

Strategic Plan for the Fountain Creek Watershed



Prepared by the Fountain Creek Vision Task Force

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Available online at www.fountain-crk.org

PREFACE

The Fountain Creek Visioning Task Force, begun under the leadership of El Paso County Commissioner Sallie Clark and Pueblo County Commissioner Loretta Kennedy, created the framework for one of the most progressive and collaborative initiatives in the State of Colorado. Recognizing that issues on Fountain Creek had come to a critical point, leaders in both counties began a discussion that has led to the drafting and signing of an Intergovernmental Agreement between Pueblo and El Paso Counties and municipalities within both jurisdictions.

The Fountain Creek Visioning Task Force initially created three subcommittees devoted to remedying excessive water flows, improving water quality and exploring land use issues that contribute to these problems. Later, a subcommittee to develop ways to fund an entity dedicated to Fountain Creek, was established. Though the process took two and a half years to complete, it encompassed the hopes and dreams of citizens in both counties to make Fountain Creek an amenity that can be enjoyed by all.

Not only will the entity address the major issues of water quantity and quality, but also how to make this stretch of land between Colorado Springs and Pueblo a recreational and educational area that will sustain the Creek. Where the entity will take the vision in the future is in the hands of those appointed to the Board of Directors. But we are sure that it will continue to develop creative ways to keep Fountain Creek vital and an invaluable link between two great communities.

Sallie Clark
El Paso County Commissioner

Jeff Chostner
Pueblo County Commissioner

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Note: Due to the size of the appendices, they have been posted on the website separately from the rest of the Strategic Plan to facilitate downloading.

INTRODUCTION

The Fountain Creek Vision Task Force was a collaborative effort of government officials, advocacy groups, and residents in three counties in southern Colorado working together to restore a neglected watershed, create a shared natural amenity, and bring their communities together. Task Force participants brought their respective aspirations, perspectives, experiences, and knowledge to bear on the many challenges facing the watershed. Managed by the 29-member Consensus Committee, participants in the Task Force came together in working groups to address issues of water quality, water quantity, and land use and environment. The working groups met monthly for more than two years, inviting expert speakers from local, state, and federal agencies and non-governmental organizations to provide data and other information as context to inform their discussions. When it became clear that the solutions for Fountain Creek would require additional funding and more dedicated management than what was currently available, the Consensus Committee created a working group to identify the best approach to address those issues as well. The Fountain Creek Vision Task Force Strategic Plan is the final work product of all these groups. It is a road map to improved conditions and enhanced opportunities throughout the watershed.

Participation in the Process

Participation in all working groups was open to the public. More than 60 people who were not part of the Consensus Committee participated regularly in working group meetings. Many of these individuals represented various government entities, but several were unaffiliated residents of the watershed with a sincere interest in restoring Fountain Creek.

The Consensus Committee served as the decision-making for the Task Force. The following entities had seats on the Consensus Committee:

Counties	El Paso
	Pueblo
	Teller
Municipalities	Colorado Springs
	Fountain
	Palmer Lake
	Pueblo
Councils of Governments	Pikes Peak Area Council of Governments (Board members & staff)
	Pueblo Area Council of Governments (Board members & staff)
Advocacy Groups	Colorado Open Lands
	Colorado Progressive Coalition (on behalf of residents of Pueblo's East Side)
	Sierra Club
Ranching Community	Arkansas River Basin ranchers
	El Paso County ranchers along Fountain Creek
	Pueblo County ranchers along Fountain Creek
Water Management Agencies	Colorado Springs Utilities
	El Paso County Water Authority
	Fountain Utilities

	Lower Arkansas Valley Water Conservation District
	Pueblo Board of Waterworks
Colorado's Congressional Delegation	Senator Salazar's office
	Senator Allard's office
	Congressman Lamborn's office
	Congressman Salazar's office
Other Entities	Colorado State Parks
	Fountain Creek Technical Advisory Committee
	US Department of Defense

Preparation of the Plan

The Strategic Plan is a collaborative document, written by stakeholders in the Fountain Creek Watershed. These stakeholders came from a variety of perspectives and backgrounds, but each contributed to the preparation of the final Strategic Plan. This Plan benefited greatly from the leadership of the Consensus Committee and the ongoing working group participation and commitment of the following individuals. *Individuals who served on the Consensus Committee are indicated by an asterisk (*). Some entities changed their representatives to the Consensus Committee during the course of the Task Force process.*

Kathy Andrew	El Paso County Environmental Services
Tom Autobee*	Pueblo Board of Water Works
Dick Anderwald	City of Colorado Springs – Dept. of Community Development
Carol Baker	Colorado Springs Utilities
Gary Barber*	El Paso County Water Authority
Mary Barber*	Fort Carson
Dan Bare	City of Colorado Springs
Jeff Besse	City of Colorado Springs – Stormwater Drainage Team
Elise Bergsten	Cross Creek Metropolitan District
Vickie Broerman*	Senator Wayne Allard
Chris Butler	CH2M HILL
Stephanie Carter	Department of the Army – Fort Carson
Jeff Chostner*	Pueblo County Board of County Commissioners
Sallie Clark*	El Paso County Board of County Commissioners
John B. Cordova, Sr. *	Pueblo County Board of County Commissioners
Scott Cowan	Pueblo City/County Health Department
Todd Dahlberg	Colorado Springs Utilities
Barbara Dallemand	El Paso County Public Service Department – Stormwater Program
Pat Edelmann	US Geological Survey
Ron Ensero	URS Corporation
Danny Elsner	Matrix Design Group
Paul Fanning	Pueblo Board of Water Works
Mike Fink	City of Fountain Water Resources
Ferris Frost	Landowner
Dwight Gardner	Senator Salazar
Juliet Glass	El Paso County Public Services Dept – Environmental Services
Mark Glidden	CH2MHILL

Jane Green*	Landowner
Kim Headley*	Pueblo County Department of Planning and Development/PACOG
Dan Henrichs*	Land Owner
Dennis Hisey*	El Paso County Board of County Commissioners
Jeri Howells*	Mayor - Fountain
Amber Jack	El Paso County Public Services Dept. – Environmental Services
Juniper Katz*	Colorado Open Lands
Neil Katz	El Paso County Parks
Brian Kay	El Paso County Parks
Sarah Keith	City of Colorado Springs, Parks, Recreation, and Cultural Services
Loretta Kennedy*	Congressman John Salazar
Irene Kornelly	Citizen
Carole Lange	Carole Lange and Associates, LLC
Dennis Maroney*	City of Pueblo Stormwater Utility
Bruce McCormick*	Colorado Springs Utilities
Gene Michael	Pueblo Wastewater Department
Rex Miller*	Landowner
Bob Miner*	Town of Palmer Lake Watershed Study
Margaret Montano*	Colorado Progressive Coalition
Rich Muzzy*	Pikes Peak Area Council of Governments
Annie Oatman-Gardner*	Senator Salazar
Vera Ortegon*	City of Pueblo City Council
Sal Pace*	Colorado State Representative
Larry Patterson*	City of Fountain
Julie Pearson	City of Colorado Springs
Cynthia Peterson	AWARE Colorado
Nancy Prieve	El Paso County Public Services Dept. – Environmental Services
Joe Rall	Congressman Lamborn
Gary Rapp	Recycling Coalition of Colorado Springs
Sandy Rayl	US Army Corps of Engineers
Tom Ready*	Colorado State Parks Board
Kathleen Reilly	Colorado Department of Public Health and Environment
Jane Rhodes*	Landowner on Fountain Creek in Pueblo County
Lisa Ross	City of Colorado Springs – Stormwater Enterprise
Ken Sampley	City of Colorado Springs
Kirsta Scherff-Norris	Colorado Springs Utilities
Richard Skorman*	Director, Colorado Springs Conservation Corps
Larry Small*	Colorado Springs Vice Mayor
Graham Thompson	Matrix Design Group
Ryan Tefertiller	City of Colorado Springs – Dept. of Community Development
Allen Ward	Pueblo Board of Water Works
Thomas Warren*	Ft Carson
Barb Vidmar*	Pueblo City Council
Tim Williams	Pueblo City/County Department of Health
Jay Winner*	Lower Arkansas Valley Water Conservation District
Ross Vincent*	Sierra Club

Heather Bergman and Niki Koszalka of The Keystone Center provided facilitation and record-keeping services for the Task Force. The maps provided in Appendix A were prepared by Jim Houk of Thomas and Thomas.

I. MISSION AND VISION

Mission

The members of the Fountain Creek Vision Task Force have come together to turn the Fountain Creek watershed into a regional asset that adds value to our communities. We are working to create a healthy waterway with appropriate erosion, sedimentation, and flooding that supports diverse economic, environmental, and recreational interests. We will cooperate to enhance and protect Fountain Creek, promoting sustainable use by members of our watershed community and by the visitors we know this wonderful natural amenity will attract.

Vision

Our vision for the Fountain Creek watershed is a strong, resilient, and sustainable ecosystem that supports a variety of interests and activities. Our vision includes a number of issues:

- In terms of water quality, we see a waterway that supports fish and other aquatic species, is safe for recreation, and protects public health.
- Regarding water quantity, we see successful stormwater management to better control flooding and erosion.
- For the larger natural environment, we see healthy, contiguous habitat for a diversity of wildlife species, including the threatened and endangered species that make their homes here. We envision migration corridors into and out of the watershed, allowing species safe and free movement from north to south and from east to west throughout the region.
- With respect to land use planning, we see great opportunities for recreation, including a state park and an integral part of the Front Range Trail. We expect residents and visitors alike to engage in biking, hunting, cycling, fishing, birding, cross-country skiing, camping, and other activities that foster healthy lifestyles and a greater quality of life. We will continue to respect landowners' rights and envision ongoing opportunities for sustainable agriculture and ranching and responsible growth. We anticipate thoughtful and sustainable development that benefits local economies, supports Ft. Carson, encourages the creation of local jobs, builds neighborhoods and neighbors, promotes alternative transportation, and provides green infrastructure and ecosystem services. Throughout the watershed, we envision open space parks and other green areas that connect our residents but separate our cities, allowing each community to create and sustain its own visual and cultural identity.
- Our vision entails achieving all of these things for the entire Fountain Creek watershed. However, we acknowledge that doing so might not be possible or practical in every case and that some vision elements may be confined by necessity to Fountain Creek itself.
- Our vision for the work of the Task Force is to model successful collaboration in watershed clean-up and stewardship. We hope to demonstrate that by working together and striking a balance between short-term and long-term thinking, communities can create and realize a shared vision, turn problems into opportunities, and choose their own future. Solutions that benefit different communities, different species, and different land

uses are possible, and working together to find and implement them empowers communities and creates lasting relationships. We know it is our responsibility to educate the public about our work and promote sound community stewardship of the watershed.

II. FUNDING AND LONG-TERM MANAGEMENT OF THE WATERSHED

In order to accomplish the many goals that are outlined in this strategic plan for Fountain Creek, the Fountain Creek Vision Task Force determined that a funding and management entity must be created to provide leadership and resources in the implementation process. For this reason, the Task Force is recommending that the Colorado State Legislature create the Fountain Creek Watershed Drainage, Flood Control, and Greenway District. The details of this district are outlined in the Inter-Governmental Agreement (IGA) below. Key elements of the district are summarized below.

1. Creation of a **9-member Governing Board** as follows:

Board Member	Appointed By
Pueblo County	Pueblo County
El Paso County	El Paso County
City of Pueblo	City of Pueblo
City of Colorado Springs	City of Colorado Springs
City of Fountain	City of Fountain
Lower Arkansas Valley Water Conservation District	Pueblo County
Small Municipalities in El Paso County or Citizen of El Paso County	City of Colorado Springs and El Paso County
Pueblo County Citizen-at-Large	City of Pueblo and Pueblo County
Member of the Citizen Advisory Group (see below)	El Paso County and Pueblo County

2. Creation of a **taxing district** to receive and/or raise matching funds for projects and maintenance; the district would include all of Pueblo and El Paso Counties and is subject to a vote of the citizens of those counties.
3. Creation of a **Citizens Advisory Group (CAG)** to bring the voices and ideas of residents of the watershed to the deliberations of the Governing Board.
 - Purpose of the CAG:
 - Establish and maintain strong communication with interest groups, communities and stakeholders by serving as a public sounding board for the District Board, providing an opportunity for both the cooperative exchange of information, emerging issues, new ideas and approaches, dissemination of watershed information, as well as early resolution of problems.

- Assist in the creation, review and prioritization of management strategies and projects
 - Participation on the annual audit committee for the district.
 - Membership on the CAG will include at a minimum the following representation, not to exceed 15 members:
 - Property owners on Fountain Creek south of Fountain
 - City of Pueblo residents (East Side)
 - Arkansas Basin ranchers/farmers/agricultural water interests
 - Land conservation nonprofit organizations (Colorado Open Lands, Palmer Land Trust, etc)
 - Recreation interests (State Parks, Trails and Open Space Coalition)
 - Environmental groups (Sierra Club, Trout Unlimited, Clean Water Action)
 - Potential funding partners (Fountain Creek Foundation, El Pomar)
 - Citizen-at-large
 - Citizen-at-large
 - Business stakeholders
4. Creation of a **Technical Advisory Committee (TAC)** to ensure thoughtful and informed discussion on technically complex issues. Membership on the TAC will be as follows:
- Six technical representatives, one each from El Paso County, City of Colorado Springs, City of Fountain, Pueblo County, City of Pueblo, and the Lower Arkansas Valley Water Conservation District..
 - As needed, additional technical experts who are knowledgeable on the key issue areas in the Strategic Plan (water quality, flood control, land use planning, wetlands, wildlife, recreation, agriculture, and municipal water) and/or representatives of state and federal agencies with similar expertise.

Commitment to Ongoing Collaborative Planning

Stakeholders in the Fountain Creek Vision Task Force have spent countless hours over the last three years working together to craft not only a vision for the watershed but also a specific plan for realizing that vision. This collaborative effort has been monumental, bringing together government entities, advocacy groups, and residents together to create a something that will lead to fundamental change and improvements along Fountain Creek.

Once the work of the Task Force is completed, the participants in the Task Force are committed to continuing to work together to see that the plan is implemented to the fullest extent possible. A key component of successful implementation will be the creation of the Fountain Creek Watershed Flood Control, Drainage, and Greenway District, a funding and management entity to oversee projects and improvements along the creek. In the unfortunate event that the District does not pass and is unable to generate funds for implementation, the participants in the Task Force will continue to meet regularly and discuss issues pertaining to Fountain Creek. They will work through existing avenues to find funding for projects and to implement the Strategic Plan.

III. WATER QUALITY AND SEDIMENTATION

A. Current Conditions

Introduction

Having good water quality is very important to human health, to fish, and to quality of life. It makes water usable for wildlife and habitat preservation, recreation, drinking water supply, crop irrigation, and industry. Water quality is affected by the activities of people, by wild and domestic animals and by natural causes.¹

The United States Geological Survey (USGS) collects water quality information at several locations in the Fountain Creek watershed. Some of the data can be accessed at <http://www.dwr.state.co.us>. Additional links and information on data can be found in the Appendix.

Unregulated Pollutants

The Colorado Water Quality Control Commission (CWQCC) recognizes that excessive salinity and suspended solids can be detrimental to water quality, but has not assigned specific numeric standards to either salinity or suspended sediment in the Arkansas River Basin². Agricultural agencies and water quality planning agencies should coordinate regarding additional water quality information about impacts at specific concentration levels.

Emerging contaminants (ECs) are chemicals that recently have been shown to be present in numerous water bodies throughout the United States. Some of these substances may represent a potential environmental or public health risk, although adequate data do not yet exist to determine which substances pose a risk, or how significant that risk might be. ECs come from products that are used every day in our homes, farms, or businesses, and include detergents, fragrances, prescription and non-prescription drugs, disinfectants, and pesticides.³

Standards and Classifications

Colorado streams are divided into individual stream segments for classification and protection of designated uses (aquatic life, recreation, agriculture, etc). Streams are divided into segments at some easily defined geographic point, or at a point where some physical or chemical factor changes the character of the watercourse significantly. Colorado, not the US Environmental Protection Agency (EPA), has the primary responsibility for setting water quality standards.

The Surface Water Standards and Classifications Reviews occur once every five years. These are regulatory hearings where the Colorado Water Quality Control Commission decides whether changes in stream segmentation, designated uses, or stream standards are needed. These reviews are conducted for each of the five major river basins. Under the Clean Water Act, every state must adopt water quality standards to protect, maintain, and improve the quality of the nation's

¹ In this report, "water quality" means the amounts of pollutants (chemicals, bacteria, etc.) in the water, as measured by scientific tests approved by the U.S. Environmental Protection Agency (EPA), and compared against water quality standards in Colorado regulations.

² Colorado Water Quality Control Commission (CWQCC). 2007. Regulation No. 31: The Basic Standards and Methodologies for Surface Water. Title 5, Colorado Code of Regulations, 1002-31.

³ More information on ECs can be found at <http://toxics.usgs.gov/regional/emc/index.html>

waters. These standards represent a level of water quality that will support the classification use (e.g. Cold Water Aquatic Life, Warm Water Aquatic Life, Recreation, Water supply, etc.) of the stream segments. Fountain Creek is located in the Arkansas River Basin, and designated uses and stream standards for all waters within the Arkansas Basin are contained in Regulation #32 of the Colorado Department of Public Health and Environment (CDPHE). The Arkansas River Basin Rulemaking Hearing (CDPHE Regulation #32) was last held in July 2007, and the next Rulemaking Hearing for the Arkansas River Basin is expected in 2012. Data Analysis for the Basin Hearings will occur from the fall of 2010 through the winter 2012. A copy of Regulation #32 can be found at: <http://www.cdphe.state.co.us/regulations/wqccregs/index.html>. The tables for the Arkansas River Basin show that the Fountain Creek Watershed (page 11-12) is broken down into eleven different stream segments. Specific water quality standards are listed for each of these stream segments and if they are not maintained then a stream or stream segment can be placed on the state's list of water quality impaired stream segments (known as the "303(d) list"). To protect a waterbody's classified uses, the state sets both numerical and water quality standards. Narrative standards describe the water quality goals for all state surface waters in a list of six general statements. Numeric standards set the maximum acceptable concentrations of specific pollutants in streams, lakes, and reservoirs.⁴

Water Quality Impaired Stream Segments (303(d) List)

Section 303(d) of the federal Clean Water Act requires states to prepare and submit a list to the EPA listing waters that do not meet water quality standards. This is used to set priorities for pollution controls. Any stream where water quality standards are not attained must be placed on the state's 303(d) list. *E. Coli* is listed on the 303(d) list as a high priority for Upper Fountain Creek and the mainstem of Fountain Creek from the confluence of Fountain Creek and Monument Creek to the Highway 47 bridge in Pueblo. Selenium is listed as a low priority for Upper Fountain Creek (upstream from the confluence with Monument Creek), the mainstem of Fountain Creek from the Highway 47 bridge in Pueblo to the confluence with the Arkansas River, and Monument Creek. More information regarding the 303(d) list can be found at <http://www.cdphe.state.co.us/wq/Assessment/TMDL/tmdlmain.html>. Once a segment is listed on the 303(d) list, a Total Maximum Daily Load (TMDL) is required to be developed, or if all sources can be identified and treated and sampling shows that concentrations are below the established stream standards, then it can be de-listed. A TMDL is a mechanism to allocate pollutant loads, or potential pollutant loads, among all identified sources in a manner that the combined discharges do not cause the water quality standards for a given water body to be exceeded under existing and future conditions.⁵

There are currently no regulations or policies controlling sediment. Although sediment is not currently regulated by quantifiable standards, some general language within the State of Colorado's Basic Standards and Methodologies for Surface Waters asserts that, "state surface waters shall be free from substances attributable to human-caused point source or non-point source discharge in amounts, concentrations, or combinations which...can settle to form bottom deposits detrimental to the beneficial uses. Depositions are stream bottom buildup of materials

⁴ Colorado Foundation for Water Education, 2003. Citizen's Guide to Colorado Water Quality Protection

⁵ Pikes Peak Area Council of Governments. 2004. Water Quality Management (208) Plan 2003 Update. [Online] Available <http://www.ppacg.org>

which include but are not limited to anaerobic sludges, mine slurry or tailings, silt, or mud...”⁶ Therefore, general regulation currently governs sediment loads within the watershed; however, in the near future this could become a more prominent, numeric constraint.

Stream segments that lack sufficient information to determine the source of pollution, but where there are still concerns with attaining water quality standards, are placed on the Monitoring and Evaluation portion of the state’s 303(d) List. Sediment within the Fountain Creek watershed has been identified by CWQCC as a concern for three tributaries to Fountain Creek (Bear Creek, Fourmile Creek and Cheyenne Creek) on the 2008 303(d) Monitoring and Evaluation list. This regulation identifies water bodies that may have water quality problems. However, uncertainty within various evaluation criteria necessitates further evaluation. A determination as to whether or not these waters are to be considered impaired will be made within ten years after their placement on the Monitoring and Evaluation List.

Bacteria

Bacteria are very small, single-celled life-forms that exist everywhere. There are many different types of bacteria, and some types can cause illness in people. Two types of bacteria, fecal coliforms and *E. Coli* (a specific type of fecal coliform bacteria), are used to monitor the possible presence of disease-causing organisms in surface waters. These bacteria, called indicator bacteria, are present in high numbers in the intestines of humans. Wildlife (deer, elk, ducks, geese), livestock (cattle, horses), and domestic animals (dogs, cats) also carry *E. Coli* and fecal coliform bacteria. This is true for both healthy people and animals and for those that are ill. Pathogenic microorganisms that can cause human disease may be present where levels of indicator bacteria are high. As a result, it might be unsafe to swim or wade in Fountain Creek when levels of indicator bacteria are high, although it is difficult to determine if high levels of bacteria directly cause an individual to become sick. The Centers for Disease Control and most states track the incidence of bacterial infections of the type that are expected to result from ingesting contaminated water while swimming. In addition, epidemiology data provide information relevant to determining the likelihood that a given illness might be related to recreational exposure to Fountain Creek water. However, there is no mechanism to determine definitively whether people are getting sick because of exposure to high levels of bacteria in the creek or for some other reason. More information regarding *E. Coli* can be found on the Centers for Disease Control and Prevention website (<http://www.cdc.gov/>).

The standards are 200 fecal coliform bacteria per 100 milliliters of water, or 126 *E. Coli* bacteria per 100 milliliters of water. The EPA estimates that at these levels, for each 1,000 people exposed, eight may become ill. Monitoring conducted by the Pueblo City/County Health Department shows that bacteria frequently exceed water quality standards in Fountain Creek, especially in summer and after storms. Indicator bacteria also occur in sediments in Fountain Creek, but because there are no water quality standards for bacteria in sediments, it is difficult to say whether the bacterial numbers in Fountain Creek sediments are unusually high. The amount of bacteria that exists in sediment is difficult to determine because it is impossible to capture all the bacteria in the sediment, and it is difficult to get accurate and consistent measurements. More work needs to be conducted in order to determine the amount of *E. Coli* in the bed

⁶ CWQCC. 2007.

material. Unfortunately, most studies regarding the amount of *E. Coli* present in sediments have been limited to beaches. (<http://www.utoledo.edu/as/lec/pdfs/ecoli.pdf>)

Bacteria levels in water appear to be directly related to flows and water temperature. When flows are high, like after a summer storm, higher bacteria levels are found in Fountain Creek during and for a few days after the storm. Sources of bacteria could include raw sewage spills, storm runoff from urban areas, wildlife (deer, elk, geese), livestock (cattle, horses, pigs, poultry), and runoff from farms, ranches, and open areas. Colorado State University-Pueblo and the U.S. Geological Survey (USGS) are conducting studies using DNA from *E. Coli* bacteria in Fountain Creek to determine whether they come mostly from people or mostly from animals. Identifying the main sources of bacteria may make it possible to reduce bacteria levels in Fountain Creek so that standards are attained. In addition, a cooperative study between the USGS, Colorado Springs Utilities, the City of Colorado Springs, and the Colorado Department of Public Health and Environment is being conducted on Upper Fountain Creek from Green Mountain Falls to the confluence of Fountain Creek and Monument Creek to identify sources of *E. Coli*.⁷

Selenium

Selenium is a natural element. There is an unusually large amount of selenium in the Pueblo County portion of the Fountain Creek watershed, substantially more than is found in most areas. High concentrations of selenium are found in the bedrock and soils underlying Fountain Creek and its tributaries. Selenium is picked up by surface water and groundwater as it flows over or through the soils and bedrock, resulting in increased amounts of selenium in the water. Because of these factors, Fountain Creek between Pin n Road and the Arkansas River consistently exceeds the water quality standard.

When animals eat, they take in materials like selenium from the environment. Unlike other substances, the selenium that is not used as a nutrient does not pass out of the body. Instead, excess selenium is stored in body tissues. This is called “bioaccumulation.” High levels of selenium in body tissue can cause birth defects in fish and birds. Water quality standards in

⁷ Bossong, Clifford R. 2001. Summary of Water-Quality Data, October 1987 through September 1997, for Fountain and Monument Creeks, El Paso and Pueblo Counties, Colorado. U.S. Geological Survey. Water-Resources Investigation 2000-4263. [Online] Available: <http://www.fountain-crk.org>; CWQCC 2007; Colorado Water Quality Control Commission. 2007. Regulation No. 32: Classifications and Numeric Standards for Arkansas River Basin. Title 5, Colorado Code of Regulations, 1002-3; Edelmann, Patrick, S.A. Ferguson, R.W. Stogner Sr., M. August, W.F. Payne, and J.F. Bruce. 2002. Evaluation of Water Quality, Suspended Sediment, and Stream Morphology with an Emphasis on Effects of Stormwater on Fountain and Monument Creek Basins, Colorado Springs and Vicinity, Colorado, 1981-2001. U.S. Geological Survey. Water-Resources Investigation 2002-4104. . [Online] Available: <http://infotrek.er.usgs.gov/pubs/>; Fountain Creek Vision Task Force Water Quality Working Group Update, February 23, 2007. Coliform bacteria and *E. Coli* updates presented by Dr. Don Stoeckel, U.S. Geological Survey; Dr. Brian Vanden Heuvel, Colorado State University – Pueblo; and Mr. Scott Cowan, Pueblo City/County Health Department; Mau, David P.; Stogner, Robert W., Sr.; Edelmann, Patrick. 2007. Characterization of Stormflows and Wastewater Treatment-Plant Effluent Discharges on Water Quality, Suspended Sediment, and Stream Morphology for Fountain and Monument Creek Watersheds, Colorado, 1981-2006. U.S. Geological Survey. Water-Resources Investigation 2002-5104. [Online] Available: <http://infotrek.er.usgs.gov/pubs/>

Fountain Creek were established to protect fish and other wildlife, and the high levels of selenium in lower Fountain Creek are potentially harmful to fish, insects, and birds that nest and feed along the creek. Fish studied in 2005 and 2006 at several locations in Fountain Creek, in the Arkansas River, and in other tributaries in the Arkansas Basin showed no evidence of birth defects due to selenium. This study found that numbers and types of fish and aquatic insects were lower at a site in the Wildhorse Creek basin where the selenium concentrations were highest. No effects on fish health or on fish or insect populations caused by selenium were found to occur in the locations studied on Fountain Creek.⁸

The original selenium standard for Fountain Creek was very low, based on the assumption that selenium can harm wildlife. However, in 2007, the selenium standard was changed to the naturally occurring selenium concentration in the creek, based on the results of studies that demonstrate that natural, geological sources are the principal sources of selenium in portions of Segment 2b of Fountain Creek (Highway 47 Bridge to Confluence of Fountain Creek and Arkansas River). Segment 2a of Fountain Creek (confluence of Fountain Creek and Monument Creek to Highway 47 bridge) is on the 2008 303(d) Monitoring and Evaluation List for selenium. In addition, it was found that Fountain Creek carries high concentrations of sulfate. Sulfate decreases the adverse effects of selenium. Sulfate is also a natural substance found in bedrock. Because selenium is so widespread, and because it is difficult for regulatory programs to address natural sources of pollutants, the Fountain Creek Vision Task Force has not formulated specific strategies to address selenium.⁹

Selenium is listed on Segment 6, Monument Creek, of the 2008 303(d) List for the portion of Monument Creek below Mesa Road, because it isn't meeting the chronic standard. A Monument Creek Selenium Study was performed by Colorado Springs Utilities in 2004-2005 to evaluate the levels of selenium in Monument Creek and investigate potential sources of selenium. The Water Quality Control Division (WQCD) reviewed the data gathered during this study and other efforts and determined that the reach of Monument Creek from Palmer Lake to the confluence with Fountain Creek was meeting the standard except for a small section below Mesa Road. It is possible that future discharges from the J.D. Phillips Water Reclamation Facility in Colorado

⁸ Canton, Steven P., and L. Wall. 2007. Aquatic Biological Monitoring and Selenium Investigation of the Arkansas River, Fountain Creek, Wildhorse Creek, and the St. Charles River, Project 062750. GEI Consultants, Inc., Chadwick Ecological Division, Littleton, CO.

⁹ Bossong, Clifford R. 2001; Canton, Steven P. 1995. Aquatic Biological Survey of the Arkansas River in the Vicinity of the City of Pueblo Wastewater Reclamation Facility, Chadwick Ecological Consultants Inc., Littleton, CO; Canton, Steven P., and L. Wall. 2007; CWQCC 2007; CWQCC 2007; Divine, Craig E., and T. K. Gates. 2006. Sources and Occurrence of Selenium in the Arkansas River and Fountain Creek near Pueblo, Colorado. ARCADIS G&M, Inc. Highlands Ranch, CO; Edelmann, Patrick, S.A. Ferguson, R.W. Stogner Sr., M. August, W.F. Payne, and J.F. Bruce. 2002. Evaluation of Water Quality, Suspended Sediment, and Stream Morphology with an Emphasis on Effects of Stormwater on Fountain and Monument Creek Basins, Colorado Springs and Vicinity, Colorado, 1981-2001. U.S. Geological Survey. Water-Resources Investigation 2002-4104. . [Online] Available: <http://infotrek.er.usgs.gov/pubs/>; Fountain Creek Vision Task Force Water Quality Working Group Update, May 11, 2007. Selenium updates presented by Mr. Pat Wells, Colorado Springs Utilities; and Gene Michael, City of Pueblo Wastewater Department; Huskie, William W., and M. J. Gearhart. 1998. Selenium Source Characterization Final Report: Investigation of Naturally Occurring Selenium, Pueblo, Colorado. Arcadis Geraghty & Miller, Inc., Denver, CO.

Springs may dilute the concentrations of selenium in Monument Creek below Mesa Road to acceptable levels.

Total Dissolved Solids

Total dissolved solids (TDS) and salinity are measures of the amount of salts dissolved in water. Electrical conductivity is an indirect measure of the amount of salts in water. The Sodium Absorption Ratio (SAR) is a specific measure of how salt might harm plant growth. High TDS impairs crop growth and can cause salts to build up in soil so that the soil will no longer support crops. High TDS creates “hard” drinking water and can create an undesirable taste in drinking water. There is no numeric water quality standard in Colorado for TDS for either irrigation or for drinking water. The Water Quality Control Commission recognizes that excessive salinity and TDS levels can be detrimental to the water use classifications.¹⁰ The Commission has established salinity standards for the Colorado River Basin,¹¹ but not for other waters, and the Commission has not developed control practices for salinity or TDS. The State of Kansas has expressed concern regarding TDS levels in the Arkansas River.¹²

The USGS, in cooperation with the Southeastern Colorado Water Activity Enterprise, researched ways to predict whether future water operations might cause water quality changes in the Arkansas River. The USGS selected TDS as the water quality constituent to use as an indicator for water quality changes and estimated background conditions for TDS to provide a baseline for comparison purposes. The results of the study showed background concentrations of TDS in Fountain Creek have historically been elevated relative to the four other study sites in the Arkansas River.¹³

Nutrients

The term “nutrients” includes different forms of phosphorus and nitrogen that can act as fertilizers that stimulate the growth of algae and other aquatic plants in water bodies. Algae growth can cause several types of problems, especially in lakes, including unsightliness, unpleasant taste in drinking water, and fish kills. Fish kills are caused by the decay of dead algae using up oxygen from the water that fish need to live. Nutrient impacts may not be seen where the nutrients enter the river, but may occur at downstream locations like lakes and reservoirs where nutrients build up in non-flowing waters. Colorado has not yet adopted standards for nutrients. However, the EPA is pressing states to adopt nutrient standards at the earliest possible time, and Colorado has begun the process. Limiting the amount of nutrient entering rivers will require significant changes in many activities including fertilizing lawns and agricultural fields,

¹⁰ CWQCC 2007.

¹¹ Colorado Water Quality Control Commission. 1997. Regulation No. 39: Colorado River Salinity Standards. Title 5, Colorado Code of Regulations, 1002-39.

¹² Bossong, Clifford R. 2001; Canton, Steven P. 1995; Divine, Craig E., and T. K. Gates. 2006; Edelmann, Patrick, S.A. Ferguson, R.W. Stogner Sr., M. August, W.F. Payne, and J.F. Bruce. 2002

¹³ Ortiz, R.F. 2004. Methods to Identify changes in background water-quality conditions using dissolved-solids concentrations and loads as indicators, Arkansas River and fountain creek, in the vicinity of Pueblo, Colorado. U.S. Geological Survey. Water-Resources Investigation 2004-5024. [Online] Available: <http://infotrek.er.usgs.gov/pubs/>

irrigating lawns and agricultural fields, and managing livestock wastes, as well as controlling runoff from cities and adding new processes for treating wastewater.¹⁴

Phosphorous is not directly harmful to humans and animals, but it can stimulate toxic algae blooms or oxygen depletion. Nitrate can be harmful at high levels to humans and animals. The drinking water limit for nitrate, a form of nitrogen, is 10 milligrams per liter. Planting or maintaining vegetation along the riverbanks and controlling urban runoff can help to reduce the level of nutrients in the river. Additionally, there are agricultural management methods that can reduce nutrient levels, such as matching fertilizer to crop needs, keeping runoff from manure out of the river, and reducing erosion. Ammonia, another form of nitrogen, is also a nutrient and can be harmful to fish. Colorado adopted new ammonia standards in 2007, based on the EPA standards. The new ammonia standards for warm water streams are significantly lower than the old standards.¹⁵

Based on very limited data sets from the EPA's STORET data base, both nitrogen and phosphorus appear to be significantly higher in Fountain Creek than in the Arkansas River. There is not sufficient data to quantify various source contributions, but in general, depending on locale, the relatively elevated concentrations of nitrogen and phosphorous in Fountain Creek (downstream from Colorado Springs' Las Vegas Street wastewater treatment plant) are largely due to effluent discharge. However, elevated nitrogen and phosphorous concentrations also occur as a result of storm runoff; and below Fountain elevated levels also could possibly be due to agriculture return flow.

Sediment

Flow conditions combined with other factors (e.g. geology, stream modification, etc.) result in increased erosion and sediment transport. As the creek is trying to re-establish equilibrium and adjust for these additional flows, it alters its meander pattern and promotes increased bank erosion and down-cutting of the creek bed, which are all evident processes currently taking place within Fountain Creek and its tributaries.

Specific factors leading to an increase in sediment transport include floodplain encroachment, construction and other ground disturbing activities, including higher frequency of channel forming flows¹⁶ (main stem and tributaries) and high flow events. The watershed has become increasingly urbanized which has lead to higher base flow¹⁷ and more frequent flood flows.

As the flows are increasing in the streams, the sediment transport capacity has also increased. These additional sediment loads increase floodplain widths, impact water quality, and decrease channel capacities. Sediment loads measured from within the watershed in 2005 range from

¹⁴ Fountain Creek Vision Task Force Water Quality Working Group Update, June 7, 2007. Nutrient updates presented by Mr. Pat Edelman, U.S. Geological Survey, and Ms. Nancy Keller, City of Pueblo Wastewater Department.

¹⁵ Bossong, Clifford R. 2001; CWQCC 2007; CWQCC 2007; Edelman, Patrick, S.A. Ferguson, R.W. Stogner Sr., M. August, W.F. Payne, and J.F. Bruce. 2002

¹⁶ Channel forming flows: The representative discharge responsible for doing the majority of the work that shapes the channel (pattern, cross section, profile/slope).

¹⁷ Base flow: That part of stream discharge that is not attributable to direct runoff from precipitation or melting snow. Primarily sustained by groundwater discharge into the stream.

6,400 tons/year within Monument Creek at Woodman Road to 60,200 tons/year within Fountain Creek at Security to 148,000 tons/year within Fountain Creek at Pueblo.¹⁸ There is a need to better ascertain the bedload¹⁹ characteristics and behavior as they relate to Fountain Creek's system. Another parameter of the fluvial²⁰ system is the meander belt, which can extend beyond the floodplain and is defined as the zone along the floor of a valley across which a meandering stream periodically shifts its channel. Encroachment into this area could prove critical and needs to be considered in future planning associated with land use and creek stability.

Below is a brief summary of three efforts within the Fountain Creek Watershed:

U.S. Army Corps of Engineers (USACE) Study

Factors that influence erosion include velocity (determined by gravity and volume) and composition of the material in the water. Results from the Corps Sediment Transport Study indicate that more reaches in Fountain Creek, as well as its tributaries, have the tendency for degradation rather than aggradation²¹ due to the relatively steep slopes of the streams. Streams exhibiting high degradation are Cottonwood Creek, East Sand Creek, Sand Creek, Jackson Creek, and some reaches of Monument and Fountain Creeks.

The study also concluded that channel length is decreasing (becoming straighter) for Cottonwood Creek, Monument Creek, Sand Creek, E. Fork Sand Creek, Jimmy Camp Creek and increasing in the southern part of the watershed.

USGS Studies

The USGS (SIR 2007-5104) has stated that suspended sediment concentrations, discharges, and yields associated with stormflow were significantly larger than normal flow. During normal flow suspended sediment concentrations were smallest at Monument Creek above Woodmen Road (0.5 to 10 tons per day) and highest at Cottonwood Creek (3 to 10 tons per day). Concentrations ranged from 25 to 80 tons per day at Fountain Creek at Security. Suspended sediment concentrations generally varied by site, but increased from upstream to downstream as streamflow increased.

The USGS has conducted multiple studies on suspended sediment and stream morphology²² and how they are affected by stormflow, normal flow and baseflow. These reports can be downloaded from the Fountain Creek Watershed website at www.fountain-cr.org.

Fountain Creek Corridor Master Plan

¹⁸ Edelman, Pat. 2007. Presentation to a Fountain Creek Vision Task Force working group on October 27, 2007.

¹⁹ Bedload: That part of the sediment transported by a stream that is moved in the form of rolling and salting sediment particles on the bed of the channel.

²⁰ Fluvial: These sediments generally consist of gravel and sand with a minor fraction of silt and rarely of clay. The gravels are typically rounded and contain interstitial sand.. These materials have been transported and deposited by streams and rivers.

²¹ Aggradation: is the accumulation of sediment in rivers and nearby landforms.

²² Morphology: a branch of geomorphology that deals with the forms of natural water bodies such as rivers, lakes, estuaries, lagoons, coastal zones and seas, as well as with the processes that create and modify these forms.

The Fountain Creek Corridor Master Plan is currently being developed for the mainstem of Fountain Creek from the southern Colorado Springs city limits to its confluence with the Arkansas River in Pueblo (approximately 44 miles of creek). This Plan identifies projects and designs that will:

1. Improve watershed health by reducing erosion, sedimentation, and flooding and by improving water quality;
2. Create stable riparian and wetland ecosystems to attract and support native wildlife and vegetation;
3. Sustain productive agricultural lands along corridor;
4. Lay out trail from Colorado Springs to Pueblo with recreational and educational opportunities; and
5. Gain public and private support through partnerships to facilitate implementation and future funding.

The Plan utilizes the following mechanisms to address water quality and sedimentation concerns:

- Slowing down the creek in erosive segments to reduce the carrying capacity of the stream (i.e., reducing erosion and sediment transport) and consequently reduce sedimentation by:
 - Increasing the curviness (sinuosity) of the stream, effectively lengthening the path the creek takes to slow it down
 - Diverting water into wetlands and side detention areas during flood flows to reduce the amount of water in the stream during a flood
 - Protecting the wide natural floodplain from further infringement to help slow flood flows
- Improving existing wetlands and adding additional wetlands in the floodplain to naturally filter and thus improve water quality in the creek
- Installing a Streamside Systems collector to remove sediment in the levee area in Pueblo
- Stabilizing eroding banks along the creek that contribute large quantities of sediment downstream
- Narrowing the stream channel in areas where sediment deposits so that the sediment can be carried out

These mechanisms have been laid out in a holistic manner in a draft Plan for the entire 44-mile Fountain Creek reach. This Plan has been presented to the US Army Corps of Engineers, local landowners, the Fountain Creek Vision Task Force Working Groups, and local elected officials and planners in Colorado Springs and Pueblo. The Plan has received much support from each of these groups and comments have been incorporated into a revised Plan.

Additionally, the Corridor Master Plan has identified four locations for building demonstration projects, totaling over six miles along the creek. These locations will demonstrate the mechanisms discussed above leading to a cleaner waterway with less erosion and sedimentation. Plan efforts are now focusing on obtaining funds for the projects. The Master Planning effort will be completed in late 2009.

Organics

There are numeric standards for nineteen organic parameters that have been adopted as basic standards applicable to all waters of the region. These standards are designed to protect the waters of the state regardless of the use classifications, because they describe the fundamental conditions that all waters must meet to be suitable for any use.²³ These standards are shown in the Basic Standards Regulation.²⁴

Existing Studies and Reports

There have been numerous water quality studies conducted in the Fountain Creek Watershed (primarily by the USGS). Within the watershed there are about 22 active USGS monitoring stations which measure streamflow and different types of water quality parameters such as biological, nutrients, organics, inorganics, and physical properties. The Pikes Peak Area Council of Government (PPACG) 2003 Water Quality Management Plan gives detailed information on the municipal wastewater treatment plant dischargers in the watershed.

Criteria Manuals

The two most widely used design manuals for both construction and permanent erosion control and water quality protection in the Fountain Creek Watershed are the Urban Drainage and Flood Control District's "Criteria Manual Volume 3 – Best Management Practices" and the City of Colorado Springs' "Drainage Criteria Manual Volume 2 – Stormwater Quality Policies, Procedures and Best Management Practices (BMPs)." Both of these manuals are under review to incorporate the best available techniques in runoff control, erosion mitigation, and water quality protection such as low-impact development.

B. Goals and Strategies to Address Current Conditions

Goals to Improve Current Conditions

1. Assess potential water quality problems in the watershed.
2. Mitigate adverse stream impacts.
3. Reduce selenium to levels that are at or below State water quality standards and/or background conditions or recommend that the CWQCC establish appropriate site-specific standards.
4. Reduce *E. Coli* to levels that are at or below State water quality standards or recommend that the CWQCC establish appropriate site-specific standards.
5. Improve watershed function to manage sediment transport patterns and reduce erosion and sedimentation.
6. Improve stormwater runoff conditions at the source to improve water quality.

Objectives

1. By 2013, all organizations collecting water quality data in the watershed are contributing to a shared on-line water quality database accessible to the public (such as the Colorado Watershed Data Sharing Network).
2. By 2012, remove one parameter from one segment on the 303(d) list.

²³ CWQCC 2007

²⁴ CWQCC 2007

3. By 2015, remove two parameters from one or more segments on the 303(d) list.
4. By 2013, no additional stream segments will be added to the 303(d) list (based on existing stream standards).
5. By 2020 demonstrate a continuous water quality improvement from 2008 for parameters of concern (*E. Coli*, selenium) measured in each stream segment in order to reach State standards.

Strategies to Achieve Goals and Objectives

1. Better understand water quality baseline conditions in Fountain Creek Watershed.
2. Determine potential factors, such as permitted discharges and non-point sources, that have a significant negative influence on water quality in the Fountain Creek watershed and implement strategies to mitigate negative influences.
3. Develop and implement watershed-wide regulations and policies, as applicable in each jurisdiction, related to storm-water management, water quality, development and overall land use.
4. Develop and implement applicable strategies to address water-quality impacted stream segments.
5. Comply with municipal National Pollution Discharge Elimination System (NPDES) permits.

Note: Additional information about water quality data sources is available in Appendix B.

C. Implementation Plan

Strategy 1: Better understand water quality baseline conditions in Fountain Creek Watershed			
Steps to Implement Strategy	Target Completion Date	Recommended Responsible Entity in the Watershed	Partners in Implementation
a. All organizations collecting water quality data in the watershed are contributing to a shared on-line water quality database accessible to the public (such as the Colorado Watershed Data Sharing Network)	2013	Pueblo Health Department	State and federal agencies; cities and counties; Colorado Watershed Data Sharing Network and USGS
b. Establish a sampling plan that specifies sampling frequency and that varies the time of day, day of week, and season for sampling at each location, including both bacterial sampling and flow measurement	2010	Pueblo Health Department	City of Colorado Springs, Colorado Springs Utilities, Pueblo, Pueblo Health Department, USGS
c. Identify appropriate water quality monitoring locations and water quality parameters throughout the watershed (to be included in the Sampling Plan).	2010	Pueblo Health Department	City of Colorado Springs, Colorado Springs Utilities, Pueblo, Pueblo Health Department, USGS
d. Coordinate Fountain Creek data collection with Arkansas River Basin monitoring programs	2010	Pueblo Health Department	USGS
e. Develop a long-term intergovernmental agreement among local governments to fund sampling, laboratory analysis, data interpretation, and reporting	2013	PPACG	City of Colorado Springs, Colorado Springs Utilities, Pueblo, Pueblo Health Department
f. Create a master inventory of existing water quality BMPs throughout the Fountain Creek Watershed	2013	PPACG and NPDES Phase I and Phase II permit holders	Pueblo, City of Colorado Springs, El Paso County, Pueblo County, Monument, Manitou Springs, Fountain
h. Develop a list of maintenance procedures and maintenance frequency for water quality BMPs	2009	City of Colorado Springs	
i. Identify non-point source areas of concern throughout the watershed	2010	Cities and Counties	
j. Compile an inventory of existing evidence of the historic course and condition of the Fountain Creek channel, including aerial photographs, research papers, newspaper articles, etc. to document historic conditions	2009	PPACG	
k. Inventory areas throughout the Fountain Creek watershed where sediments eroded from upstream locations have been deposited, resulting in a change in the shape of the channel and loss of hydraulic capacity	2013	PPACG	

Strategy 2: Determine all potential factors that influence water quality of Fountain Creek			
Steps to Implement Strategy	Target Completion Date	Recommended Responsible Entity in the Watershed	Partners in Implementation
a. Determine potential factors (i.e. agricultural return flows, geologic conditions, etc.) that influence concentrations of selenium and use them as input for a predictive model.	2013	Colorado Springs Utilities/Pueblo	Colorado State University
b. Develop a predictive model to support the State's wasteload allocation for selenium	2013	Colorado Springs Utilities/Pueblo	Colorado State University
c. Establish background levels of selenium as the state water quality standards	When determined	Colorado Springs Utilities/Pueblo	
d. Characterize the baseflow and the critical runoff volumes that triggers erosion under various conditions	2010	Future Fountain Creek Watershed Funding Entity	USGS
e. Characterize bed load sediment and transport volumes as a basis for watershed modeling criteria	2013	Future Fountain Creek Watershed Funding Entity//USGS	Pueblo, City of Colorado Springs, El Paso County, Pueblo County
f. Obtain from the U.S. Geological Survey the results of historical studies conducted in Fountain Creek that defined natural bed load volumes or developed data used to make bed load calculations	2010	PPACG	USGS
g. Study off-channel detention storage and water quality treatment systems in conjunction with sediment bypass systems	2010	Pueblo	El Paso County
h. Develop theoretical designs and build projects (such as off-line detention and Streamside Systems) that would achieve sediment bypass and monitor results	2013	Future Fountain Creek Watershed Funding Entity	
i. Select an appropriate site and develop a demonstration project using the Streamside System sediment bypass to protect against downstream channel degradation from detention storage and sediment deposition. The site location should consider high suspended sediment loads, easy access to the stream, available land for off-channel operations line stockpiling and drying extracted sediment, and accessibility to markets or points of use for extracted sediments	2010	City of Pueblo (funded through a 319 Grant)	Cities and Counties and CDPHE
j. Design and implement a sediment monitoring plan for the streamside system that includes measurement of flows, water quality	2013 (this is tied to second	Future Fountain Creek Watershed	Cities and Counties

parameters of interest, suspended sediment measurements, and bed load measurements upstream and downstream of the extraction site to provide a means of measuring the effectiveness and water quality impacts of the process.	Implementation Step in Strategy 1)	Funding Entity//USGS	
k. Establish a channel monitoring plan that targets areas of erosion and sedimentation and elements of channel form to be observed and/or measured	2014	Future Fountain Creek Watershed Funding Entity//USGS	
l. Characterize the effects of suspended sediment and bed load on water quality and aquatic habitat	2013	Future Fountain Creek Watershed Funding Entity//USGS	
m. Develop land development practice recommendations that make it possible to reduce pollution from non-point sources.	2013	City and Counties	Pueblo, City of Colorado Springs, El Paso County, Pueblo County

Strategy 3: Develop regionally applicable regulations and policies, related to storm-water management, water quality, development, and overall use			
Steps to Implement Strategy	Target Completion Date	Recommended Responsible Entity in the Watershed	Partners in Implementation
a. Compile and publish an inventory of highly erosive soils throughout the watershed based on existing Soil Conservation Service soils maps	2010	PPACG	
b. Develop a document summarizing non-structural BMPs (street sweeping, use of salt and sand on roadways, pet stations, wetlands enhancements, constructed wetlands, riparian area expansion and enhancements, and other methods to protect water quality) in the form of draft land use control policies and regulations that city and county governments could adopt	2009	AWARE Colorado	Pueblo, City of Colorado Springs, El Paso County, and Pueblo County
c. If sediment bypass pilot projects prove successful, consider adding designs to the acceptable design criteria for new development drainage plans	2014	Cities and Counties	
d. Retrofit where appropriate public water quality features for existing development that can be used to reduce runoff	2010-2018	Cities and Counties	
e. Modify/Enhance local drainage criteria manuals to incorporate new, state-of-the-art BMPs that focus on water quality improvements.	2010	City of Pueblo, City of Colorado Springs, El Paso County	Pueblo, City of Colorado Springs, El Paso County, Pueblo County, Fountain, Woodland Park
f. Each municipality works with community and politicians to modify criteria regarding source control volume specific to each municipality	2012	Pueblo, City of Colorado Springs, El Paso County, Pueblo County, Fountain, Woodland Park	Pueblo, City of Colorado Springs, El Paso County, Pueblo County, Fountain, Woodland Park
g. Hold a Land Use Workshop for local government elected officials and staff to explain the content, use, and benefits of LID practices	2009	Aware Colorado/Colorado State University	Pueblo, City of Colorado Springs, El Paso County, Pueblo County
h. Obtain copies of the land use policies and regulations presently in use by the city and county governments throughout the Fountain Creek watershed .	2010	City of Pueblo and City of Colorado Springs	Pueblo, City of Colorado Springs, El Paso County, and Pueblo County

i. Compile and inventory of existing policies and regulations of local governments within the Fountain Creek watershed pertaining to construction site controls, particularly with respect to vegetation removal and methods to control water borne or windblown erosion from construction sites.	2010	El Paso County and PPACG	Pueblo, City of Colorado Springs, El Paso County, and Pueblo County
j. Develop recommendations to land use planning agencies of city and county governments throughout the Fountain Creek watershed so they can make informed decisions on adoption of the methods summarized in the document as development policies for use in their jurisdictions	2010	Aware Colorado	Pueblo, City of Colorado Springs, El Paso County, and Pueblo County
k. Develop a document summarizing LID practices (porous pavement, sediment basins, infiltration basins, etc.) in the form of land use control policies or draft policies and regulations that city and county governments should adopt.	2010	Aware Colorado/Colorado State University	Pueblo, City of Colorado Springs, El Paso County, and Pueblo County
l. Recommend LID practices to city and county governments through the Fountain Creek watershed	2010	Aware Colorado	Pueblo, City of Colorado Springs, El Paso County, and Pueblo County
m. Where discrepancies exist, provide information to city and county governments so they can make informed decisions on modification of their existing land use policies and regulations to conform to the BMPs and LID draft documents.	2010	Aware Colorado	Pueblo, City of Colorado Springs, El Paso County, and Pueblo County
n. Develop manual for recommending methods for series of uniform incentives and disincentives for consideration of adoption by local governments throughout the Fountain Creek watershed designed to reward contractor compliance and discourage contractor noncompliance with construction site control policies and regulations	2011	Pueblo, City of Colorado Springs, El Paso County, Pueblo County	
o. Establish reward programs within the watershed that recognize and affirm the efforts of developers that adhere to LID principles and that comply with land use policies and regulations designed to protect streams, providing such developers with “most favored developer status” in matters before land use approval bodies, provide free memberships in local Chamber of Commerce, etc.	2012	Aware Colorado/Colorado State University	Pueblo, City of Colorado Springs, El Paso County, and Pueblo County
p. Evaluate and compare existing policies, regulations, and practices to the best management practices and LID draft documents to the benchmark policies and regulations contained in the Center of Watershed Protection document entitled Better Site Design: A Handbook for Changing Development Rules in Your Community	2013	City of Pueblo and City of Colorado Springs	Pueblo, City of Colorado Springs, El Paso County, and Pueblo County

Strategy 4: Develop applicable strategies to address impacted stream segments			
Steps to Implement Strategy	Target Completion Date	Recommended Responsible Entity in the Watershed	Partners in Implementation
a. Remove one parameter for one segment on the 303(d) list	2010	CDPHE/WQCD	State and federal agencies, cities and counties
b. Remove two parameters from one or more segments on the 303(d) list	2013	CDPHE/WQCD	State and federal agencies, cities and counties
c. See continuous water quality improvement for parameters of concern (<i>E. Coli</i> , selenium) measured in each stream segment	2013 and 2020	All	
d. Identify locations where non-point sources impair designated stream uses	2011	CDPHE/WQCD through TMDL process	
e. Review and publicize a location for a pilot project where restoring the channel is expected to result in a dramatic improvement in the quality and appearance of the stream, that offers easy access to the stream and proximity to established or planned recreational amenities that serve to attract the public, so the success of the project can be showcased to the community	2010	Future Fountain Creek Watershed Funding Entity//USGS	

Strategy 5: Evaluate discharge permits and encourage conformance by all permitted entities and provide watershed level evaluation of possible impacts of permitting activities			
Steps to Implement Strategy	Target Completion Date	Recommended Responsible Entity in the Watershed	Partners in Implementation
a. Compliance with municipal NPDES permits	2009 on	Municipalities	Everyone

b. Annually review permit requirements and applicable compliance throughout the watershed	2009 on	Pueblo, City of Colorado Springs, El Paso County, Pueblo County, Fountain, Woodland Park	
c. Develop a schedule of recommended fines for consideration by local governments that penalize failure to comply with land use regulations, escalating by the severity of the impact of the infraction and by the frequency of repeated offenders	2012	Pueblo, City of Colorado Springs, El Paso County, Pueblo County, Fountain, Woodland Park	

IV. FLOODING AND STORMWATER MANAGEMENT

A. Current Conditions - Streamflow

Fountain Creek drains a 930-square-mile watershed with an elevation ranging from 4,640 feet to 14,115 feet. Fountain Creek is currently not a stable fluvial²⁵ system, exhibiting frequent changes in sediment loads, flows, vegetative conditions and nearby land uses. Fountain Creek has historically exhibited highly fluctuating flows, particularly between April and September, in response to storm events. Since the early 1980s, land and water use changes within the watershed have resulted in ephemeral streams²⁶ located in urban areas becoming perennial²⁷ and Fountain Creek downstream of the City of Fountain flowing year round. A majority of these changes have resulted from increased urbanization and lack of a comprehensive watershed management approach for the basin. Increased baseflow²⁸ in Fountain Creek and its tributaries is attributable to imported water sources (i.e., transbasin diversions), increased amount of impervious surfaces, wastewater effluent discharges, and return flows from lawn watering and crop irrigation.

Three types of flows that impact the overall conditions of Fountain Creek include major flood events, channel forming flow, and baseflow. Major flood events remove tremendous amounts of sediment during an event, but do not occur on a regular basis. Channel forming flow is the representative discharge that shapes the channel with respect to the pattern, cross-section, and profile.²⁹ This type of flow moves the largest percentage of sediment over time, because it occurs on a more frequent basis in response to daily climate and land use conditions. Baseflow is not a consistent factor in shaping the channel, as it does not typically have enough energy to consistently move sediment. While subtle, erosion caused by increased baseflow is a component of day-to-day channel erosion and sediment transport.³⁰ An example of hypothetical flows for Fountain Creek would be:

- Baseflow = 30 cubic feet per second (cfs)
- Channel forming flow = 3,000 cfs
- Flood flow = 30,000 cfs

These hypothetical numbers demonstrate the orders of magnitude of difference between the various flow rates.³¹

Major Flood Events

²⁵ Fluvial: These sediments generally consist of gravel and sand with a minor fraction of silt and rarely of clay. The gravels are typically rounded and contain interstitial sand.. These materials have been transported and deposited by streams and rivers.

²⁶ Ephemeral streams: A stream that flows only a short time (days or weeks) in direct response to precipitation.

²⁷ Perennial: A stream with year-round channel flow .

²⁸ Baseflow: That part of stream discharge that is not attributable to direct runoff from precipitation or melting snow. Primarily sustained by groundwater discharge into the stream.

²⁹ Thompson, Graham. 2007. Presentation given at a Fountain Creek Vision Task Force working group meeting on March 22, 2007.

³⁰ Stogner, Sr., Roger W. 2000. "Trends in Precipitation and Streamflow in the Fountain Creek Watershed, Southeastern Colorado, 1977-1999." (Report from the US Geological Survey.) Available at <http://pubs.usgs.gov/fs/fs-136-00/pdf/fs136-00.pdf>.

³¹ Thompson, 2007.

Flood events have occurred periodically on Fountain Creek, with the most recent occurring in 1999 with a flow of 20,000 cfs recorded at the United States Geological Survey (USGS) gauge in Pueblo. Embankment failures in May 2007 caused additional flooding in low-lying North Side neighborhoods in Pueblo. Flood events are documented with photos and news reports from many sources within the watershed (see Attachments 2a-2s in Appendix C).

Significant flood events have caused damage to public infrastructure, utilities, adjacent farmlands, and residential communities. Flooding also compounds problems associated with increased sedimentation and erosion. As development continues within the watershed, with the associated increase in impervious area, runoff and flood events are expected to increase.

New studies conducted by the US Army Corp of Engineers (USACE) indicate a reduction in flood peaks from prior Federal Emergency Management Agency (FEMA) hydrology (see Attachment 1 in Appendix C). However, channel capacities have been reduced in the lower reaches of Fountain Creek due to sediment build-up and heavy vegetative growth restricting channel widths and reducing channel depths. Critical reach analysis was studied on Monument Creek, Black Forest Tributary, Cottonwood Creek, and Jimmy Camp Creek. The study was conducted to evaluate sedimentation, erosion, and flooding on the selected tributaries and the full report is contained in the USACE study, “Critical Reach Study” for the Fountain Creek watershed.³² Study results indicate problems with sediment, flooding, and channel degradation ultimately threatening buildings and infrastructure.

FEMA is currently converting floodplain maps for Pueblo and El Paso Counties to develop new Digitized Flood Insurance Rate Maps (DFIRMs) for all previously mapped drainageways. Along portions of the new mapping of the Fountain Creek corridor will be based on hydrologic³³ and hydraulic³⁴ analyses completed in the USACE study of the Fountain Creek watershed. FEMA mapping will require the certification of all levees and floodwalls providing flood protection before floodplain maps can reflect areas protected by levee and floodwall systems. Preliminary DFIRM mapping by FEMA reflects floodplain changes on Fountain Creek. Recent 100-year hydrologic and hydraulic interim studies indicate freeboard deficiencies³⁵ on the Fountain Creek levee system in the Pueblo area. Lower reaches of the Fountain Creek levee system do not provide the 3-foot and 4-foot levee height above water surfaces required by FEMA. This deficiency is due to loss of channel capacity because of sediment build-up.

Hydrologic and hydraulic studies have determined the probability of flood events at various locations along Fountain Creek as shown in the USACE Watershed Study. Because the dam at the Pueblo Reservoir controls the release of water, most of the water generated from storms downstream of the confluence of Fountain Creek and the Arkansas River is from Fountain Creek.

³² Available at www.fountain-crk.org.

³³ Hydrologic: The relationships between water and the geologic environment.

³⁴ Hydraulic: An engineering process used to convert a volume of water moving down a channel into a depth of water so that it can be drawn on a map of flooding areas.

³⁵ Freeboard deficiencies: Lack of sufficient height between the 100-year water surface and the top of the levee to meet FEMA requirements.

Flood attenuation (peak flow³⁶ reduction) occurs in downstream segments of Fountain Creek due to off-line storage and channel storage. In 1989, levee systems were constructed through Pueblo to protect the East Side community and the downtown area from flooding caused by a 100-year flood event³⁷. Private properties were purchased by the City of Pueblo to remove development from the floodplain³⁸ and provide additional hydraulic capacity within the channel. Current efforts by federal and state agencies, railroads, cities, counties, and stormwater enterprises strive to maintain channel stability by constructing detention facilities, grade control structures, hard points (jetties), embankment protection (riprap), and other channel improvements. Vegetation control and debris removal have been implemented on Fountain Creek to increase channel capacity and improve flow characteristics.

Channel Forming Flow

Channel forming flows are not indicative of catastrophic flooding. Rather, these are smaller events ranging from a few hundred cfs to a few thousand cfs that occur one to two times per year along the Front Range.³⁹ These flow conditions combined with other factors (e.g. geology, stream modification, infrastructure, etc.) result in increased erosion and sediment transport. As the creek is trying to re-establish equilibrium and adjust for these additional flows, it alters its meander pattern and promotes increased bank erosion and down-cutting of the creek bed, which are all evident processes currently taking place within Fountain Creek and its tributaries. (Sediment transport is discussed further in the Water Quality and Sedimentation section of the Fountain Creek Vision Task Force Strategic Plan.)

Runoff Reduction

Conventional stormwater management practices to date have emphasized the reduction of peak runoff rates from flood events with little attention being paid to the more frequent events or to volume reduction. Fundamental changes to the methods used for planning, designing, and constructing development projects are needed to address these issues.

Low-impact development (LID) source controls are being considered by the Fountain Creek Vision Task Force to reduce impacts of future development. The reduction of runoff volumes through the utilization of source controls will provide a reduction in erosion, sedimentation, and flooding, as well as improvement in stormwater quality. NPDES (National Pollutant Discharge Elimination System)⁴⁰ permits require implementation of best management practices (BMPs), including runoff reduction techniques to address runoff volume and improved stormwater quality. The City of Colorado Springs, El Paso County, the City of Pueblo, and Pueblo County are all responsible for the implementation of the NPDES permits issued to those communities.

As a result of projected changes within the watershed and documented changes in streamflows in Fountain Creek, the USACE has made some general recommendations regarding future

³⁶ Peak flow: Refers to a specific period of time when the discharge of a stream or river is at its highest point.

³⁷ 100-year flood event: Refers to the calculated level of flood water expected to be equaled or exceeded every 100 years on average.

³⁸ Floodplain: Flat areas bordering streams that are subject to flooding.

³⁹ Edelmann, Pat. 2007. Presentation to Fountain Creek Vision Task Force working group on October 27, 2007.

⁴⁰ NPDES (National Pollutant Discharge Elimination System): A provision of the Clean Water Act that prohibits discharge of pollutants into waters of the United States unless a special permit is issued by the US EPA, or a state or other delegated agency.

development within the watershed (see Attachment 5 in Appendix C). These general recommendations address policies and strategies to reduce flood risk, sedimentation, and erosion, including the rehabilitation of riparian areas, creation of off-channel diversion and storage, and the preservation of existing wetlands, as well as the creation of additional wetlands. The recommendations emphasize LID as a means to mitigate existing conditions and wisely manage future impervious surface areas and increased runoff. In addition to the items mentioned in Attachment 5, the USACE study also identified potential projects and sites for flood risk reduction, eco-system restoration, and channel stability.

Existing Studies and Reports

As impervious areas⁴¹ increase in the watershed, Fountain Creek will experience more frequent flood events from storms of lesser magnitude (Attachment 3 in Appendix C: USGS Report, “Trends in Precipitation and Streamflow in the Fountain Creek Watershed”). The Fountain Creek Watershed Study predicts minor increases in flood peaks for major storm events because saturated conditions in the watershed more closely match runoff from impervious surfaces. Future development within the watershed will continue to increase instabilities on Fountain Creek because of increased runoff, volumes, and peak flows. Pikes Peak Area Council of Governments (PPACG) studies indicate significant increases in imperviousness in 11 sub-basins within the Fountain Creek watershed with major impervious area increases in Jimmy Camp Creek, Sand Creek, and Cottonwood Creek (see Attachments 4a, 4b, and 4c in Appendix C). The USGS report also indicates significant increases in high streamflows in Fountain Creek between Nevada Street and Security because of development within this area of the watershed:

In the reach from Nevada Street to Security, the average annual per-square-mile increase in streamflow was about five times greater than the other reaches that had increasing trends. Additionally, the reach from Nevada Street to Security showed the greatest annual change in total streamflow during high flows. This indicates on average, the intervening drainage area for the reach between Nevada Street and Security contributed more total flow and more flow per square mile than any of the other drainage areas studied. This trend probably is attributable to changes in land use from rangeland to urban that occurred in the intervening drainage area over the past 23 years, which altered the hydrologic response and increased storm runoff. . . . changes in land use within the watershed have increased the rate and magnitude of runoff for more moderate rainfall events.⁴² (Attachment 4c notes the impacts of increasing impervious surface in the future for the entire watershed and the need for mitigation going forward.)

This USGS report also notes significant increases in low streamflows in the same reach between Nevada Street and Security:

The average annual increase in streamflow for the low streamflow statistics generally was from 5 to 10 times greater in the reach from Nevada Street to Security than the other reaches that had increasing trends. Additionally, the reach between Nevada Street and Security generally showed the greatest annual change in total streamflow during low flows. The large annual increases in the low streamflows in the reach between Nevada Street and

⁴¹ Impervious areas: A hard surface area which either prevents or retards the entry of water into the soil. Examples include, but are not limited to, structures, walkways, patios, driveways, carports, parking lots or storage areas, concrete or asphalt paving, gravel roads, packed earthen materials, haul roads and soil surface areas compacted by construction operations.

⁴² Stogner, 2000.

Security have resulted from increased wastewater treatment-plant discharge associated with population growth, importation of transbasin water, and management of the Fountain Creek transbasin return-flow exchange decree, which allows Colorado Springs to exchange return flows from transbasin imports to other locations in the Arkansas River basin.

Future flows on Fountain Creek will likely reflect similar increases in areas experiencing continued growth and development.

B. Goals and Strategies to Address Current Conditions

Goals to Improve Current Conditions

1. Recognize that stormwater is a resource and manage it for the benefit of the watershed and entities downstream.
2. Preserve natural channel capacity through floodplain preservation and sedimentation controls.
3. Preserve the natural drainage way through conservation easements and streamside setbacks.
4. Improve channel stability and flow stability by formulating a watershed development policy that promotes matching the post-development hydrographs⁴³ and the pre-development hydrographs for peak, volume, and timing to the extent practicable.
5. Promote efficient stormwater management so that runoff will not exceed downstream conveyance capacity in order to minimize adverse impacts downstream.
6. Promote stable base flows and stabilize the stream system by retrofitting, to the extent practicable and in accordance with applicable Municipal Stormwater Discharge Permits (MSDPs)⁴⁴, existing drainage systems to provide runoff reduction, water quality treatment, and improved stormwater management practices.
7. Improve stormwater runoff conditions at the source, with respect to quality, quantity, and rate/duration of flow to better mitigate development impacts.

Objectives

1. By 2010, all entities will have participated in a watershed workshop to evaluate watershed management policies based on benchmark principles developed by recognized authorities such as the Center for Watershed Protection.
2. By 2012, all entities in the watershed will have adopted stormwater management policies based on benchmark principles developed by the Center for Watershed Protection; conducted workshops for revising existing drainage and land use regulations; presented revised criteria to developers and policy makers; and adopted recommended criteria for uniform application in the watershed..
3. By 2014, 10% of all existing public systems (as determined by each jurisdiction) will be retrofitted for water quality treatment and volume and peak flow reduction.

⁴³ Hydrographs: The description and studies of bodies of water (e.g. lakes and rivers): as the measurement of flow and investigation of the behavior of streams and the charting or graphing of them.

⁴⁴ Municipal Stormwater Discharge Permits (MSDPs): permits are required for storm water discharges to surface waters from construction and industrial activities and municipalities if stormwater from rain or snow melt leaves your site through a "point source" and reaches surface waters either directly or through storm drainage.

4. By 2014, 50% of all new development and 100% of all new annexations will implement LID techniques to reduce peak flows and runoff volume and to stabilize channel-forming flows.

Strategies to Achieve Goals and Objectives

1. Develop comprehensive Fountain Creek floodplain management regulations, encourage their adoption, and develop floodplain mapping.
2. Retrofit existing stormwater systems to provide runoff reduction, water quality treatment, and improved stormwater management practices to the extent practicable.
3. Study the feasibility and impacts of a flood control dam on Fountain Creek
4. Maintain and restore channel capacity, riverine environment, and stream system functionality to the extent practicable.
5. Evaluate hydrologic and hydraulic controls for the Fountain Creek watershed.
6. Explore LID practices to retrofit existing development and guide future development.

