alachlor**, Benomyl, Bromine, Calcium Hypochlorate, **Carbofuran**, Chlorpyrifos, Cyanuric Acid, Chlorine, **Dalapon**, Diazinon, **cis 1,2-Dichloroethylene**, **trans 1,2-Dichloroethylene, Dichloromethane or Methylene Chloride**, **Diquat**, **Glyphosate**, Hydrochloric Acid or Muriatic Acid, Iodine, Isopropanol, Methanol, Nitrosamine, **Oxamyl (Vydate)**, Peroxide, Phosphates, **Picloram**, Sulfate, **Simazine**, Sodium Carbonate, Sodium Hypochlorate, 1,1,2,2-Tetrachloroethane, **Tetrachloroethylene or Perchlorethylene (Perk)**, **Trichloroethylene or TCE**, Tin
Lagoons and Liquid Waste *CONTAM. HAZARD: A*	**Atrazine**, **Alachlor**, **Coliform bacteria**, ***Cryptosporidium parvum***, **Carbofuran**, **Diquat**, **Dalapon**, ***Giardia lamblia***, **Glyphosate**, ***Legionellae*** **sp.**, Methane, **Nitrate**, **Nitrite**, **Oxamyl (Vydate)**, **Picloram**, Sulfate, **Simazine**, **Vinyl Chloride**, Viruses
Managed Forests *CONTAM. HAZARD: B*	**Atrazine**, **Diquat**, Benomyl, Chlorpyrifos, Diazinon, **Glyphosate**, Nitrosamine, Phosphates, **Picloram**, **Simazine**, Turbidity
Pesticide/Fertilizer/Petroleum Storage *CONTAM. HAZARD: B*	**Atrazine**, **Alachlor**, Benomyl, Chlorpyrifos, **Carbofuran**, **Chlordane**, **2,4-D**, **Diquat**, **Dalapon**, Diazinon, **1,2-Dibromo-3-Chloropropane or DBCP**, **Glyphosate**, **Nitrate**, **Nitrite**, Nitrosamine, **Oxamyl (Vydate)**, Phosphates, Phosphorus, **Picloram**, Strychnine, **Simazine**, 2,4-TP (Silvex)
Rural Homesteads *CONTAM. HAZARD: A*	**Atrazine**, **Alachlor**, Benomyl, Bromine, Calcium Hypochlorate, **Carbofuran**, Chlorine, Chlorpyrifos, **Coliform bacteria**, ***Cryptosporidium parvum***, Cyanuric Acid, **cis 1,2-Dichloroethylene**, **trans 1,2-Dichloroethylene, Diquat**, **Dalapon**, Diazinon, ***Giardia lamblia***, **Glyphosate**, Hydrochloric Acid or Muriatic Acid, Iodine, Isopropanol, ***Legionellae sp.*****, Nitrate**, **Nitrite**, Nitrosamine, **Oxamyl (Vydate)**, Phosphates, **Picloram**, Sulfate, **Simazine**, Sodium Carbonate, Sodium Hypochlorate, **Vinyl Chloride**, Viruses
Naturally Occurring *CONTAM. HAZARD: B*	**Antimony**, **Arsenic**, **Barium**, **Cadmium**, Chloride, Chromium, **Coliform**, Copper, ***Cryptosporidium parvum***, Fluoride, ***Giardia lamblia***, Iron, **Lead**, ***Legionellae sp.*****,** Manganese, **Mercury**, **Nickel**, Radionuclides, **Selenium**, Silver, Sodium, Sulfate, Zinc