C. Implementation Plan

Strategy 1: Develop comprehensive Fountain Creek floodplains management regulations and encourage their adoption and develop floodplain mapping			
Steps to Implement Strategy	Target Completion Date	Recommended Responsible Entity in the Watershed	Partners in Implementation
a. Compile copies of floodplain regulations and streamside ordinances and evaluate effectiveness	2009	Government entities in the watershed	Colorado Water Conservation Board (CWCB)
b. Flood insurance regulations – educate and promote	2009	Government entities in the watershed	CWCB/FEMA
c. Flood warning system – evaluate and upgrade	2010	Offices of emergency managements in jurisdictions	FEMA
d. Review local emergency plans and identify areas of risk	2010	Offices of emergency managements in jurisdictions	FEMA
e. Evaluate DFRIM mapping and compare to historic meander belts and stream stability	2010	Government entities in the watershed	CWCB; USACE; THK and Associates (contractors working on Fountain Creek Corridor Master Plan)
f. Initiate preservation of open space within and adjacent to floodplains through conservation easements, setbacks, and agreements	2009	Cities/Counties	Non-profits
g. Discourage the use of levees in regard to new development in flood hazard areas. Consider only as a last resort for protecting existing development when no other mitigation option is feasible	2009	Cities/Counties	FEMA/USACE
h. Educate private landowners and easement holders such as utilities in alternatives to “hardening” to protect property and facilities from erosion and flood hazards.	2009-ongoing	Cities, Counties, Stormwater entities	THK and Associates
i. Preserve open space corridors along Fountain Creek within the historic meander belts	2010-2018	Cities/Counties	Non-profits

Strategy 2: Retrofit existing stormwater systems to provide runoff reduction, water quality treatment, and improved stormwater management practices to the extent practicable			
Steps to Implement Strategy	Target Completion Date	Recommended Responsible Entity in the Watershed	Partners in Implementation
a. Retrofit scoping – identify potential sites	2009	Cities/Counties	US Environmental Protection Agency (EPA) and Center for Watershed Protection
b. Desktop retrofit analysis: map potential sites	2009	Cities/Counties	EPA and Center for Watershed Protection
c. Retrofit reconnaissance field surveys investigation	2010	Cities/Counties	EPA, Center for Watershed Protection, Natural Resources Conservation Service (NRCS)
d. Compile retrofit site inventory	2010	Cities/Counties	EPA and Center for Watershed Protection
e. Evaluation and ranking of identified sites	2011	Cities/Counties	EPA and Center for Watershed Protection
f. Sub watershed treatment analysis of potential site	2011	Cities/Counties	EPA and Center for Watershed Protection
g. Final design and construction drawings of highest ranked sites	2013	Cities/Counties	EPA and Center for Watershed Protection
h. Pilot project selection and construction	2013	Cities/Counties	EPA, Center for Watershed Protection, USACE, Future Fountain Creek Watershed Funding Entity
i. Inspection and maintenance of existing systems	2013-2019	Cities/Counties	Future Fountain Creek Watershed Funding Entity

Strategy 3: Study the feasibility and impacts of a flood control dam on Fountain Creek			
Steps to Implement Strategy	Target Completion Date	Recommended Responsible Entity in the Watershed	Partners in Implementation
a. Review 1972 and 1981 USACE reports on potential dam locations on Fountain Creek	2009	Cities/Counties	USACE
b. Review project scoping on the Fountain Creek dam contained in the USACE "Project Report" from the Fountain Creek Watershed Study	2009	Technical Advisory Committee of the Future Fountain Creek Watershed Funding Entity	USACE
c. Communicate results of dam feasibility studies	2010	Cities/Counties	Federal agencies
d. Implement the results of feasibility studies	2013	Cities/Counties	Federal agencies

Strategy 4: Maintain and restore channel capacity, riverine environment, and stream system functionality to the extent practicable			
Steps to Implement Strategy	Target Completion Date	Recommended Responsible Entity in the Watershed in the Watershed	Partners in Implementation
a. Identify sites for pilot projects	2009	Government entities	USACE
b. Compare existing regulations based on goals established by the Fountain Creek Vision Task Force: Including streamside buffers, setbacks, and wetlands preservation	2009	Watershed TAC	Government entities
c. Review THK corridor study on channel alignment and offline storage potentials	2009	Future Funding Entity	USACE
d. Evaluate adverse impacts of detention systems on sediment transport	2009	Colorado State University or USACE	Government entities
e. Evaluate detention/retention systems with sediment bed load bypass system	2009	Colorado State University or USACE	Government entities
f. Remove invasive species and other vegetation to maintain channel capacity	2009-2018	Entity/Government Entities	USACE
g. Monitor stream cross sections and channel slopes at locations of restricted channel capacity	2010-2018	Entity/Government Entities	USGS
h. Initiate preservation of open space within and adjacent to floodplains through conservation easements, setbacks and agreements	2009	City/County	Non-profits
i. Preserve open space corridors along Fountain Creek within the historic meander belts	2010-2018	City/County	Non-profits

Strategy 5: Evaluate hydrologic and hydraulic controls for the Fountain Creek watershed			
Steps to Implement Strategy	Target Completion Date	Recommended Responsible Entity in the Watershed	Partners in Implementation
a. Map potential sites for water quality treatment and detention/retention facilities	2009-2018	Cities/Counties	USACE, THK and Associates
b. Evaluate interim and final USACE and FEMA levee certification criteria for relevance to the watershed	2009	Cities	CWCB, USACE, FEMA
c. Identify structures protected by levee	2009-2009	Cities	CWCB, USACE, FEMA
d. Evaluate offline storage impacts on runoff peak, volume reduction, and conformance with water rights laws	2009	Cities/Counties	THK and Associates, USACE
e. Evaluate adverse impacts of detention system on sediment transport	2009	Cities/Counties	Colorado State University
f. Evaluate detention/retention systems with sediment bed load bypass system	2009	Cities/Counties	Colorado State University
g. Define and describe stormwater benchmarks for pre-development conditions for Fountain Creek and for tributaries in terms of runoff volume, peak discharge rate and timing and the relationship between these attributes and water quality	2013	Cities/Counties	
h. Develop a manual for recommending methods for designing new developments to match historic runoff volumes, peak discharge rates, and timing to the extent practicable	2010	Cities/Counties	
i. Evaluate the reduction of runoff volume and improvement of water quality through infiltration and detention/retention systems	2009	Cities/Counties	Colorado State University, EPA
j. Develop plan for levee de-certification based on future watershed development and sediment transport models	2009	Cities	CWCB, FEMA
k. Remove invasive species and other vegetation	2009-2018	Cities/Counties	USACE
l. Monitor stream cross-sections and channel slopes at locations of restricted channel capacity	2010-2013	Cities/Counties	CWCB, USGS
m. Levee structure maintenance activities to comply with certification criteria	2009-2018	Cities/Counties	USACE

Strategy 6: Explore LID practices to retrofit existing development and guide future development			
Steps to Implement Strategy	Target Completion Date	Recommended Responsible Entity in the Watershed	Partners in Implementation
a. Evaluate the reduction of runoff volume and improvement of water quality through infiltration and detention/retention systems	2009-2010	Cities/Counties	Colorado State University, EPA
b. Evaluate LID source control and guidelines and their ability to meet the USACE general recommendations	2009-2010	Cities/Counties	Colorado State University
c. Explore LID practices to retrofit existing development	2009-2011	Cities/Counties	Developers
d. Evaluate offline storage impacts on peak runoff, volume reductions, and conformance with state water right laws	2009	Cities/Counties	THK Study
e. Develop LID implementation policy and strategy for watershed application (Clarification on water rights issues and Class V injection wells may be needed.)	2009	Cities/Counties	Colorado State University, COE
f. Map potential sites for water quality treatment and detention/retention facilities	2010	Cities/Counties	NRCS - Soils mapping
g. Identify sites for pilot projects	2010	Cities/Counties	USACE
h. Evaluate potential aquifer recharge and aquifer storage potentials: identify recharge sites, capacities, and pumping rates	2010	Cities/Counties	NRCS – Soils mapping
i. Purchase of reserve areas for future projects in areas of potential redevelopment or infill	2009-2018	Cities/Counties	Non-profits
j. Implement full spectrum detention where appropriate to address water quality and runoff reduction	2009-2018	City/County	Urban Drainage and Flood Control District

V. MUNICIPAL WATER SUPPLIES AND RETURN FLOWS

A. Current Conditions

Most municipal water used within the Fountain Creek Watershed originates from ‘non-native’ water, both water piped in from another watershed and deep well water. After the initial use of this “non-native” water, a portion returns to waterways, increasing their base flow⁴⁵ rates and contributing to the acceleration of their natural instability. At the same time, the return flows from this water enable Fountain Creek to have sustained flows year round, improving conditions for riparian habitat and the sustainability of water organisms. Although the increased vegetation provides greater habitat, in restricted floodplain areas this growth further restricts channel capacity increasing potential flood impacts.

Regional water demand outgrew the relatively small and undependable supply of indigenous Fountain Creek Watershed water supply over 100 years ago. At that time, a cross-basin pipeline was constructed to import water from the south slope of Pikes Peak. Since then, additional pipelines have been built to bring water to this region from up to 200 miles away. In addition, deep wells have been used since the mid 19th century to supply the demands for water in the watershed.

Currently, approximately 80% of the water used for municipal purposes in the Fountain Creek Watershed is ‘non-native,’ originating from another watershed (mostly from the Colorado River Watershed), or from the Denver Basin aquifers which are located deep underground and do not hydraulically connect with surface waters.

By law, the portion of this “non-native” water that remains after the initial use can be ‘reused to extinction,’ enabling return flows to be reused either directly for non-potable uses⁴⁶, or exchanged for additional non-native water. (That is: the total non-native water delivered to customers for their use *minus* the non-native water fully consumed by the customer and lost to the system *equals* the remaining non-native water discharged from wastewater plant as return flows available for subsequent reuse.) This means that for every one gallon of non-native water that is brought into the system, multiple uses can be achieved through direct reuse or by exchanges. Direct reuse is done through a non-potable water system. This water is used for power generation and non-residential outdoor irrigation (golf courses, parks, cemetery, apartment complexes, etc.). Approximately 13% of the water used in the Colorado Springs service area (10.2 million gallons per day) comes from non-potable sources. Reclaimed water (treated waste water) accounts for half of this, and ‘raw’ (untreated) water accounts for the other half. Accounting for the losses due to consumption and evaporation, this one gallon of imported water will ultimately equate to a total of 2.1 gallons of imports through multiple reuse and exchanges.

Because of these exchanges, water now flows all the way to the Arkansas River year round. Since agriculture started diverting significant water from the Fountain in the 1800’s until around

⁴⁵ Base flow: That part of stream discharge that is not attributable to direct runoff from precipitation or melting snow; primarily sustained by groundwater discharge into the stream and wastewater treatment plant discharges.

⁴⁶ Non-Potable: Water that is unsafe or unpalatable to drink because it contains objectionable pollution, contamination, minerals, or infective agents.

1980, Fountain Creek dried up during certain times of the year as these diversions depleted stream flows south of Colorado Springs. Thus, because of exchanges associated with non-native water use, Fountain Creek again has sustained flows year round, improving conditions for riparian habitat and the sustainability of water organisms. Because of the non-native water that is being introduced into the Fountain Creek Watershed, water flows going down Fountain Creek have increased. Currently, of all the water that goes down Fountain Creek in a year (base flows plus storm flows, 149 acre-feet/year or 206 cubic feet per second); approximately 18% is non-native water from Colorado Springs, Fountain, and Security (approximately 26,000 acre-feet/year or 37 cubic feet per second). Since base flows in Fountain Creek are currently approximately 165 cubic feet per second, non-native water currently accounts for roughly 26% of base flows. These additional flows have contributed to the acceleration of the waterway's natural instability. A summary of the existing conditions are shown in the table below:

	Existing Conditions⁴⁷ - Year-Round Ave Flows at USGS Pueblo Gage			
	Thousand Acre-feet per Year (kaf/yr)	Cubic Feet per Second (cfs)	Millions of Gallons per Day (MGD)	% of average
Reusable Return Flows (Colorado Springs, Fountain, and Security)	27	37	24	20%
Native Water	109	151	98	80%
Total Flow in Fountain Creek	136	188	122	
	Existing Conditions* Base (Winter) Flows			
	kaf/yr	cfs	MGD	% of base
Reusable Return Flows (Colorado Springs, Fountain, and Security)	31	43	28	29%
Native Water	77	106	69	71%
Base Flow in Fountain Creek	108	149	96	

*

Of all the water used in the Arkansas River Basin in Colorado:

⁴⁷ Existing conditions values are from page E-64 of the Southern Delivery System Environmental Impact Statement (SDS EIS). They were calculated using actual historical data from 1982 to 2004 modeled with 2006 river operations parameters as described on page 185 of the SDS EIS. This is the most current and accurate data available as of January 2009.

- ~87% used for agriculture
- ~4.3% goes to Colorado Springs
- ~1.7% goes to City of Pueblo and Pueblo West
- ~2.8% goes to Aurora

Municipal water entities in this watershed typically consume 40% of their water through beneficial uses, evaporation, and losses. Of the total approximately 105.4 thousand acre-feet per year (kaf/yr) of water that is used by water users in El Paso County,⁴⁸ approximately 42.2 kaf/yr is consumed on an average year. Water use by provider is estimated as follows:

Water Provider	Water Use
Cherokee Metro District	4.2 kaf/yr
Colorado Springs	80.5 kaf/yr
Donala Water and Sanitation	1.6 kaf/yr
Fountain	2.8 kaf/yr
Manitou Springs	1.0 kaf/yr
Security	4.0 kaf/yr
Stratmoor Hills	1.1 kaf/yr
Widefield	2.9 kaf/yr
Woodmoor	1.1 kaf/yr
Individual Well Users	2.2 kaf/yr
All Other Users (those using < 1.0 kaf/yr each)	3.8 kaf/yr

Source: El Paso County Water Authority Report. September 6, 2002.

Approximately half of the water used by municipal systems is for outdoor irrigation and the remaining half is used indoors. A portion of the water that is used for irrigation returns to the groundwater close to the ground surface and recharges this alluvium⁴⁹ (adds water to it). The portion of this groundwater that flows underground to a nearby creek or is recovered by an alluvial well is not considered to have been consumed, since this water is available to be reused. Of the indoor use, the water split is approximately 29% for toilets, 22% for laundry, 22% for showers and baths, 15 % for faucets, 10% for leaks, and 2% for dishwashers.

Conservation efforts such as tiered water rates, education and outreach, regulations, rebates, and incentives have been successfully used to decrease the per capita water use. In fact, residential water use in Colorado Springs (largest population center in the watershed) is among the lowest in the West, and is 15-30% lower than the Boulder, Denver, and Pueblo per capita residential water use.

Conservation efforts have proven very effective in reducing water use. However, water providers must be prepared for the risks associated with this ‘water hardening,’ meaning that when conservation efforts reduce water consumption to meet only essential needs, there is no longer a water ‘cushion’ to curtail during an emergency or drought. Watering restrictions and other drought measures are therefore not as effective in reducing water use during dry cycles

⁴⁸ El Paso County Water Authority Report. September 6, 2002.

⁴⁹ Alluvium: A general term for unconsolidated material deposited by a stream or other body of running water.

when conservation has already reduced demands to essential needs only. Thus, water providers must be careful to increase storage capacities to assure that water supplies can meet essential water demands during times of drought.

The Future

The population in the Fountain Creek Watershed is increasing. Greater water demands accompany this growth and thus water projects are being planned to meet these demands. One major water project being planned to increase water supply to Colorado Springs, Fountain, Pueblo West, and Security is the Southern Delivery System (SDS). As a result of this project, non-native return flows will increase into Fountain Creek. More details about this project and alternatives are available at www.sdseis.com.

Even with the planned future water projects, the Arkansas Basin Roundtable estimates that by 2030 El Paso County will have a 22,600 acre foot/year (AF) gross gap between water demand and water supply. This gap will be caused by:

- Increased demand in unincorporated El Paso (9,250 AF)
- Loss of groundwater supplies in unincorporated El Paso County and the Town of Monument (13,350 AF)

El Paso County requires the following for new development approved after 1986 that utilizes Denver Basin groundwater:

- A single residence or a subdivision of 4 lots or less must prove a 100-year aquifer life for these residences
- A subdivision exceeding 4 lots in size must prove a 300-year life for the residences

Furthermore, the State of Colorado (HB 1141) requires that building permit applications for developments of more than 50 single-family equivalents include specific evidence of an adequate water supply. Per HB 1141, adequate water supply is defined as one that is sufficient for the proposed development through build-out, in terms of quality, quantity, and dependability.

If these requirements are strictly abided by, some of the future shortfall should be avoided. Additionally, through conservation, reuse, and the reduction of distribution system leaks, water use in the Fountain Creek Watershed will be further reduced. Alternatives to deep aquifer well water dependence will also be necessary to create a sustainable water supply for this region.

Increased discharges and creek flows are expected in the future. The table below is an estimate of these flows, assuming all water demands are met. Although the flows are estimated for 2046, decreased development indicates that these flow rates will not likely occur until a later date.

Future Conditions* (2046) Year-Round Ave Flows at USGS Pueblo Gage

	Thousand Acre-feet per Year (kaf/yr)	Cubic Feet per Second (cfs)	Millions of Gallons per Day (MGD)	% of average
Reusable Return Flows (Colorado Springs, Fountain, and Security)	64	89	58	36%
Native Water	116	160	104	64%
Total Flow in Fountain Creek	180	249	161	
Future Conditions* (2046) Base (Winter) Flows				
	kaf/yr	cfs	MGD	% of base
Reusable Return Flows (Colorado Springs, Fountain, and Security)	67	92	59	49%
Native Water	70	96	62	51%
Base Flow in Fountain Creek	136	188	122	

* Future conditions values are from page E-64 of the Southern Delivery System Environmental Impact Statement (SDS EIS). They were calculated using models predicting future creek flows.

The challenge of increased impervious area⁵⁰ and increased stormwater runoff associated with increased development will require mitigation measures within the watershed to reduce these impacts.

Sources of Statistics Used in This Summary

The statistics used in this summary come primarily from the Colorado State Engineers Office and in the Arkansas Basin Consumptive Use Water Needs Assessment: 2030 (2008 Update). The data on residential water use comes from Western Resource Advocates and the Pueblo Board of Water Works. Future reuse and flows are runs from the SDS EIS consultant's model (MWH). Most of these statistics have been presented to the Fountain Creek Vision Task Force Consensus Committee and many can be read in the Fountain Creek Vision Task Force Top 10 publication.

B. Goals and Strategies to Address Current Conditions

Goals to Improve Current Conditions

⁵⁰ Impervious area: A hard surface area which either prevents or retards the entry of water into the soil. Examples include, but are not limited to, structures, walkways, patios, driveways, carports, parking lots or storage areas, concrete or asphalt paving, gravel roads, packed earthen materials, haul roads and soil surface areas compacted by construction operations.

1. Develop and enhance region-wide conservation efforts
2. Develop and enhance region-wide reuse programs
3. Minimize region-wide water system losses
4. Initiate regional discussions for addressing the long-term water supply gap

Objectives

1. By 2009, issue a report identifying all the watershed stakeholders in water supply.
2. By 2009, perform a SWOT (strengths, weaknesses, opportunities, and threats) analysis on the water conservation for at least three water districts in the watershed. Prioritize the elements from this analysis into water conservation phases for water providers. Set water reduction targets for each phase.
3. By 2010, introduce water conservation phase concepts to all water providers serving 50 or more homes in the watershed.
4. By 2010 – 2015, help implement phased water conservation plans to all watershed water providers open to participating, with the goal of a 15% residential water use per household reduction for providers that do not currently have a conservation program. Monitor and verify programs impact water demands for each provider, fine-tuning programs as needed to meet goals.
5. By 2015, help establish watershed reuse programs with all feasible water districts that are open to participating.
**Note that water conservation includes efforts to reduce potable water distribution system leakages.*

Strategies to Achieve Goals and Objectives

1. Identify stakeholders (cooperative water provider groups) in the watershed
2. Identify education and outreach efforts on water conservation and other related topics and adopt State of Colorado's "Best Management Practices" (BMPs) program.
3. Develop urban water conservation programs in each community in the Fountain Creek Watershed, as appropriate with a watershed-wide target for residential gallons per capita per day (gpcd) water use.
4. Develop programs to lower water demands associated with new development.
5. Develop water reuse programs for all communities in the Fountain Creek Watershed, with watershed-wide reuse percent targets, as appropriate.
6. Establish watershed-wide potable water distribution system targets for acceptable leakage rates
7. Initiate regional discussions for addressing the long term water supply gap.
8. Establish a watershed-wide plan for future growth (Please see strategies for land use planning elsewhere in the Fountain Creek Vision Task Force Strategic Plan)

C. Implementation Plan

Strategy 1: Identify stakeholders (cooperative water provider groups) in the watershed			
Steps to Implement Strategy	Target Completion Date	Recommended Responsible Entity in the Watershed	Partners in Implementation
a. Generate contact list	2009	Pikes Peak Area Council of Governments (PPACG)	Water provider organizations

Strategy 2: Identify education and outreach efforts on water conservation and other related topics and develop the “best of the best” program			
Steps to Implement Strategy	Target Completion Date	Recommended Responsible Entity in the Watershed	Partners in Implementation
a. Interview local water providers (at least 3) and water conservation organizations	2009	Future Fountain Creek Watershed Funding Entity	Water provider and conservation organizations
b. Gather existing electronic information on programs	2009	Future Fountain Creek Watershed Funding Entity	Water provider and conservation organizations
c. Develop phases for water conservation programs combining the best elements from local providers and water conservation organizations	Year-end 2009	Future Fountain Creek Watershed Funding Entity	Water provider and conservation organizations

Strategy 3: Develop urban water conservation programs in each community in the Fountain Creek watershed, as appropriate with a watershed-wide target range for residential gallons per capita per day use.			
Steps to Implement Strategy	Target Completion Date	Recommended Responsible Entity in the Watershed	Partners in Implementation
a. Establish tiered water rate structures	Ongoing	Future Fountain Creek Watershed Funding Entity	Water provider organizations
b. Develop and enforce landscape ordinances that favor low-water use practices	Ongoing	Future Fountain Creek Watershed Funding Entity	Water provider organizations
c. Establish education and outreach focused on reducing outdoor irrigation and indoor water use including: Xeriscape, water-wise appliances and fixtures, efficient irrigation techniques, etc.	2010 (or as soon as possible after entity is created)	Future Fountain Creek Watershed Funding Entity	Water provider organizations
d. Establish rebate, assistance, incentive, and other conservation programs	2010 (or as soon as possible after entity is created)	Future Fountain Creek Watershed Funding Entity	Water provider organizations

Strategy 4: Develop programs to lower water demands associated with new development			
Steps to Implement Strategy	Target Completion Date	Recommended Responsible Entity in the Watershed	Partners in Implementation
a. Assure/enforce that low-flow faucets and showerheads and low water toilets are installed in all new residences and other facilities	Ongoing	Future Fountain Creek Watershed Funding Entity	Water provider organizations, developers/builders
b. Have aggressive water conservation programs for new development (see above)	Ongoing	Future Fountain Creek Watershed Funding Entity	Water provider organizations, developers/builders
c. Use a portion of new-home development fees to help fund water conservation programs, as appropriate	Ongoing	Future Fountain Creek Watershed Funding Entity	Water provider organizations
d. Develop a model landscape ordinance for new development and annexations, as appropriate	Ongoing	Future Fountain Creek Watershed Funding Entity	Water provider organizations

Strategy 5: Develop water reuse programs for all communities in the Fountain Creek watershed, with watershed-wide reuse percent targets, as appropriate			
Steps to Implement Strategy	Target Completion Date	Recommended Responsible Entity in the Watershed	Partners in Implementation
a. Develop long-term plans and programs to meet water reuse targets, as appropriate	Ongoing	Future Fountain Creek Watershed Funding Entity	Water provider organizations & agricultural users, as appropriate
b. Educate the public on how runoff from their property may be used for irrigation purposes	Ongoing	Future Fountain Creek Watershed Funding Entity	Water provider organizations

Strategy 6: Establish watershed-wide potable water distribution system targets for acceptable leakage rates			
Steps to Implement Strategy	Target Completion Date	Recommended Responsible Entity in the Watershed	Partners in Implementation
a. Develop programs to help each community reach these targets	Ongoing	Future Fountain Creek Watershed Funding Entity	Water provider organizations
Strategy 7: Initiate regional discussions for addressing the long term water supply gap			
Steps to Implement Strategy	Target Completion Date	Recommended Responsible Entity in the Watershed	Partners in Implementation
a. Initiate regional discussions for addressing the long term water supply gap	Ongoing	EPCWA	Water provider organizations

VI. LAND USE PLANNING AND DEVELOPMENT

A. Current Conditions

Issue/Problem

Physical development is the greatest agent of change in the watershed. As municipalities and unincorporated counties approve developments within the watershed, the functionality of the physical environment changes. Colorado has one of the highest growth rates in the west. Expanding development increases the amount of impervious surfaces⁵¹ and increases demands on natural resources and physical infrastructure. Meeting these increased demands of development within the watershed affects water quality, water quantity, the natural environment, and patterns of land use within the watershed.

The table below shows the most recent population and projected growth for the eight municipalities and three counties within the Fountain Creek Watershed.

	2000	2005	2010	% change b/w 2000- 2005	% change b/w 2005- 2005
City of Colorado Springs	360,890	385,312	NA	6.8%	NA
Fountain	15,197	19,489	NA	28.2%	NA
Geen Mountain Falls	773	916	NA	18.5%	NA
Manitou Springs	4,980	5,329	NA	7.0%	NA
Monument	1,971	4,114	NA	108.7%	NA
Palmer Lake	2,179	2,399	NA	10.1%	NA
Pueblo	102,121	103,994	NA	1.8%	NA
Woodland Park	6,515	7,155	NA	9.8%	NA
El Paso County	520,571	568,436	622,858	9.2%	9.6%
Pueblo County	142,054	150,917	164,783	6.2%	9.2%
Teller County	21,147	22,260	24,096	5.3%	8.2%

Source: Colorado Department of Local Affairs Website (2/26/09)

El Paso County

The rate of residential and commercial development is increasing in the watershed. This raises the issue of how to manage this growth and track the impacts. Residential and commercial development in unincorporated El Paso County had undergone record increases between 2002 and 2006. Though development submittals slowed significantly in 2007 and 2008, growth during the decade has proceeded at a rapid pace.

Within the unincorporated portion of the watershed, there are numerous developments that are entitled at a specific density; however development has not yet begun. The major projects

⁵¹ Impervious Surfaces: A hard surface area which either prevents or retards the entry of water into the soil. Examples include, but are not limited to, structures, walkways, patios, driveways, carports, parking lots or storage areas, concrete or asphalt paving, gravel roads, packed earthen materials, haul roads and soil surface areas compacted by construction operations.

tracked by the El Paso County Development Services Department total 22,883 planned residential units in the watershed and 86 acres of planned commercial development. This number is based on a development cap approved by the Board of County Commissioners for each project, but may be less when the design comes to fruition. The 22,883 dwelling units (du's) and 86 acres of commercial is the expected cap for major projects (over 150 du's) and mixed use projects. This does not include smaller projects and infill development occurring in the Cimarron Hills area.

The City of Colorado Springs

Colorado Springs is a sizeable and growing community. There are thousands of land use applications reviewed per year; of those, approximately 1,500 are for major projects. The City has a population of 400,000 people and is growing by 1.3% per year, comprising the majority of the region's 575,000 people. By 2030, the city's population is expected to exceed 500,000; the region is anticipated to grow to more than 800,000 during the same time. Two-thirds of recent population growth has resulted from net natural increase (more births than deaths). One-third resulted from people moving into the area⁵² Given the rapid growth of the unincorporated areas surrounding the City, Colorado Springs' share of the regional population is expected to drop from 69% to 63% by 2030. City strategic growth policies seek to focus future urban growth within the City.

The City of Fountain

Several large ranches are in Fountain's urban growth area. Kane Ranch and a portion of Norris Ranch have petitioned for annexation. Fountain's population has grown an average of 7% per year since 2000. It is expected to continue with the influx of additional troops at Fort Carson. Most of the City's commercial growth is at the northern end of the City.⁵³

Fort Carson

The Base Realignment and Closure (BRAC) expansion is the largest proposed change to the base in the near future. The estimated cost of the BRAC construction projects is \$526 million, and the majority of that construction is taking place between June 2006 and September 2009. Projects include: a Division Headquarters complex at a cost of \$104 million, heavy brigade facilities at a cost of \$341 million, and an alteration to Evans Army Community Hospital and consolidated clinic at a cost of \$81 million. The base is also planning to build 401 additional family housing units. Fort Carson is anticipating the arrival of an additional 10,000 soldiers at Fort Carson as a result of BRAC.⁵⁴

Pueblo County (including the City of Pueblo)

Net migration in Pueblo in 2006 totaled 2,810. Assuming a household size of 2.5, this meant that occupied housing increased by about 1,120 units. Last year the Pueblo economy saw employment grow by 2,550, up 4.0%. Employment growth in 2006 was almost four times as

⁵² Healy, Bill and Ryan Tefertiller, 2007. City of Colorado Springs Planning Department. Presentation to a Fountain Creek Vision Task Force working group on March 22, 2007.

⁵³ Smedsrud, Dave. 2007. City of Fountain. Presentation to a Fountain Creek Vision Task Force working group on March 22, 2007.

⁵⁴ Alguirre, Hal. 2007. Fort Carson. Presentation to a Fountain Creek Vision Task Force working group on March 22, 2007.

high as it was in 2005. Relatively low mortgage rates also contributed to a strong housing market in 2006. Builders' inventories of speculative homes were down slightly compared to a year ago, totaling an acceptable four-month supply. Housing production per capita was within normal limits. Supply and demand are in balance. In 2005 new housing construction in Pueblo per 1,000 population totaled 8.1, down from a peak of 10.3 in 1999. Pueblo's housing production rates of about 7 to 10 units per 1,000 population are well below per capita housing production seen in the most active markets in the country.⁵⁵

The portion of the Fountain Creek Watershed in Pueblo County represents one of the last major areas of Colorado's Front Range that has not been entitled and subdivided in preparation for development or placed under conservation easement. Within this Fountain Creek / I-25 corridor there has been a lot of interest from developers related to annexation to the City of Pueblo. Pueblo recently annexed a 370-acre ribbon of land around the border of Pueblo Springs Ranch (formerly McCulloch Ranch) as a first step in the potential annexation of the remaining 24,000 acres. This recent activity has spawned interest from a number of large landholders within the lower portion of the watershed⁵⁶.

Imperviousness of the Fountain Creek Watershed

"The Fountain Creek Watershed Impervious Surface Area and Watershed Health Analysis Report" describes growth and development trends and health characteristics of the Fountain Creek Watershed. The watershed was divided into 27 smaller drainage basins (sub-watersheds) and for each individual sub-watershed, current and future percent imperviousness was calculated and classified depending on the amount of imperviousness as either sensitive (0-10%), impacted (11-25%) or non-supporting (26-60%)⁵⁷. Results of the study indicate that changes in percent imperviousness will be most pronounced in the northern and eastern portion of the Fountain Creek Watershed and in the areas that have shared boundaries between the City of Colorado Springs (or other municipalities) and unincorporated portions of El Paso County. Increased growth in the unincorporated portions of El Paso County will continue to put more pressure on creeks within those areas and immediately downstream due to increased stream-flow and increased suspended sediment concentrations. Ephemeral⁵⁸ and intermittent streams will continue to see more stream-flow and become perennial⁵⁹. This has already occurred in Cottonwood Creek, sections of Sand Creek, and Jimmy Camp Creek, which are also expected to see the largest increase in percent imperviousness in the future.

Strategies to address increasing imperviousness are being considered by the various counties and municipalities within the watershed. Changes to development techniques may allow post-development hydrographs⁶⁰ to approximate pre-development hydrograph on a site-by-site basis. The implementation of low-impact development (LID) practices may be one means to

⁵⁵ Pueblo Housing Market 2007-2009, 2007 Bamberger Housing Study,

<http://www.prbd.com/pdf/PuebloHousing2007.pdf>

⁵⁶ City of Pueblo, Planning Department

⁵⁷ Fountain Creek Watershed Imperviousness Surface Area and Watershed Health Analysis Report,

http://www.fountain-crk.org/Reports/fc_impervious_surface.html

⁵⁸ Ephemeral: A stream that flows only a short time (days or weeks) in direct response to precipitation.

⁵⁹ Perennial: A stream with year-round channel flow.

⁶⁰ Hydrographs: The description and studies of bodies of water (e.g. lakes and rivers): as the measurement of flow and investigation of the behavior of streams and the charting or graphing of them.

accomplish this goal. Adopting Smart Growth principles and promoting Green Infrastructure, Energy Star Housing, and Leadership in Energy and Environmental Design (LEED) Criteria for non-residential structures will go a long way toward minimizing the negative impacts of development within the watershed. These strategies do not necessarily require changes in planned uses, only the manner in which sites are developed.

Anticipated Water Needs

If we assume that the average household contains 2.5 persons, and also assume a per person average water usage of 69.3 gallons of water per day, each household on average would use 173.25 gallons of water per day. When this number is extrapolated to reflect the amount of growth expected in the watershed in the next 20 years, it provides a large target for optimizing our efficiency as it relates to resource usage and allocation within the watershed. The Colorado Springs Region is expected to grow by 225,000 residents by 2030⁶¹ and the Pueblo area proposed annexations could accommodate as many as 175,000 residents.⁶² If these growth projections are actualized, and current water use trends remain the same, the minimum water needs for the Colorado Springs region would increase by roughly 15,592,500 gallons per day and the Pueblo region's minimum water needs for the region would increase by approximately 12,127,500 gallons per day.⁶³

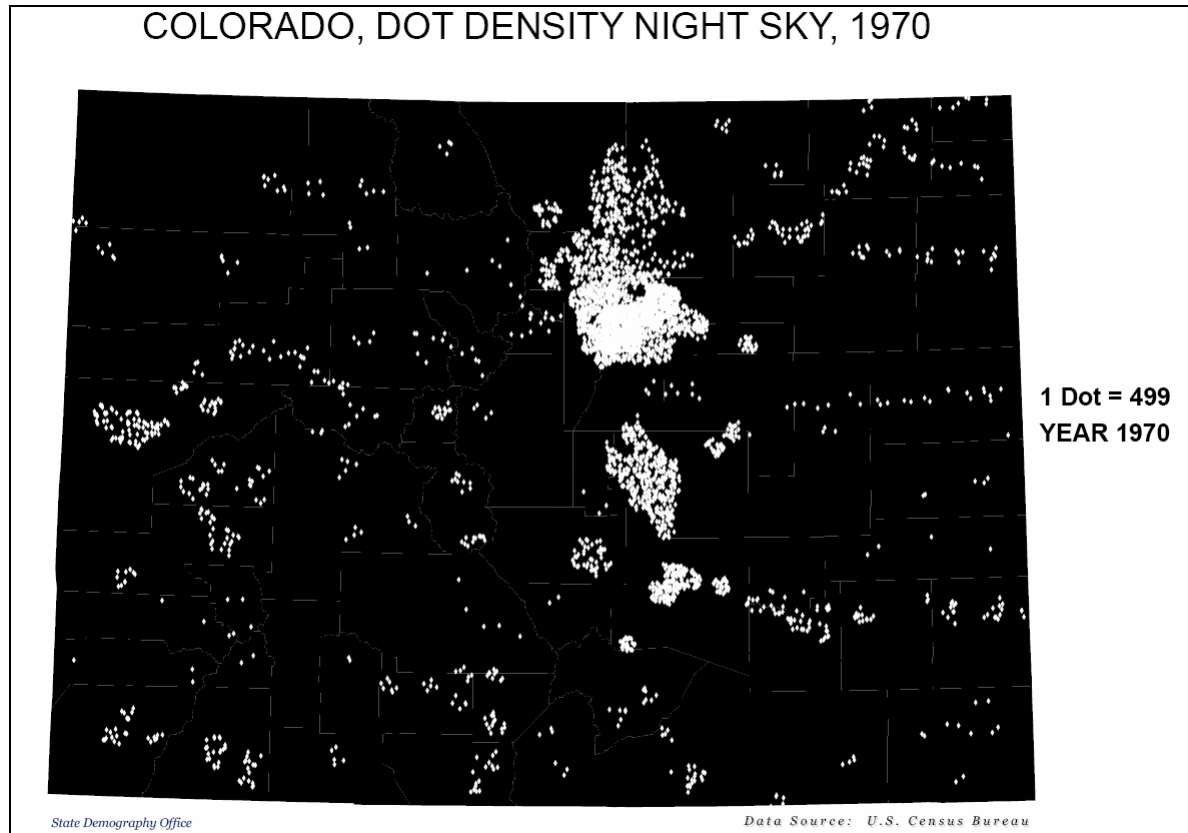
⁶¹ Healy, Bill and Ryan Tefertiller, 2007. City of Colorado Springs Planning Department. Presentation to a Fountain Creek Vision Task Force meeting on March 22, 2007.

⁶² City of Pueblo Planning Department, Land Use and Environment Working Group, March 22, 2007.

⁶³ Arkansas River Consumptive Use; July, 2008.

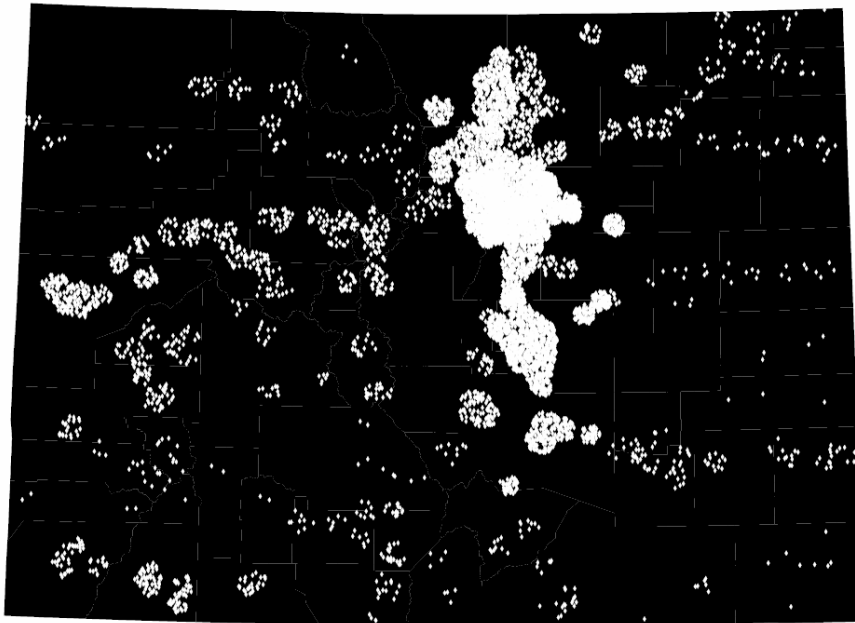
Growth Indicator

The Colorado State Demographer uses a “Dot Density, Night Sky” format to show the impacts of residential growth in various parts of the state. Imagine each “dot” represents about 500 people. The State of Colorado in 1970 is shown below.



The “darkness” between both Colorado Springs and Pueblo is readily observed. As the next series of depictions indicates, growth in the Fountain Creek Watershed will fill in the darkness. These dots similarly represent increasing impervious surface in the watershed, with all the consequences that follow.

COLORADO, DOT DENSITY NIGHT SKY, 2010

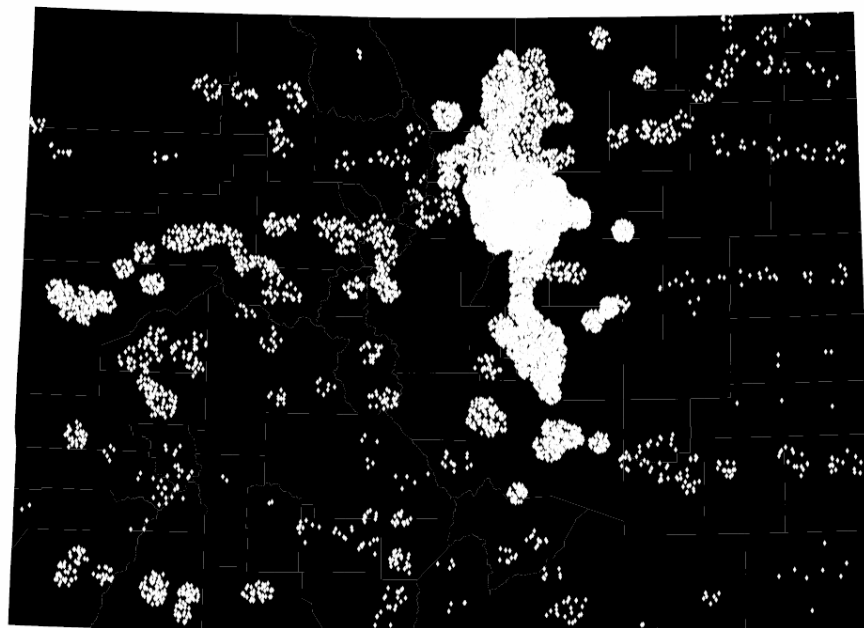


1 Dot = 499
YEAR 2010

State Demography Office

Data Source: State Demography Office

COLORADO, DOT DENSITY NIGHT SKY, 2020



1 Dot = 499
YEAR 2020

State Demography Office

Data Source: State Demography Office

Prospective Development in the Fountain Creek Watershed

Sundance Investments/Lafarge West Inc. Gravel Pit

The Sundance Investments/Lafarge West Inc. Gravel Pit is a 745-acre property that will contain a 437-acre sand and gravel pit, along with a use variance request for possible asphalt and concrete batch plants. This proposed project would be located along two miles of the west bank of Fountain Creek just southeast of I-25, Exit 122. The land is currently leased for 15 years, though the rate of use will depend on the market and determine the length of the lease – up to 30 years.⁶⁴ The site will be mined from north to south in increments to expose no more than 30 acres of ground water at one time; reclamation will be sequential with this progression. The land will be returned to agricultural uses and a possible 270-acre water reservoir upon conclusion of operations. Water needs are stated at 150 acre-feet per year. Lafarge indicates that the water supply will come from “local sources.” There will be discharge into Fountain Creek from directly adjacent settling basins. Lafarge states that peak dewatering and stormwater release to Fountain Creek of clarified water will meet or exceed all standards and that “no impact to surface waters is anticipated.”

Sand and gravel would be mined from the pits, and some of it would be processed on site in proposed concrete and asphalt batch plants. There would be up to 750 truck-trips per day, utilizing the proposed improved Exit 122 overpass. Negotiations with the Colorado Department of Transportation (CDOT) are ongoing relative to this overpass.

This project has potential impacts to the Fountain Creek corridor:

- The northern extension of the proposed property lies in a narrow band between Fountain Creek and the railroad tracks, where the creek takes a turn east. Some analysts anticipate the need to “hard point”⁶⁵ the creek at this point in order to mitigate flooding risks, which may cause even low levels of floods to be redirected into an area of natural wetlands on the opposite bank. Lafarge states that it is required to implement flood mitigation as appropriate and that “no wetland impacts are anticipated” within the site. No studies have been done at this time to determine effects on the opposite bank.
- Portions of the northern end of this property are located within the 100-year floodplain. Lafarge states that the asphalt and concrete plants will not be situated within the floodplain area.
- Lafarge states that dewatering discharge and stormwater will be intercepted on site by settling basins and will be subject to discharge permitting. They also report that “no erosion in Fountain Creek is anticipated as the result of this operation.”

The gravel pit’s eastern boundary is located along 2 miles of the west bank of Fountain Creek. Just across the creek along those two miles is a 915-acre conservation easement intended to preserve agriculture, wildlife, and wildlife habitat, including wetlands. Lafarge states that impacts on wildlife within the site were studied and are estimated to be negligible based on avoidance of riparian areas and utilization of only existing, disturbed agricultural land.

⁶⁴ In a presentation to the Fountain Creek Vision Task Force Consensus Committee on April 20, 2007, a Lafarge representative indicated that the lease could be for up to 30 years. However, Lafarge’s submittals to the El Paso County Planning Department indicate that the lease would be for 15 years only.

⁶⁵ Hard pointing involves reinforcing the creek bank with rocks and/or cement in order to prevent erosion.

Lower Fountain Metropolitan Sewage Disposal District (LFMSDD)

A wastewater treatment and biosolids stabilization and disposal plant is proposed to be located on Birdsell Road 4 miles south of Fountain (and 1.5 miles northeast of Exit 122). The site application is currently being reviewed by the Colorado Department of Public Health and Environment (CDPHE) Water Quality Control Division. In its first phase it will handle 2.5 million gallons per day (mgpd) and build up to 6 mgpd. It will serve development in the lower Jimmy Camp Creek watershed. Discharge will be made into Fountain Creek with efforts to mitigate erosion. This facility is scheduled to open late 2010. A geotechnical study has been completed to determine soil conditions and develop suitable design criteria for pipelines and structures. Commencement of construction is anticipated to begin during the first quarter of 2009.

Pueblo Springs/ LDM Development

Pueblo Springs is a proposed 24,000-acre residential development in Pueblo County just south of the Pueblo/El Paso County line and east of I-25. Technically, only a small part is within the Fountain Creek Watershed but that part is along Fountain Creek. The developer is in talks with the City of Pueblo on many things, including the need for a future wastewater treatment plant.⁶⁶

Jimmy Camp Creek

While there is an area in the north of the proposed development that could be conducive to industrial development, there are no plans for it at this time.

Pikes Peak International Raceway (PPIR)

PPIR was sold to International Speedway Corporation (essentially NASCAR) in early 2006. They are in negotiations with several unspecified entities for providing “multi-function sports car activities” that do not conflict with NASCAR activities. Nothing further is known at this time.

Construction

Construction activity (beyond these large projects) is a significant part of the economy and can have important land use, water quality, and water quantity effects on the watershed.

Roadways

US24 Highway Improvement

In the mid-90’s, in response to projected traffic congestion concerns, Pikes Peak Area Council of Government (PPACG) asked CDOT to study the route from Colorado Springs to Woodland Park. In 2004, planning efforts began on the 6.5 mile stretch of US HWY 24 between I-25 and West Manitou Avenue. An effort to solicit local and regional input resulted in nearly 400 “ideas.” These were narrowed down to three alternatives: the No-Build alternative, which would include only those projects already approved and funded; the Midland Expressway, with an emphasis on local neighborhoods and local (40-45 miles per hour) traffic; and the US24 Freeway alternative with an emphasis on regional traffic traveling at higher speeds (50-55 miles per hour). In May 2006 the Midland Expressway alternative was chosen. The Midland Greenway Advisory Committee championed the re-visioning effort (See: www.dot.state.co.us/us24w/greenway). Local concerns included the effects on local neighborhoods, loss of homes and business in the

⁶⁶ Munch, Jim. 2007. Personal communication.

path of the new route, non-motorized traffic trails and pathways, environmental degradation, light, noise, and air pollution.

The Environmental Assessment for the Expressway alternative, preparatory to CDOT's recommendation and the Federal Highway Administration's Decision Document, should be completed in 2008. PPACG will then address funding for construction which will most likely happen in phases over a 10- to 15-year period. (Design graphics for the plan are available at: www.ppacg.org/trans/2030/2030plan under "graphics.")

State Highway 16

Among all the other roadways envisioned, planned, or proposed (see below) for the Fountain Creek Watershed, one is of particular note: State Highway 16 which connects Mesa Ridge Parkway /South Powers Boulevard to HWY 85 (at Fountain) to I-25 (at exit 132) to Fort Carson (at Gate 20). Already congested and operating beyond its capacity, this series of interchanges and overpasses is being constructed at an accelerated pace due to the imminent arrival of 10,000 additional troops assigned to Fort Carson (which is estimated to bring a total of 30,000 people to the area), the need for a Rapid Deployment route from Fort Carson to Peterson AFB that will support the 115-ton "Heavy Equipment Transporter" vehicles; and provide for an east-west connection for future growth in southern Colorado Springs and Fountain. Parts of this project should be completed in 2009.

Toll Roads

Plans for Toll Roads abound throughout the Watershed; far too many to be analyzed here. Please see maps on the following websites: www.PPACG.org (under "Transportation"), www.Dot.state.co.us (under "CTE (Colorado Tolling Enterprise) Executive Summary"), and Powerslink.com.

One toll road that directly impacts the Watershed and that is not specifically named in the above documents is the Southlink, Inc, Private Toll Road (PTR). PTR is proposing a 9.3 mile, 300-foot corridor to form a 4-lane, median-divided toll road from South Powers Boulevard/Mesa Ridge Parkway (in Fountain) to I-25 Exit 123. That is, from Mesa Ridge Parkway straight south, curving a bit east to circumvent Calhan Reservoir, then curving southwest over Fountain Creek and the railroad tracks to I-25 Exit 123. (NOTE: This project is not the so-called Super Slab, which would be located farther east, i.e. outside the Fountain Creek Watershed.)

PTR has filed formation documents with the Colorado Secretary of State and must commence work within 3 years. Before construction begins, they must provide an environmental study approved by CDOT and construction plans for the road must be "approved by CDOT and each Metropolitan Planning Organization or Regional Planning Organization" affected by the route. The project also "needs to be included in the regional transportation plan(s) and in the comprehensive statewide transportation plan prepared by CDOT."

PTR "intends to offer additional forums for public involvement" and "contemplates preservation of wildlife habitat and open space adjacent to the corridor." Southlink states that they "do not have the power to condemn private property" and that "such condemnation could occur only through action by CDOT."

Powerlines

The following power lines and towers are included in this plan due to their impact on viewsheds in the area.

Eastern Plains Transmission Project (Tri-State/WAPA Power Transmission Lines)

Western Area Power Administration (WAPA) and Tri-State Generation and Transmission Association are proposing a 1,000-mile high-voltage transmission line with associated facilities throughout eastern Colorado and western Kansas. One part of this will intersect with the Midway Substation (just southwest of Exit 122). As currently proposed, there would be a long series of 90 to 115 foot towers for the 345 kilovolt power lines that would originate at the Boone substation, head north and west across the prairie to a point near the El Paso/Pueblo County line, then turn west to cross Fountain Creek to the Midway substation. Then reverse course back across the creek heading east to split north-south somewhere out near the Chico Basin Ranch. The actual route is in a state of flux. **Note on November 30, 2008:** According to a WAPA spokesperson, Kansas did not approve an air permit and the entire project is on hold until further notice.

Xcel Energy/Public Service Company of Colorado Power Line

Xcel has proposed and has gained approval for a powerline from the Comanche power plant south of Pueblo to the Daniels plant south of Denver. The power line would follow established corridors (power lines) from east of Pueblo, angle to a point two and a half miles east of I-25 and just south of the El Paso-Pueblo County line, then cross open prairie north near Birdsall road and head north on established corridors. The towers for this 345-kilovolt line would be 140 feet tall along this 70-mile stretch.

Robert Norris - Radio Communications Towers

Landowner Robert Norris is applying to the Pueblo County Planning Commission for approval of a cluster of from four to six, 200- to 350-foot radio towers just north of the power line corridor, just south of the El Paso-Pueblo County line, along Overton Road. This project has been approved.

B. Goals and Strategies to Address Current Conditions

Goal to Improve Current Conditions

Establish and implement land use policies that preserve, maintain, and enhance ecosystem health (including flood control, wildlife habitat and water quality).

Objectives

By 2010, establish a process that Fountain Creek communities can use to work together to achieve the land use vision and goal

Strategies to Achieve Goals and Objectives

1. Create and implement a common land use vision for the watershed.
2. Develop a suite of land use and development approaches to mitigate negative impacts on water resources.
3. Identify and promote land use and development best management practices.

4. Preserve open space and agriculture with a coherent system of conservation easements.
5. Collaborate and cooperate with all entities that control land use and development in the region to achieve the goal.
6. Remove regulatory barriers and provide selective incentives to promote water protective land use and development, such as low-impact development, sustainable design, and green building.
7. Develop watershed-wide criteria, regulations, and policies, as appropriate to each jurisdiction, to ensure water protective land use and development
8. Create a pilot project that demonstrates low-impact development practices.
9. Evaluate the effectiveness of the new suite of land use and development approaches.

C. Implementation Plan

Note: Many of the actions items for improving land use planning in the watershed overlap with action items for improving water quality. For the sake of clarity, these crossover action items are only listed in the Water Quality section of the Strategic Plan.

Steps to Implement Land Use Strategies	Target Completion Date	Recommended Responsible Entity in the Watershed	Partners in Implementation
a. All jurisdictions in the watershed to develop a task force to meet twice a year to discuss land use planning issues, review current land use and development practices in each community and develop voluntary guidelines.	2009	City of Pueblo	Colorado Springs, Woodland Park, Fountain, Pueblo County, El Paso County, Manitou Springs, Monument, Department of Defense representatives, Army Corps of Engineers
b. All watershed jurisdictions have revised land use planning and development guidelines that are similar to those proposed by the task force	2013	Pueblo County	Colorado Springs, Woodland Park, Fountain, El Paso County, Manitou Springs, Monument, Department of Defense representatives, Army Corps of Engineers
c. A watershed entity is developed to provide and recommend voluntary land use and development best management practices in the watershed	2013	Pueblo County El Paso County	Pueblo, Woodland Park, Fountain, Pueblo County, El Paso County, Manitou Springs, Monument, Department of defense representatives, Army Corps of Engineers
d. Guidelines are set for existing undeveloped private land to incorporate a percentage of open space dedications or other measures for all proposed development	2014	Future Fountain Creek Watershed Funding Entity	Colorado Springs, Pueblo, Woodland Park, Fountain, Pueblo County, El Paso County, Manitou Springs, Monument, Department of Defense representatives, Army Corps of Engineers
e. Development of new regulations incorporating LID, best management practices (BMPs), streamside or riparian regulations, and green building practices.	2015	Colorado Springs	Pueblo, Woodland Park, Fountain, Pueblo County, El Paso County, Manitou Springs, Monument, Department of Defense representatives, Army Corps of Engineers
f. All new development in the watershed will incorporate, to the extent practicable, LID, sustainable design, and green building into development practices	2018	Future Fountain Creek Watershed Funding Entity	Colorado Springs, Pueblo, Woodland Park, Fountain, Pueblo County, El Paso County, Manitou Springs, Monument, Department of Defense representatives, and the Army Corps of Engineers

VII. RECREATION

A. Current Conditions

Overview

One of the goals of the Fountain Creek Task Force is to create a recreational amenity of Fountain Creek. The Task Force hopes to increase recreational opportunities along Fountain Creek in order to benefit the region's residents, wildlife, and the stream itself.

This summary focuses on opportunities for passive recreation⁶⁷ along Fountain Creek and provides general background on existing recreational opportunities in the Fountain Creek watershed. Active or motorized recreation⁶⁸ is not part of this summary because those uses are not consistent with the vision articulated by the Task Force. This summary is not intended to provide a blue print for recreation in the entire watershed.

Current Conditions: Existing Recreational Facilities and Opportunities

There are many parks, nature preserves, and trail amenities in the watershed. As is true for Colorado as a whole, residents of the watershed enjoy outdoor recreation opportunities and consistently respond favorably when asked if more opportunities for recreation are desired.

Although there are substantial recreational facilities in Colorado Springs and many in the City of Pueblo, south of the City of Fountain and north of the City of Pueblo there is little opportunity for recreation along Fountain Creek. The primary public recreational facilities between the City of Fountain and Pueblo is a designated bird watching trail along Hanover Road in El Paso County. This area is sparsely populated, with ranching and farming the primary land use within the corridor. Transportation right-of-way, residential development, and utility corridors are other significant land uses.

State Parks has two facilities in the area: Lake Pueblo State Park (not in the Fountain Creek Watershed) and Cheyenne Mountain State Park. Lake Pueblo State Park is among the most heavily utilized parks in the state (with an estimated 1.5 million visitors each year) and is anticipated to connect to the Front Range Trail (see below for more on the Front Range Trail). Flat water recreation, fishing, and camping are the main attractions to the Park. Cheyenne Mountain State Park is a scenic foothills-to-mountain park located just southwest of Colorado Springs and west of Ft. Carson with hiking, biking, and educational opportunities. State Parks and Colorado Springs are in the process of acquiring the top of Cheyenne Mountain and will provide increased trail and recreational opportunities once the entire area is purchased.

⁶⁷ Passive recreation includes is generally limited to hiking, biking, horseback riding, picnicking, camping, climbing, hunting, fishing, and wildlife viewing.

⁶⁸ Active recreation includes physical education, athletic fields, and supporting athletic elements (such as but not limited to: goals, goal posts, backstops, dugouts, fences, etc.).

There are numerous local and regional parks in the watershed. Among these are: Monument Valley Park, North Cheyenne Canyon & Stratton Open Space, Bear Creek Canyon Park, Palmer Park Bluestem Prairie Open Space, Honor Farm, Fountain Creek Regional Park, and Whitewater Kayak Park. In addition to parks and open space, there are trail systems throughout the area, some of which follow Fountain Creek and connect to parks such as Fountain Creek Regional Park. The majority of these parks and open space are used for passive recreation such as walking, bicycle riding, jogging, wildlife viewing, and, in the case of Whitewater Kayak Park in Pueblo, limited non-motorized water recreation (kayaking).

Other recreational activities such as hunting and motorized recreation have not been discussed by the Task Force. Currently, hunting is not a major activity occurring on Fountain Creek. If increased hunting were to occur careful planning would be required in order to ensure the safety of the public while recreating in or near areas where hunting is allowed. As of third quarter 2008, there are several options being considered for the Pikes Peak International Raceway.

Future Recreational Opportunities

One upcoming recreational opportunity within Pueblo County is the Fountain Creek Stewardship Center. The Fountain Creek Stewardship Center will serve as the hub for the Fountain Creek system of parks, open space, natural areas and research sites. It will be connected to the other facilities located along Fountain Creek with Internet and webcam technology, making it an educational amenity for those who visit in person or on-line. Each element of the system will promote natural resource management practices.

Functioning full-scale exhibits at this location will be used to educate the public in many areas including: natural creek functions, water quality improvement, flood/sediment attenuation, bank protection techniques for rural areas, wildlife habitat improvements, backwater areas for Arkansas Darter habitat (a threatened species in Colorado), and recreational management. This project is currently in the planning and development stage with a proposed 2009 construction start date.

Another project that will encourage the public to become Fountain Creek stewards is the Fountain Creek Eco-Fit Education Park. The Fountain Creek Eco-Fit Education Park, which is a critical component of the watershed improvements, will also be connected to the other facilities located along Fountain Creek with Internet and webcam technology, making it an integral educational amenity for locals and tourists alike. Visitors will learn and explore through inviting interactive and hands-on play, and health will be promoted through active play.

The park will be a case study of how the ecology of Fountain Creek can be improved in an urban setting. This will be accomplished through innovative design techniques such as backwater channels and wetlands that will act as water quality filtration ponds and for flood storage. These areas will also provide beauty, wildlife habitat, and recreational opportunities. Hands-on educational displays will teach park visitors about the Fountain Creek drainage basin, how floods occur and can be safely avoided, and the history of the creek.

Both of these demonstration projects will actually be a part of the solution for the watershed because it will:

- construct wetlands that will help improve water quality in Fountain Creek and will help attenuate flood flows;
- provide bank stabilization will help reduce sediment loads in the Creek and will demonstrate state-of-the-art practices that can be duplicated in both rural and urban settings elsewhere in the watershed;
- provide habitat improvements that offer a healthy environment for the Arkansas Darter, a threatened fish species in Colorado; and

create demonstrations that will educate the public on watershed health, safety, and the importance of proper watershed management.

In addition to these future recreational facilities are other upcoming and planned developments in the watershed. State Parks is spearheading an initiative to connect Wyoming to New Mexico via the Front Range Trail (FRT). The FRT will piggyback on existing trails systems through metropolitan areas and will work to build new sections of trail where there are none. Colorado Open Lands, a non-profit land trust and member of the Task Force, was awarded in 2008 a trail planning grant from State Parks to prepare a trail implementation plan for the Front Range Trail section south of Fountain to the Pueblo City boundary. The goal of the grant is to help State Parks and its partners implement the FRT by presenting two potential trail alignments, assessing cost for trail easement acquisition, compiling contacts for interested landowners, and to coordinate efforts among various stakeholders interested in planning for the FRT (including the Task Force). To date, no detailed planning has been done on parking, esthetic impacts of the FRT, and public access points. Any private landowner participating in granting a trail easement would do so willingly. Impacts to agricultural operations and other land uses will be considered in the trail alignment phase of planning.

The Task Force has also brainstormed opportunities for loop trails off of linear trails that would provide wetland and riparian habitat viewing for birders and general wildlife viewing nearer to the Creek, although no formal plans have been produced by the Task Force to date. Portions of Fountain Creek including Hanover Road and Clear Springs Ranch are included in Colorado Division of Wildlife Pikes Peak Birding Trail. Viewing and parking is from the road and no private property access is allowed. The envisioned loop trails would likely be raised or planked in order to cross wet or riparian areas and would require easements on private property or the acquisition of such access. Currently, no specific plans for the location of birding and wildlife viewing trails has been identified. Parking and public access would need to be carefully planned.

There has also been discussion of establishing one or more State Park facilities along Fountain Creek that would be linear in shape and provide camping, flat water recreation, and ranching activities. If graveling of the creek occurs, there may be future opportunities for flat water recreation such as that found at St. Vrain State Park on the Northern Front Range. Any discussion of a State Park would have to be supported by the local communities that would be impacted by a Park. State Parks is pursuing negotiations with landowners for potential location(s) for a State Park. Two ideas have been discussed for the use of the park(s): 1) a working ranch park where visitors can experience Colorado's ranching heritage through hands-on activities, and 2) passive recreation site(s) for camping and nature viewing. No further planning work has been done by the Task Force in conjunction with State Parks.

Local planning for recreation is ongoing on the local level and includes trails such as the Midland Trail along US Highway 24 between Colorado Springs and Manitou Springs following Fountain Creek. A broad based citizen's group called the Greenway Advisory Committee is planning a greenway that will use a state road expansion project to implement a new trail system in this same stretch of Fountain Creek. The Greenway Committee is exploring three different visions for the trail that include considerations for water quality, floodplains, and impacts to recreational resources. Planning efforts in Pueblo include improving linkages to the Fountain Creek Trail at El Centro de Quinto Sol, Plaza Verde Park, and Hoff Elementary School; trail enhancements that better link trail users to wildlife and the river corridor through vegetation management and improvements; and consideration of the viability of a 'confluence park' located between Plaza Verde Park and the confluence of Fountain Creek and the Arkansas River.

Other local planning efforts are too numerous to list in this summary. The intent of the Fountain Creek Recreational Task Force Committee, recommended in this report, is not to duplicate but to encourage coordination of recreational planning such as the segment of Fountain Creek south of Fountain. The Fountain Creek Recreational Task Force Committee would also be able to ensure that the vision and general goals of the Fountain Creek Vision Taskforce are upheld in recreational planning.

Note: Currently, there is no non-motorized transportation alternative connecting the metropolitan areas of Colorado Springs and Pueblo. Members of the public have expressed an interest in having a trail that could provide not only recreational opportunities but bicycle and other non-motorized commuting options. The Task Force has begun to explore what trails currently exist in order to plan for future trails that could also provide routes to Ft. Carson gates, for example, or access to city centers.

Challenges and Next Steps

There is no information available on the costs of implementing any of the recreational visions discussed by the Task Force. Trail building costs will vary depending on the type of surface, width, and engineering issues associated with different segments of the trail. Implementing a State Park or other recreational facilities will require partnerships and a financial commitment from regional citizens to share the costs of planning, constructing, and maintaining recreational facilities. One mechanism available is dedicated county open space funding raised through taxes or mil levies.

Some members of the Task Force and the community at large have expressed the opinion that cleaning up the water quality and flooding issues along Fountain Creek are key steps to implementing any long-term recreational goals along Fountain Creek. The current conditions of Fountain Creek could provide wildlife viewing and wetlands creation; however, major flood events or pollution events could diminish or destroy investments in recreational facilities and discourage recreationists from enjoying the resource. Any major recreational plans would need to be coordinated with efforts to improve the stability and quality of Fountain Creek.

The challenges presented by planning for increased recreational activities include: establishing accurate baseline data for existing and planned recreational activities for the entire focus area and balancing needs of private landowners with recreational needs. The most obvious challenge of

establishing any trail system will be the cost of acquiring trail easements, the cost of building the trail, and the ongoing costs of trail maintenance. There are also natural and man-made constraints to the Fountain Creek corridor such as railroad tracks, difficulty of crossing I-25, floodplain challenges, utility corridors, and creek crossings that will have to be considered when planning for the trail.

B. Goals and Strategies to Address Current Conditions

Goals for Improving Current Conditions

1. Create a common vision for recreational uses within the Fountain Creek Corridor between the various municipalities/counties.
2. Expand the types of recreational opportunities within the Fountain Creek Watershed and Corridor.
3. Preserve, maintain, and enhance the Fountain Creek Watershed and Corridor through environmentally sensitive and sustainable recreational design. Restore ecological systems that have been lost or are struggling.

Objectives

1. Implement the recreation vision and strengthen existing master plans by jointly creating unique recreational opportunities.
2. By 2009, identify preferred trail alignment for the Front Range Trail
3. By 2009, begin removal of invasive plant and animal/inspect species from the Fountain Creek Watershed.
4. By 2009, create a coherent list of current recreation opportunities within the Fountain Creek Watershed and Corridor.
5. By 2010, work with the Outreach Committee on programming events.
6. By 2010, create a Fountain Creek Watershed Recreational Task Force Committee
7. By 2010, complete an inventory of existing conditions along the proposed trail routes
8. By 2011, develop a list of recreational maintenance needs and solicit the help of various businesses and corporations.
9. By 2011, acquire necessary trail easements for the Front Range Trail
10. By 2011, hire an engineering firm to begin construction drawings for the Front Range Trail
11. By 2015, start construction and establish an ongoing maintenance schedule of the Front Range Trail within the Fountain Creek watershed.

Strategies for Achieving Goals and Objectives

1. Finish construction of the Front Range Trail.
2. Develop recreational standards that promote healthy and thriving environments, which encourage the strong presence of flora, fauna, and wildlife species.
3. Establish a core panel of recreational leaders within the Fountain Creek watershed who will act as the recreation consensus committee for establishing Task Force committees that would address long-term and short-term funding mechanisms, identify recreational needs and opportunities/constraints, and create a common recreation vision along the Fountain Creek Corridor.

4. Pursue funding mechanisms that would allow for continued development and maintenance of future recreational uses within the Fountain Creek Watershed and Corridor.

C. Implementation Plan

Strategy 1: Finish construction of the Front Range Trail within the Fountain Creek watershed.			
Steps to Implement Strategy	Target Completion Date	Recommended Responsible Entity in the Watershed	Partners in Implementation
a. Identify preferred trail alignment for the Front Range Trail	2009	Colorado State Parks and State Trails	El Paso and Pueblo County; Colorado Open Lands
b. Complete an inventory of existing conditions along the proposed trail routes	2010	Colorado State Parks and State Trails	El Paso and Pueblo County
c. Acquire necessary trail easements for the Front Range Trail	2011	Colorado State Parks and State Trails	El Paso and Pueblo County
d. Secure all necessary capital funding for the construction/acquiring/maintenance of the Front Range Trail	2012	Colorado State Parks and State Trails	El Paso and Pueblo County
e. Hire an engineering firm to begin construction drawings for the Front Range Trail	2011	Colorado State Parks and State Trails	El Paso and Pueblo County
f. Identify permitting requirements and develop the critical path chart for construction	2011	Colorado State Parks and State Trails	El Paso and Pueblo County
g. Construct and maintain the Front Range Trail within the Fountain Creek watershed	2015 Ongoing	Colorado State Parks and State Trails	El Paso and Pueblo County

Strategy 2: Develop recreational standards that promote healthy and thriving environments, which encourage the strong presence of flora, fauna, and wildlife species			
Steps to Implement Strategy	Target Completion Date	Recommended Responsible Entity in the Watershed	Partners in Implementation
a. Begin removal of invasive plant and animal/insect species (i.e. Zebra Mussel and Elm Trees). Create a “firewall” to prohibit the continued spread of the invasive plant and animal/insect	2009	Pueblo County, El Paso County, Colorado Springs, Colorado State Parks	Grant Money
b. Repair and replace trail sections negatively affected by events of nature. In the event the trail cannot be repaired in a timely fashion, provide appropriate signage and trail detours	2009	Pueblo County, El Paso County, Colorado Springs, Colorado State Parks, City of Pueblo	

Strategy 3: Establish a core panel of recreational leaders within the Fountain Creek watershed who will act as the recreation consensus committee for establishing Task Force committees that would address long-term and short-term funding mechanisms, identify recreational needs and opportunities/constraints, and create a common recreation vision along the Fountain Creek Corridor.			
Steps to Implement Strategy	Target Completion Date	Recommended Responsible Entity in the Watershed	Partners in Implementation
a. Create a coherent list of current recreational opportunities within the Fountain Creek watershed and corridor and provide the public with appropriate links and ways to find information about these opportunities	2009	El Paso County, Colorado Springs, Pueblo County, City of Pueblo, State Parks	Friends groups, non-profit organizations
b. Create a Fountain Creek Watershed Recreational Task Force Committee to create a coherent recreation system between the various counties and municipalities. This committee would be responsible for informing other committee members about recreational opportunities and planned projects for the watershed	2009	El Paso County, Colorado Springs, Pueblo County, City of Pueblo, State Parks	Friends groups, non-profit organizations
c. Upon establishment of a coherent list of current recreational opportunities, set up yearly meetings so the task force can review the dynamic document and adjust it with changing trends in the recreation world	2010	El Paso County, Colorado Springs, Pueblo County, City of Pueblo, State Parks	Friends groups, non-profit organizations
d. Consult with neighbors and community members to discuss what has happened with recreation in the Fountain Creek watershed and corridor and up-coming projects. Invite the public to have an open dialog with the task force committee	2010	El Paso County, Colorado Springs, Pueblo County, City of Pueblo, State Parks	

Strategy 4: Pursue funding mechanism that would allow for continued development and maintenance of future recreational uses within the Fountain Creek watershed and corridor			
Steps to Implement Strategy	Target Completion Date	Recommended Responsible Entity in the Watershed	Partners in Implementation
a. Create “friends” groups for all the various recreational uses and existing recreational areas within the Fountain Creek watershed and corridor. The friends group would be an integral part of fund raising efforts for on-going maintenance needs and programs	2010	El Paso County, Colorado Springs, City of Pueblo, Pueblo County, State Parks	Non-profit organizations
b. Establish opportunities within the various recreational uses so the friends group can become regular volunteers and help preserve the history of the properties	2010	El Paso County, Colorado Springs, City of Pueblo, Pueblo County, State Parks	Non-profit organizations
c. Develop a list of recreational maintenance needs and solicit the help of various businesses and corporations. Provide a menu of options and allow the businesses and corporations the opportunity to match their strengths/interests to the project(s) needs	2010	El Paso County, Colorado Springs, City of Pueblo, Pueblo County, State Parks	Non-profit organizations
d. Aggressively apply for grants and funding opportunities	2009 – on going	El Paso County, Colorado Springs, City of Pueblo, Pueblo County, State Parks	Non-profit organizations

Strategy 5: Create an interpretative/education plan that would address the positive and negative impacts human behavior has on the Fountain Creek watershed and corridor			
Steps to Implement Strategy	Target Completion Date	Recommended Responsible Entity in the Watershed	Partners in Implementation
a. Create a campaign to encourage and explain why dog owners need to keep their pets on leashes and out of Fountain Creek	2010	El Paso County, Colorado Springs, City of Pueblo, Pueblo County, State Parks	
b. Work with the Outreach Committee on programming events	2010	El Paso County, Colorado Springs, City of Pueblo, Pueblo County, State Parks	

VIII. WETLANDS

A. Current Conditions

Issue/Problem

The Fountain Creek Watershed waterways are experiencing erosion, sedimentation, flooding, and degraded water quality in some reaches. Properly located and designed wetlands can help improve these deleterious conditions, as well as increase adjoining property values and tourism (through recreation and wildlife viewing opportunities), and can provide opportunities for environmental education. There are many existing wetlands in the Fountain Creek Watershed, some of which have been created by increased local water flows. However, some are at risk due to floodway reduction, increased flood flows, and Tamarisk invasions.

Current Situation

The Clean Water Act (CWA) has jurisdiction over "waters of the U.S." which includes lakes, enforced by the US Army Corps of Engineers, and filling a qualifying wetland or stream requires a Section 404 permit under the CWA.

Wetlands provide a number of important benefits to natural and human communities. They can help improve water quality by filtering water through vegetation and stabilize the banks of streams as the roots hold soil in place. Because wetlands reduce the velocity of water traveling through them and hold excess water like sponges, they can reduce erosion and flooding. As waterway sediment loads increase exponentially with water velocity, the reduced creek velocities also result in significantly reducing sediment loads. Wetlands are an important component of the ecosystem as they attract and support a high diversity of wildlife species. Created wetlands can mimic many of these functions of natural ones, although they rarely mimic all of them. Additionally, wetlands can serve as an outdoor classroom for environmental education and are attractive for ecotourism. (For additional information concerning the types of wetlands, associated vegetation/habitat, wildlife, the benefits of wetlands such as water filtration, and dynamics of wetland loss and creation, please visit the websites of the U.S. Fish and Wildlife Service, U.S. Environmental Protection Agency, and U.S. Army Corps of Engineers.)

Less than 3% of the surface area in Colorado was originally wetlands.⁶⁹ Of that 3%, approximately 40 to 60% of the original wetlands area has been lost.⁷⁰ This equals approximately 1-3 million acres. The loss of wetlands in Colorado is greater proportionately than the losses of other habitat types.

Under natural hydrology⁷¹ wetlands/riparian vegetation are maintained as shifting patches on the landscape, e.g. one patch of shrubs might get washed away, while a sandbar gets created that

⁶⁹ Dahl, T. E. 1990. Wetland losses in the United States: 1780s to 1980s. U.S. Fish and Wildlife Service. Washington, D.C.

⁷⁰ Ibid.; Wilen, B. O. 1995. The nation's wetlands. Pages 473-476 in *Our living resources: a report to the nation on the distribution, abundance, and health of U.S. plants, animals, and ecosystems* (E. T. LaRoe, G. S. Farris, C. E. Puckett, P. D. Doran, and M. J. Mac, editors). U.S. Department of the Interior, National Biological Service, Washington, D.C.

⁷¹ Hydrology: The study of relationships between water and the geologic environment.

starts new wetland vegetation building. A naturally healthy system is always in flux; the number of acres of each wetland type changes constantly but the total acres is relatively stable at the watershed scale. The Fountain Creek Watershed has become so dynamic, however, that it is beyond the natural levels of fluctuation in water quantity and frequencies of flows that would have been expected from a stable system. The natural hydrology of Fountain Creek, as well as that of other riparian systems, is increasingly impacted by urban development. Treated wastewater discharges, stormwater, and other sources are likely to prevent a restoration of the creek to a pre-development hydrology.

In the Fountain Creek watershed, typical wetlands are cattail and bulrush marshes, wet meadows of grasses and grass-like plants, and stands of willow shrubs. The composition of wetlands in the Watershed within El Paso County is open water and marshes (2.5 square miles), shrublands (2.5 square miles), wet meadows (5 square miles), and wetlands associated with streams (10 square miles). These wetlands make up approximately 2.5% of the total land area, a much greater percentage than the 1% Colorado statewide average. Wet meadows are found in the prairies in northern and northeastern El Paso County. Traveling south into Pueblo County, the land becomes more arid and there are fewer wet meadows. Willow shrublands and marshes are found throughout the Fountain Creek Watershed along streams. Fountain Creek has a large cottonwood forest and an understory of willow shrubs. The cottonwood forest is filled with pockets of small to large marshes. Colorado Springs, as the largest urban area, has an evolving wetland resource. The increase of urbanization has increased base flows⁷² in the creek and the increased available water source for growth on the banks and the wetland acreage in some areas. Marshes do not fair as well with urbanization. In areas where more water carried by the stream has led to significant streambed downcutting, lowering of the surrounding local alluvial⁷³ aquifer⁷⁴ has dried out adjacent wetlands. Wetlands and stream corridors represent a small percentage of the Colorado landscape. However, while wetlands constitute only one percent of the landscape statewide, they (along with riparian areas) support 80% of all wildlife and more non-bird species than any other habitat area.⁷⁵

The Monument Creek basin consists mainly of riparian vegetation such as a variety of willows, sedges, and rushes. Surrounding uplands consist generally of midgrass prairie with a variety of grasses. Northern reaches of Monument Creek and surrounds represent important habitat for the Preble's meadow jumping mouse – dense herbaceous and shrub riparian communities and upland grass communities free from urban development and significant grazing.

The Fountain Creek Vision Task Force (FCVTF) reviewed a variety of maps to identify possible opportunities for wetlands creation in the Watershed. These maps included land ownership, biodiversity, floodplains, existing wetlands, and recreational opportunities. Based on this very high-level examination of the maps, the group identified several potential sites as options for

⁷² Base flow: That part of stream discharge that is not attributable to direct runoff from precipitation or melting snow. Primarily sustained by groundwater discharge into the stream.

⁷³ Alluvial: A general term for unconsolidated material deposited by a stream or other body of running water.

⁷⁴ Aquifer: A geologic formation, group of formations, or part of a formation that contains sufficient saturated permeable material to yield sufficient quantities of water to wells or springs.

⁷⁵ Browne, Claudia. 2007. Biohabitats, Inc. Presentation to a Fountain Creek Vision Task Force working group on June 29, 2007.

wetland creation or protection throughout the watershed. It was agreed, however, that a wetland professional would need to be consulted on final locations for successful wetland creation and protection. Additionally, although National Wetlands Inventory Maps were not researched by the FCVTF during this process, they will likely be useful tools in delineating where wetlands currently exist, changes over time, and where new wetlands might be encouraged naturally or created for specific purposes.

Determining where the most stable areas of Fountain Creek are is an important first step in deciding where to create viable wetlands in and around Fountain Creek. This information is available in the Fountain Creek Watershed Study prepared by the US Army Corps of Engineers.⁷⁶ Other factors in choosing wetland rehabilitation and development locations include:

- Land ownership
- Development costs
- Accessibility for maintenance and for the public
- Habitat quality
- Potential for flood attenuation
- Erosion prevention ability
- Water availability

Careful selection of wetland sites is imperative as wetland construction is quite costly, ranging from \$50,000 to \$110,000/acre (these costs include general land costs, structural facilities to assure an adequate water supply and grading, and vegetation to achieve the desired function).⁷⁷ Newly created wetlands will require a dedicated water supply (and therefore dedicated water rights, which may have to be purchased prior to wetland creation) to ensure proper functioning and survival of the wetlands. How much water and when the water is needed vary by specific location and wetland type. However, a reasonable range of water that may be required for a new one-acre wetland in this watershed is between 2 and 5 acre-feet per year.⁷⁸ City of Fountain consultants suggest that wetlands here typically consume 3 acre-feet (includes evaporation losses) of water per wetland acre so this adds to the water company's consumptive use augmentation requirement. At the very least, it appears that a consumptive use augmentation plan and funding for same would be required for created wetlands.

There are several federal statutes that may be applicable to wetlands and wetlands creation. These include the Clean Water Act, National Environmental Policy Act, and the Endangered Species Act. Related state statutes may also apply, including surface water law and Colorado groundwater law. These laws may pose challenges to wetlands creation, but these problems are likely not insurmountable.

Wetland Banking

Wetland banking appears to have potential for implementation of wetland and related projects along Fountain Creek, but it is recognized that more consultation with wetland professionals is required. A mitigation bank is a wetland, stream, or other aquatic resource area that has been restored, established, enhanced, or (in certain circumstances) preserved for the purpose of

⁷⁶ Available at www.fountain-crk.org.

⁷⁷ Glidden, Mark. 2008. Senior Project Manager, CH2MHill. Personal communication on January 3, 2008.

⁷⁸ Lusk, Kevin. 2008. Principal Engineer, Colorado Springs Utilities. Personal communication on January 3, 2008.

providing compensation for unavoidable impacts to aquatic resources permitted under Section 404 of the Clean Water Act or a similar state or local wetland regulation. A mitigation bank may be created when a government agency, corporation, nonprofit organization, or other entity undertakes these activities under a formal agreement with a regulatory agency. The 1995 Banking Guidance established a structure for banking that is characterized by four distinct components:

- The bank site: the physical acreage restored, established, enhanced, or preserved;
- The bank instrument: the formal agreement between the bank owners and regulators establishing liability, performance standards, management and monitoring requirements, and the terms of bank credit approval;
- The Mitigation Bank Review Team (MBRT): the interagency team that provides regulatory review, approval, and oversight of the bank; and
- The service area: the geographic area in which permitted impacts can be compensated for at a given bank.

The value of a bank is defined in “compensatory mitigation credits.” A bank’s instrument identifies the number of credits available for sale and requires the use of ecological assessment techniques to certify that those credits provide the required ecological functions. Although most mitigation banks are designed to compensate only for impacts to various wetland types, within the past five years, banks have been developed to compensate specifically for impacts to streams (i.e., stream mitigation banks).

Mitigation banks are a form of “third-party” compensatory mitigation, in which a party other than the Clean Water Act permittee assumes the responsibility for compensatory mitigation implementation and success. This transfer of liability has been a very attractive feature for Section 404 permit holders, who would otherwise be responsible for the design, construction, monitoring, and ecological success of a compensatory mitigation site for a minimum of five years in addition to ensuring the site’s long-term protection. Although not currently available in the Fountain Creek Watershed, wetlands banking has occurred on the Middle South Platte River <http://www.coloradowetlandbank.com/pages/msprbank.html>.

B. Goals and Strategies to Address Current Conditions

Goals to Improve Current Conditions

1. Develop a wetland and riparian area management plan that addresses flood attenuation, water quality, water quantity, wildlife habitats, recreation and tourism, erosion and sedimentation, and public education.
2. Maintain and enhance the health and functionality of existing wetlands and riparian areas to accomplish the goals of the wetland and riparian management plan.
3. Create additional wetlands and riparian areas that help to accomplish the goals of the wetland and riparian management plan.
4. Practice adaptive management to improve wetland protection, enhancement, and creation.

Objectives

1. By 2010, prepare and release a comprehensive inventory and assessment of all wetland and riparian areas in the watershed.
2. By 2011, interpret one pilot project using an existing wetland to demonstrate wetlands' ability to filter pollutants and to demonstrate wetlands' ability to attenuate flooding.
3. By 2018, increase the number of wetland acres in the watershed by 100 to 300 acres, with an approximate increase of 2% of the existing wetlands.

Strategies to Achieve Goals and Objectives

1. Inventory existing wetland and riparian areas and evaluate their conditions and functionality. List their desired future conditions and functionality. Look for additional mapping of wetlands at a higher resolution and quality than the National Wetlands Inventory Mapping of past and potential wetlands. Create a fact sheet on how water rights relate to wetland creation, and stated goals for specific wetlands.
2. Protect and enhance existing wetlands and riparian areas while also creating new wetlands as determined to be appropriate by the aforementioned evaluations.
3. Differentiate between native and engineered/created wetlands in terms of how they function, and their biological value, both initially and over longer periods time. Incorporate those nuanced expectations into considerations of wetlands strategies.
4. Develop and distribute a watershed-wide plan that includes prioritized opportunities for protecting, enhancing, and creating new riparian and wetland areas along with their associated functions.
5. Continue to evaluate, enhance, and maintain the functionality and health of wetlands in the Fountain Creek Watershed, including removing sediment and pollutants if they fill wetlands over time, evaluating plant health and biodiversity, and ensuring habitat viability.

C. Implementation Plan

Steps to Implement Strategy	Target Completion Date	Recommended Responsible Entity in the Watershed	Partners in Implementation
a. Preserve existing wetlands through conservation easements, floodplain management tools, and land-use planning regulations	2009-2018	Nature Conservancy, El Paso County	<u>Federal</u> – Environmental Protection Agency, US Army Corps of Engineers, US Fish and Wildlife Service, USGS National Wetlands Research Center, The Natural Resource Conservation Service and Elected Officials. <u>State</u> – Colorado Natural Heritage Program, Colorado Division of Wildlife, [CDOW Wetland Wildlife Conservation Program], Colorado State Parks, Colorado Cooperative Fish and Wildlife Research Unit, Colorado Department of Natural Resources, Colorado Department of Public Health and Environment, Colorado Department of Transportation Elected Officials. <u>Local</u> – Counties, Municipalities, Utilities, Fort Carson, Air Force Academy, Stakeholders, Coalitions of Government, Metropolitan Districts, Conservancy Districts, Departments of Public Health and Environment, Elected Officials. Arkansas River Watershed Invasive Plants Plan / SECWCD
b. Consider wetland banking as an option in the watershed. Identify an entity to oversee the implementation of a wetland bank	2009-2010	Cities/Counties	
c. Work with the Army Corps of Engineers to determine design details of a wetland bank	2009-2010	Cities/Counties	
d. Work with local planning departments to clarify and improve existing standards, regulations, and guidelines for development in and around wetland areas based on professional recommendations of wetland scientists	2009-2012	Pueblo, City of Colorado Springs, El Paso County, and Pueblo County	
e. Host a regional forum on land-use standards and regulations within the watershed as they relate to riparian and wetland areas	2009-2012	Pueblo, City of Colorado Springs, El Paso County, and Pueblo County	
f. Manage tamarisk and other invasive species and create wetlands to mitigate them	2009-2020	Pueblo County, El Paso County, Colorado Springs, Colorado State Parks	

g. Educate stakeholders about the value of wetlands. Coordinate education efforts with local planning departments, homebuilders' associations, and local environmental regulatory agencies	2009-2012	Nature Conservancy	<u>Organizations</u> – Ducks Unlimited, Front Range Anglers, Colorado Open Lands, Colorado Fly Fishing and Stream Information, The Nature Conservancy, Partners for Fish and Wildlife, The Sierra Club, World Wildlife Fund, Natural Resource Defense Council, Defenders of Wildlife, Fountain Creek Foundation.
h. Enhance existing wetlands and create new wetlands with the help of wetlands scientists, landowners, and the Army Corps of Engineers	2009-2018	Pueblo County, El Paso County, Colorado Springs, Colorado State Parks	
i. Consider the water quality relationship with wetlands related to the sedimentation and pollutants	2011-2015	NPDES permit holders	
j. Evaluate monetary value of wetlands and their ecosystem services	2011-2015	Cities/Counties	
k. Create pilot projects to demonstrate the effectiveness of wetlands in providing ecosystem services and educate the region about their habitat and monetary values	2011-2015	Fountain Creek Foundation	
l. Create incentives for the preservation of existing wetlands	2010-2020	Pueblo County, El Paso County, Colorado Springs, Colorado State Parks	
m. Work with the Army Corps of Engineers, the US Fish and Wildlife Service, Colorado Division of Wildlife, local planning offices and interested agencies, and organizations on wetland preservation issues	2009-2020	Pueblo County, El Paso County, Colorado Springs, Colorado State Parks	

IX. WILDLIFE

A. Current Conditions

Issue/Problem

Wildlife habitat in the Fountain Creek Watershed is negatively impacted by invasive species and the effects of development. Loss of habitat, habitat fragmentation and degradation, and loss of connectivity/migration corridors are among the biggest threats to wildlife locally. (Additional information specific to wetland habitat may be found in the wetlands chapter elsewhere in the Fountain Creek Vision Task Force Strategic Plan.)

The Current Situation

Physical Setting

The Fountain Creek Watershed encompasses mountains, foothills, and grasslands and transition zones between these habitat types. The watershed is a crossroads of sorts, straddling two major physiographic regions: the Southern Rocky Mountains and the grasslands of the Great Plains. It is a meeting place where eastern, western, and southwestern North American species come together to form a uniquely diverse collection of plants and animals. Snow-capped, ruggedly-alpine mountains rise majestically out of the Pikes Peak-San Isabel National Forest and provide a western backdrop for one of the most spectacularly beautiful landscapes in Colorado. At their base, rolling, pine-covered foothills give way to juniper and piñon-speckled shrublands. These then blend into vast expanses of short-grass prairie and fragrant sand sage ecosystems. Tying all of this variety together is a laced network of braided wetlands, reservoirs, lakes, mountain streams and riparian corridors that together form the numerous tributaries of the greater Arkansas River system.

Fountain and Monument Creeks, originating in the mountainous uplands, are the core of the watershed, carrying water from the mountains into more arid landscapes below. This unique landscape provides a setting for numerous species of birds and land animals. It shelters rare plants and animals that are found nowhere else in the world and provides critical habitat to a number of rare, threatened, and endangered species. This diversity of ecosystems provides a range of habitats for wildlife that are utilized year round and for purposes such as migration corridors, hunting ground, breeding, severe winter range, and water sources by regional species.

Development Impacts on Habitat

The quality of habitat varies by area of the watershed as it relates to development and agricultural use. The upper elevations of the watershed are least impacted by development. Major portions of the headwaters area remain undeveloped and include national forest lands and other preserves. Development intensifies at lower elevations of the watershed, particularly in the urbanized foothills and plains surrounding Colorado Springs, Pueblo, and the I-25 corridor. Fountain Creek downstream of Colorado Springs is impacted by increased total water flows and storm flow surges due to upstream development and the increase of impervious surfaces.⁷⁹ As a

⁷⁹ Impervious surface: A hard surface area which either prevents or retards the entry of water into the soil. Examples include, but are not limited to, structures, walkways, patios, driveways, carports, parking lots or storage

result, the lower creek and banks are increasingly unstable. Increased flows in the main stems of the creek are changing and eliminating habitats important to a wide array of plants and animals. Without action to address these flows, the diversity of habitats critical to maintaining the variety of wildlife in the watershed will continue to be degraded or lost. Graminoid⁸⁰ meadows and marshes, shallow water wetlands, and willow and cottonwood stands are all needed to maintain the diversity of wildlife and provide for changing species needs throughout the year. There are many stretches of Fountain Creek between Colorado Springs and Pueblo that have remained healthy through changing water flows due to various geomorphic conditions and the influence of adjacent land uses. These healthier sections provide a good model for future restoration projects.

Also, it is important to note the habitat improvements that are associated with a base flow⁸¹ in creeks. Before diversions were made for agriculture along Fountain Creek, water ran year round in this waterway. In the early 1980's, when water exchanges were permitted, water again ran year round. This has increased the sustained wildlife habitat and water source in the region. Additionally, wetlands and riparian habitats have been created in areas where previously there was no flow but now there is sufficient flow present to support a wetland or riparian⁸² community.

Imperiled Species

A number of rare, threatened, and endangered species of plants and animals coexist within the Fountain Creek Watershed. Some 500 vertebrate species consisting of residents and migrants inhabit the watershed, including federally and state listed species and numerous invertebrate, fish, amphibian, and bird species and plant communities of special concern. At greatest risk in the watershed are species directly associated with stream stems and adjacent wetland and riparian habitats.

In the upper reaches of the Monument watershed, a major Fountain Creek tributary, the federally threatened Preble's Meadow Jumping Mouse (*Zapus hudsonicus preblei*) and several plant species/communities of special concern are at risk due to urbanization and elimination and fragmentation of wetland and riparian habitats along Monument Creek and its tributaries. In addition to direct destruction of wildlife habitat, urbanization can isolate populations of small mammals by eliminating travel and dispersal corridors connecting populations, resulting in restriction of gene flow or extirpation of small populations and loss of genetic diversity. Urbanization increases populations of carnivores, both wild and domestic, that create sinks in populations of "prey" species found in adjacent ecological systems.

Several riparian plant communities of significant biological importance are found in the Monument creek watershed and some are directly threatened by urbanization. Although high

areas, concrete or asphalt paving, gravel roads, packed earthen materials, haul roads and soil surface areas compacted by construction operations.

⁸⁰ Grasses and grass-like plants such as sedges and rushes

⁸¹ Base flow: That part of stream discharge that is not attributable to direct runoff from precipitation or melting snow. Primarily sustained by groundwater discharge into the stream.

⁸² Riparian: Plant community succession naturally occurring along the bank of a natural freshwater waterway such as a river, stream, or creek. Riparian zones support diverse and abundant terrestrial wildlife species, protect stream banks and adjacent land from erosion, and contribute significantly to aquatic communities by providing shade, cover from predators, nutrients, a buffer from nearby land use activities, and a filter for overland soil erosion.

volume storm flows causing stream channelization and loss of habitat such as undercut banks and loss of riparian cover are less problematic in the northern reaches of the watershed, continued urbanization will increase these effects and eliminate or reduce the quality of habitat for two species of concern, the Flathead Chub (*Platygobio gracilus*) and the Northern Leopard Frog (*Rana pipiens*). Urbanization along Monument Creek threatens the regional persistence of wetland and riparian populations of Dwarf False Indigo (*Amorpha nana*), Arrow-leaved Tearthumb (*Truellum sagittatum*), and American Currant (*Ribes americanum*).

Wetlands and riparian habitats at the headwaters of Fountain Creek are threatened by erosion and a variety of recreational activities occurring on Pikes Peak. Commercial and recreational activities have degraded upper elevation wetlands and aquatic habitats at lower elevations in the mountains by increasing sedimentation, introducing disease, or degrading the genetic viability of native trout through introduction of non-native fish species. Severy Creek in the Fountain Creek Watershed supports populations of the federally threatened Greenback Cutthroat Trout (*Oncorhynchus clarkii stomias*), the only trout species native to the state. Spread of whirling disease to mountain streams threatens the recovery of the greenback in the watershed. Less at risk is the *Corylus cornuta* plant community of special concern and endemic populations of the Golden Columbine (*Aquilegia chrysantha* var. *rydbergii*), both found along streams in the lower mountains. As above, it should be mentioned again here that wetlands and riparian habitats have been created in areas where previously there was no flow but now there is sufficient flow present to support a wetland or riparian community.

More than 160 species of birds are known to have nested in the watershed, and the majority of these nest annually. Many of these occur in riparian habitats in the lower foothill tributaries of the main stems of Fountain and Monument Creeks. Three of the 29 bird species of regional conservation concern breeding in the watershed nest annually in the riparian habitats along lower Fountain Creek: Swainson's Hawk (*Buteo swainsoni*), Lewis's Woodpecker (*Melanerpes lewis*), and Red-headed Woodpecker (*Melanerpes erythrocephalus*). The cottonwood riparian forests and wetlands of lower Fountain Creek provide significant stopover habitat to thousands of migratory land birds in spring and fall and are important winter habitat for many species. Migratory waves of land birds appear and disappear throughout the migration season, seeking shelter, rest, and food during inclement weather. Some 290 species (70% of the species recorded in El Paso County) have been recorded at Fountain Creek Regional Park and most of these are associated with wetland and riparian habitats. The spread of Tamarisk (*Tamarix ramosissima*), an aggressive, invasive plant that is not native to the watershed, threatens the persistence of riparian cottonwood forests and their diverse species assemblages in the Fountain Creek Watershed by crowding out native vegetation, lowering water tables, and increasing soil salinity, thus making the area unsuitable for native species growth. Uncontrolled flooding downstream from Colorado Springs reduces available riparian habitat by removing soil, trees, willows, and other native vegetation.

Water birds and species associated with aquatic habitats along Fountain Creek, particularly those habitats occurring south of Colorado Springs, are abundant in fall and spring migration. More than 100 species of water birds have been recorded at Big Johnson Reservoir, located near the center of the watershed. The importance of the reservoir to aquatic birds is threatened by future recreational development.

Aquatic habitats of Fountain Creek and its associated wetlands support populations of sensitive species threatened by high creek flows resulting from urbanization at the northern end of the watershed and in Colorado Springs.⁸³ Important fish habitat such as undercut banks, velocity chambers⁸⁴, pools and vegetation adjacent to the creek are lost as channelization and water velocity increase. Native fish diversity will likely decline in the lower reaches of the watershed as channelization increases. These changes will also negatively affect creek populations of Northern Leopard Frog, Plains Leopard Frog (*Rana blairi*), Flathead Chub (*Platygobio gracilis*) and Arkansas Darter (*Etheostoma cragini*), a state threatened species. Less threatened are populations of the Painted Turtle (*Chrysemys picta*) residing in permanent water impoundments of Fountain Creek Regional Park. There is an ongoing study by the US Geological Survey (USGS) to evaluate the health of aquatic life over time; however, additional study is needed to make conclusions.

Diseases

Significant diseases found in the watershed affect both wildlife and humans. The three most virulent are recent immigrants: Bubonic Plague, West Nile Virus, and Chronic Wasting Disease. Enzootic plague persists in rodent communities in the watershed, occasionally erupting in epizootics devastating Black-tailed Prairie Dogs and indirectly impacting Golden and Bald eagles, Ferruginous Hawk, Burrowing Owl, and Mountain Plover - species depending on this “keystone” species for food, shelter or nesting space. The devastating effects of the West Nile Virus in recent years on humans and birds in the U.S. is well documented and remains a significant health concern for residents in the watershed and the region.

Chronic Wasting Disease is fatal to deer and elk, but not known to cross over to human hosts. Currently only a few cases in deer are known in the foothills of the watershed; the first reported in 2005. Like the West Nile Virus and plague, wasting disease has changed the way many enjoy the outdoors. The chytrid fungus (*Batrachochytrium dendrobatidis*) is a disease threatening Northern Leopard Frog populations nationally and in Colorado, as well as many amphibians species internationally. The disease is generally fatal to leopard frogs and is responsible for deaths of the Boreal Toad (*Bufo boreas*), which is listed as an endangered species by the State of Colorado. At this time, it is not known to occur in the watershed,⁸⁵ but its introduction could have negative effects on local amphibian populations. The Northern Leopard Frog is a species of special concern in Colorado and was petitioned for protection under the Endangered Species Act in 2006.

Fishing and Hunting

Game species are numerous along the creek and hunting figures prominently in the watershed from management, sociological, and economic perspectives, but few public land hunting opportunities are available in the lower watershed. The Colorado Springs State Wildlife Area, an area under the control of Colorado Springs Utilities, once provided the only publicly accessible hunting area along the lower Fountain Creek corridor. However, that area is now managed by El Paso County Parks as the Clear Spring Ranch Trail and provides wildlife watching and

⁸³ Dowler, Gary. 2008. Colorado Division of Wildlife, personal communication.

⁸⁴ Velocity chamber: Section of a river where the current is stronger and focused in a narrow notch in the river bed.

⁸⁵ Jackson, Tina. 2008. Colorado Division of Wildlife, personal communication.

hiking/biking opportunities. It is no longer used for hunting. Mule and White-tailed deer are the most abundant big game species found along the creek, where much of the hunting occurs on private lands. Elk in the foothills of the watershed, responding to recent droughts, moved into riparian and agricultural lands adjacent to lower Fountain Creek this decade, creating concerns among agricultural interests. Wild Turkey, waterfowl, cottontail rabbits, and particularly doves, are important small game species along the creek. Fishing in the watershed is generally confined to federally, state, and privately stocked reservoirs and to stocked sections of lower mountain streams.

Regulated Species

In addition to the many imperiled species found within the watershed, the following are designated as federally or state listed or as Species of Special Concern by the U.S. Fish and Wildlife Service (USFWS) or the State of Colorado.

- **Plants:** Ute ladies' Tresses (Federally Threatened)
- **Amphibians:** Northern Leopard Frog (State Special Concern), and Plains Leopard Frog (State Special Concern)
- **Reptiles:** Triploid Checkered Whiptail (State Special Concern)
- **Fishes:** Arkansas Darter (Federal Candidate Species, State Threatened), Flathead Chub (State Special Concern), and Greenback Cutthroat Trout (Federally and State Threatened)
- **Birds:** American Peregrine Falcon (State Special Concern), Bald Eagle (State Threatened), Burrowing Owl (State Threatened), Cassin's Sparrow (USFWS), Ferruginous Hawk (State Special Concern), Lark Bunting (USFWS), Lewis's Woodpecker (USFWS), Long-Billed Curlew (State Special Concern), Mexican Spotted Owl (Federally and State Threatened), Mountain Plover (State Special Concern), Northern Harrier (USFWS), Plains Sharp-tailed Grouse (State Endangered; extirpated, except NE CO), and Prairie Falcon (USFWS)
- **Mammals:** Townsend's Big-Eared Bat (State Special Concern), Preble's Meadow Jumping Mouse (Federal and State Threatened), River Otter (State Threatened; extirpated), Swift Fox (State Special Concern), Black-footed Ferret (Federally and State Listed; extirpated)

Factors Impacting Habitat

According to Colorado Division of Wildlife biologists, the most important actions stewards of the watershed can take to enhance and maintain wildlife populations is to protect and preserve the habitats the species depend on for survival. Topping the list of priorities are noxious weed removal (particularly Tamarisk), reducing the instability of the creek systems to ensure the existence of predictable long-term habitat for wildlife, providing corridors for wildlife over or under transportation facilities such as I-25, maintaining suitable flows in riparian and wetland habitats, and protecting open space for food, foraging, and breeding. Because some watershed species of federally protected birds nest in Tamarisk (most notably the Long-eared Owl, Mourning Dove, Blue Grosbeak, and Yellow-breasted Chat), control measures should include precautions to avoid destroying nests, a strategy for replacing the lost shrubby cover with native woody species, and most importantly, a strategy to prevent recolonization by Tamarisk after it is removed. Stands of Russian Olive, another exotic invader, has crowded-out native vegetation at

some locations in southeast Colorado and should be removed from riparian areas before it becomes extensively established along watershed creeks. Russian Olive supports high numbers of over-wintering non-native European Starlings, a species aggressively competing with native bird species for nesting cavities in cottonwood riparian habitat. Big Johnson Reservoir supports the greatest diversity and numbers of water birds in the watershed, but it has virtually no aquatic bird nesting due to an absence of associated wetlands and riparian habitat. Introduction of native floating aquatic and shoreline vegetation should be considered to establish a nesting population of Clark's Grebe and other water birds present at the reservoir in summer. Marsh vegetation and cottonwood groves should be established at selected shore locations to increase bird and mammal diversity and nest sites for birds of prey.

Other factors impacting natural habitat associated with Fountain Creek include noxious weeds, degraded water quality, fragmentation, degradation, and loss of habitat and barriers to wildlife migration. Most species within the Fountain Creek watershed require access to riparian areas in order to survive. Many use Fountain Creek and its tributaries as natural corridors to move across the landscape. From multiple perspectives, the health and viability of the habitat along the creek is very important to the viability of wildlife populations in the region.

Well managed agriculture and biodiversity in the Fountain Creek Watershed are generally seen as mutually beneficial. Such groups as The Nature Conservancy and Colorado Open Lands have worked with landowners in the watershed successfully to craft conservation leases and easements to preserve agricultural lands and to demonstrate integrated agricultural and wildlife management techniques.

Agricultural lands can negatively impact the quality of water in a riparian system if their management regime includes tilling practices that increase soil erosion or if fertilizers and pesticides added to croplands are transported into the water system. Wildlife managers may also be concerned about indirect effects of farming practices such as fragmentation of habitat. More often than not, though, agriculture benefits a wide variety of wildlife species, as farms and ranches provide important habitat compared to most urbanized areas. Agriculture can benefit wildlife by providing relatively large, unbroken, and undisturbed parcels as well as open space that is not in production, such as edges separating fields and rangeland. Irrigation may provide even more diverse habitat.

Agricultural communities may be concerned about wildlife-transmitted diseases, protection of livestock from predation, damage from migratory birds (e.g. geese), and protection of property (e.g. beaver, Prairie dogs). Conversely, having wildlife living on farm or ranchland can provide substantial aesthetic, economic, and ecological benefits. A diversity of plants, insects, birds, and animals living in and around agricultural lands is mutually beneficial to the rancher or farmer and wildlife. For example, open agricultural lands and fence rows provide habitat for sensitive species, natural pest control, and pollination services, nesting or foraging habitat, and hunting opportunities.

Education

Educational programs are an important component in conservation in the Watershed. The City of Pueblo Stormwater Utility, City of Colorado Springs Stormwater Enterprise, El Paso County,

Colorado Springs Utilities, and the Pueblo City-County Health Department provide educational programs such as presentations to school children, setting up displays at the Colorado State Fair, and conducting several public education efforts pertaining to Fountain Creek.

El Paso County is home to two world-class nature centers. The Bear Creek Nature Center was the first nature center built in Colorado. Programs are offered year-round at both the Bear Creek Nature Center and the Fountain Creek Nature Center. El Paso County Parks also hosts 85 miles of trails within the Pikes Peak Region.

- Fountain Creek Regional Park – Fountain Creek Nature Center, located in the park's Cattail Marsh Wildlife Area, is the site of numerous interpretive programs. The program focus is hands-on environmental education and educational displays for adults and children. The interpretive staff leads over 100 general group programs and over 160 school programs annually.
- Bear Creek Nature Center - The Bear Creek Nature Center is located in the western portion of the Bear Creek Regional Park in Colorado Springs. The Center provides opportunities to hike in the foothills, see native wildlife, and discover Bear Creek. Scrub oak thickets, ponderosa pine forests, meadows, a mountain creek, and abundant foothills wildlife attract children and adults to Bear Creek Regional Park and Nature Center. Interpretive programs, special events, guided and self-guided tours, and media presentations are offered all year. Two miles of self-guiding nature trails wind through the short-grass prairie, scrub oak woodlands, and cottonwood riparian communities.

At Colorado State Parks, many trails and educational opportunities abound. Cheyenne Mountain State Park, located south of Colorado Springs on Highway 115, offers numerous nature education opportunities.

In addition to those listed above, other organizations with educational/outreach programs include military installations such as Fort Carson and the Air Force Academy, U.S. Forest Service, the Colorado Division of Wildlife, other municipalities and many more offer a wide variety of educational and outreach programs within the Fountain Creek Watershed.

Existing Statutes

Federal statutes related to conservation activities in the Watershed include the Endangered Species Act, Migratory Bird Treaty Act, the Eagle Protection Act, and the National Environmental Policy Act. Regulations encoded in Title 33 of the State statutes protects wildlife in the Watershed and regulates hunting. The Colorado Wildlife Action Plan, along with federal and state laws, provides a basis for guiding essential and basic conservation in the Watershed. However, it is up to local governments and private landowners to manage ecosystems for the purpose of providing native wildlife habitat and maintaining the diversity of species.

Water Needs for Wildlife Habitat

It is beyond the scope of this assessment to quantify the amount of water required to maintain the current level and quality of wildlife habitat in the Watershed. However, water provides habitat for the greatest number and diversity of species in the Watershed. Flat water such as ponds and lakes, running water such as streams and rivers, springs, playas, and wetlands all provide

important wildlife habitat. Over 75% of native species are dependent on wetland and riparian habitat for a portion of their lifecycle.⁸⁶ The quality of the water, behavior of stream systems, and seasonal availability of water will affect the ability of wildlife to thrive in the Watershed.

Portions of this watershed in its current state experience fairly dramatic seasonal and storm-related spikes in flows. There are many causes for these storm-related spikes in flows, including climate. The region receives most of its rainfall in short, powerful summer thunder bursts. Secondly, soils in the Watershed that can contain large amounts of clay make water generated by these storms less likely to soak into the ground and more likely to run off into the river systems. The bankfull⁸⁷ discharge, or the flow that occurs about every 18 months, (not the 100-year flood⁸⁸) is what influences the shape, pattern and profile of a stream.⁸⁹ This is also partially due to regional urbanization and increased impervious areas in the watershed. Impervious surfaces such as buildings, concrete, and asphalt typically generate more runoff from the site than existed before the site was developed. Current studies indicate that this “hardening” of the watershed is likely to continue into the future.⁹⁰ The final reason for these storm-related spikes in flows, is stormwater management strategies. For many years, these systems were designed to interact with stormwater in a way that focused on getting the water away from the developed areas, and into pipes, which then delivered that water directly to the local river systems.

The level of the spike in flows and general instability in the channel varies depending on where in the watershed a site is located. Typically areas near the lower portions of a watershed would experience greater spikes in flow as the accumulated spikes from all of the upstream sub-watershed areas feed into one lower channel. The section of Fountain Creek south of Colorado Springs to the confluence with the Arkansas River has experienced these greater spikes in the form of erosive, channel-changing flows.

The following general description of healthy riparian habitat comes from the US Environmental Protection Agency’s “Discussion of Importance of Riparian Habitat to Aquatic Communities and the Topeka Shiner.”⁹¹

To maintain at least “good” water quality for aquatic habitats in general, riparian areas should contain at least a 12 m (~40 feet) wide vegetated area, 15 plant species, vegetation of at least two height classes, and provide at least sparse shade (>10% shade). The following three attributes of riparian vegetation habitat quality were evaluated for this assessment: stream bank stability, sedimentation, and thermal stability. Each of these attributes and their relative importance with respect to the Topeka shiner is discussed briefly below. Although this species is not present in the Fountain Creek Watershed, the same considerations would apply.

⁸⁶ Katy Fitzgerald, U.S. Fish and Wildlife Service, FCVTF Land Use/Environment Working Group, April 27, 2007.

⁸⁷ Bankfull: The channel-forming flow of the stream usually equivalent to 1½ to 2 year storm recurrence interval.

⁸⁸ 100-year flood: Refers to the calculated level of flood water expected to be equaled or exceeded every 100 years on average.

⁸⁹ Graham Thompson, (formerly) URS Corporation, (Now Matrix Design Group), Technical Advisory Committee, April 26, 2006

⁹⁰ Fountain Creek Watershed Impervious Surface Area and Watershed Health Analysis Report

⁹¹ http://www.epa.gov/espp/litstatus/effects/topeka_shiner_appendix_h.pdf

Stream and river bank stabilization: Riparian vegetation typically consists of three distinct height classes of plants, which include a groundcover of grasses and forbs, an under-story of shrubs and young trees, and an over-story of mature trees. These plants serve as structural components for streams, with the root systems helping to maintain stream stability, and the large woody debris from the mature trees providing in-stream cover. Riparian vegetation has been shown to be essential to maintenance of a stable stream (Rosgen, 1996). Destabilization of the stream can have a severe impact on aquatic habitat quality. In fact, stable streams and river channels and banks are identified as highly important for habitat. Any action that would significantly alter channel morphology or geometry to a degree that would appreciably reduce the value of the critical habitat for both the long-term survival and recovery of the species is considered as part of the critical habitat impact analysis of the risk assessment. Following a disturbance in the watershed bank, the stream may widen, releasing sediment from the stream banks and scouring the stream bed. Changes in depth and or the width/depth ratio via physical modification to the stability of stream and river banks may also affect light penetration and the flow regime of the [riparian] habitat. Destabilization of the stream negatively impacts aquatic habitat quality by increasing sedimentation within the watershed. The effects of sedimentation are summarized below.

Sedimentation: Sedimentation refers to the deposition of particles of inorganic and organic matter from the water column. Increased sedimentation is caused primarily by disturbances to river bottoms and streambeds and by soil erosion. Riparian vegetation is important in moderating the amount of sediment loading from upland sources. The roots and stems of riparian vegetation can intercept eroding upland soil (USDA NRCS, 2000), and riparian plant foliage can reduce erosion from within the riparian zone by covering the soil and reducing the impact energy of raindrops onto soil (Bennett, 1939). Increased siltation could alter spawning habitat and affect other processes such as feeding efficiency.

Increased sedimentation may affect the spawning habitat of fish by settling on spawning gravel and reducing flow of water and dissolved oxygen to the eggs and fry (Everest et al., 1987). In addition, fine particles settling on the streambed can also disrupt the food chain by reducing habitat quality for aquatic invertebrates, and adversely affect groundwater-surface water interchange (Nelson et al., 1991). Increased turbidity from sediment loading may also reduce light transmission, potentially affecting aquatic plants (Cloern, 1987; Weissing and Huisman, 1994).

Thermal stability. Riparian habitat including mature woody trees provides stream shading resulting in thermal stability. Maintaining thermal stability is highly important for survival of aquatic species. Different species are sensitive to specific water temperature ranges.

B. Goals and Strategies to Address Current Conditions

Goals to Improve Current Conditions

1. Preserve, protect, and enhance the biodiversity, health, and long-term sustainability of wildlife within the Fountain Creek Watershed.
2. Preserve, protect, and enhance the functionality, biodiversity, health, and long-term sustainability of the habitats that local wildlife require, while maintaining access to the resources upon which wildlife depend, within the Fountain Creek Watershed.

Objectives

1. By 2009, complete a report identifying regional wildlife populations, their regional and crucial habitats, and their values.

2. By 2010, establish a watershed-wide wildlife health and population monitoring program that identifies indicator species of overall wildlife viability. This will include re-evaluations every 5 years.
3. By 2013, adopt a Wildlife Action Plan to maintain populations with the goal of reducing/eliminating declines in population for all federally-listed threatened and endangered species in the watershed, that coordinates with associated federal recovery plans for listed species.
4. By 2013, implement 10 habitat restoration projects in the watershed.
5. By 2018, identify areas in the watershed that would have the least negative impacts on wildlife and make recommendations for future development practices. Adopt watershed-wide, consistent regulations and standards for development within these areas.
6. By 2018, preserve a minimum of 75% of all identified crucial wildlife habitat in the watershed to protect it from the impacts of future development.

Strategies for Achieving Goals and Target Objectives

1. Identify wildlife species within the Fountain Creek watershed and their respective local, regional, and global values and regulatory status. Look for ways of prioritizing wildlife in terms of their conservation and biological values, and also look for potential “indicator species” whose health and abundance can be used as an indicator of the health of many other species.
2. Identify threats to wildlife and prioritize those threats within the watershed and region. Look for areas of convergence between important wildlife habitats and resources and high levels of threats. Consider the realities of the built environment, existing land uses, and private property rights when considering threats.
3. Create a *Regional Wildlife Management Plan*⁹² based on the information gathered through Strategy #1 and the input of all involved parties. At a minimum, such a plan will:
 - Identify areas of crucial-grade, medium-grade, and low-grade habitat conservation priorities within the watershed based on biological value, scarcity and threat assessment.
 - Protect a minimum of 75% or more of the identified crucial habitats and resources.
 - Establish workable conservation goals for medium-grade and low-grade conservation priorities.
 - Maintain and enhance wildlife access to these crucial habitats and resources.
 - Identify appropriate opportunities for habitat restoration projects.
 - Interact with the realities of the built/existing environment and land uses.
 - Manage wildlife within the watershed through on-going education, communication and collaboration with stakeholders.
 - Create adaptive management strategies that assess the success of past management actions and modify, if necessary, future management actions.

⁹² See *State Wildlife Action Plans and Defenders of Wildlife: Linking Conservation and Land Use Planning*, at: http://www.defenders.org/resources/publications/programs_and_policy/habitat_conservation/habitat_and_highways/reports/final_report_linking_conservation_and_transportation_planning_workshops.pdf

4. Adopt and Implement the Regional Wildlife Management Plan. The implementation of such a plan could take one of a number of political paths.
 - Wildlife management could be an element of the overall strategies that would address regional environmental health and stability within a watershed management authority with regulatory influence over land use policies.
 - Municipalities and counties should be educated on the importance of new policies and should be encouraged to individually adopt and enforce a series of uniform recommended policies related to wildlife and land use policies in the watershed.
 - State and Federal wildlife agencies could take on the implementation of a more detailed and specific wildlife management plan for the watershed.
5. Educate about, and encourage the acceptance of, goals to achieve healthy riparian habitat in the Fountain Creek Watershed. Opportunities should be examined in the Fountain Creek watershed to stabilize channel flows and create the opportunity for healthy riparian habitats to regenerate. These opportunities are focused on the human-caused aspects of habitat degradation.

C. Implementation Plan

Steps to Implement Strategy	Target Completion Date	Recommended Responsible Entity in the Watershed	Partners in Implementation
a. Determine the scale, budget, and authority of the wildlife strategies	20010-2012	Future Fountain Creek Watershed Funding Entity	<u>Federal</u> – US Fish and Wildlife Service (Mountain-Prairie Region), Environmental Protection Agency, Natural Resource Conservation Service, US Federal Highway Administration, Elected Officials. <u>State</u> – Colorado Division of Wildlife, [CDOW Wetland Wildlife Conservation Program], [CDOW Habitat Partnership Program], [CDOW Natural Diversity Information Source], [CDOW State Wildlife Action Plans], Colorado Cooperative Fish and Wildlife Research Unit, Colorado Fish and Wildlife Management Assistance Office, Colorado Department of Natural Resources, Colorado Department of Public Health and Environment, Colorado Department of Transportation, Elected Officials. <u>Local</u> – Counties, Municipalities, Utilities, Fort Carson, Air Force Academy, Stakeholders, Coalitions of Government, Metropolitan Districts, Conservancy Districts, Departments of Public Health and Environment, Elected Officials. <u>Organizations</u> – The Nature Conservancy, The Sierra Club, Colorado Open Lands, World Wildlife Fund, Natural Resource Defense Council, Defenders of Wildlife, Ducks Unlimited, Partners for Fish and Wildlife, Southern Rockies Ecosystem Project.
b. Look for partners with shared values and goals who will agree to support a common effort regionally	2010-2012		
c. Work through the strategies at a scale that is appropriate for a potential partnering group/organization	2010-2012		
d. Continually work with stakeholders who will be affected by any policy or regulatory change you might suggest	2010-2012		
e. Because development, hardening of the watershed, certain agricultural practices, habitat fragmentation, invasive species, and water contamination can negatively impact the continuing viability of riparian habitats and wildlife diversity in Fountain Creek, further evaluate and compare policies and controls among jurisdictions within the watershed related to stormwater management (especially on-site management and LID as means of controlling flow, volume, and water quality), smart growth/sustainable development concepts and principles, invasive species removal, creek flow stabilization, open space/habitat protection	2010-2015		
f. Complete a report identifying regional wildlife populations, threats to wildlife, their regional and crucial habitats and their values. Also look for potential “indicator species” whose health and abundance can be used as an indicator of the health of many other species	2011		
g. Establish a watershed-wide wildlife health and population monitoring program that identifies indicator species of overall wildlife viability. This will include re-evaluations every 5 years	2012		
h. Create and adopt a Regional Wildlife Action Plan to maintain populations with the goal of reducing/eliminating declines in population for all federally-listed threatened and endangered species in the watershed, that coordinates with associated federal recovery plans for listed species.	2015		
i. Implement 10 habitat restoration projects in the watershed	2015		

j. Identify areas in the watershed that would have the least negative impacts on wildlife and make recommendations for future development practices. Adopt watershed-wide, consistent regulations and standards for development within these areas.	2020	<u>Federal</u> – US Fish and Wildlife Service (Mountain-Prairie Region), Environmental Protection Agency, Natural Resource Conservation Service, US Federal Highway Administration, Elected Officials. <u>State</u> – Colorado Division of Wildlife, [CDOW Wetland Wildlife Conservation Program], [CDOW Habitat Partnership Program], [CDOW Natural Diversity Information Source], [CDOW State Wildlife Action Plans], Colorado Cooperative Fish and Wildlife Research Unit, Colorado Fish and Wildlife Management Assistance Office, Colorado Department of Natural Resources, Colorado Department of Public Health and Environment, Colorado Department of Transportation, Elected Officials. <u>Local</u> – Counties, Municipalities, Utilities, Fort Carson, Air Force Academy, Stakeholders, Coalitions of Government, Metropolitan Districts, Conservancy Districts, Departments of Public Health and Environment, Elected Officials. <u>Organizations</u> – The Nature Conservancy, The Sierra Club, Colorado Open Lands, World Wildlife Fund, Natural Resource Defense Council, Defenders of Wildlife, Ducks Unlimited, Partners for Fish and Wildlife, Southern Rockies Ecosystem Project.
k. Preserve a minimum of 75% of all identified crucial wildlife habitat in the watershed to protect it from the impacts of future development.	2020	
l. Create wildlife corridors under and over passes for wildlife in collaboration with Colorado Department of Transportation	2013-2022	
m. Produce a noxious weed management plan for the watershed including baseline data	2013-2022	
n. Maintain migration corridors by protecting habitat through acquisition and/or conservation easements	2013-2022	
o. Create incentives for buffers and smart growth within the watershed, and work with local municipalities to accomplish wildlife goals and identify the best locations for development	2013-2022	
p. Identify compatible adjacent uses and work with the Natural Resource Conservation Service and farmers/ranchers to increase wildlife forage opportunities	2013-2022	
q. Expand education and outreach options in parks, wildlife areas, trails, nature centers, and recreation facilities including interpretive information and signage on basic environmental information, values, and protection efforts.. Also provide education on, and encourage the acceptance of, goals to achieve healthy riparian habitat.	2013-2022	

X. AGRICULTURE

A. Current Conditions

Background

The present character of Colorado is rooted in the ranching and farming heritage of the State. Today, agricultural production contributes more than \$16 billion annually to Colorado's economy.⁹³ The Fountain Creek Watershed has been used for the production of food and agricultural products since the first settlers came here over 150 years ago. Fountain Creek is one of the last significant waterways that contain no water storage facilities or flood diversion dams along the Front Range. There are many challenges to the health of Fountain Creek, including altered flow regime, flooding, erosion, and water diversions. Many of these issues threaten the economic and physical viability of agriculture in the watershed, particularly along Fountain Creek. Nevertheless, population growth and demand for water are the greatest threats to agriculture in the watershed. These threats have the potential to reduce productive agricultural acreage in the region, transfer water resources from rural areas, and further alter natural hydrological processes.

Agricultural land use dominates the section of the Fountain Creek Watershed between Fountain and Pueblo. The land is held in relatively large parcels (250-3,000 acres) and is used for irrigated crop production (alfalfa, hay, and vegetables), seasonal livestock grazing, and hobby farms. In El Paso and Pueblo Counties, dry land livestock grazing is supplemented by irrigated hay and crop production. Ranching in the area is supported by adjacent Colorado State Land Board property that is leased to local ranchers, thereby increasing the availability of grazing land. Much of the short grass prairie is well suited to responsible grazing of its native grasses. The use of uplands for cattle production not only benefits agricultural producers, but also has positive impacts on groundwater recharge that maintains the regional water table. Land that is not surfaced with pavement or other impervious surfaces⁹⁴ is critical to the long-term supply of groundwater by providing infiltration from rain and snow back into the water table.

Fountain Creek agricultural producers' irrigated lands support local and regional markets by providing locally grown produce, cattle, hay, and pasture for livestock. Agricultural land use along this corridor has obvious ancillary public benefits, providing habitat, corridors for migration and daily water needs for wildlife, wide open spaces, a scenic back drop to travelers and residents using Interstate-25, and recreational opportunities such as wildlife watching and hunting. These values must be nurtured and protected if we are not to lose the very reasons people want to live and work in Colorado.

Agriculture and Development

⁹³ Sherman, Harris 2007. Director of Colorado Department of Natural Resources, quoted in "Water roundtables tackle growth issues," in *The Pueblo Chieftain*, by Chris Woodka. November 17, 2007.

⁹⁴ Impervious surfaces: A hard surface area which either prevents or retards the entry of water into the soil. Examples include, but are not limited to, structures, walkways, patios, driveways, carports, parking lots or storage areas, concrete or asphalt paving, gravel roads, packed earthen materials, haul roads and soil surface areas compacted by construction operations.

The most direct threats to agricultural production in the Fountain Creek Watershed are population growth and development pressure. Farmers and ranchers face increasing economic pressure to sell their land and water. Since 1990, Colorado has gained nearly 1.9 million new residents.⁹⁵ It is estimated that we will gain an additional 2.4 million residents by the year 2030.⁹⁶ It is projected that more than 80% of these new residents will be putting down roots along the Front Range. El Paso County's rapid growth is indicative of this trend - in 2006, El Paso County's population grew to 575,000 residents. According to the Colorado Department of Local Affairs website, during the period 1990-2006, El Paso County grew by 45% and is expected to grow at a rate of 42% for the period 2006-2025. While these rates are not indicative of the entire Fountain Creek Watershed's estimated growth rates, they do capture the pace of population growth and have implications for the conversion of land from open space and agricultural uses to residential and commercial uses.

From 1990 to 2006, there was a cumulative loss of over 2 million acres of agricultural land in Colorado.⁹⁷ It is anticipated that nearly another 1 million acres of agricultural land will be lost by 2030. The bulk of this conversion will be from undeveloped agricultural land to large-lot subdivisions or ranchettes.⁹⁸ Again, El Paso County serves as a sobering case study. Between 1997 and 2002 the average size of farms and ranches dropped from 1,010 acres to 690 acres, while the number of farms and ranches has nearly doubled.⁹⁹ As this trend continues and farms and ranches are divided into smaller parcels, it becomes less likely that agriculture will survive as a sustainable land use.

Along Fountain Creek these pressures are evident as development follows I-25 access ramps and annexation activities. In the past, the scarcity of water and other services impeded the active development of the region between Colorado Springs and Pueblo. Annexation and the creation of new facilities for water, electricity, and sewer could remove impediments to development. Strip development along the Interstate could displace agricultural producers for a variety of reasons, including water availability, incompatible adjacent land use, and increased land values, making it harder for agricultural producers to remain. With increases in land values come increases in taxes, which compound problems by sometimes forcing the next generation to sell off a portion of the property to pay the inheritance tax. Since water rights are property rights, some choose to sell their water in order to keep their land.

Agriculture and Water

With the increase in population in Colorado, there is a proportional strain on water resources and the potential for conflict between agricultural, commercial, industrial, and residential uses. The Colorado "Statewide Water Supply Initiative" has projected that

⁹⁵ Ibid.

⁹⁶ "Colorado Conservation at a Crossroads." Page 2, Publication of Colorado Conservation Trust, 2005.

⁹⁷ "Colorado Agriculture: A profile of Colorado's agriculture and its contribution to the state's economy." Compiled by USDA, NASS, Colorado Field Office, 2007.

⁹⁸ "Colorado Conservation at a Crossroads." Page 2, Publication of Colorado Conservation Trust, 2005. Ibid. Page 1.

⁹⁹ "Colorado Profiles 2002 - 2006", Colorado Agricultural Statistics, pgs 111, 219.

municipal and industrial demand for water will increase by 53% statewide by 2030. Coloradans use about 208 gallons of water per day (gpd) per person. If agriculture is included, the per capita use increases to 3,690 gpd.¹⁰⁰ Agriculture, then, accounts for roughly 90% of Colorado's water demand and as such has been identified as the likely source for new municipal and industrial water sources in the future.¹⁰¹

The historic practice of permanently transferring water from agricultural uses to municipal or industrial uses comes in the form of selling/buying water rights and drying up the associated land. This form of water use conversion is not new to Colorado and causes the loss of arable land. This loss of land has tremendous economic and social impacts to the agricultural community in the Fountain Creek Watershed. The table below summarizes this trend.

1950-2007

Water Right	County	Acres dried up		Water Right	County	Acres dried up	
Fountain Mutual	El Paso	3300		West Pueblo Ditch	Pueblo	330	
Miller Ditch	El Paso	440		Booth Orchard Ditch	Pueblo	1433	
Cacuts Ditch	El Paso	40		Bessemer Ditch	Pueblo	1976	
Greenview Ditch	El Paso	80		Hamp Bell Ditch	Pueblo	80	*
Chilcotte Ditch	El Paso	510		Excelsior Ditch	Pueblo	1965	a
Lock/Lock 2 Ditch	El Paso	250		Colorado County	Pueblo/ Crowley	50000	b
Laughlin Ditch	El Paso	256	*				
Lincoln Ditch No. 5	El Paso	294	*				
TOTALS		5170				55784	

Source – Colorado Division of Water Division 2 (water change cases)

* denotes acres based on 1cfs for 40 acres

a denotes changed for Augmentation

b denotes most acres dried up in Crowley County/water transferred to Colorado Springs, Pueblo West, Aurora

A new alternative is being developed that would involve municipalities *leasing* rights to water from farmers but only using the leased water in years when it is necessary. This allows the farmer to stay in business and earn cash for the lean/dry years when the cities need the water most. Reportedly, this system is being considered by Colorado Springs Utilities and Arkansas River farmers. A recent article in the journal *High Country News* highlighted the pitfalls and benefits to the Los Angeles Water Authority's in using the lease approach.¹⁰²

Water conservation is, of course, the preferred alternative to reducing demand among all sectors. Conservation efforts during and since the 2002 drought have dropped urban

¹⁰⁰ "Water and growth subject of new CU report", CU-Boulder Natural Resources Law Center, Fact Sheet. November 15, 2001. Summary of "Water and Growth in Colorado".

¹⁰¹ Sherman 2007.

¹⁰² Jenkins, Matt. 2007. Quoted in "L.A. Bets on the farm," in *High Country News*, November 12, 2007, pgs 12-17.

water use to the range of 120-180 gpd per person.¹⁰³ It is unlikely that water conservation alone will satisfy future water needs.

Unlike municipal water conservation, increased agricultural water efficiency *may* improve the quantity and quality of water available to downstream users, but it is not a panacea for water needs.¹⁰⁴ Flood irrigation is relatively inefficient on a field scale: it consumes approximately 50% of the water applied and raises the water table with the ensuing problems of increased evaporative losses. It also fosters noxious weed growth by providing a water source.¹⁰⁵ The ‘extra’ water from flood irrigation that drains back to the creek leaches more salts into the water, jeopardizing downstream users’ water quality.¹⁰⁶ Seepage from ditches also raises the water table and adds to evaporative losses, however these practices also create habitat for wildlife. To the extent that more efficient irrigation methods reduce non-beneficial evaporative consumption, it may be possible to increase beneficial consumption by a corresponding amount without reducing the supply available to others. However, whether or not such savings can be transferred to other users or uses is not well established in Colorado law at the present time.

Nevertheless, “By reducing the consumptive use (e.g. converting alfalfa to drought-tolerant grasses or adopting new irrigation methods), farmers can potentially increase revenue by selling the water they save. A risk to farmers is the high cost associated with increasing irrigation efficiency. For example, converting from flood to center-pivot irrigation includes a \$568 per acre capital cost and \$80 per acre annual cost. While conservation can ‘free’ water for other uses, high infrastructure costs make it unfeasible to implement conservation strategies during drought years alone.”¹⁰⁷ The critical issue to be understood is that in order to change the use and/or place of use so that water may be sold to be used by another, a farmer must reduce the amount of water consumed by his or her own retained uses.¹⁰⁸

It is assumed that more efficient use of water will yield higher agricultural productivity or enable the agricultural community to aid industry and municipalities to meet their water needs. Studies in the South Platte watershed are underway to examine alternative modes of irrigation, including “sprinklers or drip systems, rotational fallowing, changing irrigation patterns, lining canals, and improving drainage from fields.”¹⁰⁹ These studies will have more or less direct applicability to the Fountain Creek Watershed or at least give us models to adapt to the region. One unanticipated result of increased irrigation efficiency is loss of ancillary riparian and wetland habitat. In parts of the county where

¹⁰³ “Water and growth subject of new CU report”, CU-Boulder Natural Resources Law Center, Fact Sheet. November 15, 2001. Summary of “Water and Growth in Colorado”.

¹⁰⁴ For the purposes of this summary, water efficiency refers to the method of delivery (i.e. center pivot sprinklers, ditches and flood irrigation) and type of crop use (corn vs. wheat, for example), not the consumptive use of a water right.

¹⁰⁵ Gates. Tim. 2007. Colorado State University, quoted in “Saving water could help farmers, river,” in *The Pueblo Chieftain*, by Chris Woodka. November 16, 2007.

¹⁰⁶ Ibid.

¹⁰⁷ Ibid.

¹⁰⁸ Witte, Steve. 2008. Colorado State Water Engineer. Personal communication.

¹⁰⁹ Gates 2007.

unlined irrigation ditches were converted to lined ditches, considerable loss of habitat has occurred because the seepage from the ditches was no longer feeding these riparian areas.

Another aspect of population growth that has an impact on agriculture is the effect that urbanization has on the hydrology¹¹⁰ of a watershed. Development increases the impermeability of the ground due to pavement and other covered surfaces that do not allow water to percolate into the ground. This impermeability causes an increase in the rate and volume of runoff during storm events. Some water users may benefit from this runoff by a temporary increase in water availability. However, the funneled water is essentially lost once it heads downstream as opposed to the more gradual release of water that occurs over time in a permeable watershed. Increased flows over short time periods can also cause increased stream bank erosion in riparian areas and in more extreme cases, flood damage to water diversion and control structures. A principle to be considered is that Colorado water right owners are entitled to streamflow conditions as they existed at the time their water rights were established.

One of the tools that can keep land and water available for agricultural use is conservation easements. In 2004, conservation easements enacted by land trusts and local governments protected nearly a million acres of valuable Colorado land. These easements achieve multiple outcomes including: protecting natural wonders, wildlife habitat, open space, and helping landowners keep their land in family ownership and production.¹¹¹ However, once water is tied to agricultural land in a conservation easement, it typically would then not be available for the type of municipal water leases discussed earlier.

In summary, increasing population pressures will require new and creative models to address competing needs between urban and agricultural uses of resources. Conserving water, using it more efficiently and productively, recycling and re-using it and coming up with creative models for transferring the use of that water, will all have to come into play in order to preserve water, agriculture, wildlife and the open spaces of Colorado.

B. GOALS TO ADDRESS CURRENT CONDITIONS

Goals to Improve Current Conditions

1. Preserve and Protect Agricultural Land
2. Preserve Agricultural Water
3. Promote Agricultural Viability
4. Protect Ecosystems

Note: Although the Fountain Creek Vision Task Force is deeply committed to maintaining agriculture in the watershed and to supporting activities that will help achieve the goals outlined above, the group decided not to pursue specific strategies to

¹¹⁰ Hydrology: The study of relationships between water and the geologic environment.

¹¹¹ "Colorado Conservation at a Crossroads." Publication of Colorado Conservation Trust, 2005, Page 3.

realize these goals, as only agricultural producers and landowners can determine what is best for their land and livelihood.

XI. OUTREACH

A. Current Conditions

Regional watershed outreach efforts are essential for:

- Establishing appreciation, understanding, and connecting with the waterway corridors in the Fountain Creek Watershed
- Creating public stewardship to increase watershed health/runoff water quality, to help assure waterway safety, to sustain healthy and functioning ecosystems/wildlife habitat, and to instill water conservation practices
- Facilitating enjoyment of healthy waterways that support diverse environmental, economic, wildlife, and recreational opportunities

- Preserving and protecting agricultural viability

There are multiple existing outreach programs in the region that educate a variety of people on diverse watershed topics. The region will benefit through greater cooperation and collaboration on public watershed outreach and educational programs that focus on common themes and messages.

There are currently various waterway outreach opportunities available throughout the Fountain Creek Watershed. These include (but are not restricted to):

Fountain Creek Vision Task Force (FCVTF)

The Task Force has provided the following outreach venues:

- Created a voice-over PowerPoint presentation that discusses the FCVTF efforts and delivered this presentation to various organizations throughout the watershed
- Participated in the Catamount Institutes 2008 Creek Connections Research Symposium.
- Created a Fountain Creek 'Top 10' flier that discusses the top ten facts concerning the watershed. This has been presented to the full Task Force, at a booth at the Colorado State Fair, and to various organizations in the watershed.
- Hosted a day-long watershed bus tour with expert interpretation in August 2007 for approximately 30 people
- Established a FCVTF web site on the www.fountain-crk.org site
- Is currently developing a video on the Fountain Creek Watershed

City of Colorado Springs, El Paso County, and Pueblo City and County

The local Governments provide the following watershed-related outreach:

- Regional Partnership of the Pikes Peak and Pueblo Area Councils of Government, www.fountain-crk.org
- Various stormwater protection educational materials have been developed including printed materials, videos, table-top displays, a children's watershed model, and presentations. These are used for education at schools, to various organizations, and at public events.
- School programs have been developed for various school-aged children to teach about stormwater protection.
- Signage is used to educate the public on the dangers of getting into waterways and on stormwater pollution.
- Pueblo Annual Water Festival

Local Schools

A few local schools and colleges have watershed related educational opportunities. These include:

- Colorado State University Pueblo, Water Quality Program
- Pikes Peak Community College: Water and Waste Water Technology, Associates Degree (One of only two in the State of Colorado)
- Saint Mary's High School, Colorado Springs
- Canyon Elementary Student Conservation Club – David Eick

Environmental Organizations

Several environmental groups in the region offer watershed outreach including:

- The Catamount Institute: Creek Connections –www.catamountinstitute.org/
- Colorado Watershed Network: River Watch – www.coloradowatershed.org
- Sierra Club’s Water Sentinels –www.geocities.com/water_sentinels

Parks and Nature Centers

There are several parks and nature centers in the watershed that are excellent sources for watershed outreach including:

- El Paso County Parks, The Fountain Creek Nature Center Campaign: No Child Left Inside!, http://adm.elpasoco.com/Parks/Fountain_Creek_Nature_Center.htm
- El Paso County Parks, Bear Creek Nature Center –<http://adm.elpasoco.com/Parks>

Other Organizations

Several other organizations offer the following outreach opportunities:

- Colorado Springs Utilities offers water conservation education through a wide venue including the Xeriscape Demonstration Garden, www.csu.org/environment/xeriscape/index.html
- City of Fountain offers Landscaping for the Fountain Valley, Xeriscape Demonstration Garden, <http://fountaincolorado.org/>
- Colorado Water Quality Monitoring Council (CWQMC), Xeriscape, Data Sharing Network, <http://cwqmc.coloradowatershed.org/>
- FutureSelf in collaboration with the Catamount Institute: *Stream of Conscience*
- City of Colorado Springs Stormwater – www.springsgov.com/stormwater
- Pueblo City-County Health – www.co.pueblo.co.us/pcchd/

Although there are multiple existing outreach programs in the region that educate a variety of people on diverse watershed topics, they are not linked or coordinated. These programs have the potential to be much more effective through watershed-wide coordination that focuses on filling the gaps between the organizations, optimizing their overlaps, and more effectively announcing upcoming events. Additionally, other entities in the watershed like the Home Builders Association, could be effective partners in outreach and should be invited to participate in future outreach efforts.

B. Goals and Strategies to Address Current Conditions

Goal to Improve Current Conditions

Educate and engage the public (from elementary age through adult) on the Fountain Creek Watershed to:

1. Establish appreciation, understanding, and connection with the waterway corridors in the Fountain Creek Watershed
2. Create public stewardship to increase watershed health/runoff water quality, to help assure waterway safety, and to instill water conservation practices
3. Facilitate enjoyment of healthy waterways that support diverse environmental, economic, wildlife, and recreational opportunities

4. Preserve and protect agricultural viability

Objectives

1. By mid 2009, create and implement a Fountain Creek Watershed website that includes a calendar for upcoming watershed related events.
2. By mid 2009, distribute Fountain Creek Watershed press packets to all television, radio, and newspaper outlets in the watershed.
3. By mid 2009, convene a roundtable of existing outreach and education program directors to develop short- and long-term program goals and implementation plans.
4. By the spring or fall of 2010, hold a Fountain Creek Watershed contest for K-12 school children throughout the watershed.
5. By 2010 and thereafter, hold at least 3 volunteer events annually focused on assessing and/or improving conditions in Watershed waterways.
6. Have a watershed educational curriculum in use in public schools throughout the watershed (5% of schools by 2011, 25% of schools by 2014).

Strategies to Achieve Goals and Objectives

2. Identify and leverage partnerships for funding.
2. Establish schedule of major events for Fountain Creek Watershed (FCW), develop a calendar, and develop press releases to publicize events.
3. Develop press packets and distribute them to the 'support team', update packets, as appropriate.
4. Develop a presentation packet for use by interested FCV sponsors.
5. Establish watershed-wide educational, volunteer, and experiential programs that include the following topics:
 - Stormwater protection and management (urban and agriculture)
 - Waterway safety / flooding
 - Waterway mechanisms and health (including wetlands, sedimentation, and erosion)
 - Water use and water conservation (urban and agriculture)
 - Wildlife and wildlife habitat
 - Regional agriculture
 - Recreation
 - Water quality
 - Land use issues impacting waterways
6. Establish Fountain Creek Watershed educational programs

C. Implementation Plan

Strategy 1: Identify and leverage partnership for funding			
Steps to Implement Strategy	Target Completion Date	Recommended Responsible Entity in the Watershed	Partners in Implementation
a. Develop list of grants under \$10K that are available (>\$10K goes to funding options group)	2009	Non-profit entity or similar and/or future Fountain Creek Watershed Funding Entity	PPACG, PACOG, CWCB, others
b. Develop template for grant applications	2009	Non-profit entity or similar and/or future Fountain Creek Watershed Funding Entity	Government and other entities involved in the Fountain Creek Vision Task Force

Strategy 2: Establish schedule of major events for Fountain Creek Watershed (FCW), develop a calendar, and develop a press release to publicize events			
Steps to Implement Strategy	Target Completion Date	Recommended Responsible Entity in the Watershed	Partners in Implementation
a. Establish what entities do public outreach, education, and events that support the outreach goals and determine what programs they do	2009	Non-profit entity or similar and/or future Fountain Creek Watershed Funding Entity	Government and other entities involved in the Fountain Creek Vision Task Force
b. Determine what events the Fountain Creek Regional Watershed Regulatory and Funding Entity and/or the Fountain Creek Non-profit entity will participate in and what the key messages will be for these events	2009 and quarterly thereafter	Non-profit entity or similar and/or future Fountain Creek Watershed Funding Entity	Government and other entities involved in the Fountain Creek Vision Task Force
c. Develop a calendar of events associated with the Outreach goals and post on a website	2009 with monthly updates thereafter	Non-profit entity or similar and/or future Fountain Creek Watershed Funding Entity	Government and other entities involved in the Fountain Creek Vision Task Force
d. Develop list of FCV sponsors that will promote watershed events (AKA a “support team” e.g. news publication representatives, TV station representatives, elected officials, Consensus Committee members, and Task Force Volunteers)	2009	Non-profit entity or similar and/or future Fountain Creek Watershed Funding Entity	Government and other entities involved in the Fountain Creek Vision Task Force
e. Develop a list of events that may be news worthy, updating the list monthly. Compose news releases with key messages for each such event. Review list with FCV, news publications, and TV stations to get coverage and post on website	2009 with monthly updates thereafter	Non-profit entity or similar and/or future Fountain Creek Watershed Funding Entity	Government and other entities involved in the Fountain Creek Vision Task Force

Strategy 3: Develop press packets and distribute them to the “support team”, update packets, as appropriate			
Steps to Implement Strategy	Target Completion Date	Recommended Responsible Entity in the Watershed	Partners in Implementation
a. Develop press packets including these items: FCV “Top 10”, FCW Newsletters (PPACG/PACOG), video of watershed tour, video and pictures from helicopter flyovers, maps (Thomas and Thomas and Corridor Master Plan), demonstration project summaries, USGS publications (both summaries and links to reports), and fact sheets	2009	Non-profit entity or similar and/or future Fountain Creek Watershed Funding Entity	Government and other entities involved in the Fountain Creek Vision Task Force
b. Write a series of short articles for publication in small local publications	2009	Non-profit entity or similar and/or future Fountain Creek Watershed Funding Entity	Government and other entities involved in the Fountain Creek Vision Task Force
c. Update packets and articles as appropriate	Quarterly	Non-profit entity or similar and/or future Fountain Creek Watershed Funding Entity	Government and other entities involved in the Fountain Creek Vision Task Force

Strategy 4: Develop a presentation packet for use by interested FCV sponsors			
Steps to Implement Strategy	Target Completion Date	Recommended Responsible Entity in the Watershed	Partners in Implementation
a. Develop power point presentation of various lengths containing key messages	2009 with quarterly updates	Non-profit entity or similar and/or future Fountain Creek Watershed Funding Entity	Government and other entities involved in the Fountain Creek Vision Task Force
b. Develop handouts and displays to be used and/or distributed at presentations	2009 with quarterly updates	Non-profit entity or similar and/or future Fountain Creek Watershed Funding Entity	Government and other entities involved in the Fountain Creek Vision Task Force

Strategy 5: Establish watershed-wide educational, volunteer, and experiential programs			
Steps to Implement Strategy	Target Completion Date	Recommended Responsible Entity in the Watershed	Partners in Implementation
a. Establish watershed-wide educational, volunteer, and experiential programs to address: stormwater protection and management (urban and agriculture), waterway safety/flooding, waterway mechanisms and health (including wetlands, sedimentation and erosion), water use and water conservation (urban and agriculture), wildlife and wildlife habitat, regional agriculture, recreation, water quality, land use issues impacting waterways	Late 2010	Non-profit entity or similar and/or regional watershed regulatory and funding entity	Government and other entities involved in the Fountain Creek Vision Task Force

Strategy 6: Establish Fountain Creek Watershed educational programs			
Steps to Implement Strategy	Target Completion Date	Recommended Responsible Entity in the Watershed	Partners in Implementation
a. Convene a roundtable of existing outreach and education program directors to develop short- and long-term program goals and implementation plans for a K-College curriculum for watershed education	Late 2009	Non-profit entity or similar and/or regional watershed regulatory and funding entity	Government and other entities involved in the Fountain Creek Vision Task Force
b. Produce videos for educational purposes	2010	Non-profit entity or similar and/or regional watershed regulatory and funding entity	Government and other entities involved in the Fountain Creek Vision Task Force
c. Establish a watershed wide contest for K-12 students that will increase understanding and commitment to the watershed	2010	Non-profit entity or similar and/or regional watershed regulatory and funding entity	Government and other entities involved in the Fountain Creek Vision Task Force

APPENDICES

Note: Due to the size of the appendices, they have been posted on the website separately from the rest of the Strategic Plan to facilitate downloading.

Appendix A: Maps

Appendix B: Additional Information: Water Quality

Appendix C: Additional Information: Flooding and Stormwater Management

Appendix D: Relevant Studies (referenced in the strategic plan)

Appendix E: FCVTF Consensus Committee Meeting Summaries

Appendix F: FCVTF Water Quality Working Group Summaries and Stormwater Management Group Meeting Summaries

Appendix G: FCVTF Water Quantity Working Group Summaries

Appendix H: FCVTF Combined Water Working Group Summaries

Appendix I: FCVTF Land Use and the Environment Working Group Summaries

Appendix J: FCVTF: Joint Meetings of Water and Land Use Working Group Summaries

Appendix K: FCVTF: Funding Options and Long-Term Management Working Group Summaries

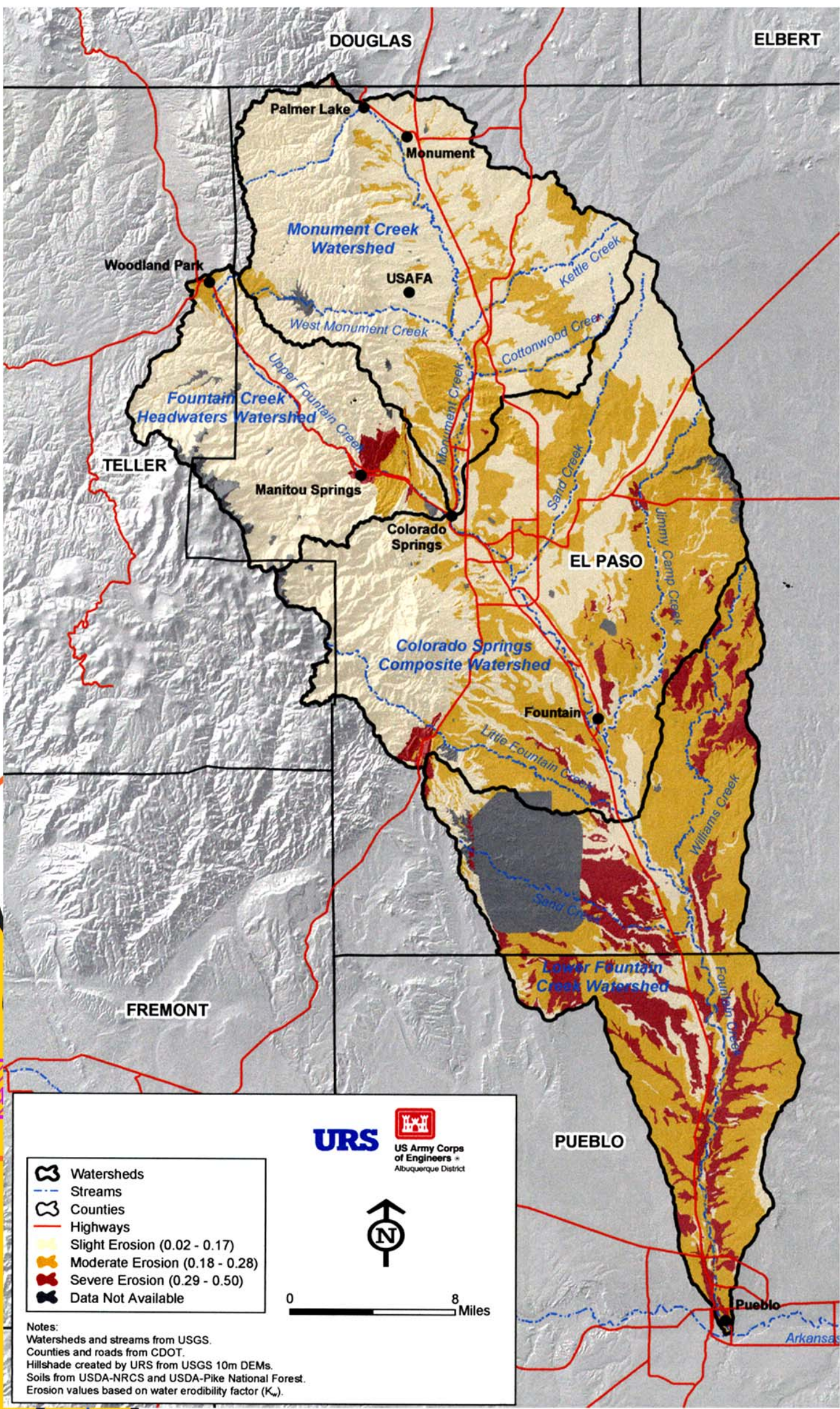
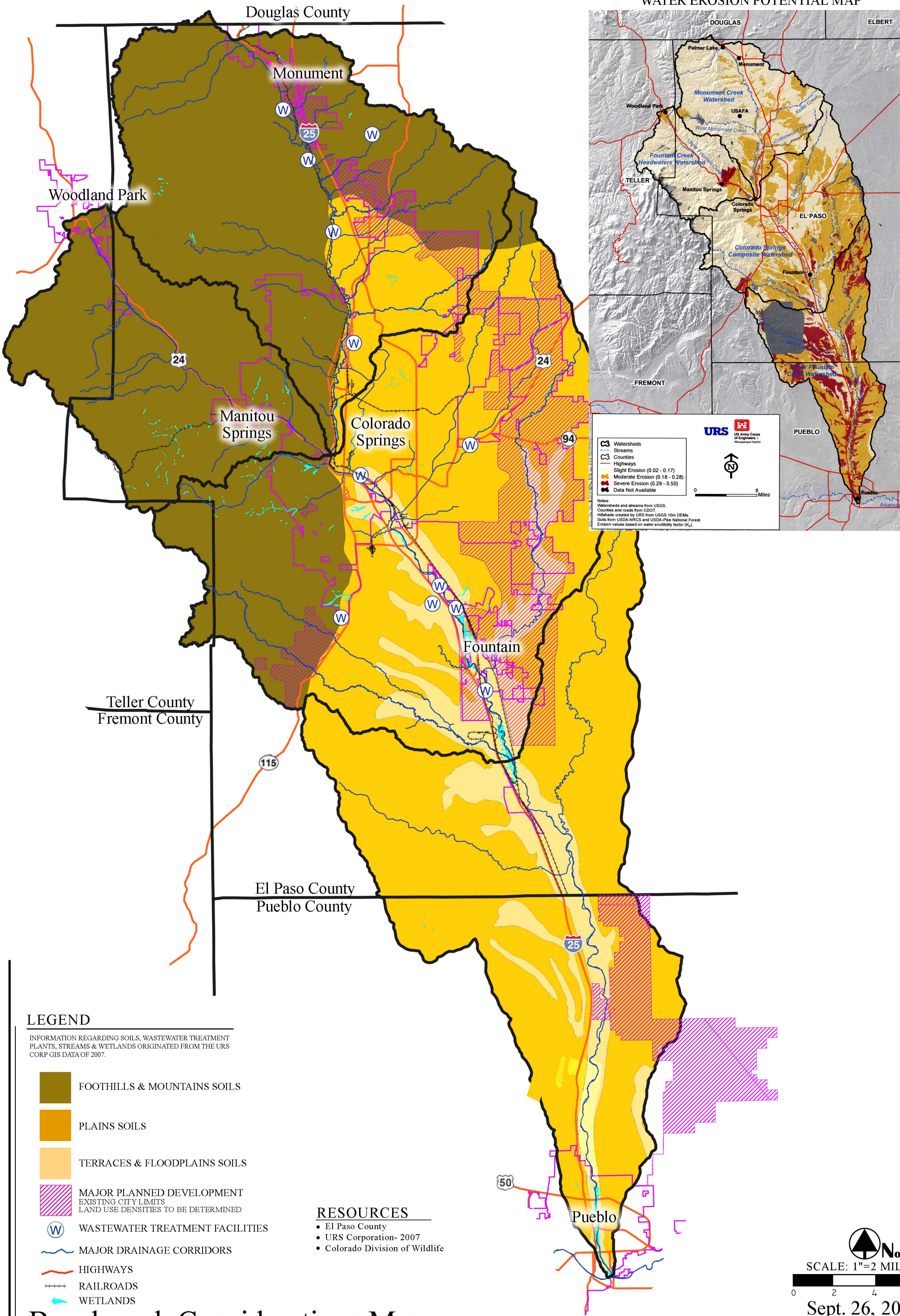
APPENDIX A

Maps

Map 1:	Benchmarks
Map 2:	Environmental Threats
Map 3:	Impervious Surface Area
Map 4:	Land Use Vision
Map 5:	Positive Environmental Attributes
Map 6:	Vision
Map 7:	Watershed Base Map

FOUNTAIN CREEK VISION TASK FORCE

WATER EROSION POTENTIAL MAP



LEGEND

INFORMATION REGARDING SOILS, WASTEWATER TREATMENT PLANTS, STREAMS & WETLANDS ORIGINATED FROM THE URS CORP GIS DATA OF 2007.