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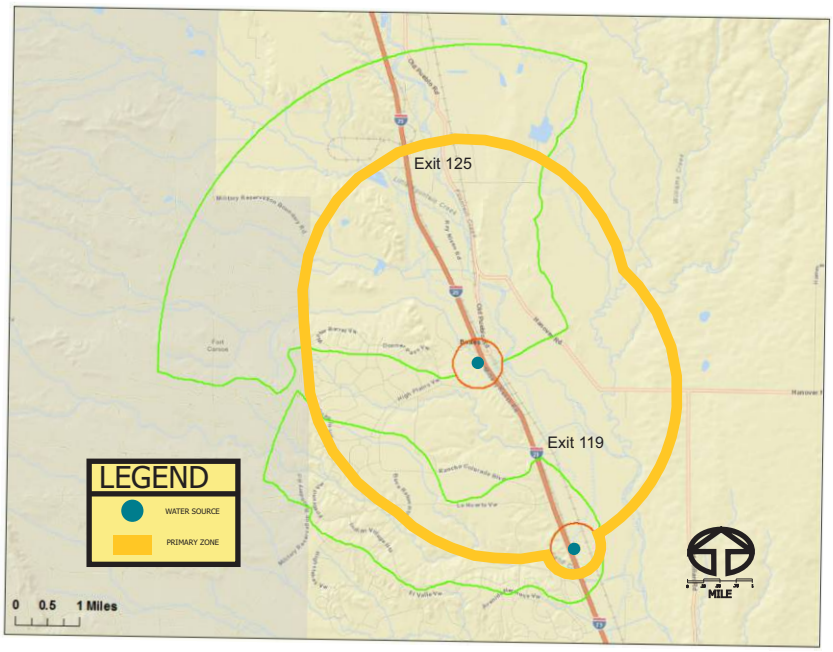
TABLE C-1
CONTAMINANT TYPES ASSOCIATED WITH DISPERSED CONTAMINANT SOURCES

Dispersed Contaminant Source Type	Acute Health Concerns							Chronic Health Concerns									Aesthetic Concerns
	Miroorganisms	Nitrate/Nitrite	Pesticides	Semi-volatile Organic Compounds (SVOCs)	Volatile Organic Compounds (VOCs)	Lead	Ammonia / Nitric Acid	Herbicides	Pesticides	Volatile Organic Compounds (VOCs)	Non-metal Inorganic Compounds	Metals - Primary Drinking Water (other than lead)	Radionuclides	Turbidity	Other Inorganic Compounds	Other Organic Compounds	Secondary Drinking Water Contaminants
LAND USES:																	
Commercial / Industrial / Transportation		x	x	x	x	x	x	x	x	x		x			x	x	x
High Intensity Residential	x	x	x					x	x					x	x	x	
Low Intensity Residential	x	x	x					x	x					x	x	x	
Urban Recreational Grasses		x	x					x	x					x	x	x	
Quarries / Strip Mines / Gravel Pits					x	x	x					x		x	x		x
Row Crops		x	x				x	x	x					x	x		
Fallow														x			
Small Grains		x	x				x	x	x					x	x		
Pasture / Hay	x							x	x					x			
Orchards / Vineyards / Others		x	x				x	x	x					x	x		
Deciduous Forest	x							x	x					x			
Evergreen Forest	x							x	x					x			
Mixed Forest	x							x	x					x			
OTHER TYPES:																	
Septic Systems	x	x	x				x	x	x						x		
Oil & Gas Wells																	x
Road Miles	x	x	x	x	x		x	x	x	x	x		x	x	x	x	x

Wigwam Mutual Water Company
Public Water System ID# CO 0121470
2454 Waynoka Road
Colorado Springs, Colorado 80915

Business Address:	**2454 Waynoka Road** **Colorado Springs, Colorado 80915**
Mailing Address:	**P.O. Box 75656** **Colorado Springs, Colorado 80970**
Business Phone:	**719.638.0456**
Field Operations Phone:	**719.638.0456 Key 3**

- **Groundwater system - 2 wells - 1 well field**
- **Fountain Creek alluvium and Sand Creek**
- **Notify Water Provider of: any major accident that has the potential to create a water issue, leaking storage tanks, spills, broken pipes, serious issues from runoff causing visible water quality issues in Fountain Creek, on or off Interstate 25 from Exit 123 to Exit 116, 2.5 miles on either side of Interstate.**



SOURCE: SMITH & CALLAGHAN

Important Contact Information

Emergency Phone:	**719.491.1666**
CDPHE Env. Release Center	**1-877-518-5608**
El Paso County Dispatch (emergency)	**911**
El Paso County Emergency Service Division	**719.390.5555**