- FOOTHILLS & MOUNTAINS SOILS
- PLAINS SOILS
- TERRACES & FLOODPLAINS SOILS
- MAJOR PLANNED DEVELOPMENT
EXISTING CITY LIMITS
LAND USE DENSITIES TO BE DETERMINED
- WASTEWATER TREATMENT FACILITIES
- MAJOR DRAINAGE CORRIDORS
- HIGHWAYS
- RAILROADS
- WETLANDS

RESOURCES

- El Paso County
- URS Corporation- 2007
- Colorado Division of Wildlife

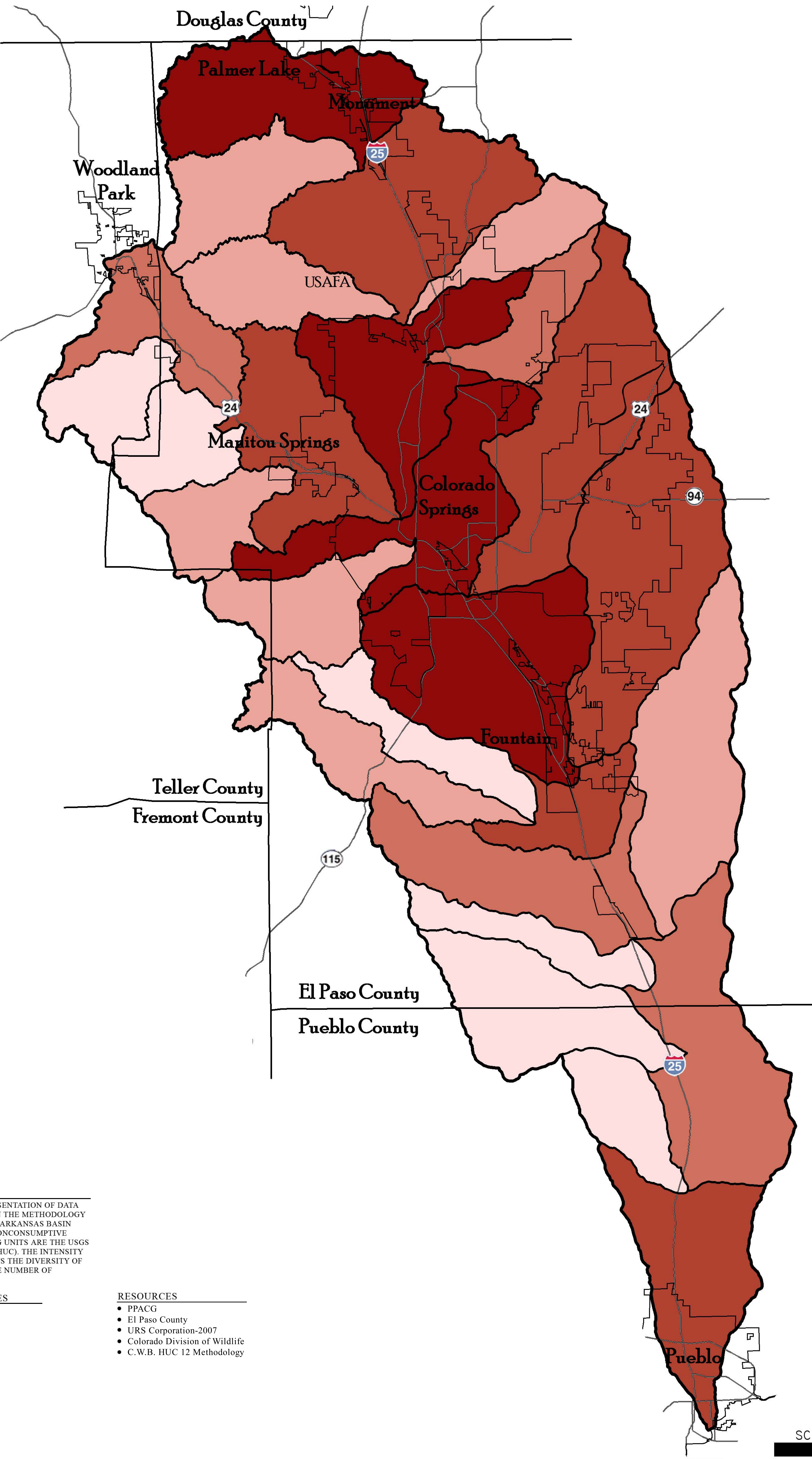
Benchmark Considerations Map

North
SCALE: 1"=2 MILES
0 2 4 6

Sept. 26, 2008

THOMAS THOMAS

FOUNTAIN CREEK VISION TASK FORCE



LEGEND

THE FOLLOWING PRESENTATION OF DATA WAS ESTABLISHED ON THE METHODOLOGY FORMALIZED BY THE ARKANSAS BASIN ROUND TABLE FOR NONCONSUMPTIVE WATER USE. MAPPING UNITS ARE THE USGS HYDROLOGIC CODE (HUC). THE INTENSITY OF MAPPING REFLECTS THE DIVERSITY OF ATTRIBUTES, NOT THE NUMBER OF ACCURANCES.

TOTAL ATTRIBUTES

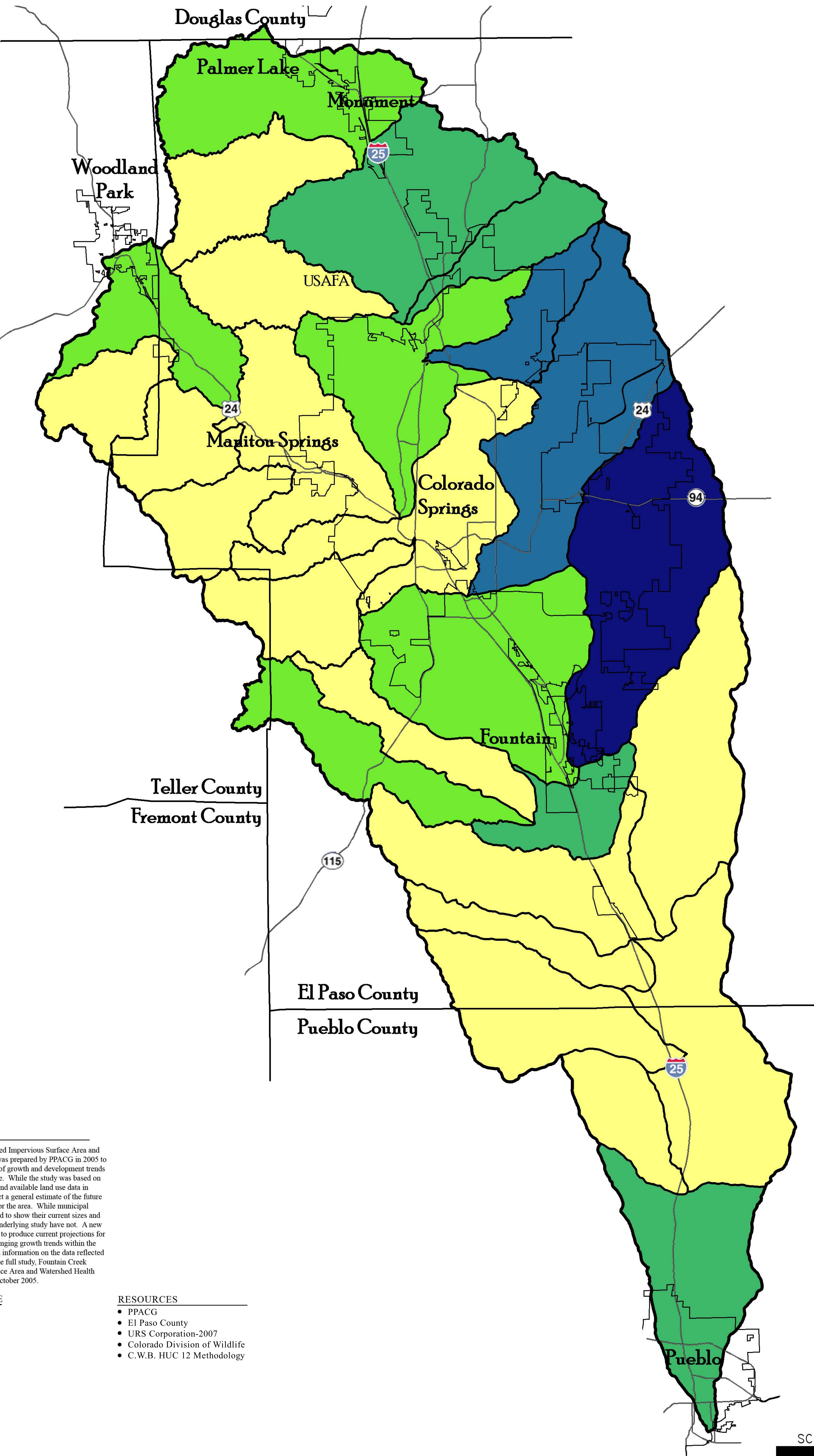
- 0-2
- 3-4
- 5-6
- 7-8
- 9-11

RESOURCES

- PPACG
- El Paso County
- URS Corporation-2007
- Colorado Division of Wildlife
- C.W.B. HUC 12 Methodology

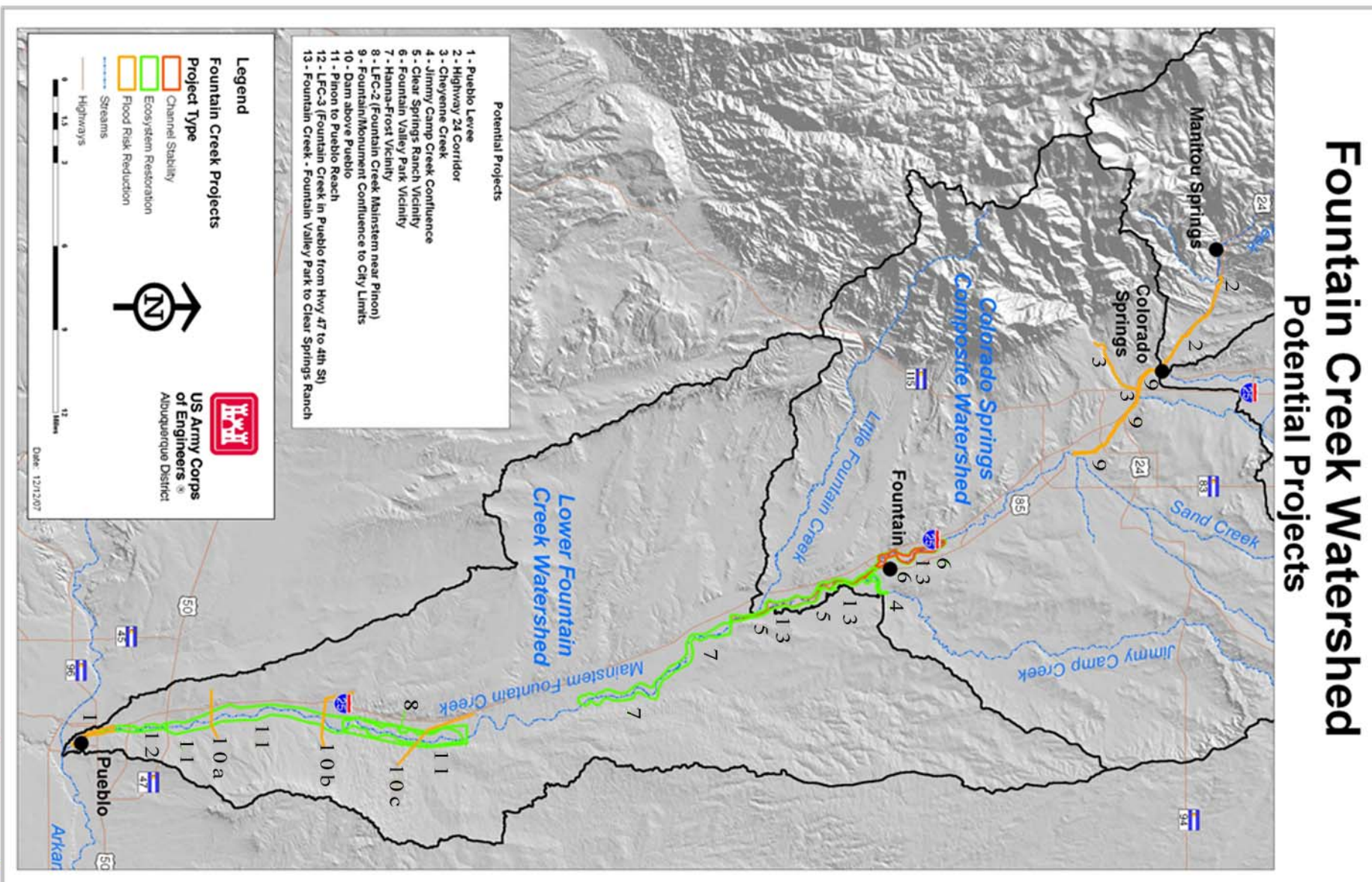
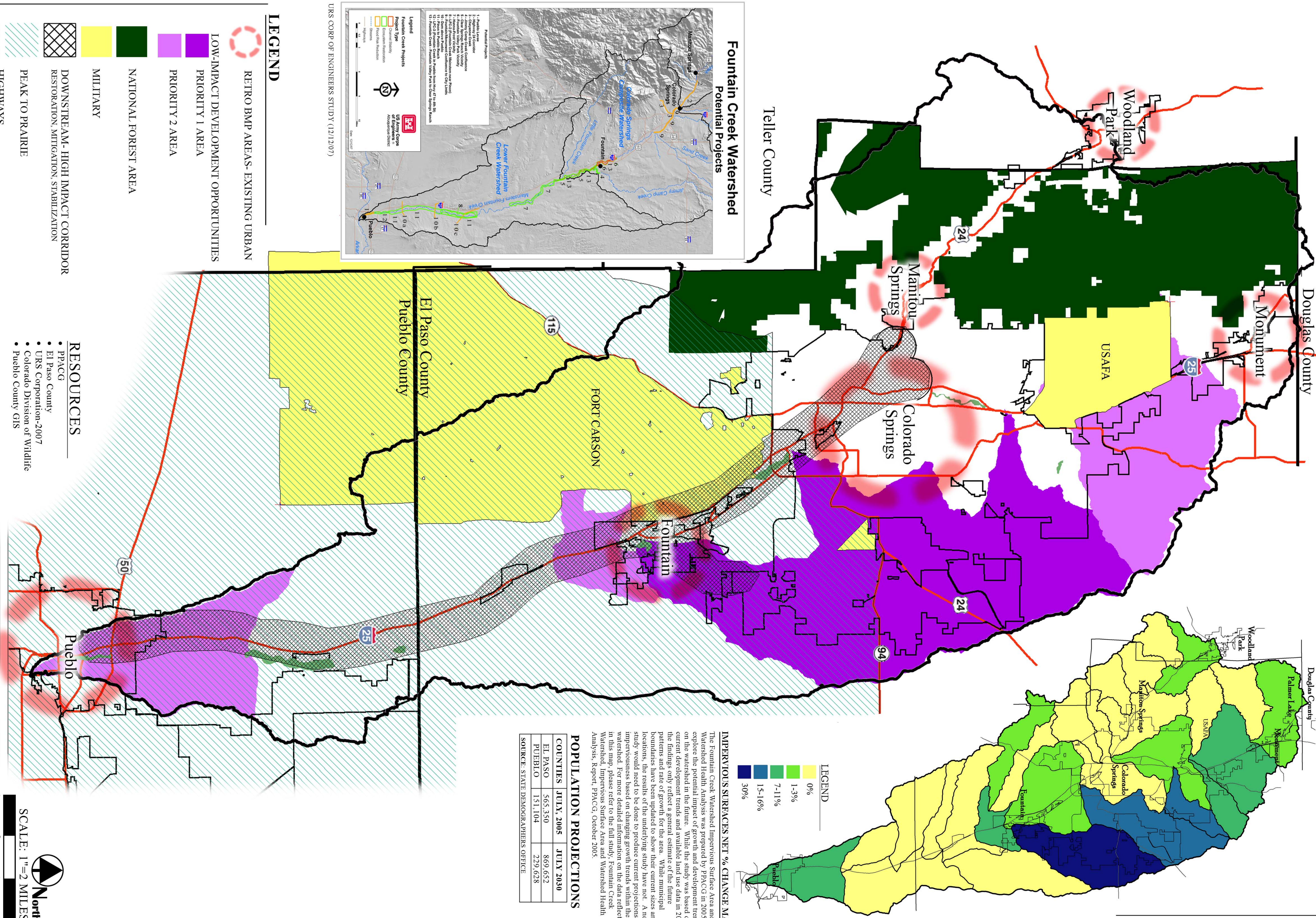
Environmental Threat Attributes Map

FOUNTAIN CREEK VISION TASK FORCE



Impervious Surfaces Net % Change Map

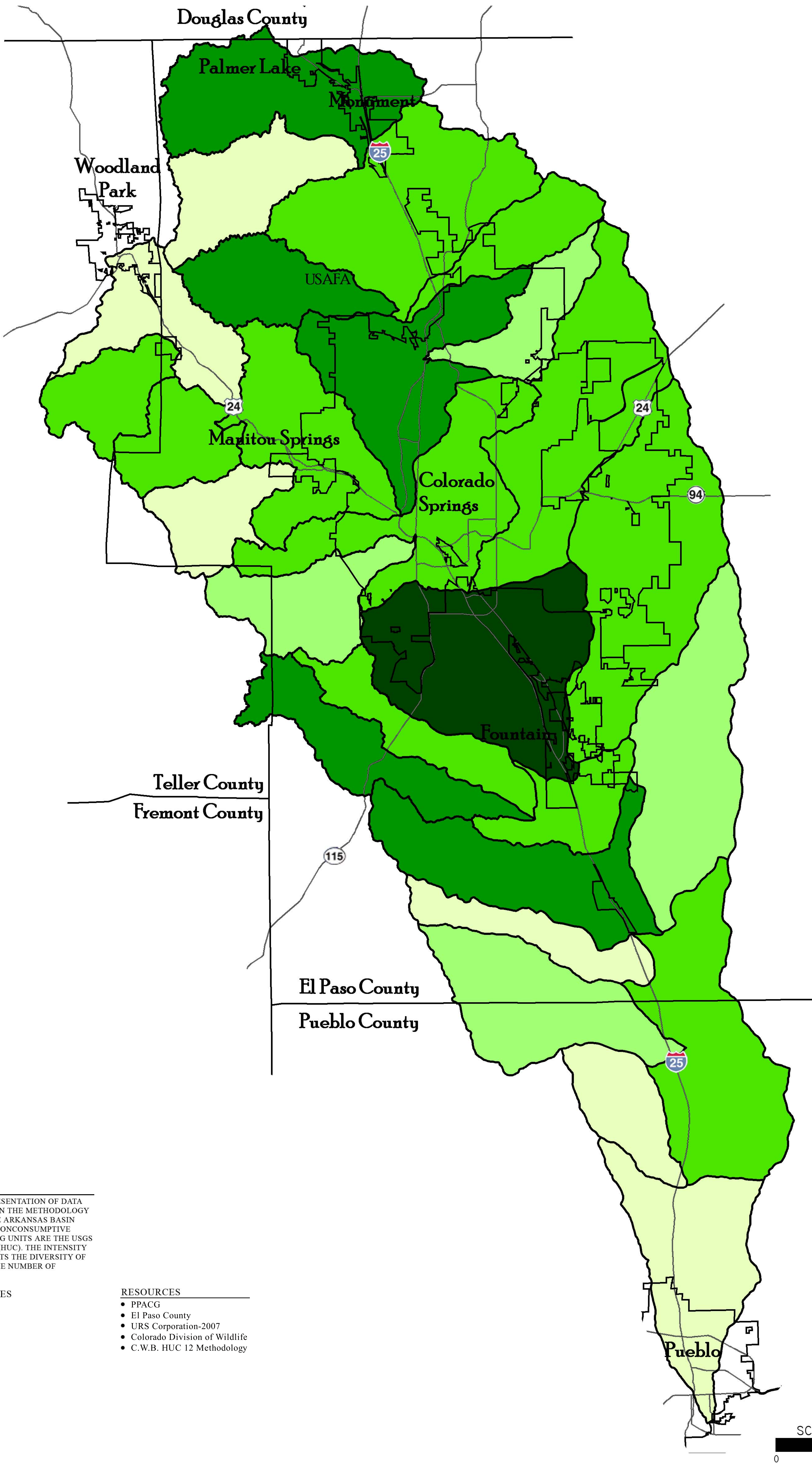
FOUNTAIN CREEK VISION TASK FORCE



URS CORP OF ENGINEERS STUDY (12/12/07)

Land Use Vision Map

FOUNTAIN CREEK VISION TASK FORCE



LEGEND

THE FOLLOWING PRESENTATION OF DATA WAS ESTABLISHED ON THE METHODOLOGY FORMALIZED BY THE ARKANSAS BASIN ROUND TABLE FOR NONCONSUMPTIVE WATER USE. MAPPING UNITS ARE THE USGS HYDROLOGIC CODE (HUC). THE INTENSITY OF MAPPING REFLECTS THE DIVERSITY OF ATTRIBUTES, NOT THE NUMBER OF ACCURANCES.

TOTAL ATTRIBUTES

- 11-13
- 14-16
- 17-19
- 20-22
- 23-25

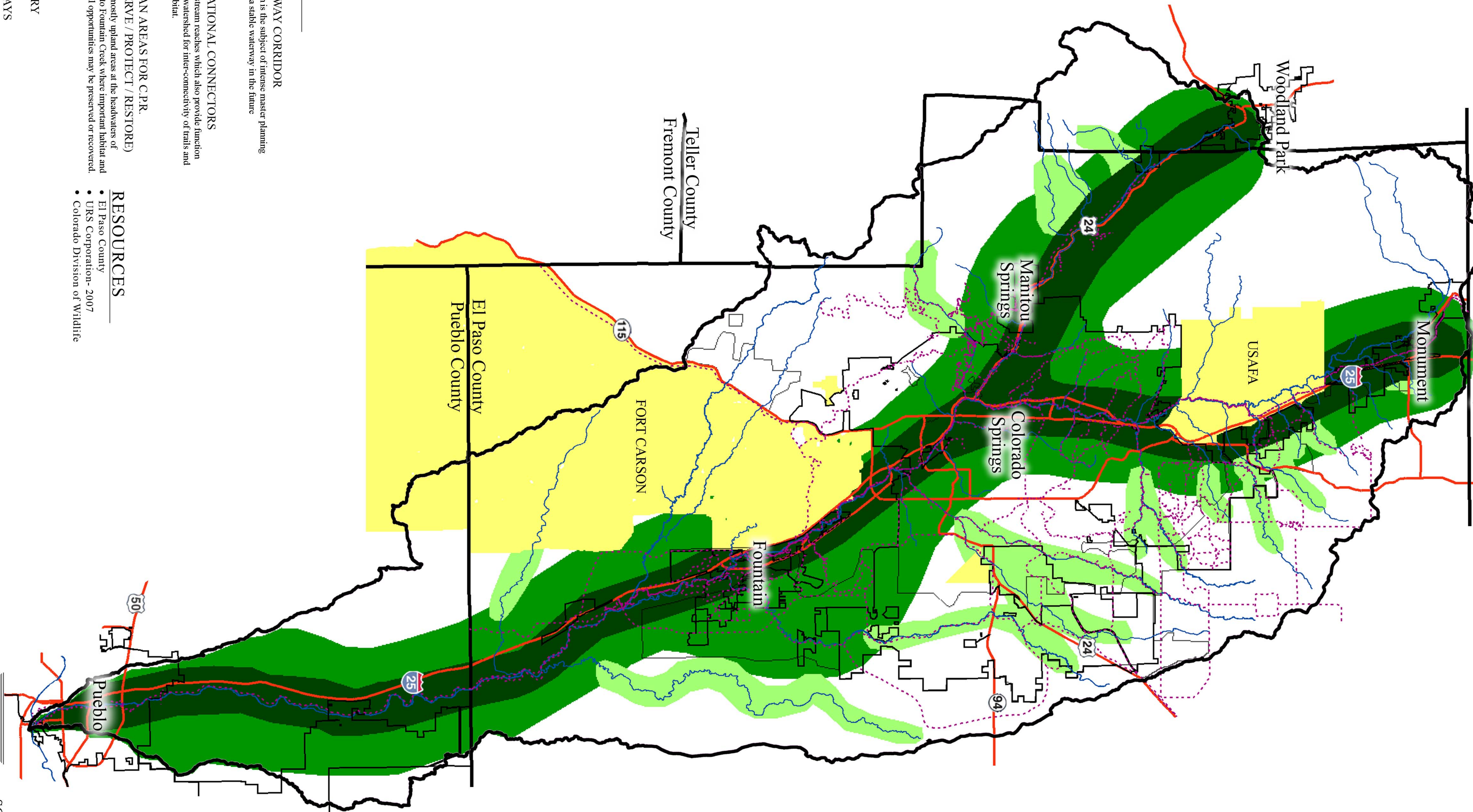
RESOURCES

- PPACG
- El Paso County
- URS Corporation-2007
- Colorado Division of Wildlife
- C.W.B. HUC 12 Methodology

Positive Environmental Attributes Map

FOUNTAIN CREEK VISION TASK FORCE

Douglas County



LEGEND

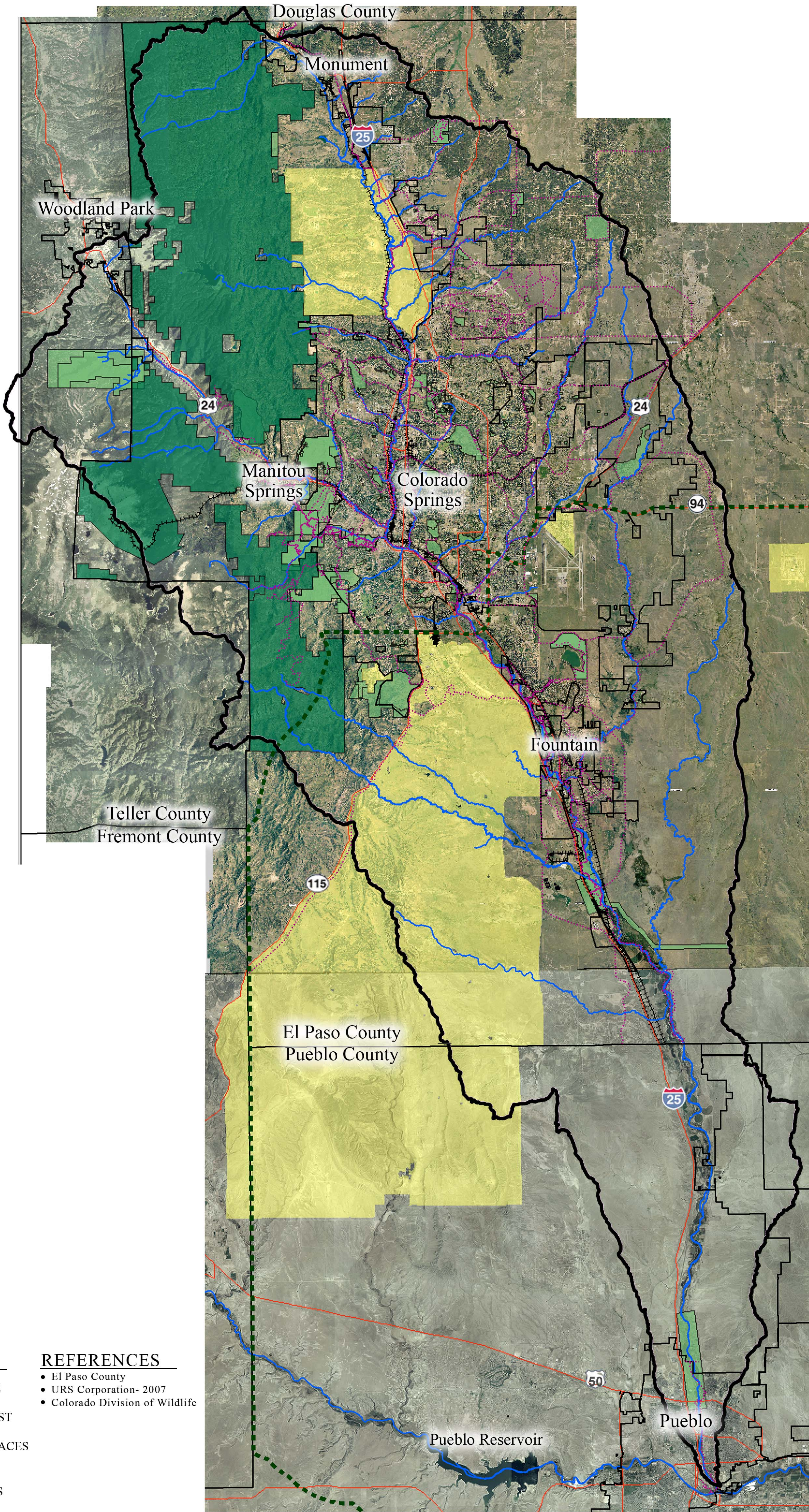
- GREENWAY CORRIDOR**
This region is the subject of intense master planning to achieve a stable waterway in the future
- RECREATIONAL CONNECTORS**
These are stream reaches which also provide function within the watershed for inter-connectivity of trails and riparian habitat.
- RIPARIAN AREAS FOR C.P.R. (CONSERVE / PROTECT / RESTORE)**
These are mostly upland areas at the headwaters of tributaries to Fountain Creek where important habitat and recreational opportunities may be preserved or recovered.

- ### RESOURCES
- El Paso County
 - URS Corporation- 2007
 - Colorado Division of Wildlife

- MILITARY
- HIGHWAYS
- MAJOR STREAMS
- EXISTING AND PROPOSED TRAILS

Vision Corridor Map

FOUNTAIN CREEK VISION TASK FORCE



LEGEND

- MILITARY BASES
- NATIONAL FOREST
- PARKS / OPEN SPACES
- HIGHWAYS
- MAJOR STREAMS
- RAIL ROADS
- TRAILS
- PEAK TO PRAIRIE BOUNDARY

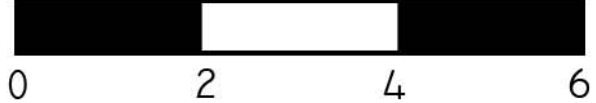
REFERENCES

- El Paso County
- URS Corporation- 2007
- Colorado Division of Wildlife

Watershed Base Map



SCALE: 1"=2 MILES



Sept 26, 2008

THOMAS THOMAS

APPENDIX B

Additional Information: Water Quality

- o www.dwr.state.co.us real time tracking from all stations to the state line.
Directly linked to sites of the USGS

USGS - Colorado home page

<http://co.water.usgs.gov/index.html>

Map-based tool that permits users to zoom into an area, scroll through a list of site type categories (stream, springs, reservoirs, wells, or precipitation) AND select the data type of interest -- streamflow, water quality, water levels, etc.

<http://co.water.usgs.gov/Website/projects/viewer.htm>

Streamflow

Realtime data in tabular format:

<http://waterdata.usgs.gov/co/nwis/current/?type=flow>

Comparisons to historic conditions at selected sites:

<http://co.water.usgs.gov/drought/html/index.cfm>

Water watch (a map showing current conditions throughout the state) can hover/click on any site and get current conditions or go directly to the real-time streamflow table referenced above.

<http://water.usgs.gov/waterwatch/?m=real&r=co>

Water Quality

Real-time water quality in tabular format

<http://waterdata.usgs.gov/co/nwis/current/?type=quality>

Real-time tracking from all water gaging stations to the state line; directly linked to sites of the USGS.

www.dwr.state.co.us

Water watch (a map showing current conditions at selected sites throughout the state) can hover/click on any site and get current water temperature or specific conductance condition or go directly to the real-time water quality table referenced above.

<http://water.usgs.gov/waterwatch/wqwatch/>

A water quality information and data page that provides links to a variety of water quality data (see list shown below).

<http://co.water.usgs.gov/infodata/waterquality.html>

Real-Time Site List

<http://waterdata.usgs.gov/co/nwis/current/?type=quality&group%20Key=basin%20cd>

All Water-Quality Data

http://waterdata.usgs.gov/co/nwis/dv/?referred_module=qw

Field/Lab Samples

<http://nwis.waterdata.usgs.gov/co/nwis/qwdata>

Site Inventory search

<http://nwis.waterdata.usgs.gov/co/nwis/inventory>

Daily Water Quality Data

http://waterdata.usgs.gov/co/nwis/dvstat/?referred_module=qw

Monthly

http://waterdata.usgs.gov/co/nwis/monthly/?referred_module=qw

Annual

http://waterdata.usgs.gov/co/nwis/monthly/?referred_module=qw

Comprehensive USGS Water Quality Data

Contains all the water quality data USGS has collected.

<http://nwis.waterdata.usgs.gov/co/nwis/qwdata>

Historical Comparative Data on Salinity Conditions

Provides a comparison of current salinity conditions to historic conditions for selected sites.

<http://co.water.usgs.gov/projects/ArkQW/index.cfm>

Publications:

USGS publications for the Colorado Water Science Center

<http://co.water.usgs.gov/publications/>

USGS publication warehouse

Provides access to all USGS publications, although some very old reports may not be accessible on-line

<http://infotrek.er.usgs.gov/pubs/>

The USGS gaging stations on Fountain Creek where much of the data is collected are:

Number	Location
11020003	Fountain Creek Watershed
07103700	FOUNTAIN CREEK NEAR COLORADO SPRINGS, CO
07103703	CAMP CREEK AT GARDEN OF THE GODS, CO
07103747	MONUMENT CREEK AT PALMER LAKE, CO

07103755	MONUMENT CREEK BELOW MONUMENT LAKE NR MONUMENT, CO
07103780	MONUMENT C AB N.GATE BLVD AT USAF ACADEMY, CO
07103797	WEST MONUMENT CREEK BELOW RAMPART RESERVOIR, CO
07103800	WEST MONUMENT CREEK AT U.S. AIR FORCE ACADEMY, CO
07103970	MONUMENT CR ABV WOODMEN RD AT COLORADO SPRINGS, CO
07103980	COTTONWOOD CREEK AT WOODMEN RD NR COLO SPRINGS, CO
07103990	COTTONWOOD CREEK AT MOUTH, AT PIKEVIEW, CO.
07104000	MONUMENT CREEK AT PIKEVIEW, CO.
07104905	MONUMENT CREEK AT BIJOU ST. AT COLO. SPRINGS, CO
07105000	BEAR CREEK NEAR COLORADO SPRINGS, CO
07105490	CHEYENNE CREEK AT EVANS AVE AT COLORADO SPRINGS,CO
07105500	FOUNTAIN CREEK AT COLORADO SPRINGS, CO
07105530	FOUNTAIN CR BLW JANITELL RD BLW COLO. SPRINGS, CO
07105600	SAND CREEK ABOVE MOUTH AT COLORADO SPRINGS, CO
07105800	FOUNTAIN CREEK AT SECURITY, CO.
07105900	JIMMY CAMP CREEK AT FOUNTAIN, CO.
07105945	ROCK CREEK ABOVE FORT CARSON RESERVATION, CO.
07106000	FOUNTAIN CREEK NEAR FOUNTAIN, CO.
07106300	FOUNTAIN CREEK NEAR PINON, CO
07106500	FOUNTAIN CREEK AT PUEBLO, CO

APPENDIX C

Additional Information: Flooding and Stormwater Management

Attachment 1:	Fountain Creek Flood Summary (table)
Attachments 2a and 2b:	Flooding along Fountain Creek (narrative)
Attachments 2c – 2s:	Flooding along Fountain Creek (photos)
Attachment 3:	Trends in Precipitation and Streamflow in the Fountain Creek Watershed, Southeastern Colorado, 1977–99 (US Geological Survey)
Attachment 4:	Trends in Impervious Surface Area
Attachment 5:	Fountain Creek Watershed Study Initial Recommendations

Fountain Creek Flood Summary

Watershed Area¹ = 925 mi²

Date: 8/10/2005

Annual Percent Chance Flood Event	Return Period	Peak Discharge (cfs)						
		URS HEC-HMS Model ²		USGS Regression Analysis, Plains Region ³	CWCBS Regression Analysis, ARK - 5 ⁴	FEMA FIS ⁵	DBPS ⁶	
		Existing	Future				Existing	Future
50%	2-year	4,700	5,800	1,078				
20%	5-year	10,000	12,000	2,987				
10%	10-year	16,000	17,000	5,601		18,500		
4%	25-year	24,000	29,000	10,768				
2%	50-year	33,000	38,000	16,232		45,000		
1%	100-year	45,000	51,000	23,211		64,000		
0.2%	500-year	74,000	83,000	47,357		99,000		

Notes: 1) Drainage Area was taken from the URS HEC-HMS model for the watershed.

2) Existing and Future Peak Discharges from the URS HEC-HMS models prepared as part of the Fountain Creek Watershed Study for USACE.

3) USGS Regression Analysis equations are from "Analysis of the Magnitude and Frequency of Floods in Colorado" Water-Resources Investigations Report 99-4190. The Plains Region covers the portion of Fountain Creek below an elevation of about 5,000 feet.

4) CWCBS Regression Analysis equations are not applicable to Fountain Creek mainstem.

5) FEMA FIS flows were taken from "Flood Insurance Study - City of Pueblo, Colorado", September 1986

6) No local Drainage Basin Planning Study (DBPS) flows are available.

(Attachment 2a)

Flooding along Fountain Creek

May 7, 2007 – In Pueblo, a newer roadway to a Wal-Mart Supercenter commercial district and a nearby, small residential neighborhood were swamped with water when an aged Fountain Creek levee broke after rainstorm runoff from the Colorado Springs area caused a shift in the creek's path through the area.

June 21, 2005 — In Colorado Springs, a flash flood hit the city, killing two boys. The flood also broke sewage pipes, sending around 318,000 gallons of untreated wastewater down Fountain Creek. The sewage spill triggered a lawsuit against Colorado Springs by Pueblo District Attorney Bill Thiebaut and also set in motion a push in Colorado Springs to create a stormwater utility to fund improvements. Source: Colorado Springs Independent.

April 29-30, 1999 — (18,900 cfs, Pueblo) On April 29, heavy rains swelled Fountain Creek and the Arkansas River, prompting flooding in the region, particularly downriver in La Junta. In Pueblo, city crews worked to keep the Fountain from washing away the riverbank behind the Target Store at the Pueblo Mall. The water tore out a sewer line along the river. The Pinon Bridge was washed away. Pueblo County was declared a disaster area with at least \$3 million in property and public road bridges reported. In Colorado Springs, up to 10 inches of rain fell along the foothills. Heavy rain and runoff in Fountain Creek results in the river running 6 feet above normal, and doing much damage along the river banks south of Colorado Springs and in Pueblo. Many people are homeless due to the flooding, and many more without power due to the storms. When the storm was over, it had done more than \$4 million in damage to the region.

May 17, 1995 and June 1997 — Large rainstorms cause heavy channel erosion on Fountain Creek, including washing out Pinon Road and areas around Pinon Bridge and (1997) causing one pier to settle by 9 inches. Pueblo County public works officials propose study of possible construction of dam on creek.

June 7, 1997 — Thunderstorms with heavy rain and hail cause four mud and rock slides, closing U.S. 24 in Ute Pass, and much flooding in Manitou Springs.

May 18, 1995 — Three inches of rain in Colorado Springs floods the city, while 18 inches of snow fall in nearby Woodland Park. The heavy rainfall causes a landslide closing U.S. 24 on Ute Pass. □

June 17, 1965 — (47,000 cfs, Pueblo) Fifteen days of steady rain result in the flooding of the Arkansas and South Platte rivers and Fountain Creek. President Lyndon B. Johnson declares Colorado a major disaster area. In Pueblo, 1,000 residents are evacuated from their homes as the raging Fountain washes out the Pinon Bridge north of the city. Rainfall estimated put at 14 inches. Five people drown in the Lamar area as a result of the Arkansas River flood waters. Flood prompts eventual construction of Fountain Creek levee in Pueblo.

July 10, 1945 — (17,850 cfs, Pueblo) — No details readily available.

(Attachment 2b)

May 30, 1935 — (35,000 cfs, Pueblo) Memorial Day flood on Fountain and Monument creeks kills 18 people and washes away bridges and buildings in downtown Colorado Springs. Among victims is Pueblo couple stranded in car on South Nevada Avenue. In north Pueblo, downstream flooding swamped businesses along Fountain Creek and parts of Downtown. Rail traffic halted. Estimated peak flow in Pueblo: 35,000 cfs.

June 3, 1921 — (34,000 cfs, Pueblo) Pueblo's most devastating flood, primarily due to overflows on the Arkansas River, also included flooding along Fountain Creek. USGS estimates Fountain Creek's peak flow reached 34,000 cfs on June 4. The main Arkansas River flooding left more than 100 people dead and hundreds homeless. Bridges and buildings on both waterways are washed out with property damage and loss estimated at \$25 million. A high water mark of the Arkansas River still can be seen on the Union Depot.

Aug. 7, 1904 — A flash flood on Porter Draw (near Eden, north of Pueblo) washes a train from the tracks, killing 89 passengers. Flood waters weaken a bridge, which gives way under the weight of the train.

Attachment 2c - 2007



Water from the Fountain Creek spills into low-lying areas near Highway 47 and Dillion Drive where an embankment gave way Monday, flooding homes and businesses. Photo by Mike Sweeney 5.7.07

Attachment 2d - 2007



Flood waters spill over Dillion Drive Monday after a levee along the Fountain Creek broke, flooding nearby homes and businesses. Photo by Mike Sweeney 5.7.07

Attachment 2e - 2007



Crews work on replacing an old river levee which broke on the Fountain Creek Monday morning causing major flooding on Pueblo's northside. Chieftain photo John Jaques 5.8 07

Attachment 2f - 1999



Mary McNamara, of Colorado Springs, and Suzanne Green, of Manitou Springs, watch the floodwaters flow through Soda Springs Park and into Fountain Creek, Saturday May 1, 1999 in Colorado Springs, Colo., near the historic and troubled Manitou Spa building. In Larimer County, some 60 people were evacuated from a flooded trailer park, and around Colorado Springs, homes were evacuated and two towns declared local disasters. (AP Photo/The Gazette, Bob Jackson)

Attachment 2g - 1999



COLORADO FLOOD

Utilities workers from Colorado Springs and Fountain, Colo. work on damaged power lines near Fountain on Saturday May 1, 1999. The lines were damaged Friday by debris washing down Fountain Creek causing a major power outage. (AP Photo/The Gazette, Jay Janner)

Attachment 2h - 1999



DON MALDONADO

Don Maldonado, a worker with the Pueblo County Department of Public Works, surveys the damage done to the Pinon bridge which crosses the Fountain River near Pueblo, Colo., Monday May 3, 1999. A section of the bridge was washed away during Friday's storm which turned the usually tame Fountain into a raging torrent. (AP Photo)(The Pueblo Chieftain, Bryan Kelsen)

Attachment 2i - 1999



Hundreds of trees fill the Fountain River riverbed just north of the Highway 47 bridge Monday. The trees are part of the debris left when the waters of the flooding river receded. Chieftain Photo by Bryan Kelsen

Attachment 2j - 1999



Recent rains that have caused flooding along Fountain Creek have also caused extensive damage to the river trail south of the east fourth Street bridge — photo by Chris McLean 8-2-99

Attachment 2k - 2001



The Union Pacific Railroad is shoring up the cliff adjacent to their railroad tracks along the Fountain River just north of Pueblo near the Eden exit of Interstate 25. During the 1999 flood ,the river cut a new channel that eroded the cliff and brought it closer to the tracks that run alongside to the left. They are installing mesh fabric to secure large rocks and riprap along about a 1-mile stretch. The work began last week and should continue for about 6 weeks---photo by chris mclean 4-26-01

Attachment 21 - 1965



floodwaters innundate an east side home during the 1965 flood in pueblo -- chieftain file photo

Attachment 2m - 1965

METRO

AND THE REGION

INSIDE

Obituaries	2B
City/Region	3B
Crime Beat	3B
Weather	10B



Debris from a building (left photo) that washed up against the Eighth Street bridge was left behind when floodwaters receded in 1965. Lower Fountain Creek (right photo) briefly turned into a lake below the old Walter's Brewery during the flood of 1965.

Water, water everywhere

'65 flooding sparked idea of dam on Fountain Creek

Muddy, destructive wave of water came out of blue for Puebloans.

By **CHRIS WOODKA**
THE PUEBLO CHIEFTAIN

Pueblo's weather forecast for June 17, 1965, called for mostly cloudy skies with scattered showers and the chance of a thunderstorm, possibly heavy in the evening.

The front page of *The Pueblo Chieftain* that morning boasted "Freak Weather Misses Pueblo; Only Rain, High Wind Recorded." Up north, there was widespread devastation as Palmer Lake was battered by tornadoes and the South Platte River crested at 20 feet.

By the next day, Pueblo learned it had not escaped Mother Nature's wrath. Fountain Creek had cut a path of destruction through the city. The headlines read: "Flood Deals Pueblo Heavy Blow" and "River Stomps Pueblo."

As reporter Jerry Skelton summed it up at the time: "The Fontaine qui Bouille (fountain that boils) lived up to its French name Thursday night as it boiled through Pueblo, ripping houses from their foundations, tossing automobiles and house trailers about like toys, straining bridges to the breaking point and spreading a coat of slimy mud over everything in its path."

The photos that day and over the next few weeks showed the dramatic destruction of floods in Pueblo and the surrounding area. A lumber yard shed lodged itself in the center of the Fourth Street Bridge. The Pinon Bridge was photographed as it was literally swept away. A train made a nose-dive into the Purgatoire River.

The flooding on Fountain Creek was just a part of a week of storms and flooding that caused \$500 million in damage in the South Platte Basin, largely in the Denver metro area, and \$37 million in the Arkansas Basin, much of it to cities and farms east of Pueblo. While Pueblo's East Side was hammered, the

flood was less devastating to the city than the June 3, 1921, flood.

Considered a 100-year flood (a storm that has a chance of occurring once in a century) on Fountain Creek, the 1965 storm dumped 4.7 inches in six hours, centered on the Jimmy Camp Creek area, or what is now the Banning-Lewis Ranch development in eastern Colorado Springs. That particular storm did not cause much damage to Colorado Springs, because Jimmy Camp Creek joins the Fountain south of the city.

The peak flow at Jimmy Camp Creek was 124,000 cubic feet per second.

Flows through Pueblo crested at 80,000 cfs, and further downstream at the Catlin Canal headgate, the Arkansas River topped out at 43,200 cfs. Flows decreased as the floods moved downward because the channels became wider.

While John Martin Dam captured the entire flow of the river — with levels going from almost nothing to more than 230,000 acre-feet overnight. It was fed by torrential flows on the Purgatoire River and other tributaries below Fountain Creek as well, with a peak flow of 104,000 cfs. Below John Martin, there were even worse storms — at Holly 11 inches of rain fell in just six hours.

Arkansas not a problem

Puebloans flocked to the creek to watch as a 20-foot wall of water moved down the creek. Police had to keep the curious away from parts of the channel that would soon be flooded.

Nearly lost in all the accounts was the fact that most of Pueblo was protected by measures put in place after the 1921 flood. While storms were not as severe on the mainstem of the Arkansas River, a levee and a dam built by the U.S. Army Corps of Engineers prevented more rain from compounding the damage to Pueblo. But the project only rated a mention in 1965 news accounts.

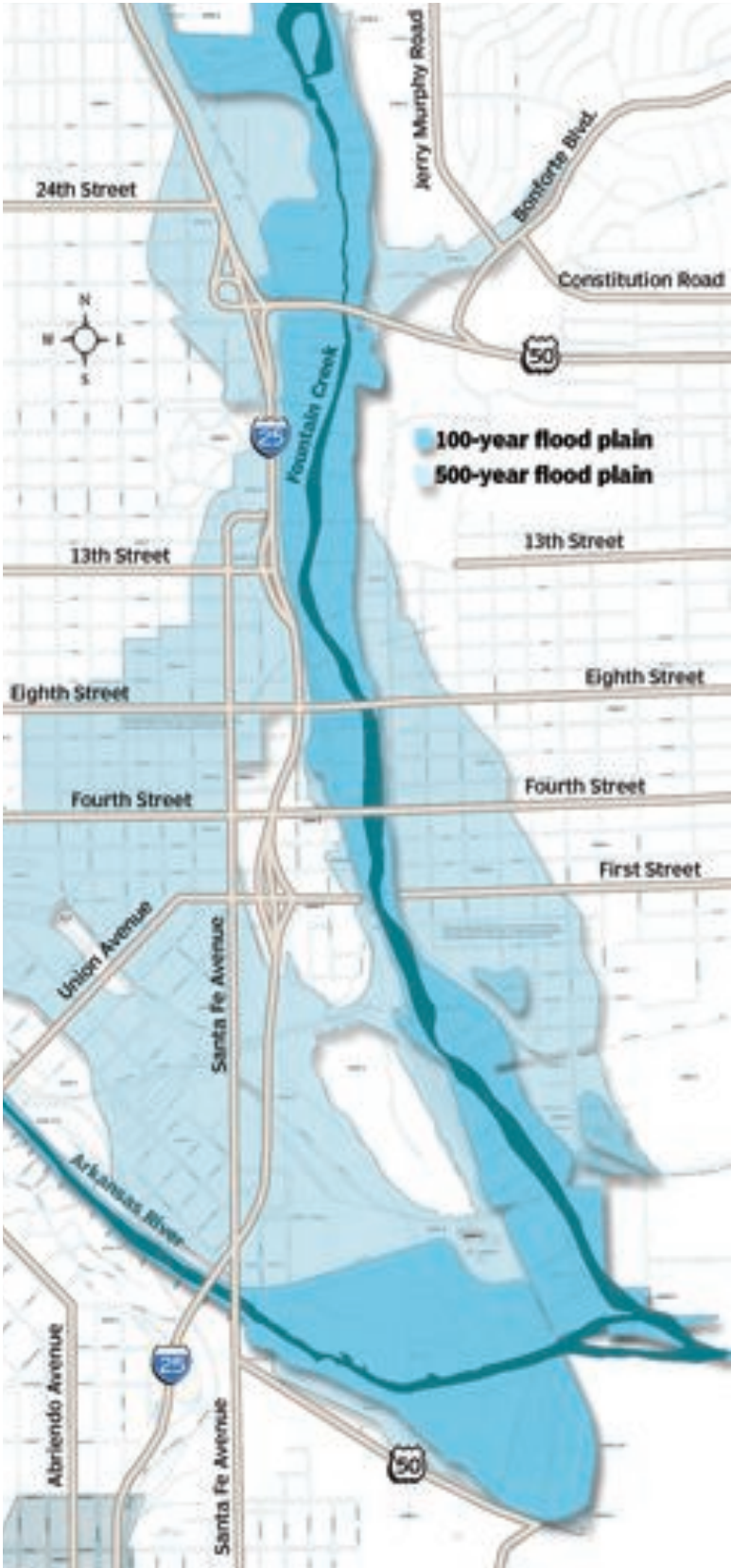
The levee is still there, covered with painted murals that serve as urban scenery along a kayak course.

PLEASE SEE FLOOD, XB



COURTESY PHOTOS/PUEBLO LIBRARY DISTRICT

East Side residents survey a muddy yard while cleaning up after the 1965 flood on Fountain Creek. The dark area on the walls of the house shows the high-water mark from flooding.



Where would the water go?

Downtown, East Side largely protected by levees, unless something has changed.

If a flood like the one on June 17, 1965, were to occur again on Fountain Creek, where would the water go?

Hopefully, down the channel and into the Arkansas River, as the U.S. Army Corps of Engineers intended when it built a system of levees along the normally sluggish creek in the 1980s.

The current Federal Emergency Management Agency map, drawn in 1986 as the levees were being constructed, shows there is little development in the 100-year flood plain. But a wider area likely to flood in a more severe storm event is drawn to include many areas of the East Side and much of the Downtown area.

However, more silt and trees are filling the channel every year, as flows continue to eat away at the reaches of Fountain Creek above Pueblo, said Dennis Maroney, Pueblo stormwater utility director.

The Army Corps of Engineers rated the city's plan to clean out the channel on a regular basis as one of the highest priorities in a preliminary assessment of alternatives recently.

"It would be a continual job, almost an annual thing," Maroney said.

The tamarisks and other trees growing in the area south of Eighth Street were cleared in 2005, but already have returned and the city has not attempted any dredging. A large sandbar accumulating at the confluence of Fountain Creek and the Arkansas River was scoured out by heavy rains in 2006, however.

PLEASE SEE LEVEES, XB



A railroad tanker rests on its side after floodwaters receded from the June 17, 1965, flood on Fountain Creek.

Attachment 2n - 1935



photo shows the ackup water close to the Walter's Brewing Company--from page 7 of June 1, 1935 Pueblo Chieftain

Marked for Death

Seeking protection from the swirling water, Orville C. O'Neil and his sweetheart, Helen Carver, both of Pueblo, are pictured here as they climbed to the top of their automobile in Colorado Springs Memorial day where they were swept to their deaths after resisting the flood tide for two hours. The flooded Nevada avenue bridge is shown in the background. Organized search for the bodies continued fruitlessly Monday along the Fountain river.

(Associated Press Photo).



Flood Swirls About Marooned Autoists



The Funtana river, washed by a rhododend at its mouth, swept down at the beautiful city of Galahady Spring (Savady), leaving a valley in its path. Here around but a few old houses, standing on the scattered beds of the sand directly in front of the city in the course of the glacial drift, were struck by a piece of wood and stones.

Rapidly Rising Waters Threaten Sterling And Fort Morgan Region

Pueblo Flood Loss Greatest Since Disaster of 1921, Officials Study Conservancy Plans	Property Damage in Devastated Districts Will Reach Several Millions

FAIRFAX FINLEY returned to his American home last week, but what savings bank was possible and having a great many of its members have to go on a long journey to the United States of America. The bank is now in a position to be able to do so.

Sterling Left in Darkness As South Platte Overflows

[illegible]

Floods Claim Heavy Toll In Southwestern States

1. Name of the project: Development of a new product line 2. Objectives of the project: To develop a new product line that meets the needs of the market and increases sales. 3. Scope of the project: The project will cover the development of a new product line, including market research, product design, and manufacturing. 4. Key deliverables: The key deliverables of the project are a new product line, a marketing plan, and a manufacturing plan. 5. Risks: The risks of the project are that the new product line may not meet the needs of the market, that the marketing plan may not be effective, and that the manufacturing plan may be too costly. 6. Budget: The budget for the project is \$1,000,000. 7. Timeline: The timeline for the project is 12 months. 8. Resources: The resources for the project are a team of 10 people, including a project manager, a product manager, a marketing manager, and a manufacturing manager. 9. Stakeholders: The stakeholders of the project are the company, the market, and the customers. 10. Conclusion: The project is a complex one, but it is one that is worth the effort. It will allow the company to develop a new product line that meets the needs of the market and increases sales.	1. Name of the project: Development of a new product line 2. Objectives of the project: To develop a new product line that meets the needs of the market and increases sales. 3. Scope of the project: The project will cover the development of a new product line, including market research, product design, and manufacturing. 4. Key deliverables: The key deliverables of the project are a new product line, a marketing plan, and a manufacturing plan. 5. Risks: The risks of the project are that the new product line may not meet the needs of the market, that the marketing plan may not be effective, and that the manufacturing plan may be too costly. 6. Budget: The budget for the project is \$1,000,000. 7. Timeline: The timeline for the project is 12 months. 8. Resources: The resources for the project are a team of 10 people, including a project manager, a product manager, a marketing manager, and a manufacturing manager. 9. Stakeholders: The stakeholders of the project are the company, the market, and the customers. 10. Conclusion: The project is a complex one, but it is one that is worth the effort. It will allow the company to develop a new product line that meets the needs of the market and increases sales.

Attachment 2q - 1935



Attachment 2r - 1935



photo shows the men's dormitory at sttae hospital annex tumbling into the swollen river

Attachment 2s - 1904



1904 Aug. 7--a flash flood north of pueblo washed a train from the tracks, killing 89 passengers file photo

Attachment 3a

Prepared in cooperation with the Turkey Creek Soil Conservation District, El Paso County Soil Conservation District, Central Colorado Soil Conservation District, and Pueblo County

Trends in Precipitation and Streamflow in the Fountain Creek Watershed, Southeastern Colorado, 1977–99

—Robert W. Stogner, Sr.

Introduction

The Fountain Creek watershed drains about 930 square miles of parts of Teller, El Paso, and Pueblo Counties in southeastern Colorado (fig. 1). Land use within the watershed includes forests, urban areas, military reservations, agriculture, and rangeland. Forested lands are located predominantly in the northwestern mountainous part of the watershed. The major urban center in the watershed is the Colorado Springs metropolitan area that includes Colorado Springs and several smaller communities in El Paso County. Since 1977, population in El Paso County has increased by about 75 percent. As population increased, the amount of impervious area increased. Research has shown that as impervious area increases, infiltration decreases, runoff increases, and a quicker hydrologic response in the receiving streams occurs, which enhances streambank erosion (Goudie, 1986; Douglas, 1983; Dunne and Leopold, 1978). Agriculture and rangeland are located predominantly south of Colorado Springs. Agriculture is common along the alluvial valley from Fountain to Pueblo and relies heavily on water diverted from Fountain Creek. A large expanse of rangeland is included within the boundaries of the military reservation at Fort Carson.

Concerns by landowners, farmers, resource managers, and municipal, county, and local agencies that (1) flooding and associated streambank erosion may be worsening over time, and (2) increases in precipitation, especially during the 1990's, may be exacerbating the problem, resulted in a study to determine whether precipitation and streamflow in the Fountain Creek watershed has changed over time. The study was done by the U.S. Geological Survey (USGS), in cooperation with the Turkey Creek Soil Conservation District, El Paso County Soil Conservation District, Central Colorado Soil Conservation District, and Pueblo County.

Stogner (2000) indicated that no significant trends were detected in precipitation or streamflow prior to 1977. Therefore, this Fact Sheet summarizes trends in precipitation and streamflow from 1977 through 1999. Readers interested in a detailed discussion of trends in precipitation and streamflow for the Fountain Creek watershed from 1939 through 1999 are referred to Stogner (2000).

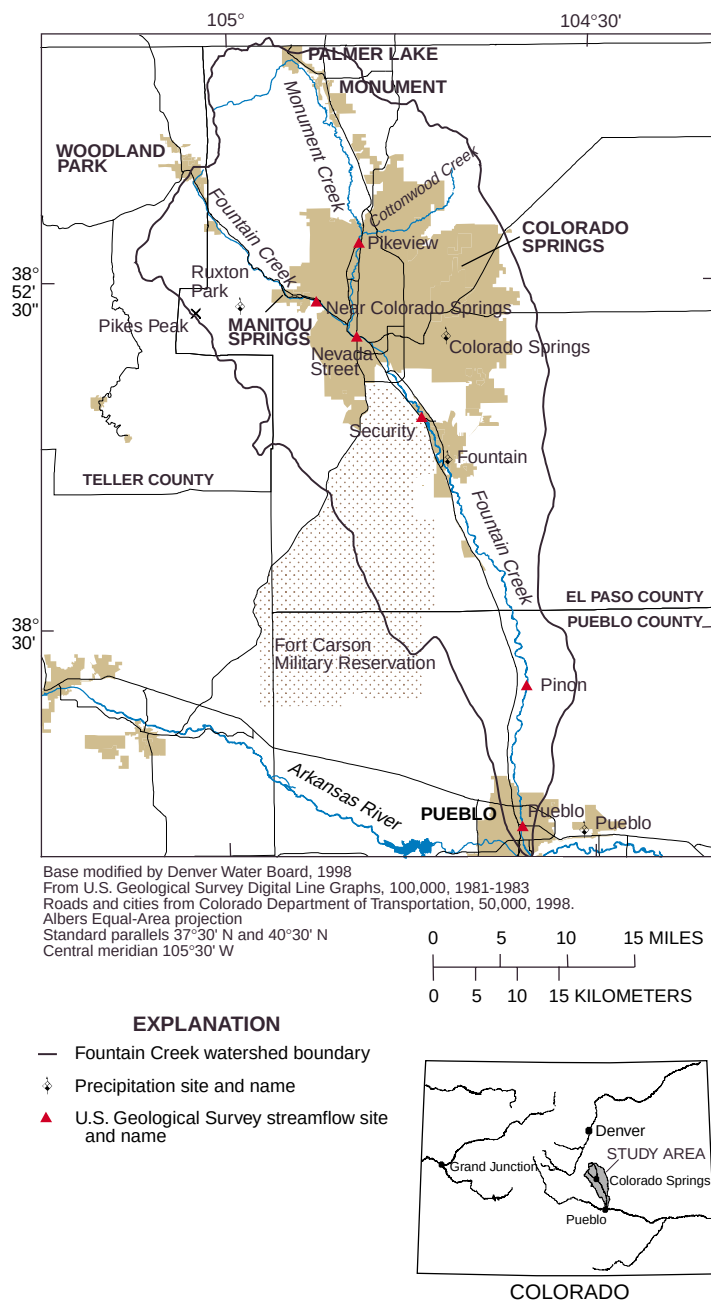


Figure 1. Location of Fountain Creek watershed, precipitation and streamflow sites.

Attachment 3b

How were Changes or Trends in Precipitation and Streamflow Determined?

Trends in precipitation and streamflow were determined by compiling precipitation data at four sites and streamflow data at six sites from 1977 through 1999 (fig. 1). Statistical trend tests were done on daily, seasonal, and annual precipitation data for each site to determine whether precipitation had changed since 1977. To determine whether streamflow had changed since 1977, statistical trend tests were done on several high (annual peak, Q100, Q90, Q70) and low (Q30, Q10, Q0) streamflow statistics computed for each site (table 1). The statistical trend test used was the Kendall test, which provides a probability of precipitation or streamflow to increase or decrease over time. The trend was defined as highly significant if the probability that a trend existed was 99 percent or greater, significant if the probability was between 95 and 99 percent, and moderately significant if the probability was between 90 and 95 percent. No trend was indicated when the probability was less than 90 percent. The Kendall test also provides an estimate of the average annual rate of change.

Table 1. Description of streamflow statistics used to evaluate trends in streamflow

Streamflow statistic and description
Annual peak streamflow is the single highest instantaneous recorded streamflow for the water year ¹ .
100 percentile (Q100) streamflow is the highest daily mean ² streamflow for the water year.
90th percentile (Q90) streamflow indicates 90 percent of the annual daily mean streamflows are below this streamflow or 10 percent are above it.
70th percentile (Q70) streamflow indicates 70 percent of the annual daily mean streamflows are below this streamflow or 30 percent are above it.
30th percentile (Q30) streamflow indicates 30 percent of the annual daily mean streamflows are below this streamflow or 70 percent are above it.
10th percentile (Q10) streamflow indicates 10 percent of the annual daily mean streamflows are below this streamflow or 90 percent are above it.
Annual minimum streamflow (Q0) equals the lowest daily mean streamflow for the water year.

¹A water year extends from October 1 through September 30 of the following year and is identified by the year in which it ends.

²Daily mean streamflow is the average of all instantaneous streamflow recordings made each day.

To determine whether streamflow changed within certain reaches of the watershed, differences in the daily mean streamflow between the upstream and downstream sites within a stream reach were computed. The differences then were divided by the intervening drainage area, resulting in streamflow data normalized to drainage area, and trends were evaluated on the normalized data.

Precipitation

Precipitation is highly variable throughout the watershed; annual precipitation ranges from about 30 inches at the summit of Pikes Peak, an elevation of 14,110 feet, to about 12 inches at Pueblo, an elevation of 4,640 feet.

Depending on location, from 40 to 60 percent of the daily precipitation that occurs is less than or equal to 0.1 inch, and from about 70 to 80 percent of daily precipitation that occurs is less than or equal to 0.25 inch. Daily precipitation of greater than 0.25 inch occurs most frequently from July through September. Many of the precipitation events that occur during this period are associated with thunder storms that generally are strong, localized storms that occur during the late afternoon and early evening. These localized storms frequently result in large variations in annual precipitation over short distances.

Trends in Precipitation

During 1977 through 1999, annual precipitation generally was above average, and increasing trends were detected at the Ruxton Park and Pueblo sites. No trends were detected in precipitation at the Colorado Springs and Fountain sites. Additionally, seasonal trend analysis indicated moderately significant increases in spring (April–June) precipitation at the Ruxton Park and Pueblo precipitation sites. This analyses indicates that the increasing trends detected in annual precipitation at these sites were likely the result of trends in spring precipitation and were not associated with changes in precipitation that occurred during the summer season or throughout the entire year.

Streamflow

Streamflow in the Fountain Creek watershed varies seasonally and has three distinct flow regimes: base flow, snowmelt, and summer flow. The base-flow period begins in late September or early October and extends until the following April. During the base-flow period, streamflow is fairly uniform. Depending on temperature and winter snowfall amounts, the snowmelt period begins about mid-April and extends until about mid-June. Early in

Attachment 3c

the snowmelt period, streamflow increases substantially from base-flow conditions. Streamflow decreases fairly quickly after peaking in early to mid-May. The summer flow period follows the snowmelt period and generally begins about mid-June and extends through September, sometimes into October. Streamflow during the summer period is highly variable. Changes in streamflow during the summer are primarily affected by afternoon and evening thunderstorms.

Trends in High Streamflow

A significant increasing trend in annual peak streamflow at the Pikeview site was detected for the post mid-1970's. No trends were detected in annual peak streamflow at the other five sites during this period. Evaluation of long-term streamflow data at Pueblo (1941–65, 1971–99) indicates instantaneous streamflows of 10,000 cubic feet per second or greater occurred more frequently during the 1990's than any decade since the 1940's. Annual peak streamflows during 1994–97 and 1999 ranked in the top 27 percent of all time recorded annual peak streamflows. However, although large streamflow events occurred more frequently during the 1990's than during previous decades since the 1940's, the magnitudes of streamflows that occurred during the 1990's were not atypical of historical peaks.

Examination of streamflow data and historical accounts of the period indicates that the four largest streamflow events at Pueblo occurred during the spring snowmelt period, mid-April to mid-June. Each of these events were caused by several inches of rainfall that fell during intense storms over large areas of the Fountain Creek watershed. In some areas, rainfall amounts that occurred during these intense storms exceeded the average annual rainfall in the Colorado Springs area. Also significant is that the most recent event, the flood of April 30, 1999, was estimated to be about a 15-year flood for the Pueblo site (Stogner, 2000). A 15-year flood is a streamflow with a probability of recurring once every 15 years.

Since 1977, highly to moderately significant increasing trends in at least one high-streamflow statistic were detected at all sites; most sites had increasing trends in all three daily mean high-streamflow statistics (Q70, Q90, and Q100). Analysis of changes in streamflow for five stream reaches also indicated that significant increasing trends in the 70th percentile (Q70) streamflow statistic occurred in four reaches: Pikeview to Nevada Street, Near Colorado Springs to Nevada Street, Nevada Street to Security, and Security to Pinon. No trends in high streamflow were

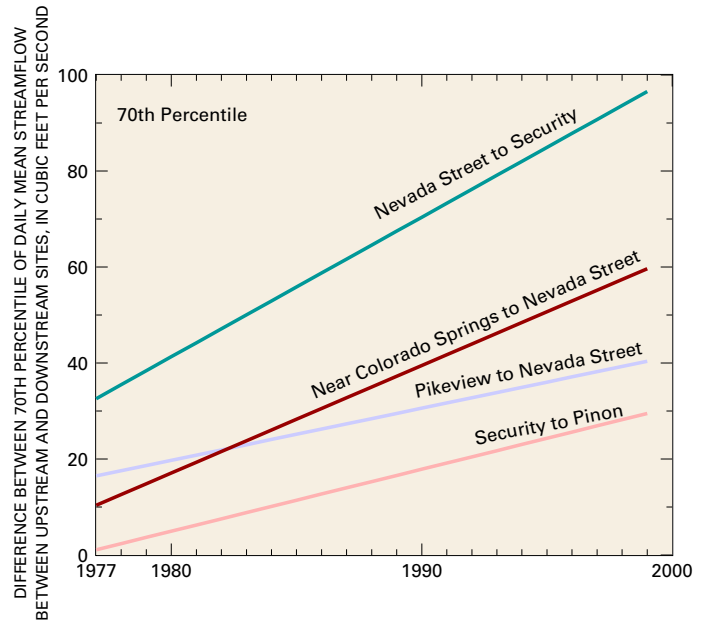


Figure 2. Trend of change in the 70th percentile of daily mean streamflow for selected stream reaches, 1977–99.

detected for the reach from Pinon to Pueblo. **In the reach from Nevada Street to Security (fig. 1), the average annual per-square-mile increase in streamflow for the Q70 and Q90 statistics was about five times greater than the other reaches that had increasing trends. Additionally, the reach from Nevada Street to Security showed the greatest annual change in total streamflow during high flows (fig. 2). This indicates that, on average, the intervening drainage area for the reach between Nevada Street and Security contributed more total flow and more flow per square mile than any of the other drainage areas studied.** This trend probably is attributable to changes in land use from rangeland to urban that occurred in the intervening drainage area over the past 23 years, which altered the hydrologic response and increased storm runoff.

The larger frequencies and high significance level of trends detected in the 70th percentile streamflow statistic may indicate that changes in land use within the watershed have increased the rate and magnitude of runoff for more moderate rainfall events that occur more frequently in the watershed than extreme rainfall events that affect the instantaneous peak and annual maximum daily mean streamflows.

Attachment 3d

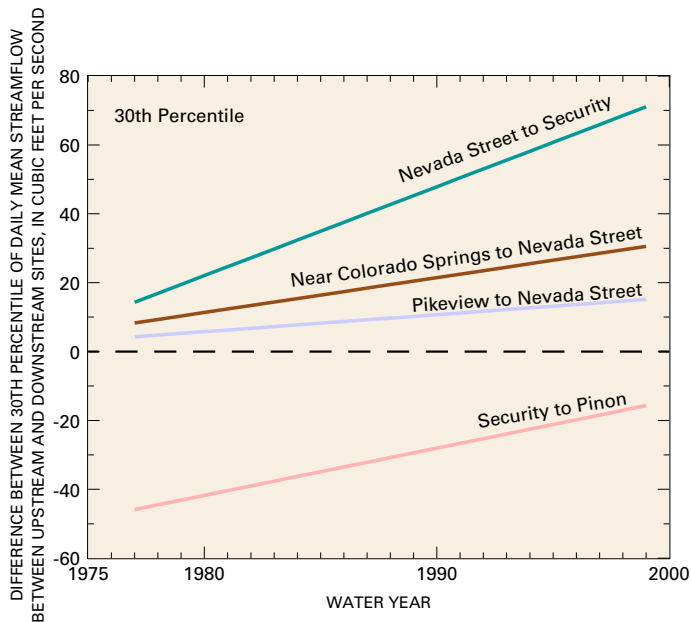


Figure 3. Trend of change in the 30th percentile of daily mean streamflow for selected stream reaches, 1977–99.

Trends in Low Streamflow

Analysis of low streamflow statistics generally indicates that low streamflows have significantly increased throughout most of the watershed, particularly since the early 1980's. In addition, the average annual rate of increase in the low streamflow statistics have tended to be largest at the sites downstream from Nevada Street. Downstream from Nevada Street, effluent from the Colorado Springs Waste-Water Treatment Plant (WWTP) and several other WWTP's discharge to Fountain Creek. Analysis of changes in streamflow for five stream reaches indicated that significant increasing trends in the 30th percentile (Q30) streamflow statistic occurred in four reaches: Pikeview to Nevada Street, Near Colorado Springs to Nevada Street, Nevada Street to Security, and Security to Pinon.

The average annual increase in streamflow for the low streamflow statistics (Q0, Q10, Q30) generally was from 5 to 10 times greater in the reach from Nevada Street to Security than the other reaches that had increasing trends. Additionally, the reach between Nevada Street and Security generally showed the greatest annual change in total streamflow during low flows (fig. 3). The large annual increases in the low streamflows in the reach between Nevada Street and Security have resulted from increased waste-water treatment-plant discharge associated with population growth, importation of transbasin water, and management of the Fountain Creek transbasin return-flow exchange decree, which allows Colorado Springs to exchange return flows from transbasin imports to other locations in the Arkansas River basin.

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- Douglas, Ian, 1983, *The urban environment: Baltimore*, Edward Arnold Publishers Ltd., 229 p.
- Dunne, Thomas, and Leopold, L.B., 1978, *Water in environmental planning*: New York, W.H. Freeman and Company, 818 p.
- Goudie, Andrew, 1986, *The human impact on the natural environment*: Cambridge, Mass., The MIT Press, 338 p.
- Stogner, R.W., Sr., 2000, *Trends in precipitation and streamflow and changes in stream morphology in the Fountain Creek Watershed, 1939–99*: U.S. Geological Survey Water-Resources Investigations 00–4130, 49 p.

**For more information,
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(Attachment 4a)

This trend in imperviousness corresponds to the type of land use predominately found in urban areas. The Colorado Springs Composite (CSC@) had the highest current and future projected level of imperviousness (45%). The current and future imperviousness for watersheds classified as Non-Supporting are shown in Table 2.

Table 2: Current and Future Imperviousness for Non-Supporting Watersheds

	Current	Future
Colorado Springs Composite (CSC2)	45%	45%
Lower Monument Composite (MC6)	39%	42%
Cottonwood Creek (MC7)	29%	44%
Sand Creek (CSC6)	27%	43%
Jimmy Camp Creek (CSC7)	7%	37%
Cheyenne Mountain Composite (CSC5)	26%	28%

Table 3 shows changes in watershed classification based on current and future imperviousness.

Table 3: Current and Future Watershed Classification

	Current	Future
Sensitive (9 – 10%)	21	15
Impacted (11 – 25%)	1	6
Non-Supporting (26 – 100%)	5	6

The changes in percent imperviousness show that most future growth will be concentrated in existing areas and continued pressure will be placed on the stream and creeks in these areas. Current levels of imperviousness are color coded on Figure 1 and future levels of imperviousness are color coded on Figure 2. Most of the eleven subwatersheds identified as having increasing levels of imperviousness were located in the northern and eastern portion of the watershed.

Figure 1
Fountain Creek Subwatershed Analysis: Current Impervious Surface Area

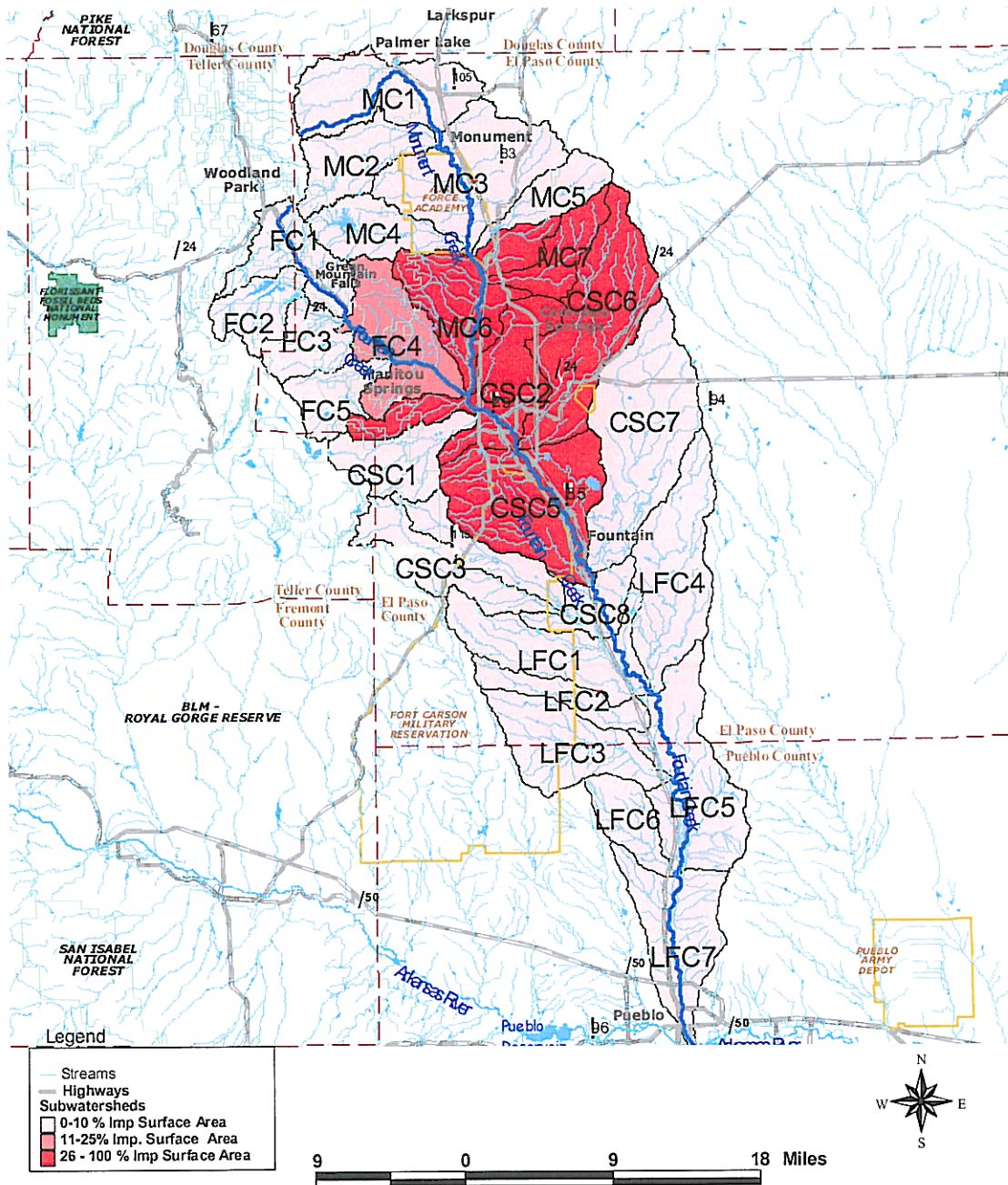
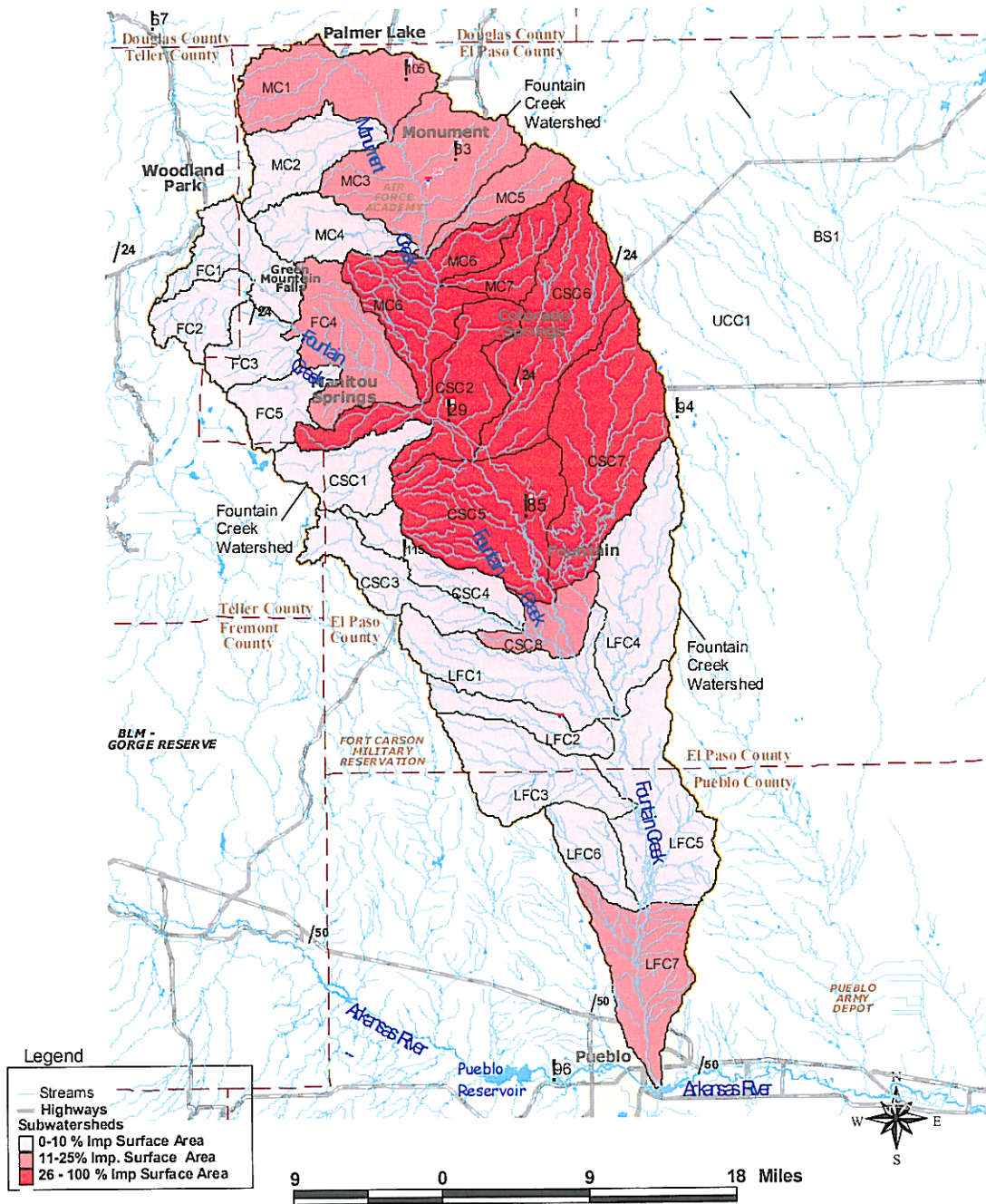


Figure 2
Fountain Creek Subwatershed Analysis: Future Impervious Surface Area



Fountain Creek Watershed Study
Initial Recommendations
August 17, 2007

General Recommendations

- Modify development policy to include more consideration of open space needs in development (focus on more habitat development within traditional parks).
- Rehabilitate riparian areas to a healthy, functioning condition.
- Preserve existing wetlands and create additional wetlands where opportunities exist.
- Limit sediment sources during construction by minimizing overlot grading in large scale developments.
- Modify development policy to include the concepts put forth by the Center for Watershed Protection (cwp.org) and Low Impact Development (lowimpactdevelopment.org).
- Modify development policy to require the post-development hydrographs to match the predevelopment hydrographs for peak, volume, and timing.
- Modify development policy to require the post-development sediment transport to match the pre-development sediment transport.
- Collect sediment load data for the Fountain Creek Watershed so that appropriate sediment transport modeling can be calibrated for all future development in the watershed.
- Modify development policy to require assessment of downstream impacts, and particularly the impacts due to small frequently occurring storm events such as the 2-yr. event.
- Modify development policy to include involvement by regulatory agencies and stakeholders as soon as possible in the development process.
- Entities must follow through with review of development plans, adherence to approved plans through the construction process, and inspection/maintenance of completed projects.
- Staff must be educated/trained in the principles of geomorphology and sediment transport to support the review process for new development and to support the ongoing efforts of their entities in the watershed.
- Entities should use the hydrologic and hydraulic models developed as a part of the Fountain Creek Watershed Study to update their FEMA floodplains.
- Entities should use the models developed as a part of the Fountain Creek Watershed Study to certify their levees.
- Remedial projects that affect Fountain Creek or its tributaries should utilize stable channel design.
- Entities constructing remedial projects in the watershed should develop a consistent approach and methodology for project design and construction.
- Create a Fountain Creek Watershed Authority that could serve as a funding source for large scale projects, and to assist entities with training, review, and/or maintenance.

Flooding on Fountain Creek

Report Prepared By:

1. Dennis Maroney
2. Carole Lange
3. Jane Rhodes

Problem Statement:

Fountain Creek lies within a 930-square-mile watershed with an elevation range of 14,140 feet to 4,640 feet. Development within the watershed continues to increase with associated increase of impervious areas generating increased runoff and more frequent flood events. Significant flood events have occurred on Fountain Creek causing damage to public infrastructure, utilities, adjacent farmlands and residential communities. Flooding compounds problems associated with increased sedimentation and erosion.

Facts:

New studies conducted by the US Army Corp of Engineers (CORPS) indicate a reduction in flood peaks from prior Federal Emergency Management Agency (FEMA) hydrology (see attachment 1). However, channel capacities have been reduced in the lower reaches of the Fountain Creek due to sediment build up and heavy vegetative growth restricting channel widths and reducing channel depths. Critical reach analysis was studied on Monument Creek, Black Forest Tributary, Cottonwood Creek and Jimmy Camp Creek. The study was conducted to evaluate sedimentation, erosion and flooding on the selected tributaries and the full report is contained in the US Army CORPS study, "Critical Reach Study" for the Fountain Creek watershed. Study results indicate problems with sediment, flooding and channel degradation ultimately threatening buildings and infrastructure.

FEMA is currently studying Fountain Creek to develop new DFIRM (Digitized Flood Insurance Rate Maps) mapping for the Fountain Creek corridor. New mapping will utilize hydrology and hydraulic analysis completed in the US Army CORPS study of the Fountain Creek watershed. FEMA mapping will require the certification of all levees and floodwalls providing flood protection, before flood plain maps can reflect areas protected by levee and floodwall systems. Preliminary DFIRM mapping by FEMA reflect flood plain changes on Fountain Creek. Recent 100-year hydrologic and hydraulic interim studies indicate freeboard deficiencies on the Fountain Creek levee system in the Pueblo area. Lower reaches of the Fountain Creek levee system do not provide 3' and 4' height above water surfaces required by FEMA due to loss of channel capacity because of sediment build up. While we cannot document specifics on consumptive and non-consumptive use, flooding does generate excess water for low priority downstream water rights on Fountain Creek and the Arkansas River.

Hydrologic and Hydraulic studies have determined a multiple number of flood events at various locations along Fountain Creek as shown in the CORPS Watershed Study. (See Watershed Study, www.fountain-crk.org, for detailed hydrology of all sub-basins within the watershed.) Fountain Creek generates the majority of flooding events on the Arkansas River since the Pueblo Dam controls releases from the Arkansas River.

Historic flood events have occurred routinely on Fountain Creek with the most recent occurring in 1999 with a flow of 20,000 cubic feet per second (cfs) recorded at the United States Geological Survey (USGS) gauge in Pueblo. Embankment failures in May 2007 caused additional flooding in low-lying North Side neighborhoods in Pueblo. Flood events are documented with photos and news reports from many sources within the watershed (see attachments 2a-2s).

Flood attenuation (peak flow reduction) occurs in downstream segments of Fountain Creek due to off-line storage and channel storage. In 1989, levee systems were constructed through Pueblo to protect the East Side community and the downtown area from flooding caused by a 100-year flood event. Private properties were purchased by the City of Pueblo to remove development from the flood plain and provide additional hydraulic capacity within the channel. Current efforts by federal and state agencies, railroads, cities, counties and stormwater enterprises strive to maintain channel stability by constructing detention facilities, grade control structures, hard points (jetties), embankment protection (riprap) and other channel improvements. Vegetation controls and debris removal have been implemented on Fountain Creek to increase channel capacity and improve flow characteristics. LID (low impact development) source controls are under review and study by the Fountain Creek Vision Task Force to reduce impacts of future development. The reduction of runoff volumes through the utilization of source controls will provide a reduction in erosion, sedimentation and flooding as well as improvement in stormwater quality. NPDES (National Pollutant Discharge Elimination System) permits require implementation of BMP's (Best Management Practices) including runoff reduction techniques to address runoff volume reduction and improved stormwater quality. The City of Colorado Springs, El Paso County, the City of Pueblo and Pueblo County are all responsible for the implementation and enforcement of NPDES permit.

As impervious areas increase in the watershed, Fountain Creek will experience more frequent flood events from storms of lesser magnitude (attachment 3 USGS Report, "Trends in Precipitation and Streamflow in the Fountain Creek Watershed"). The Fountain Creek Watershed Study predicts minor increases in flood peaks for major storm events because saturated conditions in the watershed more closely match runoff from impervious surfaces. Future development within the watershed will continue to increase instabilities on Fountain Creek because of increased runoff, volumes and peak flows.. PPACG studies indicate significant increases in imperviousness in 11 sub-basins within the Fountain Creek watershed with major impervious area increases in Jimmy Camp Creek, Sand Creek and Cottonwood Creek (see attachments 4a, 4b & 4c) The USGS

report also indicates significant increases in high streamflows in Fountain Creek between Nevada Street and Security because of development within this area of the watershed. “In the reach from Nevada Street to Security, the average annual per-square-mile increase in streamflow was about five times greater than the other reaches that had increasing trends. Additionally, the reach from Nevada Street to Security showed the greatest annual change in total streamflow during high flows. This indicates that, on average, the intervening drainage area for the reach between Nevada Street and Security contributed more total flow and more flow per square mile than any of the other drainage areas studied. This trend probably is attributable to changes in land use from rangeland to urban that occurred in the intervening drainage area over the past 23 years, which altered the hydrologic response and increased storm runoff. changes in land use within the watershed have increased the rate and magnitude of runoff for more moderate rainfall events.” Attachment 4c notes the impacts of increasing impervious surface in the future for the entire watershed and the need for mitigation going forward.

This USGS Report also notes significant increases in low streamflows in the same reach between Nevada Street and Security. “The average annual increase in streamflow for the low streamflow statistics generally was from 5 to 10 times greater in the reach from Nevada Street to Security than the other reaches that had increasing trends. Additionally, the reach between Nevada Street and Security generally showed the greatest annual change in total streamflow during low flows. The large annual increases in the low streamflows in the reach between Nevada Street and Security have resulted from increased waste-water treatment-plant discharge associated with population growth, importation of transbasin water; and management of the Fountain Creek transbasin return-flow exchange decree, which allows Colorado Springs to exchange return flows from transbasin imports to other locations in the Arkansas River basin.” Future flows on Fountain Creek will likely reflect similar increases in areas experiencing continued growth and development.

As a result of projected changes within the watershed and documented changes in streamflows in Fountain Creek, the US Army Corps of Engineers has made some general recommendations regarding future development within the watershed (see attachment 5). These general recommendations address policies and strategies to reduce flood risk, sedimentation and erosion including the rehabilitation of riparian areas, creation of off-channel diversion and storage, and the preservation of existing wetlands, as well as the creation of additional wetlands. The recommendations predominantly stress LID (low impact development) as the means to mitigate existing conditions and wisely manage future impervious surface areas and increased runoff. In addition to the items mentioned in attachment 5, the Army Corps study also identified potential projects and sites for flood risk reduction, eco-system restoration, and channel stability.

The Fountain Creek Vision Task Force is currently evaluating existing land use regulations and the impact of future development on sedimentation, erosion and flooding on Fountain Creek.

APPENDIX D

Relevant Studies Referenced in the Strategic Plan (In order of reference in the Strategic Plan)

Major Studies Referenced in Chapter 3: Water Quality and Sedimentation

Pikes Peak Area Council of Governments. 2004. *Water Quality Management (208) Plan 2003 Update*. <http://www.ppacg.org>

Colorado Foundation for Water Education, 2003. *Citizen's Guide to Colorado Water Quality Protection*. <http://cfwe.org/CitGuides/CG-Quality.pdf>

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Huskie, William W., and M. J. Gearhart. 1998. *Selenium Source Characterization Final Report: Investigation of Naturally Occurring Selenium, Pueblo, Colorado*. Arcadis Geraghty & Miller, Inc., Denver, CO.
To get a copy of this study, please email Rich Muzzy at rmuzzy@ppacg.org.

Edelmann, Patrick. 2007. *Characterization of Stormflows and Wastewater Treatment-Plant Effluent Discharges on Water Quality, Suspended Sediment, and Stream Morphology for Fountain and Monument Creek Watersheds, Colorado, 1981-2006*. U.S. Geological Survey. Water-Resources Investigation 2002-5104. <http://infotrek.er.usgs.gov/pubs/>

Canton, Steven P., and L. Wall. 2007. *Aquatic Biological Monitoring and Selenium Investigation of the Arkansas River, Fountain Creek, Wildhorse Creek, and the St. Charles River, Project 062750*. GEI Consultants, Inc., Chadwick Ecological Division, Littleton, CO.
<http://www.fountain-crk.org/Watershed%20Vision%20Task%20Force/Pueblo%20Selenium%20Report-Biology.pdf>

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Divine, Craig E., and T. K. Gates. 2006. *Sources and Occurrence of Selenium in the Arkansas River and Fountain Creek near Pueblo, Colorado*. ARCADIS G&M, Inc. Highlands Ranch, CO. <http://infotrek.er.usgs.gov/pubs/>

Edelmann, Patrick, S.A. Ferguson, R.W. Stogner Sr., M. August, W.F. Payne, and J.F. Bruce. 2002. *Evaluation of Water Quality, Suspended Sediment, and Stream Morphology with an Emphasis on Effects of Stormwater on Fountain and Monument Creek Basins, Colorado Springs and Vicinity, Colorado, 1981-2001*. U.S. Geological Survey. Water-Resources Investigation 2002-4104. <http://infotrek.er.usgs.gov/pubs/>

Ortiz, R.F. 2004. Methods to Identify changes in background water-quality conditions using dissolved-solids concentrations and loads as indicators, Arkansas River and fountain creek, in the vicinity of Pueblo, Colorado. U.S. Geological Survey. Water-Resources Investigation 2004-5024. <http://infotrek.er.usgs.gov/pubs/>

Major Studies Referenced in Chapter 4: Flooding and Stormwater

US Army Corps of Engineers (USACE). "Critical Reach Study." Available at www.fountain-crk.org.

Major Studies Referenced in Chapter 5: Municipal Water

El Paso County Water Authority Report. September 6, 2002.
<http://www.protectourwells.org/References/EPCWAWaterReport.pdf>

Major Studies Referenced in Chapter 6: Land Use

Fountain Creek Watershed Imperviousness Surface Area and Watershed Health Analysis Report
http://www.fountain-crk.org/Reports/fc_impervious_surface.html

Arkansas River Consumptive Use; July 2008.
To be posted at <http://ibcc.state.co.us/>

Major Studies Referenced in Chapter 9: Wildlife

State Wildlife Action Plans and Defenders of Wildlife: Linking Conservation and Land Use Planning, at:
http://www.defenders.org/resources/publications/programs_and_policy/habitat_conservation/habitat_and_highways/reports/final_report_linking_conservation_and_transportation_planning_workshops.pdf

APPENDIX E

Fountain Creek Vision Task Force Consensus Committee Meeting Summaries

**Fountain Creek Vision Task Force
Consensus Committee
Meeting Summaries**

**Fountain Creek Vision Task Force
Consensus Committee
February 16, 2007
Final Meeting Summary**

Attendance

Gary Barber, Mary Barber, Jeff Chostner, Sallie Clark, Ferris Frost, Dan Henrichs, Dennis Hisey, Sam Humpert, Loretta Kennedy, Carole Lange, Walt Lawson, Dennis Maroney, Bruce McCormickz, Bob McGregor, Rex Miller, Bob Miner, Rich Muzzy, Greg Nyhoff, Larry Patterson, Cynthia Peterson, Jane Rawlings, Tom Ready, Richard Skorman, Larry Small, Barbara Vidmar, Ross Vincent, Jay Winner, Pam Zubeck, and Heather Bergman

Meeting Objectives

- Discuss stakeholder interests
- Revisit vision statement and suggest changes/improvements
- Agree on a source of funding for ongoing facilitation

Stakeholder Interests

The facilitator gave a brief presentation on the differences between the positions that stakeholders hold about an issue and the interests that underlie them. These differences include:

<u>Positions</u>	<u>Interests</u>
• <u>What</u> I want or need • Often binary (yes/no, more/less, etc.) • Distributive (resources can and will be divided) • Involves stakeholders <u>claiming</u> their piece of the pie • Involves win/lose dynamics • Stakeholders seek to maximize their own gains and minimize their own losses	• <u>Why</u> I want or need it • Describes the motivation for a need or want • Integrative (stakeholders' interests can be integrated for shared gain) • Involves stakeholders <u>creating</u> new solutions and new "pie" • Involves win/win dynamics • Stakeholders seek to maximize joint gains

After this presentation, participants were asked to break into small groups to discuss their interests. The groups reported the following interests (numbers in parentheses indicate the number of groups who stated that interest):

- Recognition of stormwater and drainage as a resource
- Watershed as an asset and an amenity (2)

- Protect public/private infrastructure
- Preserve natural channel capacity
- Preserve natural drainage way
- Predictability in flows and channel stability
- Right solutions based on sound science
- Balance solutions and costs
- Sustainable regional economy (in the watershed) (2)
- Be proactive about funding
- Create a sense of community
- Efficiency in stormwater management (2)
- Maintain or improve quality of life
- Greenway connector (2)
- Protect public health (3)
- Improve human experience along the Fountain (sight, sound, smell, etc.)
- Stable base flows/stream system
- Protect water quality
- Increase appreciation and stewardship
- Ensure equality between communities
- Maintain good irrigation water
- Provide recreation opportunities (2)
- Provide commuting opportunities
- Get something done soon, but do it right
- Flood control
- Genuine cooperation
- Don't waste stakeholder and community time
- Protect, preserve, enhance agriculture as part of the cultural heritage and quality of life of this area
- Protect wildlife, for its own sake and as an indicator of ecosystem health
- Education (about riparian areas, ranching way of life, culture, heritage, etc.)
- Maintain watershed

There was a brief discussion about whether the goal of this group should be to restore Fountain Creek to its “natural” or “historic” state. Some participants believe that this cannot be accomplished, since Fountain Creek used to be an intermittent waterway and is now a perennial stream with substantial flows. Others felt that the natural state of the Creek should be pursued where possible.

After the groups shared their interests, participants reported the following observations about their interests:

- It is interesting to see that we share so many interests
- It is helpful to see people separate their interests from their positions
- Interests represent bigger, better, and different thinking
- Interests suggest that we can find ways to work together

- Although there are a few competing interests, for the most part we want the same things
- We can build on these interests and move forward

Mission and Vision

The group reviewed a draft mission statement and vision statement that the facilitator prepared based on previous discussions. Although a small number of changes were discussed, overall the group approved of these statements. The facilitator will make the changes the group discussed and redistribute the mission statement and vision statement to the Consensus Committee for its approval. After that time, these documents will be shared with the full Fountain Creek Vision Task Force for discussion and input.

Funding

At a prior Consensus Committee meeting, the group agreed to submit a proposal for funding for facilitation to the Arkansas River Basin Roundtable. Members of the Consensus Committee who also sit on the Roundtable recently reported that this is funding is not looking likely for a variety of reasons. It was agreed that while the group should continue to pursue funding from the Arkansas River Basin Roundtable, other funds should also be pursued.

After some discussion, it was agreed that the members of the Consensus Committee who are able to do so should contribute funds to a common pool to pay for ongoing facilitation. The group agreed to try to come up with about \$38,000 for facilitation through June 2007 by “passing the hat” and asking entities to contribute at a level that is comfortable for them. Confidential approximations of funding contributions were offered from several organizations. These contributions were tallied and totaled approximately \$35,000. Members of the Consensus Committee will confer with their respective organizations to determine actual funding amounts and report their official pledge to the facilitator via email by March 2, 2007.

It was agreed that the private citizens on the Consensus Committee (landowners, etc.) are welcome to contribute any amount to the funding pool if they choose to do so, but they will not be expected to contribute. The same is true of other members who are not affiliated with a larger organization or entity. Amount of contributions will not affect anyone’s standing as an equal member of the Consensus Committee.

Brief Presentations

Sam Humpert from Trout Unlimited spoke to the group briefly about a habitat survey that will be occurring on Fountain Creek in coming months. Sam also reported that Trout Unlimited is submitting a grant for a Fishing is Fun grant from the U.S. Department of Interior for work on Fountain Creek. He is hoping that members of the Consensus Committee will endorse the grant proposal. Sam will send additional materials on the funding proposal and a draft letter of support to the facilitator for distribution to the Consensus Committee. Members who are interested can use this draft letter to prepare

their own letter of support. The Consensus Committee as a whole did not take a position on this funding proposal.

Cynthia Peterson from AWARE Colorado spoke to the group briefly about the work that her organization does to share ideas about urban development, impervious surfaces, and stormwater runoff. Cynthia offered to come back and do a full presentation for the group, which would include a discussion of her organization's "tool box" for addressing stormwater runoff in urban areas. It was agreed that most of the participants in the Fountain Creek Vision Task Force would benefit from this presentation and that Cynthia should be invited back at a later time. More information about AWARE Colorado is available at www.awarecolorado.org.

Next Meeting

The next Consensus Committee will be held on Friday, March 16th, from 1 p.m. to 4 p.m. at the Fountain City Hall.

Fountain Creek Vision Task Force Consensus Committee Meeting March 16, 2007 Final Meeting Summary

Attendance

Bill Alspach, Tom Autobee, Carol Baker, Gary Barber, Kristin Bricker, Jeff Chostner, Sallie Clark, Pamela DiFatta, Jeff Drabing, Ferris Frost, Kim Headley, Dennis Hisey, Jeri C. Howells, Juniper Katz, Loretta Kennedy, Carole Lange, Dennis Maroney, Bruce McCormick, Bob Miner, Margaret Mora, Rich Muzzy, Larry Patterson, Jane Rawlings, Tom Ready, Richard Skorman, Larry Small, Graham Thompson, Tom Warren, Jay Winner, Chris Woodka, Heather Bergman, and Helen Littrell Smith

Action Items

Keystone	Follow up with Max Parker from Palmer Lake; get information to him about the Task Force
Consensus Committee Members	Review documents handed out by the Outreach Committee and send comments to Heather by Friday, March 23
Keystone	Email the funding pledge list to the Consensus Committee (<i>Facilitator Note: This was emailed on March 19.</i>)
Gary Barber and Heather Bergman	Work out the language around the work product coming out of the Task Force to meet the CWCB funding requirements.
Keystone/Consensus Committee Members	Keystone will add in time at the beginning of each Consensus Committee and working group meeting to address pressing issues. Consensus Committee members should email issues that they are aware of

	to Heather so she can gauge how much time is needed to discuss them.
Jeff Chostner and Loretta Kennedy	Find a location for the next full Task Force meeting on Thursday, April 19 at 6:00 p.m.
Presenters at April 19 Task Force meeting	• Mission/Vision: Jay Winner • Goals/updates from working groups: Keystone will take this task back to the working groups to identify presenters for each of the three working groups
Keystone	Write the April 19 Task Force meeting notice/press release to ensure consistency in various media
Jane Rawlings: <i>The Pueblo Chieftain</i> Gary Barber: <i>The Gazette</i>	Get meeting notice published in respective local media.
Jeff Chostner and Tom Ready	Provide light hors d'oeuvres at the meeting

Meeting Objectives

- Tend to a few housekeeping items
- Hear a finance update from Keystone
- Begin to translate stakeholder interests into goals
- Plan full Task Force meeting

Housekeeping Items

- Land Use and/or Environment Working Group(s)
 - The Consensus Committee agreed that the Land Use and Environment working groups should be merged into one working group because the issues they address overlap.
- Outreach Committee needs
 - Is it still the aim of the Outreach Committee to contact local media (smaller newspapers, radio and TV) about what the Task Force is and what it is trying to accomplish?
 - The idea is to be able to spread the word on the issues that have been identified by the Task Force and the educational efforts it undertakes. The Outreach Committee is open to suggestions from the Consensus Committee.
 - The challenge they are working on is to develop documents that not only communicate about the Task Force externally but also serve as the glue that holds the Task Force together (because not everybody can attend every meeting)
 - Any specific ideas on what to share with local media?
 - More positive news about accomplishments, accomplishments of other watersheds, etc.

- It was suggested that the Outreach Committee develop talking points or articles about what the Task Force is working on, to be reviewed and approved by the Consensus Committee, so that individual agencies could distribute them to their own media lists. It would be helpful to develop them as templates so the individual agencies can tweak them to fit their needs. Additionally, they were asked to continue to develop their communication plan at their next meeting to share with the Task Force.
- The next Outreach Committee meeting is scheduled for Thursday, April 19 from 2-4 p.m. at Beidleman Center.

Last Revisions to Mission and Vision Statements

Keystone provided a brief overview of the changes that have been made to the mission and vision statements since the last draft, and noted that changes were primarily made to the mission paragraph.

- Consensus Committee members were asked to read through the revised document and let Heather know if it is acceptable to use by the end of this meeting.
- No major concerns were raised about the document.

Finance Update

- Pledges received
 - To date, Keystone has received pledges totaling \$42,300.
 - Please notify Helen Littrell Smith or Heather Bergman if you require an invoice or further documentation to process your pledge.
- Are there any objections to Keystone sharing the amount pledged by each entity?
 - There were no objections and the group agreed it should be public information.
 - Keystone will circulate the list of pledges to the Consensus Committee.
- Checks received; amount in account
 - Two checks totaling \$100 have been received as of Thursday, March 15
- Amount spent in January and February
 - Keystone's expenses for January and February totaled \$6,550
- Roundtable update
 - There is \$75,000 in funding from the Colorado Water Conservation Board (CWCB) that is a possibility for funding the facilitation of the Task Force. The biggest difference in this funding is that CWCB will reimburse whatever entity pays Keystone. It is a reimbursement program, not a program of paying invoices from Keystone. In this scenario, Pueblo and El Paso County (and possibly other entities) would likely have to front the money and then be reimbursed by CWCB. CWCB is reluctant to pay for facilitation for facilitation's sake; thus the Task Force must produce a consensus-driven work product that addresses the consumptive/non-consumptive water needs in the Fountain Creek watershed in order to qualify for the funding.
 - It was clarified that the work product of the group will be a consensus-based watershed plan on consumptive/non-consumptive water needs in the Fountain Creek watershed (as opposed to a study of those needs).

- If pledges come in as promised from this body, Keystone has enough funding for the time being. Obtaining funding from CWCB and GOCO is not as urgent of an issue.
- Does the CWCB have an interest in where this body ends up (i.e., as a watershed authority)?
 - CWCB is mainly concerned with their fiduciary responsibility to the people of Colorado, whose money it is that would be used to fund facilitation services.
 - The Fountain Creek Vision Task Force has agreed (in the past) that developing a watershed authority is on the table for discussion, but the group is several steps away from being there yet.
- Has anyone looked into getting a grant from Great Outdoors Colorado?
 - Not yet.

Translation of Stakeholder Interests into Goals

The group reviewed the list of interests from their last meeting and was asked the following questions: Is this the complete list? Is there anything mischaracterized? Are there interests missing? The group agreed that the following interests should be added:

- Comply with federal law
- Water conservation
- Space between communities/greenway connector; suggest using the word “multi-use” to describe the connector.
- Control erosion and sedimentation

Brainstorm Related Goals

The group was presented with the list of the issues that the 3 working groups have identified as the most important in the watershed. These key issues are:

- Land Use / Environment
 - Land use planning/urban development
 - Wetlands
 - Ecosystem services & development
 - Water Quantity
- Impervious areas
 - Sediment transport
 - Return flowsSouthern Delivery System (SDS)
- Water Quality
 - E. coli
 - Urban runoff/stormwater
 - Selenium

Participants were asked to break into small groups and identify specific goals for the Task Force to pursue for each of the key issues. The following goals emerged from the small group discussions:

- Land Use / Environment
 - Implement green development solutions (ponds, vegetation, overlays)

- o Develop enforceable and sustainable land use regulations consistent with this group's articulated interests
 - o Establish common land use policies across municipalities
 - o Create a recreational corridor
 - o Promote inter-modal transportation opportunities
 - o Preserve open space
 - o Preserve, maintain, enhance, and increase wetlands
 - o Preserve, maintain, and enhance ecosystem services
 - o Educate citizens on these issues
- Water Quantity
 - o Regulate/control flows in watershed
 - o Anticipate new water flows in watershed (related to climate change)
 - o Mitigate existing and wisely manage future impervious surface area
 - o Reduce runoff
 - o Stabilize sediment transport patterns
 - o Effectively manage return flows
 - o Reuse non-native water as high up in the watershed as possible
 - o Use more non-potable water
 - o Protect water rights
 - o Educate citizens on these issues
- Water Quality
 - o Meet or exceed state water quality standards
 - o Implement policy, biological, and technical solutions to reduce E. coli
 - o Refine/augment existing water monitoring systems—above and beyond state requirements
 - o Educate citizens region-wide on non-point source pollution
 - o Establish common planning policies regarding stormwater

These goals will be forwarded to the appropriate working groups and task group(s) for discussion/solutions. The Consensus Committee can add goals to these lists; working groups can not without approval from the Consensus Committee.

Next Full Task Force Meeting

- The group agreed that the next Task Force meeting will take place on Thursday, April 19, 2007 at 6:00 p.m. in Pueblo.
- Loretta Kennedy and Jeff Chostner agreed to find a location for the meeting.
- The group agreed that the topics for meeting should be:
 - o Mission
 - o Vision
 - o Goals
 - o Updates from working groups
- Categorizing the list of goals developed today as the ultimate set of goals for the group to the full Task Force meeting might seem limited. Instead, suggest separating

them into goals developed thus far, key issues that have been identified, and activities to-date in order to demonstrate the breadth of the group's work.

- Presenters
 - o Mission/Vision: Jay Winner
 - o Goals/updates from working groups: Keystone will take this task back to the working groups to identify presenters for each group.
- Meeting notification in local media
 - o Keystone will write the notice/press release to ensure consistency in notices in papers
 - o Jane Rawlings will put meeting notification in *The Pueblo Chieftain*
 - o Gary Barber will work to get it in *The Gazette*
- Refreshments
 - o Jeff Chostner and Tom Ready will work to provide light Hors d'oeuvres at the meeting

**Fountain Creek Vision Task Force
Consensus Committee
May 18, 2007
Final Meeting Summary**

Attending

Tom Autobee, Carol Baker, Gary Barber, Elise Bergsten, Sallie Clark, Paul Fanning, Ferris Frost, Jane Green, Dan Henrichs, Juniper Katz, Irene Kornelly, Carole Lange, Bruce McCormick, Rex Miller, Bob Miner, Rich Muzzy, Larry Patterson, Sandy Rahl, Tom Ready, Jane Rhodes, Richard Skorman, Barbara Vidmar, Ross Vincent, Jay Winner, Chris Woodka, Niki Koszalka, and Heather Bergman

Action Items

Heather Bergman	Will arrange with Pueblo members to have the June 15, 2007 Consensus Committee meeting in Pueblo
Jane Rhodes and Heather Bergman	Will look into arranging a field trip to view the Fountain Creek watershed
Juan Trujillo and Carole Lange	Will look into who the developers are on Fountain Creek and the watershed
Ross Vincent	Will work to get a small group to review the data list and determine what can be done with the present information
Carol Baker, Juniper Katz, Heather Bergman and Jane Rhodes	Will coordinate a tour and celebration for the Frost easement
All	Agreed to get Heather Bergman the contact information of anyone interested in attending a watershed authority presentation from a representative of the Cherry Creek Basin Water Quality Authority

Updates and Housekeeping Items

Embankment failure in Pueblo (Dennis Maroney)

- ❖ The embankment failure occurred north of Wal-mart. The water was coming directly at the embankment due to issues created by and relative to erosion. The embankment was constructed in 1937-1938. Fountain Creek has changed its flow patterns because of a proliferation of vegetation and debris. The breach occurred at about 6:00 am on Monday, May 7, 2007. A second breach was manually created downstream to allow water to go back into Fountain Creek. The second breach was north of the bridge at 42nd Street. The west side of Dillon Drive was flooded for an hour and a half. When the downstream breach was opened, the water flowed back into the creek. By 5:00 pm, the water was down to below house level. Large rock and concrete debris were used to make the closure. By Tuesday at 4:30 pm, the embankment was in place and the water was back into Fountain Creek. Large amounts of sediment debris were moved out of the easterly branch of Fountain Creek. A large rock about four to five feet in diameter was used to deflect the water back toward the channel. The lower breach is still open. All areas that were flooded were in the 100-year floodplain. These areas will remain in the 100-year floodplain.

Questions and Answers

Was there a storm that caused the surge?

There was a general storm. The storm did have some moisture but in terms of magnitude, it was not a big storm. The problem lies more with the meander patterns than the size of the storm. When the meander patterns are toward an embankment or levy problems with flooding may be the result.

How much did it cost the community for the mitigation efforts?

The cost to the community was approximately \$100-\$150, 000. There was monetary assistance from the state, Colorado Springs Utilities (CSU), and the local counties as well. Some private contractors and machinery were hired.

Streamside testing

- ❖ There was a Streamside Systems presentation at the full Fountain Creek Vision Task Force meeting on April 20, 2007. A representative from Streamside suggested a meeting in Pueblo on June 15, 2007. Streamside will be doing a presentation June 11-15, 2007 in Pueblo. The Fountain Creek Vision Task Force is invited to see the operation in progress. Heather Bergman will arrange with people in Pueblo to have the June 15, 2007 Consensus Committee meeting in Pueblo as well.

Fundraising

- ❖ The Fountain Creek Vision Task Force did not receive the grant from the Environmental Protection Agency (EPA). There were six proposals that were funded out of 100. At this time, it is unclear if they will have any money available in 2008. The EPA felt that the proposal was a good one but not what

- they were specifically interested in funding. The EPA was looking for a broader area and was more interested in a group that had just begun. The Fountain Creek Vision Task Force was too far along in its process. If there is a decision to reapply, the reapplication should be submitted for an implementation grant.
- ❖ There is grant money available through the Water Supply Reserve Account (WSRA). The grant approval is staff recommended. The application for a grant will be presented Wednesday, May 23, 2007 in Montrose. There must be production of a document quantifying consumptive and non-consumptive methods. There are several years to spend the money in the grant. Under the assumption that the grant is approved, the Fountain Creek Vision Task Force should go through the WSRA roundtable process again. This group has grant money available.
 - ❖ There is a need for an additional \$175,000 for the Army Corps of Engineers study. The documents are being summarized and the locations of the specific projects on the watershed have already been looked at. The Army Corps of Engineers would like to get the Fountain Creek Vision Task Force involved. They would like to have a date set aside when there can be direct input from the Fountain Creek Vision Task Force.
 - ❖ There is currently \$40,000 in the Keystone Account.

Data Needs Survey

- ❖ Keystone prepared and sent out a survey to determine what the data needs were for the working groups. In addition, the survey wanted to know how and where these needs should be met.
- ❖ In terms of the water quality group, it was decided they needed to find out where the data is needed and how to get the data. The common issues are selenium and sediment. The group is currently addressing selenium. Sediment is on the priority list for both water quality and water quantity groups.
- ❖ Southern Delivery System (SDS) and sediment also seem to be priorities. There is not currently very much information about sediment. Pikes Peak Area Council of Government (PPACG) is working with US Geological Survey (USGS) on a suspended sample model to make it easier to assess the concentrations of sedimentation. The Colorado Water Quality Commission is coming up with standards for sedimentation. It is important to understand that vegetation (living and dead) and sedimentation can determine where the creek is going. There is a prioritized need to look at the options and gather information regarding SDS. The Fountain Creek Vision Task Force could opt to fund a study regarding suspended sediment and the problems that it poses. To understand suspended sedimentation, there would be the need for a sampling study.
- ❖ The water quality group would like to move forward on the issue of E. coli. They need to establish where source areas are and why. It is in agreement that E. coli is the top priority but without more information, it cannot be solved. Colorado Water Conservation is currently doing a study in the upper Fountain.
- ❖ A field trip to view the Fountain Creek Watershed could be very beneficial. Jane Rhodes and Heather Bergman will work to arrange a field trip.

- ❖ There is the need to continue to focus on the available information. It is important to wait for the current studies to be completed before initiating new ones. This way there is no duplication and no funds are wasted. If it is determined that there are no studies being performed on a certain topic, the Fountain Creek Vision Task Force should make a plan, including financials, to have a study performed.
- ❖ It would be helpful to have a compendium for activities that are slated for Fountain Creek. There is significant development in the works for Fountain Creek and the watershed. Juan Trujillo represents the new owners of McCullough Ranch (North Pueblo LLC). Carole Lange and Juan Trujillo will work to find out who the developers are on Fountain Creek and the watershed.
- ❖ Gathering a small group of smart people to review the data list could help the working groups to determine what can be done with the present information. Ross Vincent will work to establish this group. Kathleen Riley with the State Health Department could be a focal point for collecting this information.

Outreach Committee Report-Carol Baker (CSU)

- ❖ The Outreach Committee Group has plans to get the community information through an internal communication goal and an external communication goal. The internal track will help to coordinate education of the outreach groups to each other, to the greater task force and the Consensus Committee. The external track hopes to provide educational opportunities and accurate information to the public on Fountain Creek Watershed issues, including water quality, water quantity, environmental, and land use.
- ❖ The external communication track needs to produce fact sheets for each watershed issue. It is not a concern if there is a “fix” underway or not. If there is a “fix” underway it is important that the “fix” be identified. It will be important to have the funding and coordination plans needed as well.
- ❖ The Outreach Committee Group would like to send out a zoomerang study to help them determine the best way to move forward with the creation and distribution of the fact sheets. The current fact sheet idea is that they would be handed out to the Consensus Committee and would be on the fountain-cr.org website.
- ❖ The Outreach Committee is creating a vision board. The vision board would serve as a visual reminder of the goals for the Fountain Creek watershed. The vision board would attempt to project what the Fountain Creek Vision Task Force is trying to accomplish. The photos need to be easily translatable and recognizable for the community. There should be an inclusion of Fountain Creek from an urban perspective as well.
- ❖ The Outreach Committee would like to work creating some communications tools including information packets, watershed tours, and a DVD with chapters (introduction, water quantity, water quality, environmental, and land use). The Outreach Committee wants long lasting education for the community. The creation of watershed educational programs (new and existing) would greatly benefit the community.
- ❖ The Outreach Committee sees that there is a need for funding. In terms of DVD production and copies there is a funding need of approximately \$30-50,000. Another \$10,000 is needed to start lead efforts in other areas of outreach.

Questions and Answers:

In terms of DVD production, could a local community college be contacted and have this completed as a student project?

At one time students from CSU Pueblo were working on a DVD or video of Fountain Creek. Research needs to be done to see if it has been completed and if it will meet the needs of the Outreach Committee.

Is the DVD something that the WSRA roundtable would pay for?

It is worth the time of the Outreach Committee to submit an application to the WSRA roundtable for additional money. There is an educational mission statute that was created by the WSRA roundtable.

Is the Outreach Committee on the right path?

- ❖ The communities are curious. It would be useful to have more articles about what was going on with the group. The Outreach Committee should draft a document that government officials can use it as a template. It is never too early to start the process of engaging the public and officials. It is a very good suggestion to have a template.
- ❖ In terms of public education, there should be articles in newspaper, television reports, and presentations from the task force to communities at town meetings. It appears that there is a lack of materials going to Colorado Springs for the community. The Outreach Committee discussed producing a power-point presentation with talking points to present to other groups and government officials/councils. It would be beneficial for the Outreach Committee to get components of the power-point presentation together soon. The information can then be given to government officials who have more pull with the local media. Many towns, cities and counties broadcast their meetings on community access television. This will also help get the word out to the communities.
- ❖ A solution to the high cost of DVD production could be to have a film festival. There could be prizes and categories. The result could be that the Outreach Committee ends up with the DVD produced by local people from the watershed.

Watershed Authority-Preliminary Discussion

- ❖ At the April Task Force meeting, there was a lot of excitement about creating a Watershed Authority. Jeff Chosner volunteered to begin this process. He called elected officials in the watershed. Some officials have expressed interest in discussing a watershed authority but no commitments have been made. It would be a “closed door” session with only government officials. Heather Bergman and Jeff Chosner would then report to the Task Force with the information from the meeting. The Consensus Committee needs to be comfortable with a “closed door” meeting. The Fountain Creek Vision Task Force protocols state that all meetings are open to the public.
- ❖ There are homeowners’ associations, elected officials in conservation areas, ditch companies, and landowners that also would need to be invited and heard from.

- ❖ Perhaps it would be best to have general discussions about authorities and then come up with a game plan. It could be very helpful to understand what worked for the Cherry Creek Basin Water Quality Authority (CCBWQA). Maybe bringing in elected officials is too premature at this time. It is important to remember that this is only an option, a conversation that we want to have at some point.
- ❖ The Consensus Committee decided that it would not have a “closed door” meeting. There was also consensus that the group was not prepared to have a meeting with elected officials yet. It was suggested that a representative of CCBWQA give a presentation at the next Consensus Committee meeting and that elected officials are invited to attend. Participants agreed to get Heather Bergman the contact information of anyone that they felt should attend this meeting and hear the presentation.

One Vision for the Watershed (Jonathan Moore and Dan Pike)

- ❖ Colorado Open Lands (COL) and its partners have a vision for the watershed beyond the Great Outdoors Colorado (GOCO) grant proposal that was presented to the Land Use Working Group. COL wants to move forward with its vision but does not want to work at cross-purposes with the Fountain Creek Vision Task Force.
- ❖ The GOCO proposal allows for protection of eight miles along Fountain Creek. COL would like to maximize the amount of GOCO protection and go beyond. COL believes it is important to get levels of protection before the land is gone. There are a number of proposals in the permitting and approval processes. It would be unfortunate if opportunities to mitigate and save pieces of Fountain Creek were missed. There needs to be discussions as to how these decisions affect Fountain Creek and if there is a need or way to soften their impacts. There is an opportunity for the Fountain Creek Vision Task Force to be part of these decisions.
- ❖ The Peaks to Prairies project is only dealing with the initial ideas for the corridor. There is a larger vision for this corridor. There are proposals that will have an impact on this corridor in the next 10 years. COL wants to work with the Fountain Creek Vision Task Force to make sure all considerations are heard.
- ❖ COL feels that there should be a set of “tools” at the disposal of the Fountain Creek Vision Task Force. One tool is to find out how to amend governing master plans so there is inclusion of the recommendations of the Task Force. Another tool could be the Task Force providing informational packets. These packets are presented to elected officials providing a better understanding of what the group is doing. It would be important to make sure there is an understanding between county, city and town government officials regarding what the Task Force is doing.
- ❖ Included in the outcomes that COL would like to see are park, land and open space dedication, cash in lieu of dedication, dedication of trail easement, and cash in general.
- ❖ The GOCO grant is a huge opportunity to anchor properties. There would be 6 to 10,000 acres along Fountain Creek that would be saved. Time, currently, is a big

factor. The corridor is lucky to be latent at this time but it is on the cusp of more activity. There is a huge opportunity to do tremendous work here. There is a need to get more proactive to make sure others are aware of what we are doing.

Questions and Answers:

Does COL plan to do work only along Fountain Creek or will they include the watershed as a whole?

The corridor is considered Pueblo to Colorado Springs. This is not within the scope that COL normally looks at but they would be open to the idea.

What is the best way to get started so that opportunities are not missed?

The best way would be to get started right away on the easy stuff. There could be the creation of nice, clean informational packets. There may not be an authority but the Fountain Creek Vision Task Force did agree on its mission and vision. These could be presented to jurisdictions. This group could have immense influence with the larger jurisdictions. In the near term, work with the Outreach Committee to prepare the documents. It is important that the jurisdictions realize that this is a collaborative consensus agreement process.

How long has COL been waiting on the GOCO process?

It has not been a quick process. COL has been waiting for the GOCO Legacy for years. COL asked for seven million dollars and will ask for matching funds from the jurisdictions.

What are the next steps that can be taken by COL and the Fountain Creek Vision Task Force to be available for all other opportunities in the watershed?

Until the Fountain Creek Vision Task Force is prepared for action, it is important COL does everything it can to secure the corridor. The first step should be to identify the short-term pressing issues. The second step is to involve the officials with the short-term pressing issues identified in step one. The next step would be to identify any anticipated future development, other than residential.

Can the Task Force and COL to participate in the development of the Envenenergy Plant?

Envenenergy is not providing power to this region. They are using the land to benefit those in Denver and Xcel customers. They are proposing a huge development with many financial implications. The Fountain Creek Vision Task Force has had a conversation with Envenrgy but it would be helpful if COL could bridge the gap as well.

Is there a way have the Land Use/Environment Working Group become connected with future development ideas along the Fountain Creek Watershed?

The Land Use/Environment Working Group could become the sounding board for upcoming projects. Perhaps if the jurisdictions appreciated the larger vision this could be established. There are many people in the Fountain Creek Vision Task Force. The numbers of this group will eventually carry weight in the short- and long-term.

Is there value in trying to have the vision of the Fountain Creek Task Force and COL brought up in the permitting process?

There are 930 miles in the watershed. COL does focus on the corridor and realizes that the Fountain Creek Vision Task Force has a larger vision. The Consensus Committee agreed that they do want to have the vision on the Fountain Creek Vision Task Force and COL brought up in the permitting process.

**Fountain Creek Vision Task Force
Consensus Committee
April 20, 2007
Final Meeting Summary**

Attending

Tom Autobee, Carol Baker, Gary Barber, Kristin Bricker, Sharon Brown, Sallie Clark, Todd Dahlberg, Jeff Daniel, Dennis Darrow, Dennis Hisey, Ferris Frost, Jane Green, Gwen Happ, Dan Heinrichs, Carmine Iadarola, Bryan Johnson, Juniper Katz, Loretta Kennedy, Irene Kornelly, Carol Lange, Greg Langer, Dennis Maroney, Bruce McCormick, Bob Miner, Margaret Mora, Rich Muzzy, John Newbie, Larry Patterson, Dan Peters, Jane Rawlings, Tom Ready, Nettie Rosenthal, Richard Skorman, Drew Sloat, Larry Small, Perry Thomas, Wayne Vanderschuere, Ryan Weston, Ralph Williams, Jay Winner, Chris Woodka, Heather Bergman and Niki Koszalka

Meeting Objectives

- ❖ To learn about three upcoming land uses in the watershed.
- ❖ To determine if it is possible to influence the form these projects take.
- ❖ To decide if/how the Task Force should address these projects.

Getting Started and Committee Business

- ❖ New and Pressing Issues
 - A participant mentioned that Congress appropriated \$300,000 in the Fiscal Year 2007 Energy and Water Appropriations Bill for the Army Corps of Engineers Watershed Study. There is still \$149,000 of additional federal funding needed to complete the study.
- ❖ Funding Review and Staff Positions in Fountain Creek
 - Bruce McCormick from Colorado Springs Utilities (CSU) discussed the \$300,000 that CSU and the Lower Arkansas Conservation District are making available for a 2-year period to fund someone to implement elements of CSU's master plan for Fountain Creek. This money is not allocated exclusively for salary. The individual or firm that is hired with these funds will interact with the Fountain Creek Vision Task Force but will not be directly associated with it. The tasks to be performed by the individual or firm are listed in a written agreement, which includes the following statement: "The necessary engineering shall be

incorporated and integrated to stormwater and sediment, water quality studies, waste water spills, applicable mitigation and tamarisk removal in addition to issues revolving around flooding.”

- Keystone provided a summary of the funding situation for facilitation of the Fountain Creek Vision Task Force. At this time, over \$35,000 has been raised and only about \$7,500 has been spent, which means there should be sufficient funds to continue the process through the summer. There are some checks still en route to Keystone. Regular funding updates will be provided at future Consensus Committee meetings.

Presentations on Major Upcoming Land Uses

❖ Power Plant: Squirrel Creek Energy Center Invenergy; Fountain Creek Consortium (Carminé Iadarola)

- Squirrel Creek Energy Center Invenergy (SCECI) is a 550 megawatt gas-fired power plant that will be able to respond to any mid-day power changes. The location in El Paso County was chosen because it is near the last pipeline of the Comptroller and Auditor General (CAG), and Squirrel Creek will be able to hook up mid-way to the Daniels Park Grid.
- SCECI has made efforts in public outreach by holding a number of meetings. Each meeting has provided a better understanding of the community’s concerns. SCECI would like to connect Fountain Creek with Open Space at El Chico Basin (approximately 16,000 acres).
- SCECI is expected to bring \$187 million during the construction phase to the local economy and \$27 million, annually, into the community.
- SCECI expects to have minimal impacts because the plant is gas-fired plant. SCECI does not expect the plant to approach the EPA non-attainment standards for air quality.
- SCECI expects traffic loads to be approximately 20 trips per day, with the majority occurring during the morning and evening rush hours.
- SCECI is open to listening to public concerns and issues. SCECI will continue to work with neighbors and desires to work with the Peak-to-Prairie project.

Questions and Answers

Where does the 3,000 acre feet of water per year come from?

SCECI is not sure yet but is committed finding answers to this question in the near future.

Is this a permitted facility?

The facility is not permitted at this time; there will be a meeting May 10th with the El Paso County commissioners to further discuss this issue.

Is there a water resource yet?

No, there is not yet a water resource. A tentative agreement with Fountain has been made to get rid of the brine from their water treatment process.

How will the \$27 million annual revenue remain in the local economy?

The revenue will stay locally through contractors, taxes, maintaining building, and working with utilities.

How does SCECI affect the vision of the Task Force, which is to clean up Fountain Creek, decrease stormwater runoff, and turn the Creek into an amenity?

There will be impacts on the Fountain Creek both positive and negative. For instance, there will be the use of the air and water, which is the price that is paid for electricity. SCECI will work to provide electricity that is both cheap and environmentally friendly. In addition SCECI will, in the future, be open to helping to fund other water projects along Fountain Creek.

Will the 180-foot tall mission tower be visible from the Fountain Creek watershed? Will there be more towers added to the existing ones?

The mission tower will not be very visible from Fountain Creek. There is an existing power corridor with six towers that are Xcel's, and the SCECI will add two. The towers will be visible, but minimally.

Will SCECI have an impact on air quality?

SCECI anticipates having minimal impact on air quality, although there will be increases in sulfur dioxide.

What effect will SCECI have on agriculture?

No adverse impacts to agriculture are expected. SCECI has agreed to build a greenhouse/growing chamber at the facility site.

The 3,000 acre feet of water translates to how many gallons?

3,000 acre feet of water translates to approximately 9 million gallons per year.

Will SCECI supply power to this region?

Yes. Our primary customer is Xcel, which will serve customers from Pueblo to Denver (most of the demand is in Denver). There will be the option of more providing more power to Pueblo if the city grows. SCECI will have the ability to be on the grid immediately and will be able to fill gaps when power goes off-grid. It can benefit the local area immediately in emergency situations.

What kind of noise pollution will occur?

The noise level will be 40 decibels on the property and 35 decibels at the homes of people on nearby ranches. 35 decibels is about the same as the current noise level.

During the presentation, power plants (plural) were mentioned. Are there plans to build more than one?

SCECI was approached by Aquila in regards to negotiating a second plant, but nothing has been formalized at this time.

Will there be blinking lights on the tower?

SCECI was told that no blinking lights were needed even with the plan of having helicopter access.

Where is money coming from?

Invenergy

Will light be an issue?

The estimated amount of light will be less than a candle at the property line.

What percentage of power will be used locally?

We are not sure about that at this time.

Was dry cooling considered for the SCECI facility?

Yes, SCECI did consider it. However, we decided against it because Xcel did not want to dry cool.

What is the location of the windmills, and how many will there be?

There will be about 500 one-megawatt turbines. However, technology is “around the corner” for 5-megawatt turbines, which would mean fewer turbines on the land.

How will water get to SCECI?

The water will get to SCECI by wells and piping. The location will be where the wells produce the best and where we can get agreement from landowners.

Isn't this actually exporting water to the Front Range?

Water is a critical part of the environment, the local culture, and the economy. Water will stay here and, if done correctly, the process will not damage the environment.

❖ **Gravel Pit: LaFarge (Mark Vigil, M.L. Richardson, Kevin Moore and Rusty Cochran)**

- The goal of LaFarge is to mine a natural resource and reclaim it. LaFarge employs 190 permanent people in El Paso County. LaFarge is currently running a gravel pit in Fountain west of I-25 at exit 128. There are 2 or 3 years left at that location.
- The new proposed site is a gravel property leased through Investment for approximately 745 acres. The physical location is 5 miles south of Fountain along the west side of Fountain Creek. We expect to develop 437 acres in approximately 15 years. The new site will supply El Paso County customers with pavestone and other materials. LaFarge plans to reclaim the land after mining and has an “end-use plan” for two large water storage areas.
- There are local and federal regulations that need to be in place at the new location, such as: a special use permit, a variance of use permit to allow concrete and asphalt plants, a county access permit and road maintenance agreement for Old Pueblo Road, the Colorado Division of Reclamation Mining and Safety Mining permit, the Colorado Department of Public Health and Environment permits,

Colorado Department of Transportation access permit to I-25, US Army Corps of Engineers Section 404 permit for any wetlands onsite, State Engineers Office “Substitute Water Supply Plan,” and the federal mine regulations.

- LaFarge plans to mine 20-30 acres per year, and each phase of mining represents 5-10 years, totaling 270 acres.
- There will be monitoring wells on site, to monitor impacts to the water table, which gives LaFarge the ability to mitigate any impacts and to deal properly with jurisdictional wetlands. The best management practices in terms of water at the proposed new LaFarge site would include settling ponds, berms, and containments of silt fencing. There are also natural drainages flowing through the site. The plan includes recycling water, controlled discharge, and a groundwater monitoring and mitigation plan.
- LaFarge also has best management practices for other issues. For air, the plan includes adhering to Colorado Department of Public Health and Environment (CDPHE) guidelines. The offsite impacts of noise and light will be minimized by the use of berms to shield both. The maximum traffic will be 750 truck trips. The traffic will utilize Old Pueblo Road to I-25 and most flow will go to and from the north. LaFarge will need to procure an access permit from the county and the Colorado Department of Transportation (CDOT). The visual components will be dealt with by screening berms along I-25.

Question and Answer

Will the new LaFarge site be a concrete batch site?

LaFarge will actually be manufacturing ready-made concrete and asphaltic cement.

What will be the regulations in regards to air pollution and emissions?

LaFarge will have to have an air quality permit determined by what the state allows.

What about odor and visual pollution?

Visually, there will be a white plume of steam which is regulated to ensure that it is only a white plume and does not include any regulated air pollutants. There will be daily inspections by people who have been trained to monitor air quality. LaFarge also tried to mitigate the visual aspects by locating the processing plant far way from neighbors, keeping the berm away from natural corridor, and leaving a buffer. There will be a slight odor. However, it usually goes up into the air and leaves area quickly. LaFarge feels that the odor should not be noticeable in that area.

What kind of trucks will be coming and going from the LaFarge plant?

The trucks will be customer trucks, ready-mix trucks, dump trucks, and/or semis. There will not be any huge land movers during the input stage. Rather than trucks, LaFarge will use conveyers to move materials from one side of the property to another. On occasion there will be scrapers and excavators to build berms.

It was stated that the dig-out would be 15 years. However, last time was it 30 years. Is this a 15- or 30-year plan?

The dig-out is a 15- to potentially 30-year plan, depending on market needs. It could be a 30-year dig-out.

With 750 trucks, crossing two sets of train tracks, are there possible plans to build an overpass?

As planned right now, there will not be an overpass built. LaFarge currently operates in many places with similar railroad crossings.

What type of mineral extraction are you doing, and how does it contribute to air quality?

The minerals extracted will be sand and gravel. Due to the natural moisture in the minerals, the air quality will be minimally affected.

Have you talked to Squirrel Creek?

There has not been much dialogue. However, LaFarge has talked to neighbors and had conversations with area landowners.

At the screening plant, what will be used for size reduction?

Size reduction will be done by one or two crushers that will be located within the internal production facility.

The plant mentioned being “open” for 24 hours of operation? Would you explain that?

LaFarge wants the opportunity to be operating 24 hours a day during some periods to allow for delivery to local area customers and for construction projects (which are being asked to do more and more work at night). The typical hours of operation will be Monday through Friday, 6:00 AM to 5:00 PM.

What will help to mitigate the dust produced at the LaFarge plant?

The dust will be controlled through natural material, chemical dust reduction, and plans to reclaim disturbed areas as mining progresses (with subsequent re-vegetation).

Considering the intersection at Old Pueblo Road is a full movement intersection, would LaFarge rather use I-25?

Yes, LaFarge wants to push traffic out onto I-25 as soon as possible. We estimate that only 2% of traffic would go down Old Pueblo Road.

Maximum production of 750 trucks calculates to one truck every 2 minutes. Can the road handle it?

The 750 trucks per day would not occur very often, only during the maximum production demands. The typical number of trucks per day would be 300 truck loads.

What is the estimate of reserve?

The estimate of reserve is 20 million tons, plus or minus 5 million tons. The reserve is believed to be made up of 40% rock and 60% sand and silt.

What is the timeline of the Army Corps of Engineers Section 404 permit?

The 404 permit has been submitted to the Army Corps of Engineers, which is in the process of reviewing it. LaFarge hired consultants to map the wetland areas; there are potential wetlands outside of the mapped area. *[Facilitator's Note: A participant suggested that LaFarge take a look at the Historical Area Photograph.]*

How many miles long is the gravel pit, and how far away is it from Squirrel Creek?

The gravel pit is approximately 1.5 miles long, and Squirrel Creek is an estimated 5 miles east.

Where is the current LaFarge plant?

The current operations are across 1-25 on the west side and up on the plateau. This plant serves Pueblo and El Paso County with concrete and asphalt.

What is the average depth of excavation?

The average depth of excavation is 25 feet.

❖ **Regional Wastewater Treatment Facility: Lower Fountain Metropolitan Sewage Disposal District (LFMSDD) (Roger Sams)**

- It was identified that there was significant need to service Jimmy Camp Creek with wastewater treatment, and this is the reason LFMSDD was created. From 1986-1989 LFMSDD worked on design and discussion. It was then determined that there was not significant immediate need that couldn't be met by Fountain Utilities. As demand grew, LFMSDD debated whether they could satisfy part of their needs at an existing site or whether they should build a new facility that to take care of their long-term needs.
- LFMSDD decided to go forward with a new facility, which would be located northeast of the Pikes Peak Speedway. LFMSDD has owned property in the area since 1989.
- At this time, the proposal is to bring the new wastewater treatment facility online by 2008-2010.
- LFMSDD plans to use a gravity interceptor system at the site. Topographically, the location is over the ridge from the Fountain Creek drainage way and downstream of Callahan Reservoir; the site would be built on the south part of the property. The water on the property is below Callahan south, crosses Hanover Road and into the Fountain Creek floodplain and channel, which would be southwest of Hanna Road. There would be an easement for the pipeline if necessary.
- The entire Jimmy Camp Creek uses a volume of 45 million gallons per day. At this point, LFMSDD will not need to accommodate that volume. It is approximated that during dry weather, it would accommodate a volume of 6 million gallons per day.
- LFMSDD is administered by a Board of Directors who meet monthly on the second Thursday of each month. Jim Heckman is the operating manager and would be the contact for questions.

Questions and Answers

If the wastewater is going back into the Fountain via pipe, would it be better to take it back and reuse it?

The owners of the water would have to initiate any reuse or reclamation of the water. The majority is tributary water and needs to be replaced.

Was there consideration of creating wetlands to further treat water before releasing it to Fountain Creek?

Yes, there was consideration. The main issue is how to keep Fountain Creek whole. There could be an advantage with creating wetlands--to help repair vegetation and improve growth. The amounts would not be significant but would be able to support wetlands vegetation.

Would that be a good model for the rest of the area?

It could be a good model, but these applications are on a smaller scale. LFMSDD intends to accomplish all standards of discharge.

Would the release of 6 million gallons per day (mgd) create an erosion/sedimentation issue?

Yes, there will be erosion, but steps will be taken to mitigate this problem including dams built by Hanna Road. This issue will be given very close attention and careful mitigation.

What will be done about the smell?

LFMSDD is planning on specific odor-control facilities, which will be enclosed.

How are you protecting against spills?

LFMSDD will implement certain protective security measures and electronic monitoring. A total containment system is being planned for below the operating space.

Why are LFMSDD and CSU both building wastewater treatment plants?

In 2002, it was discovered that both LFMSDD and CSU were planning to build plants. In 2003, ideas were examined to consolidate these plants. From 2003 to 2006, both entities worked on a concept design and were unable to reach an agreement. There was a mismatch in timing, and it was determined that LFMSDD needed to move forward.

What is the elevation change in order to accommodate the pipeline (velocity/elevation)?

The discharge will be dispersed without any impacts to erosion on Fountain Creek.

In the case of catastrophic events, what is the proximity of the land drain and are they off the stream?

Yes, it is off-stream, and there have been many topographic studies done.

❖ **Regional Wastewater Treatment Facility; Clear Spring - Colorado Springs Utilities(CSU) (Jeff Daniels)**

- The Regional Wastewater Treatment Facility will work with 8 million gallons per day, 30 mgd at maximum capacity. The treatment process will be use a membrane bioreactor process that provides better effluent quality than conventional treatment. The solids are suspended, including E. coli and other pathogens. This makes them easier to remove. The membrane bioreactor process also protects the Creek from treatment upset. The project will be funded through the Banning Lewis Ranch Company.
- The screening plan timeline from 2000-2007 was as follows:
 - 2000 - Wastewater infrastructure Strategic Plan (WISP)
 - 2002 - WISP update for Jimmy Camp Creek Basin
 - 2003 - Pikes Peak Area Council of Governments (PPACG) 208 Plan
 - 2004 - Clear Spring Regional Water Reclamation Facility (CSRWRF) concept Design Report
 - 2007 - “East” site selected
 - The construction phase is planned for mid 2008-2009
- Toward the completion of the WISP, CSU continued with site selection. CSU planned to allow the public to participate in the process in many ways. In late December, the public was engaged. CSU has had numerous one-on-one discussions with residents; they continue to have discussions with the stakeholders. Public participation has influenced many factors:
 - The membrane bioreactor process has a smaller footprint, which will make the facility more aesthetically pleasing.
 - The public has also helped in the aesthetic planning of the facility by suggesting changes such as having a berm around the facility, planting trees, and maintaining a rural theme.
- CSU has on-going public meetings, and design workshops are expected in the near term. During the construction phase, CSU plans to engage the public. CSU values public participation.
- For more information, please contact Gwen Happ at 719-668-7395.

Questions and Answers

Does the membrane bioreactor actually filter water better than tertiary filtering?

Yes.

Why is the facility so far north?

If the treatment plant was not located up north, CSU would need to pump sludge through a pipeline. CSU determined it would rather pump clear water or reclaimed water farther up rather than down.

With 2 treatment plants so near to each other, is there a way to reuse 100% of the water?

The WISP mentions 100% reuse in the future.

There is a new 100-year study that will be released about the time of construction – will it be reviewed?

When the new 100-year study is released, CSU would decide whether or not to review the study.

With the expansion of the Nixon Plant, would the discharge be available for their use?
Possibly. We are looking at this.

If and when can the solution be found for the needs of the two sanitation districts?
The agreements have fallen apart, and litigation is in process. The plants will stay separate.

What are CSU's annexation plans?
CSU will not do any further annexation in the area around the plant. We currently own 40 acres of undeveloped land. CSU does not even have an annexation plan.

Will this facility produce single-family, landscape reusable water (non-potable)?
In terms of single-family landscaping needs, treatment facility reuse water cannot be used.

Group Discussion

Following these presentations, the facilitator asked each of the presenters to indicate whether there is a role for the Fountain Creek Vision Task Force to suggest ideas for mitigation of impacts or approaches to restoration and, if so, what the deadline for such feedback would be. The presenters offered the following replies:

- LaFarge is open to ideas and suggestions and would love to hear the group's concerns and address them. Regarding timing, the sooner the better, because LaFarge is hoping to move forward with permitting. The absolute deadline would be May 20, 2007.
- LFMSDD is open to ideas and suggestions from the group. Input would need to be received by August 1, 2007. LFMSDD would also like to be able to come to the Fountain Creek Vision Task Force with questions and concerns, allowing the dialogue to remain open.
- CSU is absolutely open to ideas and suggestions; it is part of the public process. There is no absolute deadline, but the 30% design will be done in the next few months, so questions/concerns should be brought up sooner rather than later.
- Squirrel Creek is open to ideas and suggestions. Squirrel Creek will be in front of the El Paso County Board of County Commissioners on May 10, 2007. Any questions/ideas/suggestions that need to be made should be submitted to the commissioners. Please identify if you are a member of the Consensus Committee or the Task Force in general.

Next Steps

- After some discussion about the appropriate next steps, the group decided not to prepare a group response to any of these projects. Rather, individual members of the Consensus Committee are invited to submit their own comments to the project proponents and/or the appropriate government agency.

- It was agreed that there may be an interesting synergy in two of these upcoming projects. One wants to put water in the Creek, and one needs to take water out. Dennis Maroney offered to put together a conference call to see if there is traction on bringing these two projects together to discuss this issue.
- One participant expressed a willingness to reach out to other watershed groups to discuss the challenges of creating a watershed authority and how to overcome them. It was also reported that Jeff Chostner is currently working to put together a discussion on creating a Fountain Creek Watershed Authority. The Consensus Committee will hear reports on these two issues at its May meeting.

**Fountain Creek Vision Task Force
Consensus Committee
June 15, 2007
Final Meeting Summary**

Attending

Larry Atencio, Tom Autobee, Carol Baker, Elise Bergsten, Vickie Broerman, Jeff Chostner, Sallie Clarke, Russ Clayshulte, Rusty Cochran, Casey Davenhill, Thorne Davis, Billy Edwards, Heather Elliot, Paul Fanning, Shanna Farmer, Ferris Frost, Mark Glidden, Jane Green, Terry Hart, Dennis Hisey, Loretta Kennedy, Irene Kornelly, Priscilla Lucero, Heather Maio, Dennis Maroney, Bruce McCormick, Bob McGregor, Bruce Miller, Jim Munch, Larry Patterson, Tom Ready, Jane Rawlings, Jane Rhodes, Richard Skorman, Larry Small, Paul Thomas, Jeff Tucker, Juan Trujillo, Ross Vincent, Ray Wells, Jay Winner, Niki Koszalka, and Heather Bergman

Action Items

Richard Skorman, Jeff Chostner, Jay Winner, and Heather Bergman	Meet to determine what topics are to be discussed at the July 20, 2007 meeting.
Jay Winner, Gary Barber, and Loretta Kennedy	Issue a mapping RFP to three contractors on behalf of the Consensus Committee

New and Pressing Issues in the Watershed

- ❖ The request for proposal (RFP) for the Fountain Creek Corridor Master Plan (FCCMP) went out on Thursday.
- ❖ Colorado Springs Utilities (CSU) recently commissioned an 18 million gallon reservoir to divert spilling into Fountain Creek.
- ❖ There is a Streamside Systems presentation today. There is hope that elected officials will show up for the presentation.

Presentations

Chatfield Watershed Authority, Russ Clayshulte

- ❖ There have been over eight authorities that Russ Clayshulte has helped create. Currently, he is involved in Chatfield and Bear Creek Authorities. There are authorities in four other states with which he has been involved.

- ❖ The Bear Creek Authority in Lakewood dates back to 1984. Chatfield Authority dates back 22 years. These entities were brought together to help with watershed issues. Each one has had to deal with differing personalities and communities.
- ❖ The Bear Creek Authority has expanded its mission and vision. They are willing to move forward. They have encompassed land use into their vision. This is a big step as land use would not have been included at the beginning. They have also brought together water quality and quantity. There is a group of folks, including wastewater dischargers, Home Owners Associations (HOAs), government officials, and other agencies, that has been able to resolve some issues. In addition, some new issues have come up, such as the temperature of the reservoir and the state of the trout. They are working with Sierra Club and Trout Unlimited to come up with a collaborative solution.
- ❖ There is an extensive amount of monitoring, and there are control regulations. There is \$140,000 combined for primary and secondary monitoring. The State control regulation is “you shall monitor.” There are lots of politics and financial woes to address. The authority cannot afford to have “players” step out because it has significant negative impacts on the budget.
- ❖ The Chatfield Watershed Authority was formed due to adversity. At one time, there was a desire to have a watershed that was good for recreation. The Environmental Protection Agency (EPA) did a Clean Lake Study and found that there needed to be more controls over water quality. If this did not happen, it would not meet the specifications for recreational use.
- ❖ In terms of phosphorus, it was important to determine how much was coming into Chatfield Reservoir. The South Platte is a major contributor. A line was drawn in the river, which divided the amount and flow. The load was a way to base a split in regards to the total maximum annual load (TMAL).
- ❖ There was also a growth issue occurring in Douglas County and the Chatfield Watershed Authority did not want to be caught up in land use issues. They were more interested in water issues.
- ❖ Chatfield is a smaller group. There are fewer players and less involvement from the government. Lockheed Martin is a big player. There is a higher assessed evaluation that results in a large bill that needs to be paid. A wastewater pipeline brings water around the reservoir.
- ❖ There is a decision to make about how the group wants to be viewed both internally and externally. Does the group want to be an association or an authority? Bear Creek wanted to be low key, so they labeled themselves an association. Chatfield saw that the Cherry Creek Watershed Authority had more strength and decided to become an authority. Both associations and authorities are long-term processes and should be around in 50 years to regulate activities in the watershed.
- ❖ The Bear Creek Association and the Chatfield Authority have funds generated by having an assessed membership. All players are potential sources of income. There was a fine given to Jefferson County and the money paid as penalty went to the Chatfield Authority resulting in a new set of wetlands with handicapped ramps.

Cherry Creek Watershed Authority, Ray Wells

- ❖ Ray Wells has spent 35 years in land development, special districts, and authority businesses.
- ❖ Cherry Creek Reservoir should have never been allowed to have water put in it. It is not technically a reservoir, because it leaks a lot of water per year. It was built to keep Denver from flooding and is now a community amenity. Without water running through it, Cherry Creek is a collection of stagnated water that will grow algae.
- ❖ One hundred percent of phosphates can be removed via wastewater treatment. However, 600 feet down river, there is the same amount of phosphate in the soil before the removal.
- ❖ If the Fountain Creek Vision Task Force wants to have an advisory group, they should choose to have an association. If the Fountain Creek Vision Task Force is looking to form a group to get things done, there needs to be the formation of an authority.
- ❖ The Clean Lakes Study in 1984 really put the action people together. The Cherry Creek Watershed Authority was formed in 1988 and amended in 2000. The authority was restructured in 2000 to reflect better membership for the government entities as well as wastewater treatment facilities.
- ❖ The Cherry Creek Watershed Authority will have a community effort to work toward keeping the reservoir in recreational shape. The Fountain Creek Vision Task Force will need to start and authority and bring in the community.

Cherry Creek Stewardship Partners, Casey Davenport

- ❖ There is an extra \$3 charge at the park entrance that helps to fund the Cherry Creek Stewardship Partners (CCSP). People used to balk at the additional charge, so CCSP produced a brochure to explain it. The brochure provides information and points out pollution-reduction facilities in the park and shares information regarding how the authority works.
- ❖ The original partners of the CCSP include the manager of the park, the EPA, and some engineering folks. The group formed with a mission to promote stewardship in the basin. In 1999, there were obvious growing pains. The CCSP felt they were being more controlled by funding and not their mission. CCSP decided against chasing money. They decided to have a voluntary assessment. Anyone who wanted to participate had to pay a fee.
- ❖ CCSP chose not to go non-profit and to have a voluntary stakeholder forum. The Colorado Watershed Network is their fiscal authority and is in charge of the financial and signing aspects of the entity, as well as bank accounts and tax returns.
- ❖ CCSP has no authority. It is more of a networking type of organization, working a lot through outreach and education. CCSP will work with homeowners doing presentations, showing what works best in fieldwork. CCSP does restoration projects, explores recreational possibilities, and works with plants and animals.
- ❖ There was not much community enthusiasm for the group at the beginning. It became clear to CCSP that they could not solve any problems without first identifying what the problems were.
- ❖ There are technical training opportunities for the counties so that knowledge can be shared on a broad basis regarding land use opportunities. It is important to have

access to best management practices (BMPs) on water quality, to explain innovative design ideas, and to know what the available opportunities are.

- ❖ CCSP spends lots of time in the schools. Many of the schools have stormwater permits, and it is important to build up knowledge about stormwater and infrastructure. It is an effective idea to use the watershed as a learning tool and outdoor classroom.
- ❖ All of the area municipalities participate financially. CCSP has the executive branch and three working groups. The working groups are water quality, education/outreach, and open space.
- ❖ There were many lessons learned by the CCSP while working on the formation of their entity. One lesson is that building rapport is imperative.
- ❖ The best advice that the CCSP could offer to the Fountain Creek Vision Task Force is to look into the Urban Drainage and Flood Control District model. It could be very helpful.

Questions/Answers

Should the Fountain Creek Vision Task Force work to form an authority or an association?

An authority has more weight politically. Considering the rivalry between Colorado Springs and Pueblo, it may take them joining an authority to come together. It is apparent that some of these questions are so big today that it is going to take a lot of interaction between entities. Waiting for an intergovernmental agreement is a waste of time. Many of the watershed problems cannot be solved through regular government channels. These problems need to be dealt with by an entity that was formed with specific goals in mind. It is important to focus on people and make them responsible. People will filter in and out of the authority. A large list of issues will come down to priorities. There will be the development of key players. Mistakes will be made while forming and during the tenure of the authority. There is no way to divide Fountain Creek. It needs to be dealt with as a whole. The Fountain Creek Vision Task Force is not equipped to solve issues manually in the watershed. Special districts have been very well received in Colorado, despite some push-back from some cities.

What is the difference between an authority, an association, a district, and a partnership?

Specific government people form special districts. Cherry Creek took it a bit further than this and approached the legislature. This was done to gain help in managing and to help as a planning agency. Because of the Cherry Creek legislation, there are specific things that they have to do. Bear Creek created watershed management and intergovernmental agreements (IGA). The IGA was signed by all saying how they are going to participate in the watershed entity. Cherry Creek Watershed Authority has more power and more money as an authority. Both Chatfield and Bear Creek were created as management tools. Both are covered under state regulation. There are specific rules as to how the watershed can be used. State control regulations mean that there are specific roles and responsibilities to meet state law.

Is Fountain Creek similar to the Barr Lake and Milton Reservoir (Barr-Milton)?

Yes, in terms of area. Barr-Milton encompasses a much larger area, similar to Fountain

Creek. When the Barr-Milton boundaries were drawn, they included all tributaries and went all the way to Summit County. It is a very large group. Barr-Milton decided to go with 501(3)c status. They are recognizing that the cost of implementation is staggering. They are calling on different entities, working with them to establish agreements on boundaries, and working together to provide collaborative data on the watershed.

Would it be the best course of action to put together the FCCMP and identify financing mechanisms?

One of the great things about the Fountain Creek Vision Task Force is that there is already forward motion. There is an awesome assembly of different people. Bear Creek did not have this advantage. It was too focused on water dischargers. The Task Force needs to figure out a course of action. If an authority is established, it will help get income and revenue. There will be the need for the Task Force to have data and to manage what is going on with the action plan.

Are authorities in other states similar to those in Colorado, and do they deal with the same kinds of issues?

In Ohio, they are dealing with large, complex issues including upstream and downstream cities that do not get along.

In terms of producing a watershed plan, what are the components that will help determine which structure is best?

The 2003 Basin Authority did a master plan, which is available on line. It is a great tool to use as a model.

How does a private property owner get protection if the cities, employees, and developers are the only ones on an authority?

In terms of citizen representation, it would be of benefit to have an HOA be part of an authority. There is also the option of having a private citizen pay an "in-kind" fee. It could be their job to take any messages back to the neighbors and citizens, which would help to foster better communication. Conservation districts, like Urban Drainage, would be a good tool for communication with landowners. They need to be heard as well. The Basin Authority Board does have members of the public appointed.

How are authorities funded?

Mill levies and membership fees fund some. The fee can be determined on a population basis or the costs can be divided evenly among the members.

What are the drawbacks of an authority?

A drawback of an authority is that the group has to commit to getting together every month. There are personality conflicts, politics, complex issues, and surprises that come up in terms of regulations. Another drawback can be getting the military to buy in, which is important. They are no different in importance from other entities. A large drawback is the "kickers and screamers." The best thing to do with a difficult participant is to make them chair the group.

Do Chatfield or Bear Creek use any multi-supply usages or is reuse involved?

Chatfield does reuse. The control regulations make it very hard for wastewater treatment facilities. Care needs to be used when dealing with water quantity and water quality. This is a fine line. Reuse can be dealt with in terms of quality but not in terms of water rights.

Could some of the \$300,000 from the FCCMP pay a person to spearhead the authority discussion?

The \$300,000 comes from Colorado Springs Utilities (CSU) and the Lower Arkansas. The request for proposal (RFP) is to come up with a plan and a strategy for implementation. There could perhaps be potential for some of the money to go to help in the organization of an authority. However, this was not the original intention for the FCMCP.

Next Steps for the Watershed Authority Discussion

- The group agreed that more discussion of a watershed authority or some sort of funding mechanism for Fountain Creek is needed.
- The group discussed the need to first determine if the elected officials in the watershed will buy into the overall Task Force process to date.
- It was agreed that a meeting should be held on July 20th to update the elected officials on the progress of the Task Force (including the efforts of all the working groups) and to ask if they think the Task Force should begin a conversation about funding options. Both elected officials and other interested parties should attend this important meeting.

Consensus Committee Business

Keystone Budget Update

\$17,000 of original \$43,000 provided by Consensus Committee members remains. This will carry the cost of The Keystone Center through mid-August or so. Once this money has been exhausted, the Fountain Creek Vision Task Force will have to tap into the Colorado Water Conservation Board (CWCB) money to pay for facilitation.

CWCB Grant Mapping

One of the stipulations of receiving the grant from the Colorado Water Conservation Board (CWCB) was that the Fountain Creek Vision Task Force would use some of the money to make maps. The group needs find someone with mapping expertise to do this. There are a few options:

- Staff from the entities around the table could work together to produce the necessary maps. This approach would be free, but could be taxing and time consuming for staff.
- Some portion of the CWCB money could be used to pay a third party.

The group agreed that Jay Winner, Gary Barber, and Loretta Kennedy should issue a Request for Proposals to three contractors for the mapping work.

Next Full Task Force Meeting

The discussed options for the next full Task Force meeting, included a possible land use visioning workshop. It was decided that this discussion should wait until after the July 20th meeting of elected officials, as the group may have a better sense of the best path forward then.

Fountain Creek Vision Task Force Consensus Committee July 20, 2007 Final Meeting Summary

Attending

Carol Baker, Gary Barber, Mary Barber, Elise Bergsten, Sallie Clarke, Rusty Cochran, Tom Gallagher, Loretta Kennedy, Carole Lange, Dennis Maroney, Bruce McCormick, Bob McGregor, Bob Miner, Mark Morlany, Larry Patterson, Jane Rawlings, Tom Ready, Jane Rhodes, Lisa Ross, Larry Small, Paul Sobiech, Parry Thomas, Paul Thomas, Graham Thompson, Barbara Vidmar, Ross Vincent, Jay Winner, Pam Zubeck, Niki Koszalka, and Heather Bergman

Action Items

Carol Baker	Send Heather Bergman copy of the top 10 fun facts
Kristin Flannery	Work to get vision board to Sallie Clarke for the El Paso county fair
Dennis Maroney	Let Heather Bergman know the where, when, and why of state

	fair
Dennis Maroney and Lisa Ross	Get started on the policy review process
Loretta Kennedy	Contact Department of Local Affairs (DOLA) about grant money
Larry Smalls	Contact Colorado Municipal League (CML) about grant money
Niki Koszalka	Prepare a calendar of meetings of elected bodies in the watershed
Bruce McCormick, Bob Miner, Jay Winner, and Heather Bergman	Create a document that shows the convergence of all the groups and the benefits
Tom Ready and Heather Bergman	Work together to procure meeting space for next Task Force meeting
Gary Barber, Jay Winner, Parry Thomas, and Heather Bergman	Work together to determine the details for the next Task Force meeting
Heather Bergman	Contact Juniper Katz about a Peak to Prairie area map
Heather Bergman	Send copies of Colorado Open Lands (COL) proposed letters to Task Force and Consensus Committee lists
Heather Bergman	Send out survey asking for availability for the Funding Options Working Group meeting

New and Pressing Issues in the Watershed

- ❖ The group requested that Niki Koszalka prepare a schedule of meetings of elected bodies in the watershed to help in scheduling presentations on the Fountain Creek Vision Task Force.
- ❖ The Fountain Creek Corridor Master Plan (FCCMP) will include the border of Colorado Springs to the confluence of the Arkansas River. FCCMP has been accepting proposals up to Wednesday of this week. The FCCMP is willing to take ideas and suggestions from the Task Force. Bruce McCormick, Bob Miner, Jay Winner and Heather Bergman will work together to create a document that shows the convergence of all the groups and highlights the benefits of the various processes in the watershed.
- ❖ The CSU water treatment facility is in the permitting phase and will likely be approved. However, CSU is still working with the City of Fountain to see if there is a way to have just one treatment facility instead of two.
- ❖ Colorado Open Lands (COL) is requesting letters of support for the Peak to Prairie Legacy Project proposal to Great Outdoors Colorado. Juniper Katz is asking that each of the entities provide a letter of support by August 1, 2007. Heather Bergman will contact Juniper to see if there is a map showing the Peak to Prairie Legacy Proposal area; she will also send the other materials explaining the proposal and the specifics to include in a letter of support.
- ❖ The State Fair is at the end of August, and several participants suggested that having a booth at the Fair would give the Task Force great exposure and would

further community involvement. At least one participant would like to see the list of the Top Ten Lessons Learned (prepared by the Outreach Committee) made available to the public at the Fair. The Consensus Committee will review the draft of the Top Ten list at its next meeting.

- o The Turkey Creek Conservation District has an informational board that can be used at the State Fair.
 - o The vision board created by the Outreach Committee can also be used.
 - o The booth will be in the Conservation Building, across from the large watershed model. This is a great location with excellent foot traffic and exposure.
 - o Dennis Maroney will send Heather Bergman the details of the State Fair. Heather will distribute a sign-up sheet for members of the Task Force who are willing to staff the booth.
- ❖ The El Paso County Fair starts today and will run through the weekend. Kristin Flannery will work to get the vision board to Sallie Clark.

Recommendation from the Water Quality Working Group

The Water Quality Working Group has been discussing stormwater runoff, with a particular focus on mitigating runoff. Identification of strategies for mitigating runoff is difficult because it is unclear what land use policies currently exist in the watershed and how they affect runoff. The Working Group would like to get more information on what the cities and counties require by assessing existing policies based on the “Better Site Design” handbook, and then discussing the results with planners and elected officials.

The Working Group suggested two ways of doing this:

- o Issue a request for proposals (RFP) to get a contractor to do the policy assessment and host meetings with planners and elected officials to share the results and determine how best to proceed in the different geographic and political contexts in the watershed.
- o Have members of the working group do the policy assessment and have Heather Bergman and the working group host meetings with planners and elected officials to share the results and determine how best to proceed.

Since no funds are presently available for this effort, the Consensus Committee agreed that members of the Working Group (led by Lisa Ross and Dennis Maroney) should begin the policy assessment process. In the meantime, Loretta Kennedy will contact the Colorado Department of Local Affairs, and Larry Small will contact the Colorado Municipal League.

Mapping and Funding

Background

Gary Barber summarized the requirements of the \$75,000 Colorado Water Conservation Board (CWCB) grant to the Fountain Creek Vision Task Force. In general, these requirements track with the current plan for the Task Force, but there are a few changes. The grant:

- o Adds an assessment of consumptive and non-consumptive water needs in the watershed to the current scope of work
- o May require maps to provide the final product CWCB desires
- o Likely extends the timeline of the Task Force's work into 2008

The funding situation is complicated by the fact that The Keystone Center will be out of facilitation funds by mid-August. Although this tracks with the original budget prepared for the Consensus Committee, Keystone provided several inaccurate spending reports to the Consensus Committee indicating that existing funds would last into the fall. These errors were due to accounting problems at Keystone that have now been corrected.

This raises a series of related questions for the Consensus Committee to answer:

- o Should the CWCB grant be accepted (with the addition to the scope of work and the extension of the Task Force timeline)?
- o If not, how will ongoing facilitation be funded?
- o If so, should a portion of these funds be given to Thomas and Thomas to prepare maps?
- o If so, this could mean a shortfall of funds for Keystone later in the process.

Decision

The Consensus Committee agreed to accept the CWCB grant with gratitude for the agency's support of the work of the Task Force. \$25,000 will be given to Thomas and Thomas for the mapping effort, and the remainder of the funds will go to Keystone for ongoing facilitation. If the need arises, additional funds for Keystone can be discussed by the Consensus Committee at a later time.

Update from the US Army Corps of Engineers (USACE) on the Fountain Creek Watershed Study (Charles Wilson)

- ❖ At meetings in June, USACE identified more stakeholder concerns. It was beneficial to learn the issues that are on the minds of the stakeholders, like water quality and water rights (among others).
- ❖ USACE also heard discussion about projects like the Colorado Department of Transportation's (CDOT) work on Highway 24 and different projects in Colorado Springs and Manitou Springs.
- ❖ USACE spoke with the Pueblo *Chieftain* and Ray Petros about a dam on Fountain Creek. USACE will look at one plan that includes a single dam on Fountain Creek above Pueblo.
- ❖ USACE has received all of the geographic information system (GIS) data and modeling data from URS (the primary contractor on the Fountain Creek watershed Study). All of this (and other) data will be available through the Pikes Peak Area Council of Governments (PPACG) after August 17, 2007.
- ❖ URS is doing a pre-screening to show areas with high potential for wetlands.
- ❖ USACE will give a presentation of initial recommendations at the August meetings of the Technical Advisory Committee (TAC) and the Consensus Committee.

Questions/Answers

Is the range of recommendation options constrained by funding?

There are funding limits. Pre-screening will show USACE more than ten areas that are suitable for work. USACE will take these ten options to see where they fit in the study best. USACE will leave the others as suggestions but will not be able to develop or complete them as projects. There is not enough money to cover the ten USACE-approved watershed projects.

In the final report, will USACE discuss the other options it looked examined?

Normally, USACE does not do this.

August Full Task Force Meeting

- ❖ There will be a September meeting with the full Task Force. The Consensus Committee would like to have a visioning and map-based workshop. The workshop might include other visual representations of the watershed. During the August Consensus Committee meeting, it might be useful to get Thomas and Thomas involved in the discussion about what the Consensus Committee would like to see.
- ❖ The meeting planning team will talk about this meeting in August. Tom Ready and Heather Bergman will work together to procure meeting space. Gary Barber, Jay Winner, Parry Thomas, and Heather Bergman will decide how the meeting will go.
- ❖ The Consensus Committee will need to coordinate with the TAC to make sure that there is the electronic data needed for the mapping information.

Next Steps for Key Issues

- ❖ A date will be set for the upcoming Funding Options Working Group meeting. It was agreed that the new Funding Options Working Group must have political and elected officials as members, in addition to other individuals who are interested in this issue and the members of the previous Ad Hoc Finance Committee.
- ❖ The Consensus Committee clarified that the Funding Options Working Group should address fundamental policy questions about how to pursue funding for implementation of the strategic plan. The Funding Options group will not be discussing funding for facilitation.
- ❖ Heather Bergman will send out targeted initiations to elected officials in the watershed and to the full Task Force listserv. This email invitation will provide clarification of the purpose of the meeting.
- ❖ To ensure that as many people as possible can attend this first meeting, Heather Bergman will send out a survey asking when the invitees are available.

**Fountain Creek Vision Task Force
Consensus Committee
August 17, 2007
Final Meeting Summary**

Attending

Tom Autobee, Carol Baker, Gary Barber, Mary Barber, Vickie Broerman, Sallie Clarke, Scott Cowan, Mark Glidden, Dan Henrichs, Juniper Katz, Loretta Kennedy, Carole

Lange, Heather Maio, Dennis Maroney, Bob McGregor, Rex Miller, Bob Miner, Rich Mitchell, Jim Munch, Rich Muzzy, Cynthia Peterson, Gary Rapp, Jane Rawlings, Tom Ready, Kathleen Reilly, Gary Rutherford, Kevin Shanks, Richard Skorman, Ross Vincent, Tim Williams, Charles Wilson, Jay Winner, Meggan Yoest, Pam Zubeck, Niki Koszalka, and Heather Bergman

Action Items

Ross Vincent, Loretta Kennedy, and Margaret Mora	Connect with Scott Cowan and Heather Miles to discuss the grant opportunity with Colorado Department of Public Health and Environment
Dennis Maroney, Carol Baker, Scott Cowan, Ross Vincent, Dan Henrichs, and Carol Lange	Discuss “top ten” list, make changes, and distribute via email for Consensus Committee
Tim Williams	Prepare a map showing the Army Corps of Engineers’ proposed projects
Rich Muzzy, Jay Winner, Cynthia Peterson, Bob Miner, Mary Barber, Margaret Mora, Carol Baker, and Heather Bergman	Schedule a meeting to discuss the Colorado Department of Public Health and Environment’s 319 funding opportunity and update Consensus Committee at next meeting

New and Pressing Issues

- ❖ The next full Task Force meeting is September 6, 2007. Colorado Springs Utilities (CSU) is hosting a two-day water tour. Several Consensus Committee members were invited. It was agreed that the full Task Force meeting on September 6th should be rescheduled for September 27th to accommodate the water tour. The meeting on the 27th will be from 6:00 to 9:00 PM at Lake Pueblo State Park.
- ❖ As of the end of July, the remainder of The Keystone Center’s funding was \$3,800. This is enough money to pay for approximately half of August; Keystone will cover the rest of the facilitation costs for August. Keystone will need to begin billing to the Colorado Water Conservation Board (CWCB) grant to cover facilitation costs beginning on September 1. It was agreed that to expedite the dispersal of the CWCB funds, Keystone will bill the El Paso County Water Authority rather than both El Paso County and Pueblo County.
- ❖ Colorado Springs Utilities and the Lower Arkansas Water Conservation District received very good proposals in response to their request for proposals (RFP) regarding the Fountain Creek Corridor Master Plan. The contract was awarded to THK, and the team is currently working to get up to speed on the project. The team includes experts who have worked together on other projects from the visioning to implementation. This team includes Graham Thompson of Matrix Designs, who is working on the Fountain Creek Watershed Study with the US Army Corps of Engineers and has provided much technical assistance to the Task Force in the past. THK is currently working on a project on Highway 24 with the Colorado Department of Transportation (CDOT). The Consensus Committee decided it would like to meet

with THK at its next meeting (September 21st from 1 p.m. to 4:00 p.m at Fountain City Hall).

❖ Grant Opportunities

- Juniper Katz and others are working to submit the Peak to Prairie project proposal to Great Outdoors Colorado (GOCO) by August 27. Entities in the watershed who have not yet submitted letters of support for the grant are encouraged to do so. Several communities have also committed matching funds, which will strengthen the proposal.
- There is a grant available from the Colorado Department of Public Health and Environment's (CDPHE) Water Quality Improvement Fund (WQIF). Pueblo would like to apply for this grant to:
 - Continue education efforts in surface water, stormwater, and urban runoff.
 - Encourage a change in protocols for septic tanks and agriculture
 - Continue E. coli testing and monitoring (though this would change from once a week to once every two weeks; it is expected that the predominant pattern will remain the same with monitoring every other week)

Several members of the Consensus Committee expressed concerns about decreasing the frequency of E. coli testing. These individuals will meet with Scott Cowan and Heather Maio to determine how best to move forward with this grant application.

- Kathleen Reilly spoke briefly about the opportunity associated with CDPHE's Section 319 grant program. The 2008 funds target two river basins: the Arkansas and the Rio Grande. The 319 funding focuses on non-point source pollution impacts, and projects need to provide measurable impacts on water quality. There are two pots of money. One is for projects in the Arkansas and Rio Grande basins, and the other is for projects elsewhere in the state. This grant needs to have a 40% match. The CWCB funds to support facilitation of the Task Force can be counted as part of the 40% match. There is \$1 million dollars available for these grants, and project funds would be available in March or April of 2008. The application is due in the fall of 2007. Rich Muzzy, Jay Winner, Cynthia Peterson, Bob Miner, Mary Barber, Margaret Mora, and Carol Baker will meet to discuss appropriate projects that could be submitted for 319 funding and update the Consensus Committee at its next meeting.

Presentation

Fountain Creek Watershed Study: Preliminary Recommendations (Charles Wilson, US Army Corps of Engineers)

Charles Wilson reported on the preliminary recommendations from the US Army Corps' Fountain Creek Watershed Study. The objectives of the watershed study are to improve water quality and reduce flood risk, sedimentation, and erosion. The general recommendations are:

- modify development policy to include more consideration of open space needs in development (focus on more habitat development within traditional parks);
 - rehabilitate riparian areas to a healthy and functioning condition, preserve existing wetlands, and create additional wetlands where opportunities exist;
 - limit sediment sources during construction by minimizing overload gradient in large scale developments;
 - modify development policy to include the concepts put forth by the Center for Watershed Protection (cwp.org) and Low Impact Development (lowimpactdevelopment.org);
 - modify development policy to require the post-development hydrographs to match the pre-development hydrographs for peak, volume, and timing;
 - modify development policy to require the post-development sediment transport to match the pre-development sediment transport;
 - collect sediment load data for the Fountain Creek watershed so that appropriate sediment transport modeling can be calibrated for all future development in the watershed;
 - modify development policy to require assessment of downstream impacts, particularly the impacts due to small, frequently occurring storm events such as the two-year event;
 - modify development policy to include involvement by regulatory agencies and stakeholders as soon as possible in the development process;
 - entities must follow through with review of development plans, adherence to approved plans through the construction process, and inspection/maintenance of completed projects;
 - staff must be educated/trained in the principles of geomorphology and sediment transport to support the review process for new development and to support the ongoing efforts of their entities in the watershed;
 - entities should use the hydrologic and hydraulic models developed as a part of the Fountain Creek Watershed Study to update their FEMA floodplains;
 - entities should use the models developed as part of the Fountain Creek Watershed Study to certify their levees;
 - remedial projects that affect Fountain Creek or its tributaries should utilize stable channel design;
 - entities constructing remedial projects in the watershed should develop a consistent approach and methodology for project design and construction; and
 - a Fountain Creek Watershed Authority should be created to serve as a funding source for large-scale projects and to assist entities with training, review, and/or maintenance.
- ❖ Some potential project recommendations to address flood risk reduction, ecosystem restoration, and channel stability:
- Both ecosystem restoration and channel stability contribute to reducing sedimentation and erosion.
 - Some options and/or sites for flood risk reduction include building a Pueblo levee, a dam above Pueblo, Highway 24 corridor (including Manitou Springs), Fountain/Monument confluence to city limits, Old

- Pueblo Road corridor, numerous bridge over-toppings, upper Monument Creek, and Cheyenne Creek.
 - Areas studied for high priority ecosystem restoration were Jimmy Camp Creek confluence, Clear Springs Ranch vicinity, Fountain Valley Park vicinity, Hannah-Frost vicinity, Pinon to Pueblo reach, Monument Branch, Beaver Creek, Kettle Creek, Jackson Creek.
 - Lower priority ecosystem restoration options include LFC-1, LFC-2, LFC-3, CSC-1, MC-1, MC-2, and the Highway 24 corridor.
 - o Channel stability projects seek to limit sediment sources, protect infrastructure, stabilize streams with changed hydrology, and protect streams with unchanged hydrology.
 - Areas studied to limit sediment sources were Sand Creek, Cottonwood Creek, eastern tributaries including Pine Creek, Black Squirrel Creek, middle tributary, Monument Branch, Black Forest, and Jackson Creek.
 - Areas studied for channel stability as means to protect infrastructure were Sand Creek, Cottonwood Creek, Pine Creek, Fountain Creek – Fountain Valley Park to Clear Springs Ranch, Fountain Creek – Monument Creek confluence to Sand Creek Confluence, and Monument Creek.
 - Areas studied for channel stability as a means to stabilize streams with changed hydrology included Monument Branch, Upper Cottonwood Creek (above Rangewood), Teach Out Creek, Elkhorn Creek, Black Squirrel Creek, and Jackson Creek.
 - Areas studied for channel stability as means to protect streams with unchanged hydrology were Jimmy Camp Creek, East Fork Sand Creek (above Constitution), and Beaver Creek.
- ❖ The Army Corps would like to have recommendation feedback by the end of September. The Corps expects to have its draft report completed by March 2008 and its final report by June 2008. The Corps is planning on holding public meetings and anticipates the announcement of public meetings to be made around the time of the draft report. The draft and final report dates are contingent on receipt of \$149,000 federal funding for fiscal year 2008.

Questions and Answers

What are the Corp's next steps and what are the funding mechanisms?

Once the Corps has decided on recommended sites, it will deal with the issue of funding. The Corps considers all authorities, agencies, congress, and all appropriate funding sources and deals with the appropriate paperwork to receive funding.

What kind of dams/flood control structures is the Corps considering and where would they be located?

The Corps' intention is to use one of the existing sites from the previous study for its analysis. The Corps needs to determine what size the dam needs to be and only has the money to look at a one-dam situation. A dam does have some merits when dealing with sediment transport.

Where are good areas for ecosystem restoration using wetlands?

The best option is to find areas on the main stem. The tributaries are not the best option as there is not much water flow.

With implementation of all the general recommendations, will there be any attempt in the matrix to show the cumulative effects of these projects?

Yes, to a degree.

Is the Corps able to share any information including scientific research about dams with the Task Force?

The Corps will try to get information to the Task Force about dams in the late fall. The idea of a dam came up in the Fountain Creek studies in 1972 as a recommendation to stop the flooding. Until experts and engineers weigh in, the concept of one or more dams needs to be on the table.

Following the question and answer session, the group agreed that there will need to be a more comprehensive conversation about the possibility of building a dam on Fountain Creek. The questions that need to be answered in this future discussion are: how many dams, what kinds of dams, how big should it/they be, where should it/they go, who would pay for a study of the options and how would they do that, who builds and pays for construction, and what are the water rights and other impacts? Also included in dam presentations need to be a vocabulary list, so that the Consensus Committee members are all on the same page of understanding terms.

It was also agreed that such a discussion about a dam must wait until the Army Corps completes its own study of a dam. This report is expected later in the fall of 2007. Once that document is available, the Fountain Creek Vision Task Force will hold a public meeting in Pueblo to discuss the report and to hear other viewpoints and ideas on this issue.

Outreach Committee Needs: "Top Ten" Lessons Learned

The group reviewed the current draft of the "Top Lessons Learned" document that the Outreach Committee prepared for distribution at the State Fair. The Outreach Committee had asked many entities and people to send their thoughts and ideas on what the top ten lessons are. After receiving the ideas, the committee came up with this list. The Outreach Committee also created a survey to hand out at the State Fair booth to find out the most important and surprising issues to the public. At the State Fair, in addition to the Top Ten list, the Outreach Committee would like to show the vision board and play the voice-over PowerPoint presentation. Several members of the Consensus Committee voiced concerns about the Top Ten document. The Outreach Committee agreed to revisit the list with the help of a small, representative group and resubmit the list to the Consensus Committee via email. It was agreed that the list would not be distributed at the State Fair unless Consensus Committee approval is achieved.

**Fountain Creek Vision Task Force
Consensus Committee
September 21, 2007
Final Meeting Summary**

Attending

Tom Autobee, Carol Baker, Gary Barber, Mary Barber, Sharon Brown, Ron Enserro, Kristin Flannery, Ferris Frost, Jane Green, Jeri Howell, Juniper Katz, Irene Kornelly, Carole Lange, Bruce McCormick, Bob Miner, Heather Maio, Steve Miller, Rich Muzzy, Larry Patterson, Jane Rawlings, Sandy Rayl, Ken Sampley, Kevin Shanks, Larry Small, Ross Vincent, Jay Winner, Chris Woodka, Niki Koszalka, and Heather Bergman

Action Items

Heather Bergman	Ask Charles Wilson to come to a meeting, in person or on the telephone, once the revised recommendations are released.
Heather Bergman	Add a discussion of participation and a review of the protocols to the agenda for the next Consensus Committee agenda.

New and Pressing Issues in the Watershed

Colorado Water Conservation Board (CWCB) Grant

- ❖ The CWCB asked the Fountain Creek Vision Task Force for more clarity in the grant application. The Task Force submitted a letter, further explaining the grant proposal.
- ❖ The Task Force will be required to quantify consumptive and non-consumptive uses of water in the watershed, establish the status of existing plans and projects for consumptive and non-consumptive uses, and propose potential projects. There is existing data to quantify consumptive and non-consumptive uses.

319 Grant Proposal

- ❖ The goals for the Section 319 grant proposal to the Colorado Department of Public Health and Environment are water quality improvements in the watershed through reduction of sediment and E. coli and the use of the Streamside Systems sediment removal technology.
- ❖ Approximately \$259,000 from the Lower Arkansas Basin Roundtable would support the Streamside System hardware and \$300,000 from the 319 grant would support the stream and sediment sampling. This money would also support the research of best management practices (BMP) for sediment and E. coli reduction.
- ❖ The 319 grant needs a 40% match, which can be in-kind.

Report on the Watershed Tour

The watershed tour was a great success. There were presentations on and off the bus by speakers from most of the major entities involved in the Task Force. The most consistent feedback was that tours should occur more often.

State Fair

The survey given at the Fountain Creek Vision Task Force booth had 420 responses. Overall, the response was supportive though there was some frustration with existing problems.

Fountain Creek Master Corridor Plan Update

THK will have a contract for the Fountain Creek Master Corridor Plan by the week of September 24, 2007. Carol Baker, Jay Winner, Kevin Shanks, and Heather Bergman will sit down once contract is signed and work on where the intersection of the two groups will occur.

Technical Advisory Committee (TAC) Meeting and Recommendations from the Army Corps of Engineers (Army Corps) Study Review

- ❖ There was a discussion of the project specific recommendations, general recommendations, and the expectations of the Army Corps. The recommendations are preliminary and no final decisions have been made. The TAC requested additional data on the recommendations including feasibility, rationale, and the likelihood of funding.
- ❖ The Army Corps is looking for project specific input from the cities and counties. They would like this information by the end of September. The Army Corps would like to wait for city and county input before doing any draft changes so there is only one revision. There will be public meetings to review the draft with the public.
- ❖ A few members of the Consensus Committee expressed concern that it is not clear what the recommendations are going to accomplish. The recommendations focus on the upper reaches of Fountain Creek, and it is not clear to some what the impacts of the projects will be on the watershed as a whole. The Consensus Committee also found recreation and water rights to be missing from the Army Corps recommendations.
- ❖ Heather Bergman will ask Charles Wilson to come to a meeting in person or by telephone to explain the updated recommendations once released.

Update on the Peak to Prairie grant proposal to Great Outdoors Colorado

Colorado Open Lands submitted a grant proposal for \$7.4 million. December 2007 is the date for the GOCO funding decision.

Next Full Task Force Meeting

- ❖ Rescheduling of the Task Force meeting on September 27, 2007 is necessary.
- ❖ The Consensus Committee agreed that it is best to have a meeting in each community.
- ❖ The Consensus Committee wants to use the upcoming Task Force meeting to catch the members up with where the Fountain Creek Vision Task Force is, introduce the Top Ten, and spend a shorter amount of time with maps having the Front Range Trail as the focal point.
- ❖ The Consensus Committee also agreed to pay for better advertising for the Task Force meeting.
- ❖ Ross Vincent and Carole Lange will work on a meeting space in Pueblo.
- ❖ Walter Lawson will work on a meeting place in Fountain.
- ❖ The next Task Force meetings are October 22, 2007 from 6:00-9:00 pm in Pueblo and October 23, 2007 from 6:00-9:00 pm in Fountain.

**Fountain Creek Vision Task Force
Consensus Committee
October 19, 2007
Final Meeting Summary**

Attending

Carol Baker, Gary Barber, Mary Barber, Jeff Chostner, Dennis Darrow, Mike Fink, Ferris Frost, Mark Glidden, Jerry Heimlicher, Dan Henrichs, Juniper Katz, Irene Kornelly, Carole Lange, Dennis Maroney, Bruce McCormick, Tom Ready, Jane Rhodes, Kevin Shanks, Richard Skorman, Larry Small, Parry Thomas, Ross Vincent, Jay Winner, Meggan Yoest, Niki Koszalka, and Heather Bergman

Action Items

Jeff Chostner	Present the Colorado Department of Local Affairs grant opportunity to Pueblo Area Council of Government (PACOG)
Rich Muzzy	Present the Colorado Department of Local Affairs grant opportunity to PPACG
Heather Bergman	Provide Consensus Committee with a list of working group attendees and whom they represent

New and Pressing Issues in the Watershed

- ❖ Pat Edelmann presented a report on the Fountain Creek watershed at the USGS. Heather Bergman will contact Pat about the electronic availability of the report.

Funding Updates

- ❖ For September, there is a \$6,100 unpaid balance due to The Keystone Center. An estimated \$8,400 is due for October. The Keystone Center is unable to continue working without payment and needs commitment on receiving past due payments.
- ❖ Consensus Committee members agreed to discuss funding with their respective boards, councils, and organizations.

Full Task Force Meetings

- ❖ The Task Force meetings will be based on a review with the public of the Top 10 Lessons We Have Learned about Fountain Creek.
- ❖ Heather Bergman will use the polling software to find out what issues are most important to the public. She will also invite the public to provide ideas about how to get information out to the public.
- ❖ Richard Skorman will start the meetings with a short introduction and the vision for the Fountain Creek watershed.
- ❖ These meetings determine if the public feels the Task Force is on the right track.

Fountain Creek Corridor Master Plan Contractors (THK and Associates)

- ❖ The Fountain Creek Corridor Master Plan (FCCMP) is the implementation plan for part of the watershed while the Task Force works on the strategic plan for the entire watershed.

- ❖ THK plans to produce maps by mid-November. THK will need the help of the Fountain Creek Vision Task Force. THK will need information learned from the Army Corps of Engineers (The Corps) and the Task Force. Specifically, THK wants a summary of goals, objectives, and strategies by Thanksgiving. With this information, THK can move forward and report its progress to the Task Force in March or April.
- ❖ THK will also provide technical support to the Funding Options and Implementation Working Group. This support will be non-directive and provide background information. THK's goal in assisting the Funding Group is to help find a management and/or funding entity for the watershed.
- ❖ The Greenway Foundation and Urban Drainage have extended an invitation to the Task Force to take a tour of their work on the South Platte River in Denver.

Questions and Answers

It was suggested that the master plan would be done in 2 years. Is there a concrete plan to achieve that?

The hope is to have the plan done in one year and the actual implementation phase in the second year. THK will debrief the Task Force on the implementation phase as soon as it is applicable.

Does THK want to be in partnership with the Task Force?

Yes, THK does want to work with the Fountain Creek Vision Task Force.

If THK's scope is less than the full watershed, what is the scope?

The scope is from the southern city limits of Colorado Springs to the confluence. THK also plans to look at the riparian areas. THK and Thomas & Thomas are both mapping but their scopes of mapping are different.

Are copies of the project schedule available?

Yes. The end date will not change but some of the dates and options may change. THK will consider putting the schedule on a website that could reflect the changes.

If the scope is starting south of Colorado Springs and ending at the confluence, are you going to talk to the property owners?

Yes, THK plans to do a lot of outreach.

Will THK work with the stormwater enterprise?

Yes.

Funding Opportunities

Update on 319 proposal to Colorado Department of Public Health and Environment (CDPHE) (Scott Hobson, City of Pueblo)

- ❖ Scott Hobson has taken on responsibility of the 319 grant. The Task Force asked him to put together a proposal on sediment removal along Fountain Creek. The Streamside System is a 20-foot structure to remove sediment without dredging. The

Streamside System separates the sediment according to size and removes it from the river. It is necessary to determine if there is a commercial value in selling the gravel.

- ❖ The location of the Streamside System is in the City of Pueblo, upstream from the Eighth Street Bridge, and two miles from the confluence of Fountain Creek.
- ❖ There are maintenance and ongoing costs for the Streamside System. The test period is only 30 days. If there is the possibility of self-funding (from the gravel), there could be an option of installing several more in Fountain Creek. The Fountain Creek Vision Task Force would like to submit the 319 proposal at the end of 2007.

Questions and Answers

Is it important to look at E. coli as well as sediment?

There will be testing for E. coli and source information will also be included.

When will this testing happen?

The testing will probably occur in February or March.

Will the Fountain Creek Vision Task Force own this structure?

That is not clear at this time.

What are the results of this technology in other markets?

On the east coast, it has been very successful.

Do you have to get a mining permit in order to resell the gravel?

This is a good question. There is needed investigation to determine if there are mineral rights associated with the property and if there are permits required for the removal.

Can you accurately estimate how much sediment will be removed in a 30-day test period?

Yes, and this would be important to include in the grant application.

Colorado Department of Local Affairs Opportunity

- ❖ The Consensus Committee needs a group of participants willing to take on writing a grant to the Colorado Department of Local Affairs. Rich Muzzy from Pikes Peak Area Council Government (PPACG) is willing to present it to his board. Jeff Chostner would be happy to take this back to Pueblo Area Council of Government (PACOG).

Working Group Progress Review and Assessment

- ❖ Water Working Group update
 - Key activities in recent months:
 - ❖ Did a policy review to assess opportunities for improvement in permitting and other decisions
 - ❖ Outlined better policies that can guide improved decision making affecting stormwater runoff and other key issues
 - ❖ Decided to plan a policy workshop to share findings of review and improved policy ideas with elected officials and staff planners

- ❖ Looked at 319 grant opportunity to begin addressing E. coli and sedimentation
- o Upcoming discussions include erosion, stabilization, and sediment transport.
- o The Consensus Committee feels that the Water Working Group is on target.
- o The Colorado Water Conservation Board (CWCB) grant has work for the Water Working Group. The Water Working Group must prepare a written summary of current conditions in the watershed regarding issues the Working Group is addressing. Assignments will be discussed at the next Working Group meeting.
- ❖ Land Use/Environment Group
 - o The Task Force says the key interests are:
 - ❖ Watershed as an asset and an amenity
 - ❖ Greenway connector between communities and commuting opportunities
 - ❖ Recreation opportunities
 - ❖ Agriculture, as part of the cultural heritage and quality of life of this area, needs to be protected, preserved and enhanced
 - ❖ Wildlife for its own sake and as an indicator of ecosystem health needs protection
 - ❖ Viewshed maintained
 - o The Consensus Committee feels addressing current and future development is important.
 - o The Consensus Committee wants, in the long term, a chart with interests in one column and strategies in the other. A small group of the Water Working Group is currently working on benchmarking. Heather Bergman will provide the Consensus Committee with a list of who is attending meetings and whom they represent.
 - o The Colorado Water Conservation Board (CWCB) grant has work for the Land Use and Environment Working Group. The Working Group must prepare a written summary of current conditions in the watershed regarding issues the Working Group is addressing. Assignments will be discussed at the next Working Group meeting.
- ❖ Funding Options Working Group
 - o The Funding Option group is working toward funding for long-term implementation. Some members of the Consensus Committee were not clear about this, and Heather will be sure to send a clarifying email to the Task Force listserv.

Consensus Committee Protocols Review and Assessment

- ❖ The Consensus Committee discussed the need to maintain high levels of participation in Consensus Committee meetings. The group discussed the possibility of having alternates attend meetings, changing meeting times, and other mechanisms for maintaining participation. It was agreed that Consensus Committee members can send alternatives if they desire, but there will be no formal system for designating “official” alternatives. Members and their alternates are responsible for keeping one another informed of activities at meetings. It was also agreed that Consensus

Committee members should RSVP to all future meetings, and the facilitator will cancel any meeting at which attendance will be low or lacking in diversity.

- ❖ The Consensus Committee would like further education on the “consensus model” of decision making at the next meeting. Heather will prepare a presentation so the group can review this approach.

**Fountain Creek Vision Task Force
Consensus Committee
November 16, 2007
Final Meeting Summary**

Attending

Tom Autobee, Carol Baker, Gary Barber, Mary Barber, Jeff Chostner, Sallie Clark, John Cordova, Dennis Darrow, Ferris Frost, Kim Headly, Dennis Hisey, Jim Hook, Jeri Howells, Mary Jaurequi, Irene Kornelly, Carole Lange, Dennis Maroney, Bruce McCormick, Steve Miller, Bob Miner, Rich Muzzy, Larry Patterson, Joe Rall, Gary Rapp, Sandy Rayl, Tom Ready, Jane Rhodes, Henrietta Robinson, Richard Skorman, Larry Small, Parry Thomas, Ross Vincent, Niki Koszalka, and Heather Bergman

New and Pressing Issues in the Watershed

- ❖ The Water Quality Control Commission posed and approved an amendment to El Paso 208, allowing for a new water treatment plant.
- ❖ The City of Pueblo is beginning discussion of the annexation of McCullough Ranch. There is the possibility of a donation of 350 acres on Fountain Creek to State Parks or the City of Pueblo for the Front Range Trail. Between State Parks and the Great Outdoors Colorado (GOCO) grant, there may be \$5 million available for the Front Range Trail.
- ❖ Anderson consulting is mapping the floodplain on Fountain Creek and is planning to remove an old railroad bridge.
- ❖ Discussed at the October Task Force meetings in Pueblo and Colorado Springs were outreach mechanism ideas. Please submit further ideas to Heather Bergman, Carol Baker, Carole Lange, or Irene Kornelly. Carol Baker will ask the Outreach Committee to ponder drafting a consistent opinion-editorial (op-ed) piece. This piece would be a non-technical update on the public process and then personalized for the entities that are collaborating and working together.
- ❖ In December, there is an agriculture water workshop. Bob Miner will find out more information.

Update on Mapping for the Colorado Water Conservation Board Grant (Parry Thomas and Jim Hook)

- ❖ Thomas and Thomas will take information from the Consensus Committee (funneled through Heather Bergman) and create a basin-wide map.
- ❖ Thomas and Thomas is taking information from different cities and counties to compile into a map. Currently, they are working with a baseline map and will have continued and more formal discussions with entities. In January, Thomas and

Thomas plan to have a good map with baseline information including information from the Army Corps of Engineers (Corps).

Questions and Answers

Have you talked to any farmers and ranchers?

Not yet. However, Thomas and Thomas will assist Juniper Katz with the Front Range Trail planning, which will involve extensive work with farmers, ranchers, and landowners.

There is already a statewide map showing accepted and certified wetlands, would this help Thomas & Thomas' planning?

This information is included in the Corps study under wetlands and includes specific criteria as to what is an actual wetland. It would be helpful.

Will you focus on mapping existing conditions?

Thomas and Thomas will work on existing conditions.

How is the map to be available?

It will be available electronically but they will be large files. A GIS database for this project is to be developed.

Funding Update

Unmet Keystone Costs

- ❖ Originally, the estimated unmet Keystone costs were \$14,000. The actual amount is \$11,074. The Consensus Committee has committed \$10,463 leaving a shortfall of \$611.
- ❖ The Keystone Center and Thomas and Thomas will not receive their last payments until the Colorado Water Conservation Board (CWCB) receives the final document.

Grant Opportunities Update/Plan

Update from Scott Hobson on the 319-grant opportunity.

- ❖ On December 12, Rich Muzzy will attend a workshop by the Non-Point Source Alliance, which provides technical support to the 319 program.
- ❖ Dennis Maroney will work with Scott Hobson on the writing and reviewing of the 319 grant.

Colorado Heritage Grant, Department of Local Affairs (DOLA)

- ❖ The deadline for the Colorado Heritage Grant is November 30, 2007.
- ❖ Rich Muzzy will write the grant. Sallie Clark, Larry Small, and Dennis Hisey will work to determine sponsorship of the grant.

Funding Options and Implementation Working Group (FOIWG) Update

- ❖ The FOIWG has met three times. It has a preliminary list of functions/criteria for a funding/management entity for review by the Consensus Committee.
- ❖ The FOIWG also asked the Consensus Committee to review a preliminary list of substantive areas for a funding/management entity. Included in the preliminary list

are flood control, land use, water quality, water quantity, stormwater management, floodplain management, erosion, sedimentation, wetlands, and operations and maintenance. Additions the Consensus Committee agreed upon are recreation, wildlife habitat/ecosystem management, and flood/stormwater control.

- ❖ FOIWG had a primary list of functions/criteria for a funding/management entity for the Consensus Committee to review. The Consensus Committee wants the following additions to this list:
 - Apolitical entity/non-partisan
 - Innovative BMPs
 - Integral conflict resolution
 - Inventive construction, including retro-fitting
 - Administrative staffing/support for entity
 - Motivating incentives
 - Thorough collection and dissemination of data
- ❖ The Consensus Committee also wants to see prioritization moved up on the preliminary functions/criteria list.
- ❖ FOIWG has several options for the Consensus Committee to review for the best path forward in learning about the options for funding entities and informing the public.
 - Option One
 - FOIWG learns about options at its own meetings, determines next approach
 - FOIWG holds public meeting to summarize key elements of options, explains criteria, and explains recommendations
 - FOIWG gives presentations to elected bodies on options and asks for feedback
 - FOIWG takes feedback from public and/or elected officials and reconsiders/revises recommendations
 - FOIWG brings final recommendation to Consensus Committee
 - Option Two
 - FOIWG, with the help of THK, hosts an all-day workshop open to the public
 - FOIWG starts meeting with summary of criteria for a funding entity for Fountain Creek Watershed
 - FOIWG has experts available to discuss the different options
 - FOIWG hosts breakout groups to discuss which options work out best in light of criteria. The breakout groups then devise their own solutions
 - FOIWG has participants come back together in plenary to hear different options from breakout groups and discuss.
 - FOIWG takes options from breakout groups and feedback from discussion at meeting and prepares a recommendation for the Consensus Committee
 - Option Three
 - FOIWG learns about options and determines next approach (es)
 - FOIWG hosts possible meetings with elected officials in chambers to keep apprised

- FOIWG, with THK's help, hosts an all-day workshop to present criteria and recommendation, learn about options from experts, do break-out groups to discuss, and come back to plenary to share comments/ask questions
 - FOIWG integrates comments from workshop into a refined recommendation for CC review
- o Options: Considerations
 - Will a review of the recommended options from FOIWG members pass muster with the community?
 - Will elected officials and residents want to learn about the options and generate ideas themselves?
 - Will elected officials and residents come to an all-day workshop, stay all day, and participate?
 - Will elected officials feel comfortable asking hard questions and having frank discussions in a public workshop?
 - What is the best use of THK's expertise and available funding for this issue?
 - How is the Task Force best served, in terms of time, knowledge, and expertise?
- ❖ The Consensus Committee agreed that FOIWG should proceed in the following manner:
 - o Learn about options at the FOIWG meetings
 - o Give presentations to elected bodies, council of governments, and entities
 - o Hold public meeting to explain the recommendation
 - o Have Consensus Committee members present at small meetings
 - o Take all the considerations and revise recommendations as necessary
 - o Hold an evening meeting with revised recommendation

Fountain Creek Vision Task Force
Consensus Committee
January 18, 2008
Final Meeting Notes

Attending

Carol Baker, Gary Barber, Mary Barber, Sallie Clark, John Cordova, Deiter Erdmann, Dan Henrichs, Dennis Hisey, Juniper Katz, Greg Langer, Dennis Maroney, Bruce McCormick, Rex Miller, Bob Miner, Margaret Mora, Rich Muzzy, Vera Ortegón, Larry Patterson, Jane Rawlings, Tom Ready, Jane Rhodes, Henrietta Robinson, Larry Small, Ross Vincent, Niki Koszalka, and Heather Bergman

Action Items

Gary Barber	Email Heather Bergman an update about the Colorado Water Conservation Board (CWCB) grant
Gary Barber	Revise the Residential/Commercial Development, Wetlands, Recreation, Stormwater, and Municipal Water Needs and Return

	Flows papers
Rich Muzzy	Draft a letter of support from the Fountain Creek Vision Task Force for Gary Barber's appointment to the Colorado Watershed Assembly board
Rich Muzzy	Revise the Sedimentation/Erosion and Water Quality papers
Bruce McCormick	Email Heather Bergman the papers he offered his staff to revise
Juniper Katz	Revise the Recreation paper
Juniper Katz and Deiter Erdmann	Revise the Agriculture paper
Dennis Maroney	Revise the Flooding paper
Mary Barber	Committed staff to revise the Wetlands and Wildlife papers
Consensus Committee	Review 319 grant proposal, write, and send letters of support
Heather Bergman	Ask Ferris Frost to revise the Industrial Land Use paper
Heather Bergman	Email Consensus Committee update from Gary Barber

New and Pressing Issues in the Watershed

- The Colorado Watershed Assembly asked Gary Barber to serve on their board on behalf of the Fountain Creek Vision Task Force. They will require a letter from the Task Force indicating that Gary can represent the group. Rich Muzzy will draft a letter of sponsorship for the Consensus Committee's review.
- At its last meeting, the Consensus Committee heard a report from the City of Pueblo about its progress on the grant application to the Colorado Department of Public Health and Environment for Section 319 funds to assist with a demonstration project to address E. coli and sedimentation on Fountain Creek. Pueblo drafted and submitted the grant application. Members of the Consensus Committee are encouraged to submit letters of support for the grant within two weeks.
- As part of the Great Outdoors Colorado (GOCO) grant for Fountain Creek and the surrounding prairie area, land on the property of Jane Rhodes and her family will be protected.

Financial Update

- All contributions from the Consensus Committee for September and October facilitation costs have all been received. Keystone appreciates the group's generosity of prompt response to the billing situation.
- The state has yet to process the purchase order required for Keystone to bill against the Colorado Water Conservation Board grant for facilitation costs from November on. However, Gary Barber is in communications with the appropriate person and believes that the situation will be resolved shortly.

Reports on Group Discussions

The Consensus Committee discussed and reported on the "current conditions" documents prepared by the working groups.

- Wetlands
 - The group liked the following:

- The section relating to the creation of wetlands/opportunities
 - The group had the following concerns:
 - None
 - The group had the following questions:
 - How can wetlands be incorporated as part of working landscapes of ranches and farms?
 - Where is the predominance of wetlands? (Include the type and functional status)
 - Do utilities get credit for cleaning water with wetlands?
 - Do wetlands affect water rights or vice versa?
 - Is there a difference between natural and created wetlands?
 - Should there be more discussion of wetland vegetation, habitat, and wildlife?
 - Should wetland banking be described?
 - Are there any instances of wetland banking occurring in the watershed?
 - Are there any references that could be cited on wetlands filtration?
 - The group suggested the following changes:
 - Include a description of wetlands in Monument Creek Basin
 - Need more information on health and stability of wetlands; what are the dynamics of wetland loss and creation?
- Stormwater Management
 - The group liked the following:
 - Good information on National Pollutant Discharge Elimination System (NPDES) permit and water quality issues
 - The group had the following concerns:
 - Need to address existing watershed conditions
 - Address retrofit opportunities
 - Possible overlap on water quality issues
 - The group had the following questions:
 - What are the exact references?
 - The group suggested the following changes:
 - Address the Army Corps of Engineers recommendations
 - Address policy workshop including Low Impact Development (LID)
 - Thermal pollution
 - Add run-off volume concerns for increased impervious areas
- Recreation
 - The group liked the following:
 - Good general background information
 - Good information on existing trails/open space
 - Inclusion of what the Fountain Creek Vision Task Force wants accomplished
 - The group had the following concerns:
 - No implementation plan
 - Need to identify prioritized improvements in stretches of the creek

- Include the topic of dogs including on or off leash, access or not, and the impact on wildlife
 - No financial/cost information, area maps, timetable, or mention of equestrian use
 - Needs inclusion of details for the Front Range Trail including aesthetics, facilities, parking, and property right issues
 - The group would like the following added to the document
 - Subheadings
 - Hunting
 - Wildlife viewing including birding, access, and comfort
 - Upstream areas: Pikes Peak south slop access, top of Cheyenne mountain, Ute Pass, Black Forest, and Palmer Lake
 - ATV's and multi-use areas
 - The group had the following questions:
 - How will the trail be accessible to the community?
 - Are maps going to be created?
 - Are there going to be trails for motorized and non-motorized combined use?
 - The group suggested the following changes:
 - None
- Flood Control
 - The group liked the following:
 - Document covered the subject matter well
 - The group had the following concerns:
 - Current mitigation including NPDES and stormwater enterprise
 - Current condition on tributaries
 - The group had the following questions:
 - Who are the key players in the mitigation process?
 - What role does Federal Emergency Management Agency (FEMA) play?
 - What improvements have been made to reduce the impacts of flooding?
 - How has recent development, in the past 5-10 years, affected the creek?
 - The group suggested the following changes:
 - Need more current conditions on the tributaries that contribute to Fountain Creek
 - Include information from prior studies
- Municipal Water Needs and Return Flows
 - The group liked the following:
 - Document was well written and very descriptive
 - The group had the following concerns:
 - Need to address the demand for municipal uses with a summary; non-native dependent uses; how to replace non-renewing sources like Denver Basin
 - The group had the following questions:

- None
- The group had the following changes:
 - Add information on the recharge of alluvium and how this keeps well water available
 - Add water use by other than those listed; include Manitou Springs, Monument, and others within the drainage
 - Include an indoor water use percentage
 - Define and distinguish “used” and “consumed”
 - Clarify re-use accounting section
 - Include data from other watershed municipal users
- Wildlife
 - The group liked the following:
 - Good Endangered Species (ESA) coverage
 - Good background on current conditions
 - Well written
 - Addressed sedimentation and erosion
 - The group had the following concerns:
 - No coverage of non-ESA species
 - More habitat discussion concerning vegetation/food, cover, and diversity of habitat types
 - Focus more on the Creek rather than the watershed
 - No Colorado, United States, or County wildlife specialists were utilized for input
 - Balance in agriculture statements
 - Environmental Policy Agency (EPA) is not the only standard for healthy riparian habitat
 - The group had the following questions:
 - Is there hunting and fishing in the watershed?
 - What diseases appear in wildlife?
 - What is the status of healthy wildlife in the watershed?
 - What impact do invasive species have on wildlife and habitat?
 - What types of controls are being implemented by jurisdictions in the watershed?
 - What are the impacts of pollutants on habitat and wildlife?
 - Would including the water needs section in water quality or other papers be helpful?
 - The group suggested the following changes:
 - Address habitat as it specifically relates to existing aquatic and other wildlife species
 - Addition of educational programs for all wildlife issues
 - Remove the statement about thermal stability
 - Add a cross reference between wildlife and wetlands within the Fountain Creek watershed
- Water Quality
 - The group liked the following:

- Agree the paper was well written and described terms so that the lay person could understand
 - o The group had the following concerns:
 - None
 - o The group had the following questions:
 - None
 - o The group suggested the following changes:
 - In the standards and classification section, where does Fountain Creek fit in
 - Need more information as to why nitrogen and phosphorus are higher in Fountain Creek than in the Arkansas River
 - Want more information on the unregulated pollutants
 - Address the quality and quantity of the data including how correct
 - Need to touch on the studies that are already in existence
- Residential and Commercial Development
 - o The group liked the following:
 - Good description of problem and issues
 - Outlines impacts of development on watershed nicely
 - Structure of paper is good
 - Document discusses projected growth
 - Referenced development approaches to impacts including growth management and control
 - Discusses impervious surfaces
 - Explores the issues of water need
 - Talks about various municipalities, counties, and military bases
 - o The group had the following concerns:
 - Length of the paper
 - The statement of issue did not mention public health
 - Consistency in description of cities, counties, and Fort Carson
 - Needs to address impact mitigation approaches including wetlands as a positive mitigation
 - Land planning related to watershed improvement, preservation, and health
 - Needs to identify government codes that pertain to watershed
 - o The group had the following questions:
 - To what extent are recent employment numbers, especially in construction, reflective of temporary jobs?
 - How much of growth is permanent?
 - Is there a way the Fountain Creek Vision Task Force can influence the impact of existing development on the Creek?
 - o The group suggested the following changes:
 - Communicate land planning along the Creek including future projects, utilities gravel pits and all infrastructure
 - Pueblo “city” needs inclusion
 - Growth planning
 - Property rights vs. develop rights as related to planning

- Eliminate the table as it is redundant with the text
- Sedimentation/Erosion
 - The group liked the following:
 - Consider paper well written and accurate but limited in scope
 - The group had the following concerns:
 - None
 - The group had the following questions:
 - None
 - The group suggested the following changes:
 - Need document to reference the different amounts of sediment in different areas of Fountain Creek; need more information on kinds of sediment and on bedload characteristics
 - Clarify the confusion around base flow (return flows) vs. channel forming (storms)
 - Need to reference work that has been done by the Army Corps of Engineers
- Industrial Land Use
 - The group liked the following:
 - Consider paper well written and accurate but limited in scope
 - Addressing of all of the current industrial projects
 - The group had the following concerns:
 - Concern is if Pueblo Springs proposes any industrial components and any impacts yet to be realized from the Lafarge gravel pit
 - The group had the following questions:
 - None
 - The group suggested the following changes:
 - Include information on future projects including all gravel mining, planned toll roads, Pikes Peak Raceway, and the highway project on Ute pass
 - Update or eliminate projects as necessary
- Agriculture
 - The group liked the following:
 - Well written document
 - The group had the following concerns:
 - Rely on statistics and tremendous amount of write up may have been taken out of the Basin Water Paper
 - The group had the following questions:
 - None
 - The group suggested the following changes:
 - Need to introduce a balance in the discussion of impacts to watershed and water use; there are seven paragraphs on wasteful water due to agriculture and two sentences on the positives
 - Need to include that small landowners and minor ranch operations with confined or corralled horse and cattle do not have a significant impact on water quality
 - Include the issue of water law discouraging efficiency in water use

- Change the section on vegetable production in the basin; it is quite limited
- Embrace the region as it once was a big and historical agriculture zone
- Clarify that land and water conservation practices are encouraged by the agriculture community in the Fountain Creek watershed
- Needs input from the Natural Resources Conservation Services (NRCS)

Next Steps for Current Conditions Documents

- Gary Barber offered to work on the revisions of the Residential/Commercial Development, Wetlands, Recreation, Stormwater, and Municipal Water Needs and Return Flow papers.
- Bruce McCormick offered his staff to revise the Municipal Water Needs and Return Flows paper.
- Juniper Katz offered to revise the Recreation paper.
- Juniper Katz and Deiter Erdmann offered to revise the Agriculture paper.
- Dennis Maroney offered to revise the Flooding paper.
- Rich Muzzy offered to revise the Water Quality paper.
- Mary Barber committed her staff to revising the Wetlands and Wildlife papers.
- Rich Muzzy offered to work on the Sedimentation/Erosion paper.
- Heather Bergman committed to ask Ferris Frost to revise the Industrial Land Uses paper and offer her the help of Larry Patterson and Bob Miner.

Fountain Creek Vision Task Force Consensus Committee September 21, 2007 Final Meeting Summary

Attending

Tom Autobee, Carol Baker, Gary Barber, Mary Barber, Sharon Brown, Ron Enserro, Kristin Flannery, Ferris Frost, Jane Green, Jeri Howell, Juniper Katz, Irene Kornelly, Carole Lange, Bruce McCormick, Bob Miner, Heather Maio, Steve Miller, Rich Muzzy, Larry Patterson, Jane Rawlings, Sandy Rayl, Ken Sampley, Kevin Shanks, Larry Small, Ross Vincent, Jay Winner, Chris Woodka, Niki Koszalka, and Heather Bergman

Action Items

Heather Bergman	Ask Charles Wilson to come to a meeting, in person or on the telephone, once the revised recommendations are released.
Heather Bergman	Add a discussion of participation and a review of the protocols to the agenda for the next Consensus Committee agenda.

New and Pressing Issues in the Watershed

Colorado Water Conservation Board (CWCB) Grant

- ❖ The CWCB asked the Fountain Creek Vision Task Force for more clarity in the grant application. The Task Force submitted a letter, further explaining the grant proposal.
- ❖ The Task Force will be required to quantify consumptive and non-consumptive uses of water in the watershed, establish the status of existing plans and projects for consumptive and non-consumptive uses, and propose potential projects. There is existing data to quantify consumptive and non-consumptive uses.

319 Grant Proposal

- ❖ The goals for the Section 319 grant proposal to the Colorado Department of Public Health and Environment are water quality improvements in the watershed through reduction of sediment and E. coli and the use of the Streamside Systems sediment removal technology.
- ❖ Approximately \$259,000 from the Lower Arkansas Basin Roundtable would support the Streamside System hardware and \$300,000 from the 319 grant would support the stream and sediment sampling. This money would also support the research of best management practices (BMP) for sediment and E. coli reduction.
- ❖ The 319 grant needs a 40% match, which can be in-kind.

Report on the Watershed Tour

The watershed tour was a great success. There were presentations on and off the bus by speakers from most of the major entities involved in the Task Force. The most consistent feedback was that tours should occur more often.

State Fair

The survey given at the Fountain Creek Vision Task Force booth had 420 responses. Overall, the response was supportive though there was some frustration with existing problems.

Fountain Creek Master Corridor Plan Update

THK will have a contract for the Fountain Creek Master Corridor Plan by the week of September 24, 2007. Carol Baker, Jay Winner, Kevin Shanks, and Heather Bergman will sit down once contract is signed and work on where the intersection of the two groups will occur.

Technical Advisory Committee (TAC) Meeting and Recommendations from the Army Corps of Engineers (Army Corps) Study Review

- ❖ There was a discussion of the project specific recommendations, general recommendations, and the expectations of the Army Corps. The recommendations are preliminary and no final decisions have been made. The TAC requested additional data on the recommendations including feasibility, rationale, and the likelihood of funding.
- ❖ The Army Corps is looking for project specific input from the cities and counties. They would like this information by the end of September. The Army Corps would like to wait for city and county input before doing any draft changes so there is only one revision. There will be public meetings to review the draft with the public.
- ❖ A few members of the Consensus Committee expressed concern that it is not clear what the recommendations are going to accomplish. The recommendations focus on the upper reaches of Fountain Creek, and it is not clear to some what the impacts of the projects will be on the watershed as a whole. The Consensus Committee also found recreation and water rights to be missing from the Army Corps recommendations.
- ❖ Heather Bergman will ask Charles Wilson to come to a meeting in person or by telephone to explain the updated recommendations once released.

Update on the Peak to Prairie grant proposal to Great Outdoors Colorado

Colorado Open Lands submitted a grant proposal for \$7.4 million. December 2007 is the date for the GOCO funding decision.

Next Full Task Force Meeting

- ❖ Rescheduling of the Task Force meeting on September 27, 2007 is necessary.
- ❖ The Consensus Committee agreed that it is best to have a meeting in each community.
- ❖ The Consensus Committee wants to use the upcoming Task Force meeting to catch the members up with where the Fountain Creek Vision Task Force is, introduce the Top Ten, and spend a shorter amount of time with maps having the Front Range Trail as the focal point.
- ❖ The Consensus Committee also agreed to pay for better advertising for the Task Force meeting.
- ❖ Ross Vincent and Carole Lange will work on a meeting space in Pueblo.
- ❖ Walter Lawson will work on a meeting place in Fountain.
- ❖ The next Task Force meetings are October 22, 2007 from 6:00-9:00 pm in Pueblo and October 23, 2007 from 6:00-9:00 pm in Fountain.

**Fountain Creek Vision Task Force
Consensus Committee
April 25, 2008
Draft Meeting Summary**

Attendance

Tom Autobee, Gary Barber, Mary Barber, Carol Baker, Sharon Brown, Perry Cabot, Jeff Chostner, Jerry Cordova, Dennis Darrow, Ferris Frost, Dwight Gardner, Jane Green, Merle Grimes, Dan Henrichs, Dennis Hisey, Jim Houk, Juniper Katz, Loretta Kennedy, Carole Lange, Dennis Maroney, Bruce McCormick, Steve Miller, Ron Mitchell, Margaret Montano, Rich Muzzy, Annie Oatman-Gardner, Vera Ortegon, Sal Pace, Jane Rhodes, Debbie Rose, Kevin Shanks, Larry Small, Casey Swanson, Ross Vincent, Niki Koszalka, and Heather Bergman

New and Pressing Issues in the Watershed

- The Raptor Center gave an award for environmental leadership to Margaret Montano.
- The Fountain Creek Corridor Master Plan (FCCMP) team is giving a presentation to the Water and Land Use/Environment Working Groups 1:30 p.m. - 3:30 p.m. on May 6th. They are also hosting an open house for landowners at 6:30 p.m. on May 28th.
- David Struthers and Richard Lawrence attended this month's Funding Options and Project Implementation Working Group to announce the creation of the Fountain Creek Foundation (FCF), which will work to garner funds for education and outreach projects on Fountain Creek. David and Richard both have ties to the area and hope to work with the Task Force as efforts move ahead.

Demonstration Projects in the Fountain Creek Corridor Master Plan (Kevin Shanks and Merle Grimes)

- The goals for the FCCMP are to:
 - o Improve watershed health by reducing erosion, sedimentation, and flooding as well as improving water quality;
 - o Create stable riparian and wetland ecosystems to attract and support native wildlife and vegetation;
 - o Sustain productive agricultural lands along corridor;
 - o Lay-out trail from Colorado Springs to Pueblo with recreational and educational opportunities; and
 - o Gain public and private support through partnerships to facilitate implementation and future funding.
- The FCCMP will have demonstration projects to show people what can be done on the Creek. Urban Drainage took this approach and had great success. Demonstration projects are considered low-hanging fruit. The FCCMP will look for easy partnerships and opportunities. The partners will also have to be committed to the goals as well as be in the position to bring some money or resources to the project.
- **Demonstration Project: The Environmental Stewardship Center**
 - o The Environmental Stewardship Center will be in Pueblo County and will represent man's interrelationship with the Creek including cultural, historical issues, and future development. A number of wetlands will be

created to show the opportunities for water quality improvements, flood capacity issues, and wildlife habitat. One goal is to educate people as to what makes Fountain Creek great. The vision is for people to have both a physical and electronic portal to the Creek. Small towers will be erected at tree level height allowing people to see the oxbow area, the beaver village, and the old Pinion Bridge. There is the opportunity to showcase a bank stabilization demonstration.

- **Demonstration Project: Eco-Fit Park**

- Eco-Fit Park would take the concepts of the Environmental Stewardship Center and carry them through the watershed with several satellite parks. There will be camera views available online of the Environmental Stewardship Center and the Creek itself. The development will be near the Vineyards Golf Course. Any experience is enhanced if it is a hands-on project, even more so if it is a family project. Different aspects of the Eco-Fit Park include:

- Play areas and hands-on education;
- Back water channel with wetlands;
- Towers will be connected to the internet; and
- Trails.

Questions and Answers

Is the land in the Pueblo Springs Ranch area getting donated?

The landowner is donating it, which also provides the FCCMP with a tax benefit.

The area mentioned at Pueblo Springs Ranch and the old Pinion Bridge borders on a private landowner's property. Why have landowners not been consulted?

FCCMP has every intention of sitting down with the landowners and discussing their needs. Some funding opportunities came about, and THK decided to take on demonstration projects even though it seems other steps, like consulting with landowners, should have been taken previously.

These are interesting projects, but is it possible to see more projects to support the people with the most need, such as those on Pueblo's East Side?

The THK team is discussing work in Pueblo by the confluence. Eco-Fit is a perfect fit for Pueblo and would be a good way to encourage economic revitalization and urban redevelopment. It is a high priority to get something going in Pueblo.

Presentation of Opportunities and Constraints Maps (Jim Houk)

- The methodology going forward to create a vision maps is based on the methodology used by the Lower Arkansas Basin Round Table. The Task Force maps will build on the existing data that has emerged from the watershed study, city/county participation, and the work of other entities in the watershed.
- These maps aggregate positive and negative attributes in the watershed onto two maps, one showing threats or constraints and one showing positive attributes or opportunities. There is another map that shows the estimated net percent of

impervious coverage change over time, although there is some question as to when the highest levels of anticipated build-out and imperviousness will be achieved.

- The Working Groups will discuss and review these maps at their next meeting, and a small group of Working Group participants will sit down with Jim Houk to further refine and improve the maps.
- The next step will be to create a vision map for the Task Force. This step is contingent on completion of the goals and strategies in the strategic plan. Once these are complete, Jim can begin to work with participants in the Working Group and on the Consensus Committee to prepare a map of the Task Force vision.
- All of the attributes on the maps are weighted equally. The Consensus Committee agreed to complete an online survey to indicate which, if any, attributes might be more important than the others. This information will be shared with the team from the Working Groups who will be meeting with Jim to refine the maps. The Consensus Committee will receive an update on the maps at their May meeting.

Group Discussion of Current Conditions, Goals, and Strategies

The Consensus Committee reviewed the current conditions papers, goals, and strategies that have been prepared by the Working Groups. They provided the following feedback on these documents. The Working Groups will revise these documents at their next meeting and forward improved documents to the Consensus Committee in May.

Flood Control

Current Conditions Paper AND Goals and Strategies

- The goals and strategies were well done .
- One participant voiced concerns over reducing runoff and how it relates to junior water rights elsewhere in the system. This issue needs to be addressed in the paper and in the strategies. Some participants feel that water rights are personal property rights and that stormwater runoff (which triggers junior water rights) is a right that cannot be infringed. Others feel that if the pre- and post-development hydrograph match, there is no disruption to water rights.
- At the next TAC (Technical Advisory Committee) meeting, there will be a discussion of a feasibility study of a dam on Fountain Creek. The TAC will report back to the group. Any developments from this meeting should be included in the flooding report—perhaps in the current conditions paper AND in the goals and strategies.

Water Quality

Current Conditions Paper

- Further information describing what has happened since 1977 on Fountain Creek needs to be added.
- The Consensus Committee requested the insertion of references to dates concerning the 303(d)—which year's list is being referenced in the document?

Goals and Strategies

- The goals and strategies were well written.

- The paper should include one or more pilot projects to test sediment and bedload sediment and to prove the efficiency of the wetlands to remove pollutants. (Wetlands pilot project could be in wetlands paper instead.)
- There needs to be a complete understanding of where E. coli is coming from. Do the strategies address this?
- In terms of missing data, there needs to be a strategy for compiling available data and making it publicly accessible.
- The last strategy might be better as the second strategy.

Land Use Planning

Current Conditions Paper

- The Consensus Committee felt the paper was good.
- It is important the footnotes are not just comments from the working groups. They also need to contain permit information on the technical sources of information and data.
- State demographer's information needs to be included as well and will be available in mid June.
- There is more information available today on the Pueblo Springs Ranch—this section should be updated.
- The anticipated water needs do not jive with the numbers for Fountain.

Goals and Strategies

- The Consensus Committee requested rephrasing of the first two strategies. They were unclear what they meant. The approaches mean low-impact development (LID), best management practices (BMPs), and evaluation of policy review. LID needs to be further investigated to see if it will interfere with water rights downstream.
- Perhaps strategies 1, 2, 5, and 8 could be combined.

Recreation

Current Conditions Paper

- The current conditions paper was well written.
- Recreational opportunities in the north of the Pueblo need to be included.

Goals and Strategies

- There is a strong community/group of people in bird watching with much influence. A specific location for future bird watching plans need to be identified.
- What about non-motorized recreation including bikes, horses, and canoeing?
- The zebra mussel issue needs inclusion in the goals and strategies.
- Strategy #1 needs to be inclusive only of the Fountain Creek watershed, not Wyoming to New Mexico.

Wildlife

Current Conditions Paper

The paper should report on the positive impacts to wildlife of development (such as continuous flows in Fountain Creek).

Goals and Strategies

None

Wetlands

Current Conditions Paper

- The group felt the document as a whole could use some wordsmithing.
- The group requested a discussion around the relationship of creating wetlands and water rights.

Goals and Strategies

- Add the desire to establish a wetlands pilot project to show the different ways they can be helpful.
- The difference in goals and strategies need to be discussed and revised.
- It would be good to have a strategy on wetlands banking.

Agriculture

Current Conditions Paper

- Clarify the relationship between water rights and conservation efforts.
- Clarify the relationship between Southern Delivery System (SDS) and water rights.
- Increased efficiencies are mentioned and a few pages later the creation of habitat is mentioned. Both cannot occur. Maximizing efficiency is a tradeoff to enjoying the wetlands.
- The language stating “reducing the consumptive use” needs to be clarified.

Goals and Strategies

- Agriculture viability is not an appropriate goal for this group.
- Increasing the pool of agriculture labor is also not appropriate.
- The preservation and protection of agriculture land and agriculture water is great.

Municipal Water

Current Conditions Paper

- The Consensus Committee felt the paper was very well written.
- There are many numbers in the document that raised some questions and need to be clarified.

Goals and Strategies

On strategy #5, change language from “limit water demands” to “lower water demands.”

Outreach

Current Conditions Paper

The Outreach Committee is working on current conditions and will have it completed before the next Consensus Committee meeting.

Goals and Strategies

- Prepare strategies for public engagement on the actual strategic plan prepared by the Fountain Creek Vision Task Force

Next Steps

At the May meeting, the Consensus Committee discuss water rights and how they are or are not affected by the goals and strategies outlined by the Working Groups. Gary Barber will invite Steve Witte from the Colorado Division of Water Resources to join in the discussion.

Fountain Creek Vision Task Force Consensus Committee September 5, 2008 Final Meeting Summary

Attending

Tom Autobee, Gary Barber, Mary Barber, Jeff Chostner, Sallie Clark, John Cordova, Jane Green, Dan Henrichs, Denis Hisey, Juniper Katz, Loretta Kennedy, Bruce McCormick, Gene Michael, Bob Miner, Rich Muzzy, Annie Oatman-Gardner, Vera Ortegon, Larry Patterson, Joe Rall, Tom Ready, Jane Rhodes, Larry Small, Ross Vincent, Niki Koszalka, and Heather Bergman

New and Pressing Issues in the Watershed

- The group discussed the Water Quality Control Division (WQCD) meeting in July and the associated perspectives and actions of Task Force members.
 - The goal of the July hearing was to determine based on current water quality conditions in Fountain Creek if the current “use protected” status for several stream segments in the Fountain Creek Watershed should remain or the stricter “reviewable” status should be applied instead. This change would require the CDPHE to review all future projects involving point sources of pollution. Ultimately, the CDPHE-Water Quality Control Commission (WQCC) decided to remove the Use Protected Status for stream segments 2a, 2b, 4 and 6.
 - Several entities that are represented on the Consensus Committee opposed this change. These entities cited several reasons for their respective opposition to this change:
 - WQCD data were flawed and were therefore not an acceptable basis for making such an important decision.
 - Current data indicate that non-point sources are the primary cause of pollution in Fountain Creek, so additional reviews of point sources will not result in improved water quality in the Creek
 - This change is unnecessary and costly and will divert money from projects that could improve conditions in and along the Creek.

- Other entities on the Consensus Committee supported this change because it would allow the public to review any new discharges into Fountain Creek.
- The facilitator discussed with the group that members of the Consensus Committee were surprised to learn that other members of the Committee were involved in this hearing. Some members of the Consensus Committee have expressed concern about this issue and how it might have negative consequences for the cohesiveness of the Task Force and the success of its efforts going forward.
- The facilitator reminded the members of the Consensus Committee that keeping one another informed about their actions related to Fountain Creek is important and can increase trust and transparency. She urged them to consider notifying one another in the future whenever they are taking any actions that could be construed as affecting water quality in Fountain Creek.

Review of the Draft Intergovernmental Agreement (IGA)

- The IGA outlines the anticipated governance structure for a funding and management entity for Fountain Creek and is a bridge to legislation. The document, initially, is a two-party agreement between El Paso County and Pueblo County. Once the IGA is signed, the Governing Board of the entity would be one representative each from Pueblo County and El Paso County, as well as one citizen member. Later, once the entity was created by legislation (see below), the Board would be one member each from:
 - o El Paso County
 - o City of Colorado Springs
 - o City of Fountain
 - o Pueblo County
 - o City of Pueblo
 - o Lower Arkansas Water Conservation District (LAVWCD)
 - o Citizen Advisory Group
 - o Pueblo citizenry
 - o El Paso County small municipalities or general citizenry

- The entity would also include:
 - A technical advisory committee (TAC) that will determine where money is spent; the model for this approach is the Denver Urban Drainage and Flood Control District (UDFCD), which pays professional engineers or other professionals to consult with the Board
 - A Citizen Advisory Group (CAG), which would be based on the membership of the Consensus Committee but could be expanded to include other entities in the watershed
- Legislation will need to be submitted to the State House of Representatives if a legal entity for Fountain Creek is to be created. The legislation will be based on the special districts legislation that allowed for the creation of UDFCD, Title 32: Special Districts. A new “Part 9” would need to be added to this title to make it specific to Fountain Creek.

Discussion

- Some participants questioned the appropriateness of LAVWCD having a seat on the Board and suggested that perhaps it would be better to have one of the ditch associations hold that seat instead. Others felt it is best to leave the Board configuration as is. It was agreed that individuals with this concern should sit down with the team who drafted the IGA to discuss options for addressing it. Heather will try to coordinate a meeting.
- The Consensus Committee agreed that if a solution cannot be found to address this disagreement, then the draft IGA should be put before the public as is, with a note indicating that the LAVWCD seat is under discussion. This will give the public an opportunity weigh in on the issue as well.
- A participant felt that land protection should included in the IGA “whereas” section. Juniper Katz will work with Gary Barber to find agreeable language.

Questions/Answers

Would the TAC have a floating membership?

The idea of the TAC was taken from UDFCD. The Board would appoint three members of the TAC, who would then determine what additional assistance will be necessary.

Where are the professional committee members coming from?

There would be a single staff person as the engineer in charge, and others would hired on a contractual basis.

On the initial governing board, there is one County Commissioner from El Paso County, one from Pueblo County, and one citizen. Where is City of Pueblo?

Per previous agreements by the Consensus Committee, the counties would be the initial signatories. Other entities, including the City of Pueblo, could join the Board by signing the agreement.

Should the TAC and the CAG include the stormwater enterprises?

Both the TAC and the CAG could include the stormwater enterprises. Adding one or two utilities opens the door to having others join the TAC and CAG. This was a hard line to draw while drafting the IGA. Perhaps the stormwater enterprises could contribute via an

advisory board that would consult with the TAC or CAG. It is also important to limit the TAC and CAG to small enough number to remain manageable.

Will the entity derive funding from taxation?

Ideally, yes. The goal is to get a tax passed by the voters of El Paso and Pueblo Counties, all of whom are viewed as beneficiaries of the improvements to Fountain Creek.

What will the interaction between the TAC and the CAG look like?

The details of this have not yet been determined. This will be discussed at future meetings of the Funding Options Working Group.

How will the IGA be enforced?

The IGA will be enforced through incentives rather than punishments, which is the approach taken by UDFCD.

What if voters vote down the tax?

There will have to be additional funding options. To avoid this, it is important that the FCVTG is in agreement and presents a united front to both communities and builds on each county's strengths and weaknesses.

Review of the Strategic Plan

The working groups have completed their revisions on the issue chapters for the strategic plan and have submitted for review by the Consensus Committee.

Flooding Paper

- Jane Rhodes will work with Dennis Maroney and Ken Sampley to ensure that sufficient information is provided on the history of flooding in the watershed.
- After any additions on history, this paper is ready to be presented to the public.

Water Quality Paper

- This paper is ready to be presented to the public.

Land Use

- This paper is ready to be presented to the public.

Municipal Water

- Carol Baker and Gary Barber will work on creating a few more objectives to address the municipal water supply gap.

Recreation

- The Fountain Creek Corridor Master Plan is planning several new parks in the watershed. These parks are not mentioned in the recreation document. Juniper Katz and Carol Baker will craft language about the parks.
- It would be good to add information about any anticipated projects in Pueblo south of Highway 47. Margaret Montano will draft language to add to the plan.
- After the above changes, this paper is ready to be presented to the public.

Wetlands

- Juniper Katz will edit the wetlands paper to make it more understandable by lay readers.
- Once that is done, this paper is ready to be presented to the public.

Wildlife

- The name of the biologist from the Colorado Department of Wildlife needs to be checked. Otherwise, this paper is ready to be presented to the public.

Agriculture

- There was substantial discussion about what is appropriate to include in the plan regarding agriculture. The group did want to give the perception of prescribing actions to landowners, nor did it want to engage on topics outside participants' expertise, like labor supply and farmer/rancher retention programs.
- Ultimately, the Committee agreed to keep the agriculture goals in the strategic plan (because they are an important statement about the group's interest in maintaining agriculture in the watershed), but to not list strategies or action items for this issue.
- Annie Oatman-Gardner will work on a paragraph for the introduction portion of the agriculture paper to explain this difference to the reader.

Outreach

- This paper is ready to be presented to the public.

Other Changes Needed in Papers

- All "responsible entities" need to be members of the Consensus Committee. Non-members can be listed as partners in implementation.
- All 2008 dates in action plans will be changed to 2009.
- Heather will add language to the beginning of the paper to summarize the plan for implementation if the funding entity is not created and/or is not funded by tax money.

**Fountain Creek Vision Task Force
Consensus Committee
December 5, 2008
Meeting Summary**

Attending

Tom Autobee, Carol Baker, Gary Barber, Mary Barber, Stephanie Carter, Jeff Chostner, Sallie Clark, Scott Cowan, Dennis Darrow, Cole Emmons, Ferris Frost, Dan Henrichs, Dennis Hisey, Juniper Katz, Loretta Kennedy, Irene Kornelly, Carole Lange, Dennis Maroney, Bruce McCormick, Cam McNair, Gene Michael, Rex Miller, Bob Miner, Rich Muzzy, Annie Oatman-Gardner, Vera Ortegón, Larry Patterson, Gary Rapp, Jane Rawlings, Tom Ready, Ken Sampley, Greg Severance, Mark Shea, Larry Small, Mary

Lou Smith, Barbara Vidmar, Ross Vincent, Jay Winner, Chris Woodka, Niki Koszalka, and Heather Bergman

New and Pressing Issues in the Watershed

- The Environmental Protection Agency (EPA) is going to publish a stormwater handbook. It will have the 303(d) list and recommendations on best management practices to help with daily load numbers.
- The Fountain Creek Corridor Master Plan has two new demonstration projects. One at Confluence Park in Pueblo and the other a three-mile stretch in Clear Springs Ranch.
- Colorado Department of Transportation (CDOT) and THK finished a project with Trout Unlimited on Highway 24 west.
- Gary Barber, Carol Baker, and Bob Miner met with the *Tribune* to raise awareness about the Fountain Creek Vision Task Force (FCVTF) for the citizens northwest El Paso County.

Update on the IGA/Next Steps

- Several months ago, the Consensus Committee met in Pueblo and agreed to pursue the Inter-Governmental Agreement (IGA) as a precursor to the creation of the Fountain Creek Watershed, Flood Control, and Greenway District (District).
- The Funding Options Working Group (FOWG) was created in July 2007 and took a field trip to visit Denver Urban Drainage.
- The Consensus Committee agreed to create an IGA with the hope of establishing a governing board and to capture the expertise of the FCVTF.
- The District will have a Technical Advisory Council (TAC) and a Citizens Advisory Group (CAG). The two signing counties and the other signatories will create the governing board with a TAC and CAG. El Paso County and Pueblo County are scheduled to review the document by December 16, 2008 for approval.
- Gary Barber, Jeff Chostner, and Sallie Clark will help with presentations to the counties and other potential signatories.
- In order to ask for tax dollars, the District needs to be statutorily created.
- A number of FCVTF members were tasked with planning for the CAG. They prepared a slate of nominees to deliver to the governing board. The list of nominees are possible choices, not a definite list of actual members. A member of the FCVTF suggested another member of the CAG could be an educator. The group agreed to the list but will not move forward until the IGA is signed.
- The northern region of El Paso County will be included in the board with the other small municipalities.

Review of Comments/Suggestions from November Public Meetings

- Public meetings were held in Pueblo and Colorado Springs to share the draft strategic plan with the public and receive input. Some people shared their thoughts about the plan on written worksheets, others responded to an online survey, and some spoke during the public meetings.
- The Consensus Committee discussed several suggested changes to the strategic plan, and recommended the following actions:

- o Enforcement powers of the District: Remain vague in the plan, as this may change over time.
- o Effects of imported water on sediment load: Ask working groups to review.
- o Erosion mitigation: Ask working groups to review.
- o Non-tax funding options for District to pursue: Indicate that District can take grant funds as well.
- o District prioritization of projects: Governing board will address.
- o Municipal water supply gap: Ask working groups to review.
- o Role of the US Forest Service in projects and watershed management: Do not change plan.
- o Specific linkages between FCVTF plan and projects proposed in the Corps Study: Rich Muzzy will write language for insertion into the plan.
- o Top 10 projects (prioritized list for the District to do first): Let the Governing Board address this.
- o Historical perspective through news clippings: CAG could address this after it is formed.
- o Role of the District as an advocate for improved watershed management: Heather Bergman will add language to this effect to the plan.
- o Include the IGA in the plan: If all parties sign the IGA before December 31, 2008, include the IGA as an appendix. If not, leave it out of the plan.
- o Information about USGS water quality tracking: Include in the water quality appendix. USGS website tracks real time: Include www.dwr.state.co.us. USGS
- o Role of federal and state agencies in the watershed: Do not change the plan.
- o Hydrogen sulfide: Do not change the plan.
- o Streamflow averages: Ask working groups to address.
- o Alternatives to avoid potential negative impacts to Fountain Creek: Ask working groups to address.

Finalizing and Publishing the Plan

- The Arkansas Basin Round Table provided funding for the Vision Task Force. We will need to present our findings to them to complete this effort. The Consensus Committee agreed that Gary Barber should work to have the presentation to the Round Table in February or March.
- The final strategic plan and all the appendices will be posted on the website as soon as the above changes are made.
- Heather Bergman will continue to store electronic files for the Task Force until the District is able to store them.
- Several participants indicated that hard copies should be available at libraries in Pueblo and Colorado Springs.
- Juniper Katz will work to have an executive summary printed in a short and colorful document.

Interim Plan for Meeting Until the District Exists

- The group will continue working on getting the IGA signed.
- The governing board will hopefully begin meeting in January 2009.

- The Consensus Committee has completed its work and will no longer meet.
- Heather Bergman will continue to send email updates to all of the Task Force (including the Consensus Committee) until the governing board is able to take over that function.

APPENDIX F

Fountain Creek Vision Task Force Water Quality Working Group and Stormwater Management Group Meeting Summaries

**Fountain Creek Vision Task Force
Water Quality Working Group and Stormwater Management Group
Meeting Summaries**

**Fountain Creek Vision Task Force
Water Quality Working Group
February 23, 2007
Final Meeting Summary**

Attendance

Carlos de Aguilar, Carol Baker, Dan Baughn, Scott Cowan, Dennis Darrow, Mike Fink, Doug Fitzgerald, Ferris Frost, Mark Glidden, Jane Green, Terry Hart, Kim Headley, Dan Henrichs, Nancy Keller, Carole Lange, Walt Lawson, Heather Maio, Dennis Maroney, Mike McCarthy, Gene Michael, Bob Miner, Margaret Mora, Jim Munch, Harold Noonan, Jerry Pacheco, Larry Patterson, Julie Pearson, Gary Rapp, Sandy Rayl, Chip Rice, Keith Riley, Lisa Ross, Don Stoeckel (via telephone), Brian Vanden Heuvel, Wayne Vanderschuere, Alan Ward, Pat Wells, Tim Williams, Jay Winner, Chris Woodka, Heather Bergman, and Helen Littrell Smith

Action Items

Don Stoeckel	See what can be extracted out of today's presentation and get back to the group about distributing as much of it as possible.
Scott Cowan	Synthesize the data from today's presentations to make it more accessible to the public, and try to have something rough to share in the next month.
Carol Baker and Carole Lange	Draft together language on the top three issues for this group for the Outreach group, send it to Heather, and then Heather will circulate it to the group for review.
Rich Muzzy	Check to see if there is a link from the Watershed website to the USGS webpage that has the sampling data on it. If not, create one.
Keith Riley, Brian Vanden Heuvel, and Scott Cowan	Send materials from your presentation to Heather or Rich Muzzy for posting. Please include all handouts and study protocols, as well as your slides.
Colorado Springs Utilities	Revise the confusing language on handout about effluent originating at CSU facilities.
Keystone	Coordinate with presenters to get presentations posted on the website.

Meeting Objectives

- Hear presentations about current data and studies regarding e. coli in Fountain Creek
- Ask questions as needed to gain knowledge needed to move forward with group discussion about e. coli
- Begin to identify a goal for e. coli in Fountain Creek (if time permits)

Panel Presentations: E. coli Data and Studies

Several individuals were invited to present information on current data and studies regarding e.coli on Fountain Creek. The purpose of these presentations was to give the group a sense of what is being done on the Creek and to provide an introduction to the issues around e. coli.

Presentation 1: Don Stoeckel, U.S. Geological Survey (via telephone)

Note: Due to USGS rules, this presentation will not be made available on the website or distributed via email. Keystone has tried to capture the key elements of this technical presentation to the best of our ability. Questions should be directed to USGS: David Mau, 719-544-7155.

- There are two methods for measuring e. coli: library independent and library dependent; library independent has several advantages and is our preferred method.
- Basic concept of source tracking:
 - Intestinal bacteria of animal groups are expected to be different because of:
 - o Basic habitat (body temperature, food supply, digestive system)
 - o Natural selection (direct competition, pathogenicity factors, prior exposure to agents)
 - The process:
 - o Choose source-specific targets in the feces of local source groups
 - o Characterize 'reference material' (manure and sewage) from local sources
 - o Test water for fecal contamination
 - o Associate contamination with sources
- Library-dependent method
 - o Distill gel data into a plot graph to identify source of E. coli
 - o Method becomes problematic when you have a lot of isolates; the circles on the plot start to overlap and lead to ambiguity
 - o Method benefit is the ability to link isolates to regulatory indicators
- Library-independent method
 - o Looks for presence or absence of a molecular marker
 - o Process: extract DNA, probe for marker, and look for human, cow, etc. markers
 - o Method is more accurate, but can't determine what percentage of what source is there—just that it is there
- Library-dependent method
 - o Susceptible to inaccurate isolate-level classifications
 - o Application of a minimum-detectable percentage can enhance detection accuracy at the sample level
- Library-independent method
 - o Currently semi-quantitative
 - o Tends toward high sample level accuracy
 - o Loosely related to fecal indicator bacteria concentration
- How to apply these tools to a Total Maximum Daily Limit (TMDL) and related efforts
 - o Evaluate whether marker concentrations increase at the same rates as indicator-bacteria densities
 - o Test whether sources contribute to contaminated waterways (e.g., sewer line leaks, manure lagoon seepage)
 - o May ultimately contribute to quantitative microbial risk assessment models
- Not a silver bullet; still have to collect available data.

- Trends in E. coli data:
 - Densities in Fountain and Monument Creeks tend to exceed the 126 CFU/100mL criterion
 - Mostly in warm-weather months, infrequently in cold-weather months
 - During high flows
 - Upstream from Colorado Springs
 - Over the entire reach from Colorado Springs to Pueblo
- Study objective is to evaluate state-of-the-art Microbial Source Tracking (MST) data fed into a TMDL-style evaluation
- These tools are in development; they are experimental in all applications and do not represent off-the-shelf technologies
- The investigation requires extensive quality control for interpretation
- Interpretation also requires collection of supporting data (population size, precipitation, and stream flow, among others)
- EXAMPLE: Results from testing done in another watershed (NOT IN FOUNTAIN CREEK WATERSHED)
 - Upstream from waste treatment site, level was 15 CFU/100mL; downstream from waste treatment site, level was 570 CFU/100mL. Unclear if settling pond is significantly contributing to these levels.
 - In one day's work, found convincing evidence that human source of fecal contamination was present because they had access to the waste settling pond.
 - This method is more efficient than library-dependent method, in time and money.
- Study was funded by The Pueblo Area Council of Governments (PACOG)

Presentation 2: Dr. Brian Vanden Heuvel, Colorado State University, Pueblo

Note: We expect this presentation to be posted on the Watershed Study website. Questions should be directed to Brian Vanden Heuvel at 719-549-2270.

- Study is being funded by the Lower Arkansas Valley Water Conservancy District
- Study used library-independent methods for same reason as mentioned in first presentation (cost, time, unknowns)
- Sites include several spots on Monument Creek, Upper Fountain Creek, and Lower Fountain Creek
- There is a gap in the data because there is a 12-mile stretch of Fountain Creek where no public access is available.
- Methods
 - Sampling twice a month at all sites
 - Quantification of e. coli
 - Identification of species-specific markers
 - Human and ruminant (not human)
 - Cow, pig, dog, horse (specific ruminants)
- This is currently slated as a three-year study

Presentation 3: Scott Cowan, Pueblo City-County Health Department

Note: We expect this presentation to be posted on the Watershed Study website. Questions should be directed to Scott Cowan, 719-583-4341.

- This study is funded by the Pueblo City-County Health Department (PCCHD)

- E. coli monitoring program specifically looking at the level of E. coli in the Creek
- Driving factors of study: need to address community health concerns originating with sewage spills in 2005; main stem of Fountain Creek above Highway 47 is listed on the 303(d) report for E. coli; bacterial levels in segment of Fountain passing through Pueblo
- Health risks from water-borne pathogens include gastrointestinal illness and dermatitis
- Transmission usually occurs through ingestion or direct contact with open wounds
- Centers for Disease Control and Prevention report that from 2001-2004, most E. coli outbreaks occurred in treated water (public fountains, swimming pools, etc.); Colorado only had 2 outbreaks during that time
- Pathogens vs. indicators
 - Individual tests are necessary for each pathogen
 - A single test can be used to determine the relative risk of infection of multiple indicators
- E. coli is considered by the EPA as the best indicator species for water quality (associated with fecal contamination; EPA has a standard of 126 CFU/100mL for recreational water use, which translates to 8 in 1000 people becoming ill; emerging issue—may reproduce in sediments)
- The study is sampling three sites on the Arkansas River and four sites on Fountain Creek
- E. coli levels in Fountain Creek and Arkansas River from 2005-2007
 - Saw a spike in July 2005; there were large storm events in the area, a spill occurred a month before; it is likely that other factors were contributing
 - Data suggests that water flow, water temperature, and water volume impact E. coli count. Warmer weather increases count.
- Preliminary conclusions
 - Trends suggest that the greatest potential health risks will occur in summer months
 - Counts may be linked to water temperature, flow regimes, and seasonal input of stormwater runoff
 - Highest risk is to people with weakened immune systems (young children, elderly)
 - There is no health risk to people using the trails or walking along the creek (must ingest water or expose wound to water)
- PCCHD actions
 - Standing public advisory to raise awareness of public health concerns on Fountain Creek
 - Data from study is posted on a website for public access:
 - www.pueblohealthdept.org
 - Link to surface water quality program under “Featured Topics”
 - Data is provided weekly via email to interested parties; anyone interested in receiving this data should give their contact information to Scott (719-583-4341)
 - PCCHD will continue to monitor for E. coli throughout 2007

Presentation 4: Keith Riley, Colorado Springs Utilities (CSU)

Note: We expect this presentation to be posted on the Watershed Study website. Questions should be directed to Keith Riley at (719) 668-8677.

- CSU paid for the study
- Data has been gathered by CSU since 7/2005

- Looked at ambient concentrations of bacteria in Fountain Creek, which does not include microbial source tracking
- Sampling done on monthly basis; shows the same trends as the studies performed by the U.S. Geological Survey (USGS) and PCCHD
 - Lower levels of E. coli in winter, concentrations rise in summer with rain events and warmer temps
- Data
 - One next step is to compare E. coli levels to the flows of the creek at the time to see how they relate
 - Planned sampling programs for the watershed

Questions/Discussion with Panel

- Can we get a redacted version of the USGS presentation?
 - Don Stoeckel agreed to see what can be extracted out of the presentation and get back to the group.
- What were the quantity and location of the samples in Fountain Creek in the USGS presentation?
 - That information is on the USGS web page via the Watershed Study website (www.fountain-crk.org).
- Where is the site on Fountain Creek in Pueblo?
 - It is a USGS gauge station, roughly near Highway 50
- With all the studies being done, could you report Creek temperatures and flow rates?
 - That information is already a part of the studies being done; flow rates are not available at every test site, only at USGS gauge sites.
- As data is being produced and reported, will updates be posted on the website as well?
 - That is the aim; welcome help in tracking this from the group
- Regarding the difficulty in accessing a sampling site along the 12-mile stretch of Fountain Creek, could private landowners help us gain access?
 - Jane Green and Ferris Frost offered to help out; Jane Green will talk to Jane Rhodes about this issue, and Ferris will talk to Brian Vanden Heuvel)
- Regarding the fact that children are at greater risk, is there a specific age group that is at a higher risk than others?
 - Infants are most susceptible, and risk gradually tails off as children get older. Not aware of any specific age range related to risk.
- Results indicate spikes during storm events--has there been any work done to look at sub-watersheds and impervious area in watersheds to determine how much of a spike can be contributed to runoff?
 - USGS is working with Colorado Springs Engineering on a sampling program that includes 15 tributary sites.
- Is the purpose of the studies to identify sources, see what is there, and then move to fix it?
 - Yes, that is the idea. There is a partnership being formed to perform microbial source tracking to start working towards water quality improvement. Focusing on upper Fountain Creek because it's easier to identify contamination sources there.
 - Data will be compiled and analyzed in a USGS report that will come out at the end of fiscal year 2009 with incremental updates between now and then.
 - CSU-Pueblo is a three-year study and will be completed in 2009.

- o Colorado Springs Utilities study has no end date.
 - o The PCCHD study goes through the end of 2007.
- PCCHD funding for 2007 came from what source?
 - o ¼ from general fund, ½ from Supplemental Environmental Project (SEP) funds.
 - Need to identify both types of funding for 2008.
- Sampling seems regimented; is there any value to testing on an event-driven basis? I.e., major cloudburst or sewage spill, to see what impacts those events have compared to other collected data?
 - o Sewage sampling being performed by Colorado Springs Utilities is event-driven and is expected to continue; not triggered by weather patterns, though.
 - o The USGS study collects water-quality data during base flow and storm flow periods, and collects bacteria data at selected sites on a bi-weekly basis.
 - o PCCHD does have plans in place based on volumes, but they are not weather-driven. They test until a spike goes back to normal.
- Water improvement is a lifetime commitment; we are behind in knowledge because we didn't make monitoring a priority. These studies will raise new questions that need to be addressed. Water quality monitoring needs to be a regular part of the budgets of entities across the watershed.
- Is there a way to synthesize these studies and report them to the public periodically in lay terms?
 - o The Arkansas Roundtable is discussing just that; would be important not to duplicate that effort.
 - o March 15 is the goal to finalize a matrix to catalogue every study that has happened and will happen. The second phase will be to make the matrix interactive on USGS website: co.water.usgs.gov.
- Is there any discussion on going further than that and doing some kind of distribution process—say, a periodic “state of the Fountain” message?
 - o We are at the macro-level now; such a distribution is the duty of this task force.
- Scott Cowan agreed to work to synthesize the data from the presentations to make it more accessible to the public, and will aim to have something rough to share in the next month. The difficulty is in formatting the data from the different studies to look the same.
- The PCCHD website is aimed at the lay person and does show where the creek is exceeding the 126 CFU/100mL level.
- Are the presenters doing any internal communications to avoid duplication, and is there staggering going on?
 - o They do interact with each other even though they don't coordinate directly, but the measures do validate each other because independent studies are yielding the same results.
 - o If the public has suggestions on what they would like to see/how to sample, please send them to the respective study person.
- The studies' protocols will be posted on independent sites and the Fountain Creek website.
 - o It would be beneficial to get information charts showing Colorado Springs effluent E. coli levels correlating to E. coli in the creek. Monthly or daily flow percentages (effluent percentage of creek flow) would also be useful to help find solution

- opportunities later. This is also particularly important from the recreational use perspective because the warm weather months are when the public is using the creek.
- In general, in the winter effluent is 75% of creek flow.
 - Ft. Carson will share effluent data as well.
 - City of Pueblo has done studies that go back a number of years; if anyone would like to see that historical data, email Nancy Keller at nkeller@pueblo.us.
 - A participant stated concern about the graphs in the handout from Colorado Springs Utilities that make statements about whether flows originate from CSU plants. The participant suggested that this makes it appear that the statements are designed to convince people that Colorado Springs Utilities is not responsible for levels of E. coli.
 - A CSU representative responded that the statement is designed to say that the peaks on the graph do not seem to be contributable solely to the wastewater effluent; effluent is measured every day for fecal coliform.
 - Colorado Springs Utilities agreed to revisit and revise the language in that document. They will also address the 'bizarre events' that may occur to skew data (i.e., duck flock sitting around bend from sampling site).
 - Is there any opportunity to overlap these points and collect split samples on the same day to see if the labs and the sampling methods match up, to lend greater credibility to data?
 - CSU-Pueblo is interested in coordinating overlap; maybe split samples and share with other teams to test;
 - Splitting samples tests lab consistency, but not the sampling methodology consistency—testing together would test sampling methodology.
 - CSU and PCCHD agreed to coordinate one or two sampling events
 - The baseline is being studied by three different agencies. Is there a way to combine resources?
 - It's possible; there is a great model in the South Platte Coalition for Urban River Evaluation (SPCURE).
 - Colorado Springs stormwater has a contract with USGS that accomplishes this as well. Other entities would have to decide to contract with USGS.
 - As money becomes available, that is the time to approach how to do such a program.
 - Presenters agreed to continue to coordinate and work together to bring best data from each entity to lend further credibility to the data being presented.
 - Do we have redundancy? Is there a way to save public money and avoid redundancy?
 - Think redundancy is important to keeping the data clean and credible.
 - Right now we are establishing trust in the room, and redundancy might be able to be eliminated later on in the process after trust is established.

Goal Identification for E. coli

It was agreed that until more data are available, the group cannot tackle the E. coli issue in a productive way. Participants indicated an interest in learning more about urban runoff as it relates to water quality. Several reasons were provided:

- It could be expanded to a discussion on non-point source runoff, which includes urban runoff
- It has been determined that there are specific pollutants related to urban runoff in Fountain Creek; we ought to address the top of that list. We should start with general

studies that address what urban runoff tends to put into a watershed and then look for specific information in this area.

- This topic is very important and has both breadth and depth:
 - There are cities that currently capture storm runoff and treat it; it's worth talking about.
 - There is a lot of information out there already and best management practices that have been developed that we can leverage.
 - Would be interested in learning about what is currently taking place at the city and county level on this topic.
- An informative panel could include:
 - The Colorado Department of Public Health and Environment (CDPHE)
 - County stormwater and city stormwater groups from within the watershed (Pueblo, Fountain, Colorado Springs, and URS)—to provide the local information.
 - Someone from a non-point source group—consultants, engineers, etc. Bob Miner will investigate who might do that.
 - Chip Rice (El Paso County), Dennis Maroney (Pueblo), Heather Maio (PCCHD), and Lisa Ross (Colorado Springs) agreed to help set up the panel of experts.
- This working group needs to have a conversation about what its top three issues are for the outreach materials. Carol Baker and Carole Lange agreed to put a draft together, send it to Heather, and then Heather will circulate it to the group for review.

Next Steps

The next Water Quality Working Group meeting will be Friday, March 9 from 1-4 p.m. The panel on runoff and water quality will give presentations, followed by a group discussion.

Fountain Creek Vision Task Force Water Quality Working Group March 9, 2007 Final Meeting Summary

Attendance

Carol Baker, Dan Baughn, Dan Bare, Jeff Chostner, Scott Cowan, Matt Czahor, Barbara Dallemund, Dennis Darrow, Carlos DeAguilar, Ferris Frost, Mark Glidden, Terry Hart, Kim Headley, Dan Henrichs, Nancy Keller, Irene Kornelly, Carole Lange, Heather Maio, Dennis Maroney, Mike McCarthy, Rex Miller, Jim Munch, Harold Noonan, Cynthia Peterson, Gary Rapp, Chip Rice, Keith Riley, Lisa Ross, Richard Skorman, Graham Thompson, Barbara Vidmar, Alan Ward, Pat Wells, Chris Woodka, and Heather Bergman

Meeting Objectives

- Hear presentations about the effects of runoff on water quality
- Ask questions as needed to gain knowledge needed to move forward with group discussion about runoff and water quality
- Determine whether to pursue this issue and/or convene another informational panel

Panel Presentations: Planned Actions/Activities in the Watershed

Several individuals were invited to present information on the effects of runoff on water quality in the Fountain Creek watershed. The purpose of these presentations was to help the group gain the knowledge that will be needed to identify strategies for addressing water quality issues.

Runoff and Water Quality, State Perspective

Presenter: Matt Czahor, Colorado Department of Public Health and Environment (CDPHE)

- Information about CDPHE's Stormwater Program, including guidance materials and permit applications, can be found at www.cdphe.state.co.us/wq/PermitsUnits.
- The Clean Water Act (CWA) created a permitting system for water discharge (the National Pollutant Discharge Elimination System (NPDES)).
- The US Environmental Protection Agency (EPA) has authority to enforce the CWA. In Colorado, and in most states, EPA has granted the State the authority to issue and enforce NPDES permits; EPA has oversight of this authority. EPA also issues permits on tribal lands, at federal facilities, and in those states that do not have delegated CWA authority.
- The Colorado Water Quality Control Act is the state version of the CWA. The State issues permits under this Act through the Colorado Discharge Permitting System (CDPS). This makes it easier for the State to issue and enforce its own programs and insulates the State somewhat from federal politics.
- There are several types of stormwater discharge permits:
 - Stormwater general permits are for construction sites disturbing more than an acre of ground, sand and gravel operations, asphalt and concrete batch plants, and industrial facilities.
 - Stormwater municipal permits (MS4 - Municipal Separate Storm Sewer System) are for cities, counties, and special districts. Permitting is based on population and urbanization.
- As of July 2002, all construction activities that disturb one or more acres of land require a stormwater discharge permit. This means that major highway projects like COSMIX and new developments like WALMART all go through the same permitting process. CDPHE issues these permits through its Water Quality Control Division.
- To get a permit, applicants must:
 - Develop a stormwater management plan for the site that meets the State's permitting requirements and is ready to be implemented (the State has a guidance document on management plans)
 - Fill out 2-page application
 - Wait about 2 weeks to get the permit
- A stormwater management plan (SWMP) must be prepared and implemented as part of the permit requirements. The goal of SWMPs is to identify potential sources of pollution and develop and implement control measures and best management practices (BMPs).
- There are 2 kinds of best management practices (BMPs):
 - Structural BMPs include silt fences, retention basins, and inlet protections.
 - Non-Structural BMPs include seeding and mulching, grading, and maintaining existing vegetation. The State tries to focus on non-structural BMPs.

- The components of a SWMP are a site description, a site map, a narrative description of BMPs, a plan for final soil stabilization, other controls that may be used, and procedures for inspection and maintenance.
- CDPHE offers guidance on its website about how to prepare a SWMP.
- There are both specific and general terms and conditions that are attached to permits. The purpose of these terms and conditions is to keep pollutants out of Colorado's waters. Sediment and other pollutants can change the physical nature of the streambed, eliminate wildlife habitat, and add nutrients and metals to the water.
- Inspections can be performed by CDPHE, local municipalities, or EPA. There are a lot of permits throughout state, and CDPHE only has 4 staff members to do all those inspections. To address this issue, the State trains and then contracts to local health departments to do inspections on the State's behalf. This means that inspections can be done on very short notice, and it increases field presence and enforcement. If violations are found, a Notice of Violation / Cease and Desist / Clean Up Order will be issued to deter future non-compliance.
- The CWA does allow for third-party lawsuits, and these have occurred in Colorado.

Questions/Answers

Why doesn't the State review SWMPs with the permit application?

There is not enough time or staff to do a detailed review and still maintain timely permitting. Plan reviews are done during inspections. We always find deficiencies in the SWMPs, but we measure the seriousness of the deficiency and only view egregious oversights as violations.

What is the process for a construction site on state property in a municipality?

Such a site would still be subject to the state regulations, but it may not be regulated by the municipality. If it were a federal site like a military base, it would be permitted by EPA.

Is the State's Stormwater Program consistent with, or above and beyond, EPA's standards?

The State's standards are slightly but not substantially stricter than EPA's.

Is Fort Carson a federal jurisdiction or does the State have concurrent jurisdiction there?

Fort Carson is a federal jurisdiction regulated by EPA.

Who regulates non-standard MS4 permits within a city?

The State can regulate non-standard MS4 permits, like those issued to school districts and hospitals, but the municipality will likely do the inspections.

Are the State's guidelines for industrial facilities the same as EPA's?

Yes.

Why does the State put so much emphasis on construction permits?

We do not emphasize them programmatically. We just have a large amount of construction permits to process.

Connecting Land Use and Water Quality for Colorado's Communities

Presenter: Cynthia Peterson, Addressing Water and Natural Resources Education (AWARE)

- AWARE Colorado aims to inform communities about the impacts of land use decisions on water quality and provide successful tools to protect water resources.
 - Planning can play a unique role in acting proactively to protect water resources.
 - Planning is the smartest, most effective way to protect water resources.
- There is a direct connection between land use and water quality. Increases in impervious surfaces affect waterway health. Impacts to waterways begin when there is less than 10% imperviousness and become very serious at only 25%. Natural systems and surfaces provide more water absorption.
- Reduced groundwater infiltration means less filtration of pollutants from water and reduced stream flows in dry seasons.
- Increased runoff caused by less infiltration means greater volume and velocity in streams and causes stream degradation.
- The increased pollutants that come from runoff from impervious surfaces include sediments, nutrients, metals, and other toxic chemicals.
- Communities can take a variety of steps to address these problems, and not all tools are appropriate for all communities. To get started, communities should:
 - Do a natural resources inventory to assess current conditions
 - Promote collaboration between governmental entities, within governmental entities, and with businesses and community organizations. (Water resources are not bound by municipal boundaries.)
- Planning and zoning strategies include:
 - Clustering development to get the same number of units on the same area but with more open space. Spreading out development to create low-density areas increases the amount of impervious infrastructure required (roads, driveways, etc.).
 - Creating riparian buffers to preserve ecological functions and minimize erosion. Set-back zones can be created to decrease impacts to riparian areas.
 - Applying specific zoning tools, like overlaying zone requirements (to require additional protective measures on top of existing zoning for certain areas without changing overall zoning codes) and doing planned unit development (to provide opportunities for creativity and flexibility in water protective strategies).
 - Minimizing impervious areas in transportation infrastructure by having narrower and shorter streets and roads and avoiding or mitigating the impervious surfaces of cul-de-sacs (by narrowing the radius and/or planting landscaped islands).
 - Thinking differently about sidewalks and trails (having sidewalks on only one side of the street, having swales instead of curbs, increasing landscaping, etc.).
 - Putting landscaping and/or gravel in parking lots, creating shared parking areas where possible, and implementing a maximum parking area requirement instead of the standard minimum parking requirement.
 - Directing roof runoff into landscaped areas instead of driveways.
 - Using porous pavers as an alternative to cement; some porous pavers can be put underneath grass to accommodate light vehicle travel.
 - Redeveloping existing areas by removing or redesigning impervious areas.
 - Using natural landscaping (native and xeric plants are acclimated to this area and have smaller water and chemical needs), saving and amending topsoil, increasing

urban tree cover, and allowing roof gardens (these are hard to maintain in Colorado but are very popular on the coasts).

- Land use does affect water quality and communities have a key role in this. AWARE has a lot of useful tools and would be happy to give presentations to government councils, commissions, etc. There are a lot of resources at www.awarecolorado.org.

Questions/Answers

If you eliminate runoff from a property, don't you change the historical use of that water and affect water rights?

Most water rights in Colorado were established before there was so much impervious surface. Better handling of runoff now will simply duplicate historical conditions.

El Paso County Stormwater Program

Presentation: Barbara Dallemand, Unincorporated El Paso County Stormwater

- Non-point source (NPS) pollution comes from many diffuse sources, meaning that it is without a single point of origin or not introduced into a receiving stream from a specific outlet. The pollutants are generally carried off the land by stormwater.
- Common NPSs in El Paso County include construction, city streets, urban areas, agriculture, channels, mining, land disposal, and septic systems. Other NPSs that do not exist in El Paso County are forestry, dams, and saltwater intrusion.
- There are two systems for regulating NPS pollution:
 - Total Maximum Daily Load (TMDL) is the amount of a particular pollutant that a particular stream, lake, estuary or other waterway can 'handle' without violating state water quality standards.
 - NPDES regulates point sources.
- El Paso County Stormwater has an MS4 permit under NPDES, which is a “point source permit to regulate non-point source pollution.”
- Who has to get an MS4 permit?
 - Phase I (for areas with populations of 100,000 or more) permits in Colorado have gone to Colorado Springs, Lakewood, Aurora, Denver, and the Colorado Department of Transportation.
 - Phase II permits are for urban areas with a population from 10,000 to 100,000, and non-standard Phase II permits are for agency facilities with more than 1,000 people.
 - El Paso County permit holders include Colorado Springs, Fountain, Manitou Springs, Monument, and unincorporated El Paso County.
 - Non-standard permits have been given to the universities and 5 school districts. These permits are different than most NPDES permits, because there is no discharge load. There is no need to sample water and meet a numeric limit. The concept is that we have a list of things that have to be accomplished, and the permittee chooses how to do them.
- There are 6 program areas for which each permit holder has to come up with measurable goals.
 - Public education and outreach (includes adult education, presentations, tributary name signs, etc.)

- o Public participation and involvement
 - o Illicit discharge detection and elimination (firefighting water is excluded)
 - o Construction site stormwater runoff control
 - o Post-construction stormwater management
 - o Pollution prevention/good housekeeping for municipal operations
- The “recipe” for success that is being tried in El Paso County is:
 - o Ingredients = 6 program areas
 - o Quantities = Measurable goals in each program area
 - o Bake for 5 years
 - o Repeat? New Phase 2 permits will start in 2008
- Colorado counties are a special form of government and are limited to the specific powers given to them by the State legislature. This precludes the El Paso County Stormwater Program from pursuing certain actions that might be beneficial.
- Details of the MS4 permit for unincorporated El Paso County:
 - o Boundary based on 2000 census
 - o I-25 corridor from northern county line to Fountain
 - o Some of Highway 24 west of Colorado Springs
 - o Subtract incorporated areas and military bases
- An unscientific assessment of the sources of NPS pollutants in El Paso County NPS identified the following:
 - o Construction – actual construction and construction support
 - o Vehicles
 - o Golf courses
 - o People in general
 - o Possibly agriculture and septic systems (to be determined by E. coli studies)
- Construction site stormwater runoff control and post-construction stormwater management are critical elements in the El Paso County program. There is an “Engineering Criteria Manual,” and the program adopted the drainage criteria used by Colorado Springs.
- Pollution prevention and good housekeeping for municipal operations are also important. The program has an environmental management system for its own facilities.
- Other activities include teaming with the Parks Department on school workshops and summer day camps, stormdrain stenciling, and newspaper and radio ads.
- The program does face several challenges:
 - o Regulatory basis for illicit discharge
 - o Attitudes toward the environment and toward government
 - o Change is difficult
 - o Residents do not see a problem in El Paso County.

City of Pueblo Stormwater Program

Presentation: Dennis Maroney, Pueblo Stormwater Utility

- The City of Pueblo faces some of the same issues that El Paso County faces. It is hard to change residents’ and businesses’ behavioral patterns and habits.
- Our goal is to get people to recognize that there are 2 drainage systems: one that drains to the wastewater treatment system and one that drains directly to streams.

- In the City of Pueblo, we have a lot of miles of storm drains. We label our storm drains with signs reminding people that it drains to the river.
- Pueblo has a Phase II permit and has done several things to fulfill the permit requirements:
 - Education is a big component as our program. We looked at the resources in the City and worked to find whatever we could to create an educational program. We partnered with the Pueblo City and County Health Department and worked with them on some education projects.
 - One program focuses on NPS pollution and getting people to feel that they own the watershed so they should protect it. This program empowers them. It focuses on the 4th grade, junior high, and adults.
 - We have several messages that we are trying to convey, including asking people not to dump in storm drains, not to litter, and to clean up after their animals. We promote good auto maintenance and lawn care and safe disposal of household hazardous waste.
 - We have 12 models of miniature watersheds that demonstrate the workings of the system. They are excellent educational tools.
 - We do public service announcements, including year-round and seasonal messaging. We also have a few TV commercials in the works and some billboards going up soon.
 - The campaign is funded by Supplemental Environmental Projects (SEP) money through 2007.
 - The Pueblo Stormwater Utility was established in January 2004. There is a staff devoted to stormwater issues including maintenance, spill responses, street sweeping, and catch basin cleaning.
 - We are looking at ways to reduce runoff off in new developments and at ways to minimize erosion on construction sites.
- Pueblo is currently considering 2 new water projects:
 - Lake Minnequa is a large lake on the south end of Pueblo. Its surface area is 120 acres. It is a high potential detention facility for the City of Pueblo, which can use the Lake to detain water. One quarter of Pueblo drains to this one facility.
 - We know we need to address water quality issues at same time that we are doing planning at Lake Minnequa.
 - We do not have to retrofit existing facilities, but we decided to create water quality treatment ponds to collect the first flush that comes off the street, which tends to contain the most pollutants. Then we can treat the pollutants and filter that water through wetlands to improve its quality.
 - People appreciate the open space and park-like setting that we are trying to create at the Lake.
 - We are looking at building a new 4-story parking structure in Pueblo to accommodate 720 vehicles.
 - Building a parking structure with multiple levels instead of a huge parking lot is a best management practice that decreases the amount of impervious surface.

- The driveway to the parking structure is made of pervious, flexible pavement, so water that falls in the driveway can percolate and not run off. The flexible paving is made from recycled tires and aggregate.
- The water runoff from the parking structure would be treated to separate out oil, grease, sediment, solids, and floatables. This involves building a tank that would need to be maintained.
- We would release that water like a septic system into an infiltration gallery that is underground. This system will store the 100-year event and percolate the water. There is a lot of sand and gravel in the area naturally (it is the old Arkansas River bed), which makes the percolation easier. We would treat the water and then release it back to the aquifer.
- In Pueblo, developers are told to try to match the pre-development hydrograph as much as possible and in a manner that was historical for the development site. They need to do this to the maximum extent practical (MEP), as outlined in EPA's guidance.
- New development approaches like this can help us decrease impacts to rivers and streams.

Colorado Springs Stormwater Program

Brief Statement: Lisa Ross, City of Colorado Springs Stormwater Department

- Colorado Springs has a Phase I MS4 permit that was issued in 1997.
- Where possible, the City tries to assist entities with Phase II permits.
- The City does wet-weather monitoring. We contract with the US Geological Survey (USGS) to monitor water quality at 10 mainstem locations and 20 tributary locations in the watershed. We monitor for a variety of pollutants, and USGS prepares a report every 5 years on the water quality in Fountain Creek. The most recent report was written in 2001 and is available on the USGS website. The next report should be out in June.
- In our MS4 permit, we were required to analyze and retrofit existing ponds as needed.
- Legally, Colorado Springs Utilities (CSU) and the City of Colorado Springs are not the same entity, but CSU is covered by the City's stormwater discharge permit.

Questions/Answers

Aren't polishing ponds outside Pueblo's MS4 permit?

Not to my knowledge. We would not be holding water any differently than it is being held there today. The challenge will be to release it within the necessary 72-hour timeframe.

What frequency of storms can the ponds at Lake Minnequa handle?

The maximum is the 100-year event.

Does the permitting process require Pueblo to improve and address existing problems?

We are currently on the first of many permits with the State. The next permit will probably not be as lenient as this first 5-year permit. Right now, we are required to address new development but not existing development, but that might change in future years.

How specific is the regulation about meeting historic conditions in Pueblo?

It is not very specific. It is more of a goal system, and we have not really worked out the details. The strategies for implementation are up to the staff.

Are golf courses exempted from permitting requirements in El Paso County?

No. As an NPS, golf courses are a relatively large number. They are areas of intense cultivation, fertilization, and pesticide use. However, well-run golf courses have been leaders in addressing NPS issues.

Regarding volume reduction on site, are you giving some attention to what might be needed downstream?

Not exactly. We are looking into developing a point system in which we consider if we should give credits for detention overall.

Do you have any sense of the relative role in water quality impairment played by urban areas versus agricultural use?

We do not have data on that.

Are there any model stormwater regulations that can be used for reference?

The EPA website has some information at <http://www.epa.gov/owow/nps/ordinance/index.htm>. The Colorado Water Conservation Board is working on a statewide template. AWARE also has a list of model criteria.

How can we coordinate permitting across communities?

The Pikes Peak Area Council of Governments (PPACG) is working on getting funding for local collaboration on permitting issues.

**Fountain Creek Vision Task Force
Water Quality Working Group
April 6, 2007
Final Meeting Summary**

Attendance

Bill Alspach, Carol Baker, Dan Bare, Dan Baughn, Scott Cowan, Barbara Dallemand, Dennis Darrow, Pat Edelmann, Mike Fink, Doug Fitzgerald, Ferris Frost, Mark Glidden, Jane Green, Terry Hart, Irene Kornelly, Carole Lange, Walter Lawson, Dennis Maroney, Jim McGannon, Gene Michael, Rich Muzzy, Howard Noonan, Jerry Pacheco, Larry Patterson, Gary Rapp, Lisa Ross, Ken Sampley, Richard Skorman, Graham Thompson, Ross Vincent, Patrick Wells, Tim Williams, Chris Woodka, Heather Bergman, Niki Koszalka, and Helen Littrell Smith

Action Items

Jerry Pacheco	Look into who the property owner representative is for McCulloch Ranch, make them aware of this Task Force, and invite them to participate on it.
Richard Skorman	Work with Keystone to determine the appropriate representative from the Banning Lewis Ranch

	development to come speak to the group.
Mike Fink and Graham Thompson	Investigate what the state says about sediment standards and what kind of sediment goal this group can set and work to accomplish.
Carol Baker and Keystone	Bring the issue of what Colorado water law says about reuse to the Water Quantity Working Group for exploration.
Carol Baker and Keystone	Work on getting a groundwater monitoring update to the group.
Outreach Committee, Scott Cowan, Ferris Frost, and Keystone	Put together a list of the issues that have been identified so far and what is known about those issues to help identify where there are gaps.
Keystone	Follow-up with Juniper Katz to get a copy of the final proposal put together by Great Outdoors Colorado, The Nature Conservancy, and Colorado Open Lands.
Keystone	Circulate the internet survey on data holes to the full task force.
Keystone	Check to see if the reports on pollutants that are carried by sediment are posted.
Keystone	Discuss meeting dates with Ross Vincent.
Keystone	Work to have the next Water Quality meeting in Pueblo.

Meeting Objectives

- Hear presentations on identifying the pollutants in stormwater runoff
- Ask questions as necessary to gain knowledge needed to move forward with group discussion about stormwater runoff
- Identify next steps for this issue

New or Pressing Issues of Concern

- The items that are already on the list of pressing issues that this group would like to try to impact are the power plant, the regional sewage treatment facility, and the La Farge gravel pit.
- Some people have heard that the Icon Group has sold the McCulloch Ranch land. The City of Pueblo was approached in the past by the Icon Group, but there hasn't been any formal discussion or dialogue yet.
 - o The ranch is 24,000 acres, and the specific concern is around the impact it might have on green space opportunities. It is unclear who this group will have to deal with to discuss land use options for that site.
 - o It was noted that not all of the 24,000 acres are in the Fountain Creek watershed.
 - o As a next step, Jerry Pacheco agreed to look into who the property owner representative is, make them aware of this Task Force, and invite them to participate on it.
- Banning Lewis Ranch
 - o The group suggested having the Banning Lewis Ranch developers come to a meeting and talk about what they are planning to do, because it will have an impact on the

- watershed. There is some time to accomplish this, as it appears that there is nothing going on in the immediate future that will impact the watershed.
 - o Richard Skorman will work with Keystone to determine the appropriate representative to come speak to the group.
- Carol Baker will work with Keystone on getting a groundwater monitoring update to the group.
- The group asked to have a copy of the final proposal put together by Great Outdoors Colorado, The Nature Conservancy, and Colorado Open Lands. Keystone will follow-up with Juniper Katz on this item.

Panel Presentations: Identifying Pollutants in Stormwater Runoff

Graham Thompson, Matrix Design Group

Note: We expect this presentation to be posted on the Watershed Study website. Questions should be directed to Graham Thompson at (719) 575-0100.

- What is sediment?
 - o It is made up of particles that are transported by water (e.g., sand, silt, clay, gravel, boulders).
 - o It is alternately entrained and deposited.
 - o It is linked to erosion.
- Why is sediment a concern?
 - o Sediment can impact a variety of things, including water quality, aquatic habitat, and may cause infrastructure disruption.
 - o The EPA states: “National water quality inventory reports consistently implicate sediments as a leading cause of water quality impairment.”
 - o Sediment in lakes, rivers, streams, estuaries, etc. costs \$16 billion annually nationwide (from: <http://www.epa.gov/warsss>).
 - o However, sediment also has benefits and is necessary for agriculture.
- Why is sediment important in:
 - o Urban runoff?
 - Pollutants attach to sediments and are transported. Most of the urban water quality best management practices were created because of this issue.
 - Sediment originating from construction activities, road sand, and rubber all have downstream impacts.
 - o Channel processes (erosion, sedimentation, degradation)?
 - Sediment impacts many elements of channel processes, including erosion, sedimentation, land loss, infrastructure damage, flood capacity, flood response, and channel form.
- The big picture
 - o The Fountain Creek watershed is a dynamic, interrelated system.
 - o Even though we talk about the small parts within the watershed, we need to keep in mind what the big picture looks like.
- Where does it come from?
 - o The total sediment supply is the sum of upland sources, gully sources, and bed/bank sources of erosion (the last two items can be lumped into channel processes).
 - o Upland erosion: Erosion that comes right off of the ground (the surface of the land)

- o Gully erosion: Erosion that does not come from the surface of the land or stream channel, but from areas that are gullies.
- o Bed/bank erosion: Erosion that comes from the bed or bank of a stream.
- Size matters
 - o Wash load is sediment that stays in the water column and doesn't filter out of the water, it takes little energy to move it, and it tends to travel long distances.
 - o Suspended load is bed material that is easily kicked up and suspended in the water column.
 - o Bed load is made up of bigger items that move with greater energy.
- Both the sources of sediment and how you manage them are different. It is an important distinction to make when discussing sediment management.
- Sediment management
 - o Upland
 - National Pollutant Discharge Elimination System (NPDES)
 - Municipal Separate Storm Sewer Systems (MS4)
 - Best management practices (BMPs)
 - o Channel process
 - Hydrology
 - Capacity vs. supply
 - Dimension, pattern, profile, particles
 - Stabilization
- Hydrology, particle size, upland source, gully source, channel source, transport capacity, and total load all play into sediment management. The focus today is on the upland sources.
- In a stable watershed, upland sediment is a major portion of the total sediment supply.
- During construction activities, the sediment supply can increase by 10 to 100 times historic levels.
- After urbanization, upland sediment supply can decrease to a fraction of historic levels (i.e., impervious surfaces prevent particles from running off).

Questions/Answers

- Is the upland sediment supply the most major form of sedimentation in the Fountain Creek watershed? Is that why we're addressing it?
 - o Upland sediment supply is typically the most significant source of the total sediment supply. It is unknown what percentage of the total supply is made up by upland supply. There are significant data needs that need to be filled in order to understand what and where the various sediment sources are in Fountain Creek.
 - o There is a tremendous amount of analysis in the watershed study, but the one component that is missing is the supply side of the sediment.
- Where does runoff from impervious surfaces (parking lots, rooftops) show up in the total sediment supply equation?
 - o In the upland sources. Any sediment not coming out of a channel process is a part of the upland source.
- As you develop upland sediment sources (grassland becomes parking lot, for example), doesn't that have an impact on pollutants as well?
 - o Yes, it does.

Sediment and Pollutant Data, Pat Edelmann, U.S. Geological Society (USGS)

Note: Due to the provisional nature of this presentation, it will not be made available on the website or distributed via email. Keystone has tried to capture the key elements of this technical presentation to the best of our ability. Questions should be directed to USGS: Pat Edelmann, 719-544-7155. Information is also available at: <http://co.water.usgs.gov/>.

- What is in stormwater runoff in Fountain Creek?
 - Chemical constituents, bacteria, and sediment
- The USGS performed chemical and biological stormwater monitoring in cooperation with Colorado Springs City Engineering in 1992 and from 1998 to the present.
- The USGS performed routine/non-runoff water quality monitoring with Colorado Springs Utilities from the late 1970s to the present.
- Terminology
 - 1 milligram per liter (mg/L or part per million (ppm) equals:
 - 1 inch in 16 miles.
 - 1 cent in \$10,000.
 - 1 microgram per liter (ug/L) or part per billion (ppb) equals:
 - 1 inch in 16,000 miles.
 - 1 cent in \$10 million.
- There were a limited number of storm samples taken at 20 sites in/near Colorado Springs, but there was good distribution. Stormwater quality was not monitored downstream of Security. In 1992, 35 storm samples were collected from storm drains. From 1998 to the present, samples were collected from receiving waters during storm runoff and analyzed for inorganic chemical constituents (there is very limited organic data). Up to 186 properties and constituents have been analyzed, and “contaminants of concern” are generally bound to sediments.
- Nutrients
 - Ammonia and phosphorus are frequently elevated relative to non-runoff periods.
 - Ammonia has not exceeded the acute instream standard.
 - Phosphorus frequently exceeds the recommended non-enforceable EPA guideline of 0.1 mg/L by ten times or more.
- Metals
 - Total levels of arsenic, copper, iron, lead, nickel, manganese, and zinc were elevated relative to non-runoff periods.
 - Total levels of lead and zinc are generally more elevated than other metals.
 - Except for very isolated instances, metal concentrations have not exceeded applicable instream standards.
- Organics (based on available but limited data)
 - Volatile organic content (e.g., benzene, toluene): At least one compound is frequently detected at low levels in samples collected from storm drains. Concentrations are generally below analytical reporting levels. Historic data suggests that volatile organic contents in streams rapidly dissipate.
 - Pesticides are frequently detected at low levels. These include atrazine, diazinon, malathion, prometon, trifluran, and a few others.
 - Polycyclic aromatic hydrocarbons (PAHs) were detected in about 33-66% of the samples. Concentrations are generally below analytical reporting levels.

- PAHs are primarily formed by the incomplete combustion of fuels such as wood (forest fires), coal, diesel, motor fuels, tar, tobacco, etc.
- o Bacteria
 - E. coli and fecal coliform bacteria typically exceed recreational standards during storm runoff.
 - Concentrations in storm samples are generally 10 to 100 times greater than during non-runoff samples.
- o Aquatic biology (habitat, benthic invertebrates, and fish)
 - Streams have been ‘degraded’ from a biological perspective for several decades.
 - USGS is working to “tease out” the influence of urbanization and storm runoff on ecosystem health and biological integrity.
- Suspended Sediment Concentration
 - o Concentrations generally range from 100 to 300 mg/L.
 - o In flows greater than 200cfs, much more sediment is entrained and concentrations increase (between 1,000 mg/L to 10,000 mg/L).
 - o Average seasonal loads (measured between April and September and does not include bed load):
 - Fountain Creek near Manitou Springs, average seasonal load from 2000 to 2002: 900 tons (total for 1999: 55,000 tons)
 - Monument Creek above Woodmen Road, average seasonal load from 2003 to 2005: 7,000 tons (total for 1999: 141,000 tons)
 - Monument creek at Bijou, average seasonal load from 2003 to 2005: 47,000 tons
 - Fountain Creek at Nevada Street, average seasonal load from 2003 to 2005: 62,000 tons (total for: 700,000 tons)
 - Fountain Creek at Security, average seasonal load from 2003 to 2005: 86,000 tons (total for 1999: 1,000,000 tons)
 - Fountain Creek at Pueblo, average seasonal load from 2004 to 2005: 140,000 tons

Questions/Answers

- Do we know enough about the surrounding geology to know where the selenium is coming from?
 - o Most of it is dissolved, and decreases slightly during storm runoff. Selenium is more elevated in concentrations as you move further down Fountain Creek. It is coming from the areas where selenium is a part of the geologic formation—Wild Horse Creek is one of the ‘hot spots’ for selenium.
- Are those hot spots contributing more selenium because of erosion?
 - o Selenium levels in runoff are more related to urbanization. The selenium quantity over time has not increased. Selenium is a big issue now because the selenium standards have decreased.
- Have you correlated sediment concentrations with slope, channel shape, etc.?
 - o No. Sampling at this time is on a fairly gross scale.
- Regarding sediment as a natural phenomenon, do the numbers you’ve presented represent a problem in Fountain Creek?
 - o There is room for improvement, especially in terms of aquatic life use. However, sediment transport is a complex system with many moving pieces, and it is hard to label it as either “good” or “bad.”

- How does sediment impact water temperature? How does urbanization impact this and does it impact wildlife habitat?
 - o Water with a high concentration of sediment will generally be warmer. Fountain Creek has possibly increased one to two degrees in temperature, but it is unclear how it has impacted wildlife.

Barbara Dallemund, El Paso County Stormwater Program and Dennis Maroney, City of Pueblo Stormwater Utility

Questions should be directed to Barbara Dallemund at (719) 520-6826 or Dennis Maroney at (719) 553-2283.

- Human sources of sediment include:
 - o Construction
 - o Agriculture
 - o Landscaping (or lack thereof)
 - o Transportation
 - o Recreation
 - o Mining/smelting
- Some defensive measures
 - o Best management practices
 - Construction
 - Post-construction
 - Other
 - o Outreach and education
- Fully developing a site can reduce the amount of erosion coming off of that site.
- Agriculture
 - o No till practices and contour plowing help
 - o Robocow is a Flash animation site that educates the viewer on agricultural practices that can negatively impact a watershed and ways to correct those practices.
- Urban runoff pollutants include:
 - o Excess fertilizers, herbicides, and insecticides
 - o Oil, grease, and toxic chemicals
 - o Sediments from improperly managed lands
 - o Bacteria and nutrients from livestock, pet waste, wildlife, and faulty septic systems
 - o Solid waste (trash)
 - o Atmospheric deposition and hydro modifications
- The NPDES Storm Water Management Program (SWMP) and Stormwater Pollution Prevention Plans (SWPPP) requirements are:
 - o Outreach and education
 - o Maintaining a stormwater plan during construction
 - o Maintaining a stormwater plan for post-construction.
 - o Illicit discharge detection and elimination
 - o Pollution prevention
- Best management practices currently being implemented in the watershed:
 - o Outreach and education
 - Marking catch basins with signs indicating that they drain into a river to prevent dumping. Scout troops are helping to label the catch basins.

- Classroom education: A watershed model provides an opportunity to demonstrate the impacts of land use on precipitation. Teachers are being trained how to use it and how to integrate it into their curriculum.
 - Billboards have been put up to remind people that only rain belongs in the storm drain and that solid waste put down a storm drain will end up in the creek.
 - Pet waste baggies are being provided in parks and open spaces to encourage people to pick up after their pets.
- o Construction Tools to Prevent Runoff
 - Ask homeowners to landscape immediately after their home construction is completed to reduce erosion
 - Place anti-erosion mats on unstable slopes and surfaces
 - Use silt fencing to trap sediment before it enters the water system
 - Place filter bags near storm drains where construction is happening, although this method is not as effective as some of the others
 - Create a sediment basin to collect sediment on large construction sites
- o Post-Construction (regional facilities): Build multiple use facilities
- o Post-Construction (commercial): Incorporate water features as a part of development (ponds, grass filter strips, depressed areas to collect and infiltrate water, etc.)
- o Alternatives
 - A no curb parking area bordered by a grass strip that filters, collects, and sends water to a catch-basin.
 - Capture roof runoff in a barrel with a small hole at the bottom to reenter water into the watershed at a slower pace.
 - Detention basin system
 - Ditches
- o Treatment trains: Wetlands channel
- o Maintenance
 - Best management practices are only as good as they are maintained. Building permits require the developer to assure the municipality that this will happen, but it is difficult to enforce.
 - Some street sweepers are not very effective in terms of picking up the really fine particles that have pollutants attached to them. They have more impact on the aesthetics of a surface than they do on actually reducing sediment volume.

Questions/Answers

- Does Pueblo's code require developers to ensure that there is no net change in runoff volume as a result of the development?
 - o Pueblo requires this for new annexations (runoff is returned to the historic volume of flow).
- Are there overlot grading regulations in place?
 - o For any development project that disturbs more than one acre, the developer has to develop a stormwater plan that addresses runoff and erosion during the construction phase.
- Is there a way to know how effective these techniques are? Are there measurable improvements in water quality?

- o The Urban Drainage and Flood Control District has done a lot of work to measure the effectiveness of best management practices. Pueblo has just started a program with Colorado State University in Fort Collins to measure the long-term effectiveness of best management practices (no results yet). Volume 3 of the Urban Storm Drainage Criteria Manual includes the range of best management practices and a range of their historic effectiveness.
- In 30 years, when Pueblo is rapidly growing, how do we prevent us from having this same conversation then?
 - o We need to try to get ahead of the curve. We have an opportunity to change the regulations to require more water quality-oriented growth and control before more development happens. We can also avoid the past practices that have historically caused problems in Fountain Creek.
- Given what we know about what is in Fountain Creek, and what we know about new development happening in next decade, is there a way to take that information and predict what the water quality implications for Fountain Creek will be?
 - o We can look at impervious surface areas relative to runoff, which can be correlated to sediment transport and the like.
 - o There is a study being done to estimate what the flow rates in Fountain Creek will be without a detention system. That study suggests that peak flows will go from approximately 22,000 cfs to 36,000 cfs.
- It is important for this group to think about what we can do to accomplish our vision in this arena. How much can we do, given available data and methodologies? How much should we be trying to figure out?
 - o There are design models out there to aid in putting together a holistic system for the watershed.
 - o We need to think about this topic in terms of the McCulloch and Banning Lewis Ranches.
- For areas being mined that have selenium in the geologic make-up, there are native plants that will uptake selenium and process it. Pueblo is looking into seeding those plants, especially in the Wild Horse Creek area where there is a high volume of selenium.
 - It is worth talking to wildlife experts about this topic because wildlife that feed on those plants could potentially be harmed.
- Do we have a way to enforce regulatory requirements to ensure water quality in new developments?
 - o For the Banning Lewis Ranch, Colorado Springs has a dedicated inspector working on the site for this very purpose. In other cases, we've utilized different levels of enforcement, and we are working to increase enforcement overall. We don't have the support of the state in the sense that the state only has one inspector.
 - o Community resource monitoring is also an option for this group to explore when it reaches the 'solutions' part of this process.
- The other issue we will have to deal with is that stretches of Fountain Creek are considered impaired by the state, which may result in Total Maximum Daily Loads (TMDL) development. We may eventually have to circle back to the industrial areas and cut back on the amount of discharge they are putting out there.
- There are techniques being developed that result in cost savings to keep enforcement from being the ultimate solution.

Next Steps

How to Move this Issue Forward

- There are data gaps and gaps in existing regulations that have been identified in these meetings. It would be great to understand where we don't have enough information to move forward with recommendations.
 - o Data needs: It seems like we are doing what we can to address upland sources for new development. For channel stability and other sources of sediment, what do we need? There is a significant data need in sediment size, load, and source as they relate to channel stability. It was noted that there might already be a discussion going on around getting this data, but it is unclear what the timeframe of that study is.
 - o This issue is tied to funding. We need to go in front of the Consensus Committee to explain what topics this group can not make recommendations on due to a lack of information about those topics.
- Somehow, we need to match up our data needs with the real world of what is actually feasible for us to do.
 - o The group needs a timeline of what is feasible and when.
 - o Rich Muzzy may already have this information.
- A potential way to mitigate impacts is reuse, and the group is not sure what Colorado water law says about this topic.
 - o More information on this topic would be useful.
 - o Who would provide this information? This is actually a water quantity issue, and Carol Baker agreed to help Keystone bring this topic to that working group.
- How sellable/palatable are the issues we are talking about?
 - o The full Task Force meeting on April 19 is an opportunity to vet these issues, as well as our overall mission and vision, with the public.
- Regarding the gaps in data, this process will naturally get around to identifying what those needs are. There is a need to get moving on the things we know about and know that we can impact now (i.e., land management practices). Then we should move to identifying the data gaps and the long-term goals.
 - o There will always be a need for data, and it will be an ongoing process.
 - o It is not clear that we have the data gathering mechanisms already in place.
 - We don't. This issue is part of the internet survey: we identify the data gaps first, and then we figure out what the mechanisms are.
 - Keystone will circulate the internet survey on data gaps to the full task force.
- We talked about sediment in terms of source and concentration, and how to reduce it from a couple of different sources. To maximize our efforts, is there a sediment goal that we want to accomplish?
 - o The Consensus Committee has said that the goal is to meet all state standards, but there isn't one for sediment.
 - o We need to come up with a goal that can be quantifiably measured, as opposed to the general goal of "less sediment."
 - o There is a narrative sediment standard that addresses stream functions.
 - Does it make sense for a small group get together to work on these issues by reviewing the Fountain Creek Vision Task Force vision and Senator Salazar's vision, and then figuring out what to do next?

- The state has leaned towards the “to the extent practicable” standard rather than a numeric standard.
 - Mike Fink and Graham Thompson will work on this issue together.
- We need to always relate back to the vision of this task force. Do we have a process in place that lists the number of issues we have come up with and what we know about those issues so far to help us see the big picture and where there are gaps, so that we can ultimately get a feel for how to craft solutions?
 - The Outreach Committee and Keystone are working on integrating the existing pieces of the vision and the working groups’ efforts. They will get together to flesh it out, and Scott Cowan and Ferris Frost agreed to help as well.
- Regarding a goal for sediment and the concept of historic runoff, is there historic transport data that is available?
 - The USGS has transport data that goes back to the 1970s.
- Some questions we need to answer are: What are the riparian uses we anticipate? Where along Fountain Creek is sediment likely to be a problem or already is one?
 - Is that already characterized in the Corps study?
 - This is an issue for the Land Use/Environment Working Group.

Next Meeting

The next Water Quality Working Group meeting will be on Friday, May 11 from 1:00 to 4:00 p.m. at St. Leander Church Hall (1402 E. 7th Ave., in Pueblo).

Fountain Creek Vision Task Force Water Quality May 11, 2007 Final Meeting Summary

Attending

Carol Baker, Stephanie Carter, Scott Cowan, Dennis Darrow, Danny Elsner, Mike Fink, Mark Glidden, Jane Green, Terry Hart, Dan Henrichs, Nancy Keller, Carole Lange, Gene Michael, Rex Miller, Margaret Mora, Jim Munch, Rich Muzzy, Jerry Pacheco, Kirsta Scherff-Norris, Jane Rhodes, Lisa Ross, Juan Trujillo, Ross Vincent, Alan Ward, Pat Wells, Niki Koszalka, and Heather Bergman

Action Items

Dan Henrichs	Volunteered to contact Dr. Tim Gates regarding a presentation on salinity for the next meeting
Rich Muzzy and Nancy Keller	Will give a quick presentation on nutrients in Fountain Creek at the next meeting
Pat Wells and Gene Michaels	Will have a one-page summary on the issue of selenium at the next meeting
Carol Baker and Scott Cowan	Will get a selenium fact sheet put together for the outreach committee
Heather Bergman	Will ask Pat Edelmann to attend the next meeting and answer

Presentations on Selenium in Fountain Creek

Pat Wells, Colorado Springs Utilities (CSU)

- ❖ Selenium is a naturally occurring semi-metallic trace element that is most common in cretaceous and tertiary marine sedimentary rocks. It can be highly mobile and is biologically available in arid regions with alkaline soils. Selenium is an essential nutrient for humans and animals. The Food and Drug Administration (FDA) recommends a daily dose of 55 micrograms per day of selenium for adults. Selenium activates antioxidant enzymes, boosts the immune system, and cures dandruff. It is also widely used in electronics, glass, rubber, and pharmaceutical manufacturing.
- ❖ There is a narrow margin between too little and too much selenium. It can be harmful to humans at five to ten times the recommended daily dose. Selenium is more toxic to vertebrates than invertebrates and plants. Selenium is more toxic to fish and wildlife than to humans. Selenium has the ability for bioaccumulation (the accumulation of a substance, such as a toxic chemical, in various tissues of a living organism).
- ❖ Selenium can potentially be very harmful to livestock, birds, and fish. Selenium poisoning can cause reproductive toxicity, alkali disease, and “blind staggers” in livestock. A “blind stagger” includes head pressing, perspiration, blindness, abdominal pain, colic, diarrhea, increased heart and respiration rates, and lethargy. Death can occur quickly.
- ❖ The Colorado Department of Public Health and Environment (CDPHE) has a surface water standard for selenium. The chronic standard is lower than the acute standard. The standard selenium level is 18.4 micrograms per liter (ug/L) acute, aquatic; 4.6 ug/L chronic, aquatic; 50 ug/L water supply.
- ❖ A temporary modification of the Table Value Standard (TVS) of 4.6 micrograms of selenium was made for Monument Creek in July 2003. This temporary modification will expire on December 31, 2007.
- ❖ CSU has made efforts to address selenium with historic sampling and data analysis. The Selenium Source Study (2003), the Plan to Remove Uncertainty (February 2004), and the Monument Creek Selenium Study (June 2005) are studies that have been undertaken by CSU to address selenium.
 - o The Selenium Source Study was a limited-scope study to characterize potential sources of selenium in Monument Creek. The study also allowed for investigation of selenium concentrations and sources along tributaries. The focus of the Selenium Source Study was on Templeton Gap Floodway and Douglas Creek. The most striking selenium levels were in the seep water, which was coming out of a shale bedrock formation. That specific sample came back with a selenium content of 360 ug/L. Groundwater flowing through these shale formations appears to pick up selenium in the dissolved phase along its flowpath, resulting in increased loading to surface water where groundwater discharges to the stream,
 - o The Plan to Remove Uncertainty further identifies sources and causes of elevated selenium in the watershed. The purpose of this study was to gather

supplemental information to determine an appropriate ambient, site specific standard for Monument Creek.

- o At the Las Vegas Waste Water Treatment Facility, the average influent sample was 4.98 ug/L. The average effluent sample was 2.44 ug/L. A 50% removal efficiency was attributed to wastewater treatment processes..
- o The Monument Creek Selenium Study found that selenium concentrations tend to be higher in surface water during low flow periods. Groundwater discharge into creeks appears to be a primary contributor to elevated selenium concentrations in Monument Creek... Historically, concentrations of selenium are consistently above the TVS south of the Garden of the Gods.

CSU compiled results from its sampling efforts with data from USGS, CDPHE, and other agencies to calculate the ambient concentration of selenium in Monument Creek using CDPHE's *Guidance on Data Requirements and Data Interpretation Methods Used in Stream Standards and Classification Procedures*, which defines the ambient concentration of metals in a stream to be the 85th percentile value of the data. This calculation showed the ambient level of selenium in Monument Creek to be 4.6 ug/L, which equals the TVS. Therefore, CSU recommended that the temporary modification be discontinued and the TVS be reinstated for Monument Creek.

Questions and Answers

Is there another source of selenium other than the shale rock?

Besides Cretaceous shale bedrock, volcanoes have also been shown to be a significant source of selenium to the natural environment.

Considering the geological features have not changed for thousands of years, is the increase in selenium concentrations due to human activity?

Direct correlations between irrigation from humans and increased selenium concentrations in surface water have been made for certain locations and conditions. On the Western Slope, for instance, it has been shown that deep percolation of irrigation water into soils and bedrock mobilizes selenium into groundwater, resulting in elevated concentrations of selenium in local aquifers, lakes, and streams.

Gene Michaels, Pueblo Wastewater Department

- ❖ The Pueblo Wastewater Department has surveyed 44 surface water sites and 23 wells in 13 months so that they can have a mass balance model for selenium and do some analysis.
- ❖ The selenium levels for Fountain Creek at Pinon Road are quite high. The levels above Pinon Road are lower. There is an enormous concentration of selenium in Wild Horse Creek and in the Lower Arkansas Basin. The research finds that selenium concentrations are 100 times higher in shale-influenced zones. Selenium concentrations in irrigated alluvial zones are not meaningfully higher than concentrations in non-irrigated alluvium zones. Alluvium is a deposit of sand, mud, etc., formed by flowing water.
- ❖ Wild Horse Creek has a selenium concentration of 22% at mass loading and Fountain Creek has 21% at mass loading. Mass loading is the total amount of "stuff" in the river. The flow of Wild Horse Creek is much more massive compared to Fountain Creek. At

85%, the mass loading numbers for selenium are 580 ug/L at Wild Horse Creek and 19.4 ug/L at Fountain Creek.

- ❖ At ten aquatic biology monitoring sites, the biomass, abundance, diversity, tissue, selenium levels, and habitat are monitored. In terms of biology, macro-invertebrates are dominated by species adapted for fine-substrate plains streams. The fish were typical for plains streams. There was no evidence of unusual fish or abnormalities. The only injuries found were from parasites, which is also typical. The selenium concentration in the tissue of the macro-invertebrate from Wild Horse Creek increased from upstream to downstream.
- ❖ Average selenium concentration in minnows is 21.06 ug/L, sunfish 19.7 ug/L, and suckers 17.5 ug/L. The Environmental Protection Agency (EPA) drafted a standard at 7.91 ug/L. There is no consistent statistical relationship between selenium and fish abundance or diversity. Fish abundance is better explained by habitat (silt) than by selenium

Questions and Answers

Regarding the Wild Horse Creek area, could the increased selenium be caused by the increase in septic systems that are leaching selenium back into the Creek?

There are very few septic systems in that area. The water is yellow from the selenium along that whole area. It is naturally occurring from the shale.

Was anything found regarding the fish and insects that is inconsistent with what has been found in other areas of high selenium concentration?

No. The levels are high enough that harmful effects would be found. However, the findings were very minimal.

What does the high concentration of selenium mean to humans? What does it mean to the people eating the fish with the high concentration of selenium?

There have not been any specific human problems seen. Humans tend to attenuate selenium quickly. Most multivitamins will contain more selenium than the fish in Wild Horse Creek.

Is the increase in selenium natural or has there been activity that caused it?

There was not a big difference in selenium levels found with human interaction.

What type of wastewater treatment is required for the removal of the selenium?

Both oxidized and free selenium would need to be removed by reverse osmosis.

Does the effluent from Pueblo West and Horse Creek increase the amount of selenium present?

Actually, it dilutes the problem.

Can selenium cause damage to crops and livestock?

In terms of crop production, a corn yield can go from 150-200 bushels to 50 bushels. Livestock tend to exhibit sloughed hooves and poor patches of hide. These seem to happen to livestock if there is an under- or over-abundance of selenium.

Could an ambient standard for selenium be set?

There is the potential of having an ambient standard for selenium. There would be the need to prove that the selenium was from natural causes. Creating an ambient standard involves a negotiation with the state. The state is looking at ambient numbers. There was a statewide study by Colorado Wastewater Utility Council that showed the lack of impact the high concentration of selenium was having. The study made use of tissue criteria and is going to the EPA.

How far downstream is selenium an issue?

Selenium is an issue all the way to Kansas. Kansas is talking about creating a Total Maximum Density Level (TMDL) for selenium right now.

If an ambient standard is not created for selenium, what will happen with the goal of the Fountain Creek Task Force?

In terms of the Fountain Creek Task Force, one of the goals is to meet or exceed state water standards. This goal will not be met if selenium levels remain where they are in the watershed. Perhaps the goal will have to be revised.

Would the selenium levels be lower with out human impact?

If all human activities went away, we still would not meet the standards.

Is there any information from other communities regarding selenium?

Selenium is a big deal on the Western Slope. There is information about their efforts at seleniumtaskforce.org.

What would be the best way to achieve ambient standard?

Chasing compliance would not be the best use of resources. The selenium is naturally driven, and we cannot change the shale. The best idea is to have a sound and comprehensive argument to get the ambient standard passed.

Working Group Goals

The group reviewed and revised the goals for water quality that were drafted by the Consensus Committee. The reason for the review and revision of the goals was to determine if they were actually goals or strategies. The updated goals for this group, which will be forwarded to the Consensus Committee for review are:

- ❖ Reduce E. coli to levels are at or below the maximum amount permitted by state water quality standards
- ❖ Reduce stormwater pollution
- ❖ Address and, if possible, decrease selenium
- ❖ Adequately assess water quality in the watershed

Next Steps

At the next meeting, the group will hear presentations on salinity and nutrients in Fountain Creek. The next meeting will be held on Thursday, June 7, from 1 p.m. to 4 p.m. at the Pikes Peak Area Council of Governments office in Colorado Springs.

**Fountain Creek Vision Task Force
Water Quality Working Group
June 7, 2007
Final Meeting Summary**

Attending

Scott Cowan, Dennis Darrow, Pat Edelmann, Dan Henrichs, Nancy Keller, Irene Kornelly, Carole Lange, Dennis Maroney, Gene Michael, Rich Muzzy, Pat Nelson, Harold Noonan, Gary Rapp, Lisa Ross, Graham Thompson, Ross Vincent, Alan Ward, Pat Wells, Tim Williams, Niki Koszalka, and Heather Bergman

Action Items

Nancy Keller	Contact Gary Banuelos to speak in person or via phone on selenium mitigation. If Gary is unable to come to Colorado, if there is someone locally he could recommend to speak on this topic.
Dan Henrichs	Contact Dr. Gates regarding selenium and salinity
Pat Wells	Locate a speaker regarding water conservation measures at CSU
Colorado Springs Utilities (CSU)	Provide a breakdown of the demand and use of water outside of the home (lawn irrigation)

Presentations

Nutrients in Fountain Creek (Nancy Keller, City of Pueblo)

- ❖ Non-point sources of nutrients consist of runoff from farms and cities, airborne pollutants carried by storm events, agricultural uses from fertilizer, livestock and runoff from both pasture and rangelands, septic leakage, runoff from failed septic systems, and erosion. Silt carries nitrogen. The control of non-point sources centers on land management practices and regulation of the release of pollutants to the atmosphere.
- ❖ The effects of nutrients on the watershed include degradation in water quality, interference with use of water for fisheries, recreation, agriculture, and drinking. Phosphorous is not toxic to humans and animals, but it can stimulate toxic algae blooms or oxygen depletion. Nitrate is toxic at high levels to humans and animals. The limit for nitrogen in drinking water is 10 mg/l (milligram per liter). Vegetation along the riverbanks and control of urban runoff can help with the level of nutrients in the river. Additionally, agricultural management including matching fertilizer to crop needs, keeping runoff from manure out of the river, and reducing erosion can help with the nutrient levels.
- ❖ The US Environmental Protection Agency (EPA) determined nutrient criteria for Ecoregion IV. The Water Quality Criteria Recommendation was based on geology, land use, ecosystem type, and nutrient conditions. There has been a statistical analysis of the nutrient data in each ecoregion. Percentile values were used to estimate levels that might be expected in water that had not been impacted by man's presence.
- ❖ The Ecoregion IV standard for rivers and streams is 23 micrograms per liter (ug/l) for phosphorus. For nitrogen (nitrate, nitrite, ammonia, and organic nitrogen), the standard is .56 ug/l, and it is 2.40 ug/l for chlorophyll. The Ecoregion IV standard for turbidity is 4.21 Formazine Turbidity Units (FTU).

- ❖ Ammonia is a nutrient and is toxic to aquatic life. Colorado adopted new ammonia standards, and they were based on the EPA Ammonia Criteria and will be effective in October of 2007. Warm water standards are significantly lower. The wastewater facilities in Pueblo will be required to do a \$13 million upgrade to remove ammonia in order to comply with the new standard. Upstream facilities will also have to upgrade if they are not meeting the standards.
- ❖ The 85th percentile for nitrate is 4.65 mg/l in Colorado Springs .
- ❖ There were three options given to Colorado due to the wide variability of nutrients found. The state could adopt the EPA's Criteria Recommendations, develop nutrient criteria using the EPA's Technical Guidance Method, or develop a unique system. There has to be some sort of criteria in place. Colorado adopted the Nutrient Criteria Development Plan for Colorado in 2002. Included in these criteria are data collection, data assessment, modeling, and a regulatory process for rivers and lakes. All of these will be looked at during the 2010 Colorado Basic Standards Review, as will water quality standards. The first of these hearings will be in October of 2008.
- ❖ There is no direct-statewide relationship in regards to the totals of nitrogen, phosphorus, turbidity and chlorophyll. If nitrogen is regulated, it does not mean that algae blooms will not happen farther downstream. Colorado has experience with control regulations in several lakes but this is not the case with rivers. It has been difficult to find a good indicator for rivers and streams. The state is not sure what to do with the rivers and streams. It remains to be seen what the nutrient numbers will be and how they will be addressed.

Nutrients in Fountain Creek (Pat Edelmann, U.S. Geological Survey (USGS))

- ❖ Ammonia concentration on Fountain Creek has decreased in the last 10 years. Currently the levels are a few tenths of a microgram per liter compared to about 9 mg/l a decade ago. Upstream from the Las Vegas Wastewater Treatment Facility, the concentration is under one mg/l. The values have decreased over the last three decades. In the 1980s, the median concentration went from nine to one. This is a drastic reduction in rates of ammonia. However, ammonia is converted to nitrate. There has been an increase in the level of nitrate concentration. Presently the concentration is 2.5 to 3 mg/l.
- ❖ The total phosphorus in the 1980s averaged 5.5 mg/l; today the numbers are .2 to 1.5 mg/l. At Avondale, the phosphorus numbers are .7 mg/l at the 85percentile . The upper basin has even less of a concentration. The upper basin has a concentration of .05 mg/l. Phosphorous is taken up at Pueblo Reservoir.

Questions/Answers

Is the new EPA standard achievable?

The standard is extremely low and would be very difficult to achieve.

Are nitrates the primary concern?

Both phosphorus and nitrates are concerns.

Will an increase of septic systems create more leaching of some nutrients?

Yes, it could. If there are many septic systems, there may be increased nutrients.

Have the nutrient analyses taken into consideration the vegetation changes along Fountain Creek?

The vegetation is not attributable to the change in nutrient numbers. This would have more to do with increased flow.

Is oxygen a problem in streams?

Generally, oxygen is not a problem for streams in the West. In the Midwest, they will have to deal with oxygenation and phosphorus problems.

Could there be an issue with increased nitrates?

Ammonia will need to be removed in warm water streams. The by-product of ammonia removal is nitrate. This may turn into an increased rate of nitrate. If there is no requirement to remove the nitrates, they will increase in the watershed. Too much nitrate can lead to issues with drinking water.

Do both stormwater and return flow create elevated levels in nutrients?

Yes. Strategies to deal with nutrient levels could have secondary and positive outcomes. If the approach is to use vegetation, it could affect not only nutrient but also selenium levels.

Ammonia and phosphorus from urban runoff will attach to solids. Therefore, if there are plans to remove sediment, this will also remove ammonia and phosphorus.

Selenium in Fountain Creek (Pat Edelmann, USGS)

- ❖ Historically, even at low selenium levels there can be deformities in aquatic birds. At very high levels, there can be human health impacts.
- ❖ There are various levels of selenium in the Fountain Creek watershed. There was a significant increase through 2002 and a decrease after 2002. It could be speculated that this decrease was due to the water restrictions in Colorado Springs. The state standard for selenium is 43.6 ug/l. At the Las Vegas Wastewater Treatment Facility, levels start to go down. After the facility, the levels start to increase. The increase happens at about the Pueblo County line. The raised levels at Pueblo are a bit of an anomaly. Regular indications would point to there being a reduction instead of an increase at Pueblo. From the 1990's through the present, there have been higher concentrations below the reservoir. At the 85th percentile, the levels at Avondale on the Arkansas River are 12 to 15 ug/l. Wild Horse Creek has concentrations of 500 to 1200 ug/l.
- ❖ Selenium concentrations are reduced when oxygen is decreased. To determine the load of a stream or river, the concentration has to be combined with the flow.
- ❖ There is no significant difference between the Las Vegas Wastewater Treatment Facility and Pinon. There is a 300% difference between Pinon and Pueblo. The change is attributed to groundwater and may not all be a function of agriculture or lawn-irrigation return flows.
- ❖ Flows in the Arkansas River are not considered "steady state," in all state variables are constant in spite of ongoing processes that strive to change them. It is difficult to get good information from the Arkansas because the flow is not typical.
- ❖ Every Fountain Creek tributary is enriched with selenium. The tributaries are bringing in selenium throughout the basin. When you look at the loads, the tributary loading is low. Most of the tributaries are generally not surface water but more groundwater return flows.

Questions/Answers

Are agriculture and irrigation exacerbating the problem of selenium in Fountain Creek?

More irrigation occurred after the building of the Colorado Canal. Before there agriculture, there was very little groundwater. Most of the groundwater came with the building of the Colorado Canal. Farmers are not adding selenium to their crops, but when water is added to an area that historically was never irrigated, selenium can start to leach. When urban areas are built in or around selenium-rich lands that have not been irrigated, the amount of selenium could also increase. If all the human and agricultural influences were removed, the state selenium standards would still not be met.

Are there any best management practices (BMPs) that address selenium in residential areas in regards to lawn irrigation?

Yes, but they are limited. Xeriscaping is one way to decrease lawn irrigation. Another option is better planning--for instance, not putting a golf course in selenium-rich areas. If you apply water, you will increase the selenium load so there needs to be water management. Wastewater pipelines remove half of the selenium concentration. Without wastewater treatments, the levels of selenium would be much higher. In California, there has been work with plants that can uptake selenium. When the plants have taken enough selenium, they need to be harvested and removed.

Where in the sewage treatment process does the selenium come out?

The selenium comes out in the sludge. It comes out in micronutrients. It is a biological uptake. Most of the selenium ends up in biosolvents that go into a landfill.

Should northern parts of Pueblo County be developed?

Because of the concern regarding the selenium impact to the City of Pueblo, development may be an adverse choice at this time.

Is there a time when the EPA standard is written off as unachievable?

The chronic standard has not been modified but the acute standard has. EPA put out draft tissue criteria. There are elevated amounts of selenium in sampled fish tissue, but there have not been deformities observed. If it can be proven that the selenium is naturally occurring, there could be an ambient standard given.

The Army Corps put carbon filters in Fountain Creek by the Army. Do they have an impact on the amount of selenium?

The filters are there to filter out chemicals at the Pueblo Chemical Depot. They should not be contributing to selenium concentrations. If they are removing carbon, this should also not have an impact on selenium concentrations.

Could the increased water, in addition to the marine shale, be part of the reason for increased selenium?

Yes, any water above selenium rich soils will increase selenium levels.

How many points are being tested on Wild Horse Creek?

There are tests at the mouth, upstream from Pueblo West, and downstream. There is not enough testing to figure out the source. The upstream points, north of Highway 50 west, have lower selenium levels. It could be septic systems, lawn irrigation, and/or what the groundwater picks up in its return flow path.

What are options in lowering the concentration of selenium?

BMPs, land use, and water management can decrease selenium loading. It is not clear if these can reduce the number enough to meet the standard. There is not enough knowledge on selenium geology to counsel developers as to whether or not to develop. Filtering systems also can be a treatment option. Wastewater treatments can help remove selenium.

Are there any selenium maps?

Seleniferous soils have been mapped, but the details of the mapping are unknown. USGS has a data set regarding selenium also collecting samples from outcrop areas.

What happens to the selenium issue if there is an ambient standard?

If an ambient standard is established, it will no longer be a pressing issue. Recent regulations have made standards more stringent.

Do we know how to map the flow lines?

The general lines are known. They run down the valley, but they could intercept and flow into the stream creating a regional drain.

What are some of the main issues the Task Force needs to deal with regarding selenium?

One would be to deal with loading and not concentration level when dealing with selenium. Without agriculture or human activity, it is doubtful that the levels would be down to 4.6 ug/l. There are also data concerns surrounding the scale and flow lines that chart the movement of groundwater. Water use and management coupled with land use would also be important issues when looking at selenium.

How closely tied are the levels of selenium and salinity?

Selenium, sulfate, and salinity are all coming from the same source area. There are evapoconcentration issues with all three. Many of the same remedies could help with each. Both selenium and salinity levels are rising due to groundwater and leaching occurring from the shale. The levels are not impacted too much by stormwater. Generally, stormwater attaches organics and nutrients to sediment.

How are selenium and salinity best dealt with in regards to development?

The levels would be more tied into land use. If there is development around Fountain Creek, north of Pueblo and with poor land use planning, there will be more leaching of selenium and salinity in the watershed.

Does infiltrating stormwater contribute to selenium levels?

Infiltrating stormwater will not have big impacts on selenium levels. It would be necessary to develop a clean infiltration bed so that there would not be much impact to the groundwater system.

If Kansas has issues with the water coming across the state line, could they treat Colorado as a discharge point source? If so, how does this impact land use and loading issues?

Water attorneys do not feel that Kansas can raise a water quality issue. The regulation is that the standards of Kansas are the EPA levels. Water does have to be of beneficial use. The current issue is now they have a reversed flow gradient.

Can vegetation be planted to uptake selenium?

California has areas where vegetation has been planted that will uptake selenium. High selenium plants are often referred to as locoweed.

Will detention ponds raise selenium levels?

If you create groundwater recharge, you can expect more issues regarding selenium.

How will land use planning impact selenium concentrations in the future? Are there things we can do now with land use entering the implementation phase?

The biggest hurdle in Pueblo is annexation. There are major developments that have yet to get to implementation. Banning Lewis Ranch may have to come back to city council. Banning Lewis Ranch is a 15-year-old annexation with very vague guidelines to follow in terms of land use. It was left vague because it was realized that it would be a long project. The Task Force may not be able to require them to do things but certainly should offer suggestions. In terms of water management, a certain amount of xeriscaping could be suggested.

Has there been a conclusion that pure shale does not leach selenium?

No, actually there are studies to the contrary. Ft. Carson feels that the source of their selenium is pure shale.

Salinity in Fountain Creek (Pat Edelmann, USGS)

- ❖ Salinity is the total of dissolved solids. If water is filtered and evaporated, the inorganic residue that is left behind consists primarily of calcium, magnesium, sodium, potassium, hydrogen carbonate, aluminum sulfate, chlorine, and fluoride.
- ❖ There is <50mg/l salinity concentration in snowmelt runoff and transmountain diversions. 500 mg/l is the maximum recommended amount of salinity for drinking water. At 700-850 mg/l, the US Department of Agriculture estimates that salinity levels can begin to harm crops. The salinity of oceans is 35,000 mg/l.
- ❖ There have been long-term variations in salinity levels over the last 30 years. Salinity levels at the Las Vegas Wastewater Treatment Facility have been consistent. Since 1975, it has been about 450 mg/l. During the 1970's, at Pueblo, salinity levels were very inconsistent. They varied between 200 to 2,600 mg/l. The average concentration of salinity in Fountain Creek decreased due to the Fountain Creek exchange decree. Higher stream flows can increase loading.

- ❖ Upper Fountain Creek and lower Monument Creek have had an increasing trend in the last four to five years. There is a large increase between Pinon and Pueblo but it is a smaller increase than what is seen for selenium. In Fountain Creek at Avondale, the salinity concentration is 450 to 800mg/l.

Questions/Answers

What are concentrations of salinity?

Concentrations are an interaction with geologic material. They are salts left behind from evaporated water, or evapoconcentrations. An example of evapoconcentration is boiling water repeatedly in pot. The residue eventually will result in scaling on the pot. Crops take up water, leave behind salts, and add to the concentrations of salinity.

Next Steps

- ❖ The Task Force would like to have a selenium speaker. Nancy Keller and Heather Bergman will coordinate on getting a speaker.
- ❖ Dan Henrichs will contact Dr. Gates to see if he is available for a presentation about selenium and salinity.
- ❖ It would be helpful to know the demand and use of water outside of the home. Colorado Springs Utilities (CSU) could give a breakdown. Selenium concentrations are decreasing in Monument Creek due to reduced water irrigation for lawn. Pat Wells will help identify a speaker to talk about lawn irrigation in general.
- ❖ There may be lessons to learn from Grand Valley in Grand Junction? It may be a worthwhile discussion for both parties. They know lots of information about agriculture and irrigation but are a bit less knowledgeable about the impacts of urban development.

**Fountain Creek Vision Task Force
Water Quality Working Group
July 19, 2007
Final Meeting Summary**

Attending

Carol Baker, Stephanie Carter, Todd Dahlberg, Dennis Darrow, Danny Elsner, Timothy Gates, Nancy Keller, Carole Lange, Dennis Maroney, Gene Michael, Bruce Miller, Gary Rapp, Lisa Ross, Ann Seymour, Alan Ward, Pat Wells, Niki Koszalka, and Heather Bergman

Action Items

Pat Wells	Prepare a map of saliniferous soils; contact Pat Edelman more additional information if needed; let Heather Bergman know if this is map is not available
Pat Wells	Do a detailed search and review of notes from Western Slope selenium conference
Gary Rapp	Read and summarize any publications from Gary Banuelos
Danny Elsner, Dan Bare, Dennis Maroney, Tim Williams, and	Meet to prepare a preliminary charge to two groups who will outline new drainage criteria

Cynthia Peterson	
Heather Bergman	Talk to Gary Banuelos regarding urban mitigation of selenium; determine if he has any publications available on selenium mitigation; see if he would be willing to present to the group via phone
Heather Bergman	Revise policy review request for proposals and distribute to Consensus Committee

Policy Review Options for Consensus Committee

The group discussed two possible approaches to the policy review endeavor that emerged as the best next step at the last meeting of the Water Quality Working Group. Either scenario would need to focus on the checklist provided in the “Better Site Design” handbook. The two approaches were:

- Issue a request for proposals (RFP) to get a contractor to do the policy review and host meetings with planners and elected officials to share the results and determine how best to proceed.
- Have members of the working group do the policy review and have Heather Bergman and the working group host meetings with planners and elected officials to share the results and determine how best to proceed.

The group agreed that after a few small changes are made to the draft policy review RFP, both of these options should be presented to the Consensus Committee for review and discussion.

Selenium Mitigation (Dr. Tim Gates, Colorado State University)

- ❖ Early work on the selenium research project on the Arkansas River began in 1997, field data collection began in 1998, and the full, ongoing field research program began in 1999. The project includes monitoring and modeling.
- ❖ The research is focused on improving the management of water quality and water quantity in the basin and how to sustain or improve agriculture and the river itself. The research goals are to provide water users and managers with a sound database, realign modeling tools to support water management practices that enhance water quality in the watershed, find ways to reduce concentrations, and conserve water by reducing non-beneficial consumption.
- ❖ There is salt and selenium dissolution in the aquifer. There are substantial return flows of salt and selenium to the river. There are high saline concentrations in the groundwater tables.
- ❖ Research tools include field measurement, field-scale modeling, regional-scale modeling, basin-scale modeling, and pilot studies for implementation.
- ❖ The research centers around La Junta (upstream study region) and Lamar (downstream study region). There is monitoring of the surface and groundwater in both regions.
- ❖ The field measures assess groundwater, surface water, soil salinity and soil moisture, canal seepage losses, and groundwater aquifer properties.
- ❖ The salinity of water gets more concentrated as it moves downstream. Soil salinity is measured by decisiemens per meter (dS/m). Alfalfa will tolerate 2 – 3 dS/m. If the amount of selenium gets higher, the yield of alfalfa will decrease. When the selenium average is above 4 dS/m, there is a loss of crops. The estimated crop yield reduction from 1999-2001 is 14%.

- ❖ There is selenium in the groundwater in the upstream region. The concentration is regional and comes through in “hot spots”. Massive quantities of salt are going back into the river. The estimate for selenium returning to the river is .02/.10/.038 kilogram/day/kilometer (kg/day/km).
- ❖ Some strategies for improvement are increased irrigation efficiency, reduction in recharge, lining of canals to reduce seepage, surface drainage, altered pumping patterns, and a combination of these strategies.

Questions/Answers

Is it true that people may over- irrigate so that their unused water rights are not taken away?

This is a negative side effect of our water system in Colorado. It promotes inefficiency. Research is increasingly showing that it is harmful to over-irrigate. There are reduced crop yields due to over-irrigation. There is a movement to adopt more drip and sprinkler irrigation. Water rights are assessed not on how much you divert but are rather based on what you consume. There is a claim of abandonment when people do not divert their share at the head gate because they do not need it.

Is drip and sprinkler irrigation the most common way to improve ground irrigation?

Yes. There are also surge techniques, but these are very labor intensive. There will need to be a move toward pressurized systems.

Are there incentives to farmers to off-set monetary losses and discourage over-use of water?

There is the Environmental Quality Incentives Program (EQIP) through the government. This program provides significant matching investments to growers. There is hope that the measure will be adopted. It could improve productivity and health of the river.

Did this research consider tamarisk control?

Not exactly, the research project started to look at how much water was being used by native vegetation. This research project is interested in studying more on this topic.

How does selenium affect health?

It does not affect health very much. It is very rare that livestock will get ill due to selenium.

If a surface is more permeable, is it better to get the water back into the land instead of pumping it back to the river?

This would not be a big deal if the water were soaking in without shale underneath. Most of the selenium in the Arkansas is from the upper rivers, including Fountain and Horse Creek. There are concerns about running more water through the ground if there is shale.

Is it true that if natural percolation is maintained, the chance of putting more selenium in the system is not great?

Yes, this is true. In an urbanized area, the water quantity going into the river is higher as is the selenium level. This is also true when further urbanization is occurring. It is best to try to avoid the hot spots. There is some geologic data to help locate the hot spots, but not enough.

Fort Carson just initiated a study regarding selenium and nitrates, including what has been found in the monitoring wells. The study is going to look at pump tests, grades, and geochemistry. Has the research project gone into this area?

No, it has not. By correspondence from geologic mapping, the selenium is present as are the geologic prerequisites to form selenium.

Does lawn irrigation relate to selenium?

In areas where lawns would overlay shale bedrock and so forth, if there is over-irrigation, it will also dissolve the selenium and move it back toward Fountain Creek and the tributaries that feed it.

Conservation Measures at Colorado Springs Utilities (CSU) (Ann Seymour, Water Conservation Manager)

- ❖ CSU worked with conservation early on. In 1940, CSU had initiated supply-side measures include metering, leak detection systems, pressure reduction, and non-potable development. CSU knew it had to strike a balance between developing a new water supply and working to conserve the original water supply.
- ❖ Currently CSU is saving 23-25% of future water through conservation. They are hoping to save another 7-10% in the future.
- ❖ There are several categories for conservation programs including education/outreach and conservation rates, rebates/incentives, regulations, assistance programs, and local partnerships.
- ❖ One tool for water conservation is low-water or xeric landscaping. As part of a public education/outreach effort, the CSU website has a huge database with 400 plants on it, and CSU has a large on-site library including videos, DVDs, and handouts. CSU wants to make it as easy as possible for their customers to get conservation information.
- ❖ Conservation rates are block rates. These are yearly block-rate structures. CSU hoped that people would think more about the amount of irrigation occurring at their homes/businesses if the outdoor irrigation rates were higher.
- ❖ Rebates for conservation include rebates for high-efficiency washing machines, efficiency toilets, and irrigation equipment.
- ❖ Regulations for conservation include the Colorado Springs Landscape Code and Policy Manual. This addresses conservation, aesthetics, environmental quality, land values and investments, human values, nuisance species control, improved design, administration and enforcement, and horticultural sustainability.
- ❖ The assistance program at CSU is the Home Efficiency Assistance Program (HEAP) and is designed to help those with high bills. This includes high bill inspections and the distribution of water-efficient devices.
- ❖ CSU has local partnerships with developers, builders, designers, and members of the green industry who work with water providers to promote conservation. Some of the local partnerships including Peak to Prairie Landscape Symposium, Water Sense, Partnership for Responsible Water Use (PRWU).
- ❖ CSU depends on the community to do its part in conservation in terms of residential water use. The residents have been participating in conservation for a long time. Through the past few years of drought, the customers have responded well and reduced water use. The Smart Water Study surveyed water providers across the west. CSU did not participate in the survey

but applied the same questions/methodology and self-administered the survey. Pre-drought numbers for Colorado Springs are 122 gallons per capita per day and in 2006 (during the drought), Colorado Springs is at 96 gallons per capita per day.

Questions/Answers

Will another xeriscape step be water harvesting?

That would have to put that to the State to determine what the issues would be with water rights.

Is there a way to utilize stormwater or rainwater gardens?

CSU has been educating to slow the water down during infiltration and into the gardens. There is a low impact development (LID) display to show what can be done. CSU is working to retrofit the facility for LID. Mesoscaping is also another suggestion to help with infiltration.

Next Steps

- ❖ The Water Quality Working Group will merge with the Water Quantity Working Group.
- ❖ New drainage criteria for new developments and for existing developments would be useful. The Working Group should create two teams to outline new drainage criteria. First, a small team should write a “charge” or a list of key issues to include in the recommendations for new drainage criteria. This small group will meet in the next few weeks to outline the charge to the group; the group will include Danny Elsner, Dan Bare, Dennis Maroney, Tim Williams, and Cynthia Peterson.

**Fountain Creek Vision Task Force
Stormwater Strategy Task Group
April 6, 2007
Final Meeting Summary**

Action Items

Rich Muzzy	• For next meeting, prepare brief proposal on a policy workshop to review all current policies that affect watershed health • Send information on Community-Based Social Marketing listerv to Heather for distribution
Richard Skorman and Walter Lawson	Coordinate speaker on trees/plants and urban runoff for next Stormwater Strategy Group Meeting
Dennis Maroney, Barbara Dallemand, and Bill Alspach	Attend Colorado Water Conservation Board (CWCB) meeting on stormwater runoff criteria and report back to the group at next meeting

Attendance

Bill Alspach, Carol Baker, Dan Bare, Barbara Dallemand, Danny Elsner, Carole Lange, Walter Lawson, Dennis Maroney, Rich Muzzy, Lisa Ross, Richard Skorman, and Heather Bergman

Constraints to Addressing Stormwater Runoff

The group brainstormed the existing and potential constraints to changing the way that stormwater runoff is managed in the watershed. These constraints included:

- Lack of financial and human resources

- Lack of appropriate, accurate, and undisputed data
- Inability to impact all aspects of the problem
- Transient community (it may be hard to educate and influence temporary residents)
- Physical constraints (soils, topography, climate)
- Time
- Lack of enforcement, hard to establish enforcement (how, who?)
- Attitudes (people may not care)
- Code of the West
- Rural/urban divide
- Water rights, tied to peak flows (there is a lot of information and misinformation)
- Getting knowledge to lead to action is hard
- Politics
 - o Risk
 - o Influence
 - o Information
 - o Public sentiment
 - o Lots of data/lack of data
 - o No understanding of issue
 - o Need courageous leadership
- No panaceas out there, but many small solutions exist

Urban Runoff

Participants brainstormed strategies for decreasing stormwater runoff in the watershed. These strategies included:

- Decrease future impervious areas/rehabilitate existing impervious areas
 - o Porous pavement, clustering, sidewalks, swales, smaller widths, etc
 - o Manuals (roadway width, design/drainage standards)
 - o Tiered rate re impervious areas
 - o Correlate with water quality/habitat
 - o Floodplain preservation/restoration don't change streamside overlay
 - o Better coordination with planning depts.
 - o Parking requirements – require maximum parking area instead of current minimum
 - o Prudent line setbacks
 - o Thresholds based on drainage
 - o Match historic hydrology
 - o Policy, permitting, regulations, annex agreements
 - o Home Builder Associations (HBAs), green builders
 - o Buyer demand
- Impervious surface market
- Education regarding costs/benefits (targeted to HBAs, buyers)
- Stormwater as a resource to be managed, as an amenity
- Streamside overlays
- Treatment of stormwater
 - o Infiltration
 - o Detention

- o Filtration
 - o Storage
 - o Reuse/recapture
 - o Initial abstraction
 - Plant uptake
 - Soil bacterial activity
 - Wetlands
 - Riparian areas
- Link impervious areas with groundwater recharge
- Mapping, categorizing areas of imperviousness
- Credits for good development, recharge
 - o Stormwater utility fee credits
 - o Basin fee credits
- Decrease urban pollutants
 - o Increase knowledge about household pollutants (pesticides, fertilizers, etc.)
 - o Regulations/incentives
 - o Curb and gutter (remove or sweep more often)
- Community-based social marketing
- Target education to decision makers
- School education will pay off
- Package stormwater runoff with other green issues (transportation, renewables)
- Focus on connected impervious areas
- Tree planting programs and other vegetation projects
 - o Free trees
 - o What about debris?
 - o Large scale tree planting
 - o Residential/landscape roles
 - o Floodplain
- Enforcement

Next Step

- Could create a list of goals for stormwater regulations—drainage criteria
 - o Pay someone to integrate existing lists?
 - o Raise issue to Consensus Committee
- Learn more about trees/plants at next meeting
- List of 10 worst urban pollutants
- Several participants will attend the CWCB meeting on permitting criteria for stormwater runoff and report back at the next meeting
- Rich will prepare and share a proposal for a policy workshop to review all policies in the watershed that affect water quality

Next Meeting

- May 11 from 10 a.m. to 12 p.m.
- St. Leander Church Hall (1402 E. 7th Ave., in Pueblo)

Fountain Creek Vision Task Force
Stormwater Strategy
May 11, 2007
Final Meeting Summary
Location: St. Leander's Church, 1402 E. 7th Ave., Pueblo

Attending

Larry Atencio, Carol Baker, Stephanie Carter, Nancy Corlette, Tom Corlette, Dennis Darrow, Danny Elsner, Jane Green, Carole Lange, Alicia Madrid, Dennis Maroney, Margaret Mora, Jim Munch, Rich Muzzy, John Norton, Jane Rhodes, Lisa Ross, Richard Skorman, Juan Trujillo, Ross Vincent, Niki Koszalka, and Heather Bergman

Action Items

Rich Muzzy and Dennis Maroney	Responsible for researching the mapping aspect for the next meeting
Jim Munch and Juan Trujillo	Responsible for the new development aspects of the pilot projects for the next meeting
Danny Elsner	Committed to the retrofit aspect of the pilot project for the next meeting; this should connect with the idea of credits for good developments.
Dennis Maroney	Responsible for researching the area of credits for a good development for the next meeting
Lisa Ross and Danny Elsner	Volunteered to research the Best Management Practices (BMPs) for the next meeting
Rich Muzzy	Responsible for the policy review information for the next meeting
Jane Rhodes, Carol Baker and Heather Bergman	Working together regarding a field trip to The Fountain Creek Watershed
Walter Lawson and Richard Skorman	Looking into urban forestry for the next meeting
Margaret Mora	Reviewing the relationship between economic development and land use planning for the next meeting
Ross Vincent	Researching the topic of impervious surface markets for the next meeting

Meeting Objectives

- Hear reports on the Colorado Water Conservation Board (CWCB) permitting meeting
- Continue to identify possible strategies to address stormwater runoff

Reports on CWCB permitting meeting

- ❖ The training session for the new drainage criteria manual from CWCB is available to communities. The training sessions have great ideas that could be incorporated into existing drainage criteria manuals. It would also be a good beginning tool for communities without existing drainage criteria manuals. The CWCB drainage criteria manual is great as a basic tool but was broad based.

- ❖ Pueblo felt the CWCB manual would be worth considering for adoption. There needs to be an inclusion of a chapter about volume flow not just peak flow. The CWCB indicated there would be future meetings. One of the future meetings would include volume flow.
- ❖ There is another upcoming CWCB meeting on May 30, 2007 at 1:00 PM at the Public Works conference room in Pueblo. The meeting will focus on flood insurance.
- ❖ There is an upcoming CWCB meeting June 13, 2007 in Colorado Springs from 9:00-12:30 PM dealing with levy certification. Federal Emergency Management Agency (FEMA) changed the levy certification regulations last year.
- ❖ There is no drainage criteria manual in the Fountain Creek Watershed. The county uses the drainage criteria manual from Pueblo.
- ❖ There were no specifics about Low Impact Development (LID).

Identification of Additional Stormwater Strategies

- ❖ A policy workshop is proposed. During the workshop, reports and technical information would be looked at to see how current policies from the different cities could be improved upon. It would be important to look at what is being done in other cities and states. A one-day workshop with the planners of the cities and/or counties could make them aware of new information. The information could then be related to the Fountain Creek Watershed. There is no money for the proposed workshop. It would cost an estimated \$33,000 (\$23,000 for the report and \$10,000 for the workshop). A strategy proposed was to do a policy review of all the stormwater policies within the watershed. This idea is not proposing to rewrite existing policy but to use it as a learning tool. The policy review could take about 3-4 months to complete.
- ❖ CWCB is involved in an ongoing study of Monument Creek. When the information is gathered, it will be made public.

Review/brainstorm possible strategies

- ❖ Updating the basin drainage studies could define where the problems and issues are so that they can be fixed. The study would take a year and cost upwards of \$150,000 per basin. It is important to keep the focus on the basin and find the ability to implement the Fountain Creek Watershed inside the basin. Once these are policies, all developers will have to follow.
- ❖ The Environmental Protection Agency (EPA) had a broadcast on social marketing. Any educational pieces taken on by the Fountain Creek Task Force should make this part of their strategy.
- ❖ It should be a strategy to work with water storage and infiltration.
- ❖ Policies continually use the terms historical peaks and volumes. Currently, it is hard to come up with a game plan to achieve historical peaks and volumes. A tool kit could include a how to manual, a Best Management Practice (BMP) manual, and modeling. There is a need for modeling. The issue with modeling is that it is very timely and expensive.

New Ideas

- ❖ The corridor could be a storage facility, infiltration unit, and green way. The corridor could recharge wetlands and be used as infiltration during flood peaks. The Wetlands

Subgroup meets this week and will be discussing these ideas. The Wetlands Subgroup will give a presentation at the June 1, 2007 Land Use/Environment Meeting.

- ❖ There should be development of a map showing the historical sediment and erosion areas. This map would be outside of the FEMA 100 Year Flood Plan. The map could show areas that will have problems in the future based on what occurred in the past. Many of these areas need to be protected.
- ❖ An independent map showing the historical areas where there are sediment and erosion problems should also be created. This map could make people aware of what may happen. This map is different from the one mentioned above.
- ❖ There is a need to analyze the stream in geologic time and from a geologic perspective not only from photos.
- ❖ There should be a significant effort to plant trees (urban forestry). Trees planted or grown in the wrong area can create major problems and dictate where the creek goes. The result of the debris from dying trees can also create major problems. A goal would be to control growth and put the trees in the right areas. The correct placement of trees could be a good strategy to control runoff.
- ❖ The Environmental Protection Agency (EPA) has been advocating the use and introduction of green roofs. A green roof is vegetation on the top of roofs. This concept works well on the coasts but may prove more difficult in an arid climate. There could be the use of the sedum species of plants as well as xeriscaping to make green roofing more appropriate for Colorado. There could also be the use of planters at the base of buildings to catch runoff. All of these ideas have to be within the confinements of the water rights "box".
- ❖ The breach in the embankment could offer many strategy developments. The information learned from the embankment breach could be used as a mechanism to determine what can be done if all else fails.
- ❖ Utilizing a French drain sends water to the aquifer and provides post construction control.
- ❖ It would be imperative to work with developers in terms of LID. There should be a pilot project, a showpiece for the watershed. The pilot project will show that LID in addition to other ideas can work.
- ❖ Collect rainwater (grey water) to use. This is currently illegal in Colorado.
- ❖ A very low cost solution to cutting down flow and flooding would be conservation. There could be land use requirements and landscape conservation ordinances. In Santa Fe, there is a policy stating for every new building constructed there is an old building that will be retrofitted.
- ❖ A school competition could be held regarding the best ways to manage the watershed.

**Fountain Creek Vision Task Force
Stormwater Strategy Group
June 7, 2007
Final Meeting Summary**

Attending

Luke Babbitt, Dan Bare, Dennis Darrow, Danny Elsner, Dan Henrichs, Sarah Keith, Carole Lange, Dennis Maroney, Jim McGannon, Pat McNamara, Rich Muzzy, Lisa Ross, Richard Skorman, Ross Vincent, Tim Williams, Chris Woodka, Niki Koszalka and Heather Bergman

Action Items

Rich Muzzy, Heather Bergman, Lisa Ross, and Dennis Maroney	Will work together to determine the details of policy review
Heather Bergman	Will contact Ken Sampley regarding the level of interest Colorado Springs has in implementing a credit system

Presentations

The Role of Trees and Plants in Mitigating Stormwater Runoff (Jim McGannon, City of Colorado Springs)

- ❖ Trees are the oldest new thing in stormwater treatment. There are great benefits of forest and canopy coverage including energy savings, filtering of pollutants, reduced erosion, and reduced stormwater runoff. Canopy coverage has remained the same since the late 1990s according to mapping of the area. There is less coverage in the eastern part of Colorado Springs. Towards the plains, there is still some canopy coverage.
- ❖ Converting drainpipes to open swales with vegetation can make them quite pretty. For every five percent of tree cover added to a community, stormwater runoff is reduced by approximately two percent. One inch of rain over a 12-hour period with canopy coverage like in Salt Lake City, reduces runoff by about 11.3 mm gallons (17%).
- ❖ A study done in Boulder Colorado showed that trees intercept 6 million cubic feet of stormwater runoff annually (1271 per tree on average). When it is raining, a large tree will take in rainwater through the leaves and trunk, allowing it to infiltrate to the ground around it. Urban forestry and stormwater management greatly affects the natural environment. Studies in the Colorado Front Range have shown that tree cover was estimated to reduce runoff by 52.9 million feet (to the third). This 2003 study was mainly in Denver. With the rainfall interception at .11 per gallon, a small tree can intercept 434 gallons with an estimated annual benefit of \$4.69. Large tree intercepts 1,116 gallons with an estimated annual benefit of \$12.06. City Green Analysis is a software analysis company dealing with mapping urban ecology and measuring the economic benefits.
- ❖ There is a landscape ordinance in Colorado Springs for parking lots. There needs to be natural resources in them. The natural resources can provide shade, reduction in the heat-island impact, and lengthens life of pavement. Natural resources will also reduce run off due to impervious areas.

- ❖ The mountainous areas made up of decomposed granite are highly erosive. The headwaters of Fountain Creek are in the mountains and in the plains. Decomposed granite is what ends up in Fountain Creek. The trees and plant material are catching the snow and high mountain melt. With out the plant matter, there would be much more runoff.
- ❖ The link to the Center for Urban Forest Research, Pacific Southwest Research, U.S. Dept. Ag. Forest Service is <http://www.fs.fed.us/psw/programs/cufr/> .

Questions/Answers

What is the difference between a well-planted and poorly planted tree?

If man had planted the tamarisks and they spread for 50 years, it would be a poorly planted tree. Willows planted in hot and dry area are an example of poor planting. Xeroscape is good planting.

What species of plants work best in a semi arid area?

Natural Resource Conservation (NRC) does lots of work to determine what should go where. Use the research and resources, there are ways to track what should be planted. Colorado State University has a good source of plant information. They have a website for plant, grass, and tree selection. Army Corps of Engineers (ACE) has done work with riparian area plants.

Are there trees that need minimal water?

Trees will need water. In the urban environment, there will always be the need for water and maintenance. The Green Ash tree needs much less water than other types. It is important to study the region and climate to determine what the maintenance needs are for plants and trees.

Has there been a cost benefit study that compares having plants that reduce runoff and the cost of building a detention facility?

Yes, the Center for Urban Forestry Research did a study. The closest study was in Boulder and it addressed energy savings and stormwater costs.

How can the trees be kept out of the channel?

It is necessary to maintain the waterways to meet out needs. There is a need for labor to maintain drainages. In order to maintain the creek to its existing channel, there needs to be an input of maintenance energy.

Are there plants that have impacts on pollutants?

There is no cookbook approach. Some communities have used wetlands to improve water quality. Many plants have nutrient uptakes. Some plants can uptake pollutants and then need to be removed as toxic waste. Soils also have the ability to remove pollutants. Evapotranspiration is the process of transferring moisture from the earth to the atmosphere by evaporation of water and transpiration from plants.

Reports from Participants on Strategies

Mapping (Rich Muzzy and Dennis Maroney)

- ❖ The FEMA floodplain does not incorporate lateral or vertical migration of the system. Historic and current problems caused by movable boundaries (meander pattern of the

stream) and areas of high erosion are not typically identified on FEMA maps. They are considered problem areas. There needs to be decisions made as to how they are dealt with. People need to be aware of them. There is a historic meander belt area outside of 100-year floodplain. This is an area with historic problems in regards to flooding. It needs to be decided if the areas should be regulated (by the city, county, state or at a federal level) or not.

- ❖ The movement of the Fountain Creek channel can be observed by comparing maps from 1955 to 1999. Fountain Creek has moved greatly from the east to the west. By 1999 the midline of the channel had moved. The midline moves due to growing vegetation, limits in flows, and sediment.
- ❖ There should be a study to find out what the meander has been in the past and what it might be in the future. ACE has done some studies. Aerial photos could be used to find out information about the meander. Fountain Creek has massive erosion problems. Some areas are extremely solid where there has been no movement in the floodplain. There needs to be prioritization of certain areas.

Questions/Answers

Is it possible that the landowners have taken measures to maintain the meander belts?

There are areas where bank improvements have slowed down erosion. Some landowners have made efforts to stabilize the banks but the channel has taken them out. A combination of sedimentation and vegetation determines where the channel is going.

Would it be a good idea to let Fountain Creek do its own thing?

If Fountain Creek were left to itself, there would be issues in the outlying areas. The soil outside of the creek is clay and shale. Fountain Creek deposited the clay and shale from its previous meander belt. Colorado Springs has a streamside ordinance, maybe it would be a good idea for each city to have a streamside regulation.

Retrofit Pilot Project (Danny Elsner, Matrix Design and Luke Babbitt, URS)

- ❖ The effects of increased runoff, peak flows and runoff events are channel degradation, water quality issues, and a decrease in the health of the watershed. The goals of Low Impact Development (LID) are to mimic historic hydrograph conditions, both runoff volume and peak flow. The other goal of LID is to minimize flooding events. The outcomes from the practice of LID are the preservation of natural waterways, minimizing flooding events and environmental stewardship.
- ❖ In order to implement the process, existing infrastructure needs to be identified. Included in the infrastructure are detention ponds, infiltration ponds, inlets, and open space. Any LID that is already in place should be acknowledged. It is necessary to identify what is already addressed and what needs to be addressed. Peak flows, flow volume, and flood control would need to be addressed. There needs to be identification of implementation locations and appropriate LID tools to address the needs.
- ❖ When a LID is being put in, it is very important to monitor and keep any downriver impact to a minimum. There is an option to retrofit an area with LID. Planters could be put at downspouts of buildings so that the water is sent through the planter. Roads can be retrofitted with open curbs and existing landscape infiltration can be utilized.

Questions/Answers

Can porous pavement be used as an alternative?

Yes, porous pavement or modular block could be used as an alternative. LID best management practices (BMPs) can be applied in existing infrastructure and drainage.

How much water can a stormwater planter box hold?

The intent was to have the water infiltrate. The planter boxes are not meant to hold water. They are only 2 or 3 feet deep with dirt. There is approximately three inches of void space where water can go.

What would it cost to retrofit a parking lot?

It would cost about \$5,000-10,000, depending on the size, for the implementation of parking lot ideas.

Credits for Good Development (Dennis Maroney)

- ❖ Peak flow and volume of flow are both necessary to look at. Pueblo only gives credits for detention, which is a start.
- ❖ There are cities in Colorado that have stormwater incentives and credits. Commercial facilities that have detention facilities that are maintained can have a 60% credit in service fees. This can be upwards of \$5,000 per month or 2% of yearly revenue.
- ❖ Pueblo is revising an ordinance. There are points that will be given for quality, infiltration, and detention. With an economic incentive, there should be a noticeable improvement. Having a stormwater utility credit is even more incentive to adopt in into the watershed.
- ❖ Standard design practices are not geared toward things that may be implemented on the watershed. In terms of planning and development, water rights will need to be addressed and historic conditions will need to be met.
- ❖ Maintenance practices are very important. It is necessary to recognize the importance of maintaining and budgeting.

Questions/Answers

Can credits jump jurisdictional boundaries?

Yes, they could be implemented in each jurisdiction. Counties that do not have a utility could have adjustments for the impact fees to create a credit. It would be a good idea to have uniformity in the watershed.

When a stormwater fee is set up, it is based on maintaining or repairing what was there today. If you are granting credits, will that not create a deficit?

There will be the need to work with a smaller budget. This actually could reduce the cost of infrastructure downstream. The size of the facilities can be reduced. If a facility could be designed, that conveys historic flows and a basin was developed to only match historic flows, you would need pipes to convey the difference in flows. This in turn would make the infrastructure smaller.

Best Management Practices (Danny Elsner, Matrix Design)

- ❖ The main issues for stormwater are peak flows, total volume, and the number of storm events.
- ❖ Development decreases the initial abstraction, decreases infiltration, and decreases the time of concentration. The channel is receiving more water in a quicker timeframe than previously. Less water is needed to create runoff.
- ❖ Infiltration is dependant upon soil type and water rights. The routing of stormwater can vary due to impervious areas and flat slopes. There is both onsite and regional detention facilities. It is not legal to store water unless you have water rights.
- ❖ Currently peak flows and large infrequent storms are dealt with. The frequent and smaller storms are beginning to be dealt with. Currently not addressed is volume and number of storms. There is no requirement to meet historic volume or to meet initial abstractions in terms of number of storm events. A possible solution is infiltration. Storage and reuse are illegal in Colorado, so they are not options. When there is a desire to annex into a city, the developer has to state that it is able to match the historic peaks and balances.
- ❖ The current BMPs that can help with infiltration are grass buffers/swales, modular block porous pavement, sand filters and porous landscapes. Possibilities of BMPs for infiltration are green roofs and rain gardens. In all current ideas involving infiltration, there is maintenance that is involved.
- ❖ To show that historic volumes are being met, some kind of engineering documents would have to be created.

Questions/Answers

How would the strategies be different for peaks and volumes?

If you reduce the peaks, this will change the volumes. Slowing down the time of concentration will allow a downstream detention pond to be smaller. All forms of detention have to meet requirements downstream. If the peak flows are delayed, the stream will receive water for longer and more often, which changes the volume as well. If volumes can be matched than historic-peak levels are helped immediately.

Are slotted and French drains used in Colorado?

They are not used much in Colorado. Some projects have infiltration galleries.

Does an increase of volume also increase the amount of sedimentation and erosion?

It is not the flood flows that cause the most problems with erosion and sedimentation. The smaller, frequent storms have the most effect on channel forming.

What are the best ways to look at matching the historic numbers?

The best way would be to look at annual numbers and determine how much rainfall is occurring and try to have that be matched. There is no perfect recipe to match the historic numbers. Development does have an impact on the numbers. Rainfall patterns are always a projection. High intensity, short-lived storms show a quick rise in flow. Engineers will take typical storms and have to make assumptions.

How do engineers allow for variances in time?

It is actually uncharted territory. Maintaining the same volume over a period of time is tricky. Currently, engineers try to manage low flow events when historically catastrophic events were dealt with.

Best Management Practices (Lisa Ross, City of Colorado Springs)

- ❖ It is proposed by the city of Colorado Springs to revising its Drainage Criteria Manual Volume 2 (DMC2). This should be completed in 2008. The DMC2 has been in place since 2002. The city of Colorado Springs contacted all review engineers to determine what the issues are and what needs to be done. Urban drainage will fail with out maintenance. Colorado Springs needs to enhance its program for maintenance. By 2008, there will be a drafted program to be approved by the state. The rewriting of the DMC2 is not a complete overhaul but rather just tweaking what is currently available.
- ❖ There are proprietary units used for water quality. There are approximately three or four in Colorado Springs. Some are underground, out of sight and not maintained. The city installed one, the county installed another in a city right of way, one is a retrofit, and private developers install them as well. If credits are tied to maintenance, there is more incentive to maintain properly.
- ❖ Colorado Springs Utilities (CSU) and Urban Drainage are looking for a grant and funding for a study on BMPs for maintenance and lifestyle costs. The grant would also include options to incorporate LID.

Questions/Answers

Is Colorado Springs interested in implementing a credit system?

It would be best to refer that question to Ken Sampley. Heather Bergman will contact Ken Sampley.

What does a credit look like?

In some cases, they are financial or at times percentages off a bill.

Has Colorado Springs considered adopting the Volume Three drainage criteria manual?

No. Colorado Springs does use volume three as base but would not outright adopt it.

Impervious Surface Market (Ross Vincent)

- ❖ The impervious surface market is a program that is supposed to provide an incentive for people to do the right thing by creating tradable credits. However, it also creates an opportunity for people to buy credits for bad behavior. This could be an advantage by supplementing revenue lost from the people doing the right thing.
- ❖ Impervious Surface Markets work better in theory and tend to be an alternative to better programs. There needs to be a mechanism for determining what the objectives are for water quantity. There are a few communities trying this program. However, the research done found almost no discussion of how effective the programs are.
- ❖ The program requires some sort of basin wide oversight mechanism and making sure that it is enforced. The burdens of the enforcement would fall differently to different jurisdictions. If there was a Fountain Creek Watershed Authority, it could help in this area.
- ❖ This is an idea that should be on the table but that needs much further research.

Policy Review (Rich Muzzy)

- ❖ All the questions and presentations given have been technical and policy issues. They are technical and policy issues. In 2002, there was a watershed plan evaluation of current policies with eleven local governments. There could be a policy evaluation workshop and all could be updated.
- ❖ The policy evaluation workshop would address revising existing plan and list some changes that could overall strengthen what is being done for erosion, sedimentation and flooding. The workshop could be one day with the aim to make all entities aware of the information on existing policies. There would need to be a \$33,000 budget.

Discussion of Strategies

- ❖ The common themes of the strategies are the costs/benefits, maintenance, tradeoffs, measurements/verifications, and water rights.
- ❖ In terms of policy review, it should be a goal to get funding. There is no association to water rights because there will not be recommendations of specific policies but rather a listing of possibilities. Policy review influences many of the other strategies mentioned today. The review could take six months.
- ❖ For many years, there have been attempts to procure a grant with out success. The Consensus Committee would need to be approached and the cost could be divided between jurisdictions. Information needs to be given as to how the policy review ideas will physically help “fix” the watershed rather than another study. The only policies to be reviewed will be ones that directly influence the Fountain Creek Watershed.
- ❖ The proposed policy review could be a part of the Fountain Creek plan or it could be completed now and there could be recommendations that are part of the plan.
- ❖ Before the policies are reviewed, the Fountain Creek Vision Task Force needs to determine what things need to be implemented. Before checking the policies, it is imperative that it is known for what content they are being checked. The policy review discussion also needs to include identification of what the Fountain Creek Vision Task Force is trying to accomplish. The current holes in the policy need to be identified and specific recommendations need to be made.
- ❖ Policy review could result in creating a document. Having the creation of a document would move the Fountain Creek Vision Task Force closer to a strategic plan. It is more important to change the implementation of the current document than to change the entire document. It is important to include all local governments so that everyone is heard and included.
- ❖ Rich Muzzy, Heather Bergman, Lisa Ross, and Dennis Maroney will work together to determine the details of policy review. The next step is to brainstorm how to pitch policy review to the Consensus Committee.
- ❖ BMPs should be a priority. These are issues on how to deal with stormwater management and can be tied to policy review. BMPs will be a technical hurdle. They are not well established in stormwater management and will take research and technical evaluation/analysis.
- ❖ It would be helpful to have a small group of participants look at the three major vision documents (Salazar Vision, Petros Plan, and the 2003 ACE Study) and determine

what it takes to merge them. This will help the Fountain Creek Vision Task Force be able to visually describe what the Fountain Creek watershed will look like.

APPENDIX G

Fountain Creek Vision Task Force Water Quantity Working Group Meeting Summaries

**Fountain Creek Vision Task Force
Water Quantity Working Group
Meeting Summaries**

**Fountain Creek Vision Task Force
Water Quantity Task Force
February 9, 2007
Final Meeting Summary**

Attendance

Carol Baker, Jeff Chostner, Scott Cowan, Doug Fitzgerald, Ferris Frost, Mark Glidden, Brett Gracely, Jane Green, Terry Hart, Dan Henrichs, Scott Howell, Irene Kornelly, Carole Lange, Walter Lawson, Dennis Maroney, David Mau, Bob McGregor, Jim Munch, Rich Muzzy, Julie Pearson, Gary Rapp, Jane Rawlings, Jane Rhodes, Chip Rice, Graham Thompson, Barbara Vidmar, Ross Vincent, Jay Winner, Chris Woodka, and Heather Bergman

Presentation and Background Materials

At the group's request, Carol Baker from Colorado Springs Utilities gave a brief presentation on water quantity and use in the Fountain Creek watershed. Rich Muzzy, from the Pikes Peak Area Council of Governments, provided the group with a written summary of the existing studies on the watershed. Carol's presentation and Rich's summary will be made available on the website at:

http://www.fountain-crk.org/Watershed%20Vision%20Task%20Force/fc_VisionTaskForce.htm

Key Issues

The primary goal of this meeting was to finish identifying the key water quantity issues in the Fountain Creek watershed. The group brainstormed and identified several issues. After identifying the issues, each member of the group was given 3 dot stickers to use to indicate which issue(s) is/are most important. Because discharge and reuse of water at the Clear Spring Water Treatment Facility was discussed at the last meeting, it was added to the prioritization list. The issues are listed below in order of their ranking, and the number of dots each received is in parentheses. Note that SDS and sediment transport were tied with 20 votes and are listed below in alphabetical order.

- Impervious areas (31)
 - More runoff
 - Increase flows
 - Water quality
 - Water rights
 - Flood control
 - Propensity for flooding analysis
 - Change natural flow dynamics, including volume and timing of flow
 - Change the shape of the stream
 - Growth
 - Ground water recharge is affected
 - Economic impacts to Pueblo County landowners, roads, bridges, etc.

- Sediment transport (20)
- Southern Delivery System (SDS) (20)
 - More information available at www.sdseis.com
 - More water—return flows
 - Impacts to Pueblo Reservoir
 - Decreased flows in the Arkansas River between Pueblo Reservoir and Fountain Creek
- Reuse and discharge at Clear Spring Water Treatment Facility (8)
- Flooding and channel stability (4)
 - Velocity of flows
 - Impacts to public/private entities
- Floodplain filling (3)
- Increased/Changed Vegetation (1)
 - Restricts capacity
 - Levy certification
 - Invasive species
 - Channel stability
 - Channel location
 - Cottonwoods (native)
 - Tamarisk (invasive) - increases non-beneficial consumptive use
- Excess water hazard—solids facility (0)

Data Needs

- How much of the Arkansas River is consumed by Pueblo and other communities east of Pueblo? Colorado Springs uses 41 KAF/year (4.7%).
- Is SDS “creating” more return flows? We need this information for all alternatives in the environmental impact statement.

Next Steps

The group agreed that it needs more information about what land uses affect which flows in Fountain Creek (base flow, channel-forming flow, and flood flow). David Mau and Graham Thompson agreed to work with Heather to put together a panel to share the currently available information on this topic with the group at the next meeting. The next meeting will be on Friday, March 9th from 10 a.m. to 12 p.m. Unless otherwise announced, this meeting will take place at the Fountain City Hall.

Fountain Creek Vision Task Force Water Quantity Working Group March 22, 2007 Final Meeting Summary

Attendance

Carol Baker, Dan Centa, Scott Cowan, Pat Edelmann, Doug Fitzgerald, Scott Howell, Irene Kornelly, Rex Miller, Margaret Mora, Rich Muzzy, Julie Pearson, Gary Rapp, Jane Rawlings, Chip Rice, Ken Sampley, Graham Thompson, Barbara Vidmar, Alan Ward, Jay Winner, Daryl Wood, Chris Woodka, Heather Bergman, and Helen Littrell Smith

Action Items

Keystone, Chip Rice, Doug Fitzgerald, and Ken Sampley	Put together a panel to address municipalities' requirements/regulations on impervious surfaces related to water quantity for the next meeting.

Meeting Objectives

- Hear presentations about the relationship between land use and the flows in Fountain Creek
- Discuss land use/flow relationship with experts to ensure a sound understanding of the interplay of these two factors
- Determine if/how to move forward with this issue

Panel Presentations on the Effects of Land-Use Changes in an Urbanizing Area on Stream Hydrology

Introduction and Broad Definition of Terms, Graham Thompson, Matrix Design Group

Note: We expect this presentation to be posted on the Watershed Study website. Questions should be directed to Graham Thompson at (719) 575-0100.

- Water cycle
 - Water from the ocean becomes rain and ends up infiltrating the ground, turns into precipitation, goes through evapotranspiration, becomes surface runoff, etc.
 - The primary focus in the Fountain Creek watershed is on the relationship between precipitation and runoff.
- Hydrograph lingo
 - “Flow” is a volume of water measured over a time period and is typically expressed as cubic feet per second (cfs).
 - “Base flow” is the water accumulated in the watershed in the past that would be there whether a rain event happens or not. Perennial streams have the base flow component year-round (Fountain Creek is a perennial stream). An intermittent stream has a base flow for only part of the year. An ephemeral stream is dry most of the time and only flows when there is a rain event.
 - The part of the flow that is not base flow is the amount of rainfall that turns into runoff in the stream system.
 - Channel forming flow is the representative discharge responsible for doing the majority of the work that shapes the channel (pattern, cross section, profile/slope).
 - It is critical to consider the potential impacts to all three flow ranges when doing land use and impervious surface planning.
 - Flood events remove tremendous amounts of sediment, but they don’t happen very often. Channel forming flows move the largest percentage of sediment over time because they occur more frequently (even though they move less sediment per year than a flood event). Base flows do not have enough energy to move sediment to shape the channel.
 - Example/hypothetical flow ranges of Fountain Creek
 - Base flow: 30 cfs
 - Channel forming flow: 3,000 cfs
 - Flood flow: 30,000 cfs

Land Use/Runoff Relationship in the Fountain Creek Watershed, Graham Thompson, Matrix Design Group

- Land use and runoff
 - As the intensity of land use increases, the amount of impervious surfaces (materials like cement, asphalt, roofing, and compacted soil) also increases, and water quantity becomes an issue as a result.
 - An increase in impervious surfaces is related to an increase in runoff.
 - Mathematical relationships are used to determine how much rainfall ends up as runoff.
 - U.S. Army Corps of Engineers Fountain Creek watershed study
 - Constructed a computer model that compared existing (2005) and future (circa 2025) land use
 - Modeled 2-, 5-, 10-, 25-, 50-, 100- and 500-year 24-hour storm events
 - Increased flows reflect expected changes in land use during these periods.
 - The changes reflected on the maps do not necessarily take into account storm water management techniques that might be used in future development.
- This study is an example, a model. The intent of these types of exercises is to examine worst case scenarios to figure out what planning needs to be done.

Explanation and Description of Impervious Surfaces and Effects on Stream Hydrology in Fountain Creek, Rich Muzzy, Pikes Peak Area Council of Governments

Questions should be directed to Rich Muzzy: 719-471-7080, Ext. 109.

- Rich presented a table from an EPA document examining runoff from four types of land use (available at www.epa.gov/safewater).
 - There are two types of impervious surfaces: buildings and transportation-related.
 - Impervious surface areas related to transportation are connected; with buildings, there is some open space between impervious surface areas.
 - In a four-inch rainfall event on 1-acre:
 - A forest has 13,600 gallons of runoff.
 - A residential area has 32,600 gallons of runoff.
 - A commercial area has 100,520 gallons of runoff.
- Impervious surface area report (posted at www.fountain-crk.org)
 - The report describes the growth and development trends and health characteristics of the Fountain Creek watershed.
 - The land use data was compiled from cities and counties in the watershed.
 - It allows for a better understanding of the critical problem areas, projected patterns, and anthropogenic changes affecting the watershed.
 - The report shows the effects of impervious surfaces on runoff, including:
 - Increased frequency and severity of flooding
 - Reduced groundwater recharge
 - Decreased base flow in streams
 - Increase of channel erosion and sedimentation
 - Reduced natural filtration of the water
 - Negative impact on overall stream health
 - There is a direct connection between the amount of imperviousness and aquatic health (water quality, biodiversity, etc.). There are threshold levels of imperviousness that, if surpassed, make it difficult to maintain water quality standards.

- Recommended next steps
 - Determine potential resources that will be most affected by an increase in imperviousness and correlations between imperviousness and watershed health.
 - Determine groundwater recharge and source water areas that should be protected.
- Recommend that local governments utilize methods to minimize impervious surface areas and use imperviousness as a land use planning tool.

Historical Changes in Streamflow Conditions on Monument and Fountain Creeks, Pat Edelmann, U.S. Geological Survey (USGS)

Note: Due to the provisional nature of this presentation, it will not be made available on the website or distributed via email. Keystone has tried to capture the key elements of this technical presentation to the best of our ability. Questions should be directed to USGS: Pat Edelmann, 719-544-7155.

- The presentation covered testing done at four sites:
 - Monument Creek at Pikeview
 - Fountain Creek near Colorado Springs
 - Fountain Creek at Security
 - Fountain Creek at Pueblo
- Normal Flow Index (NFI) = flows not associated with runoff. For example, ground water discharge, irrigation return flows, wastewater discharge, base flow, effluent, regulated flows, etc.
- Fountain Creek near Colorado Springs
 - Cumulative daily flow & NFI flows diverge over time, which suggests that the divergence is related to runoff events (more analysis is needed). Climatology may also have an influence in the variance.
 - There are “steps” in the graph that represent an increase in flows in the early 80s and mid-late 90s; the graph from the year 2000 and after seems to have a steadier slope.
 - At this site, the annual peak flow has not significantly increased over time.
- Monument Creek at Pikeview
 - There are similar “steps” in the flows as in the previous graph
 - How many days do you have elevated flows?
 - Looked at the number of daily flows greater than 100 cfs. There is cluster of data points around 20/year in the 1940s/50s, now seeing more per year.
 - At this site, the annual peak flow has significantly increased over time.
- Fountain Creek at Security
 - The slope on the graph increases in the early 1980s in cumulative daily flow & NFI, then the lines diverge.
 - At this site, the annual peak flow has significantly increased over time.
- Fountain Creek at Pueblo
 - Graph shows a greater divergence between cumulative daily flow & NFI, suggesting greater runoff events.
 - “Steps” appear on the graph in the early 80s, again in the late 90s.
 - At this site, the annual peak flows have not changed significantly over time.
 - The frequency of channel forming flows is increasing.

Question/Answer and Group Discussion

- What caused the “steps” to occur?
 - In general, those were periods of climatic related change. There is more research to be done in this area.
- Did historic increases in the NFI have an effect on cumulative historic flow?
 - Yes.
- Did the increase in NFI effect channel forming flows, and if so, how much?
 - Generally speaking, base flows for the most part do not have enough energy to move large volumes of sediment. Increases in base flows do not change the magnitude of the event that is responsible for the channel forming flow. There is a critical sheer stress that has to be exceeded to get sediment to move en masse. The critical sheer stress for Fountain Creek is low because the sediment particles are so small. The critical sheer stress changes across areas of the stream.
- It appears that the base flow condition has increased over time, with “steps,” and the streambed responds to that increase. If you raise the normal flow, has the stream channel fluctuated enough with that phased increase in flow that the sheer critical stress point increases as well?
 - Generally, no. As your normal flows increase, it is possible to see an increase in the frequency of channel forming flows if the channel changes. Changes in channel form are not being driven by base flow but rather by storm events.
- If increased flows are inevitable, there is concern about more channelization and erosion.
 - There is no longer a flood plain administrator position in El Paso County, and the best guess is that the work of that position will be done by existing staff.
 - Working group members were encouraged to look at proposals for channelization permits and comment on them with respect to the effects that channelization will have on Fountain Creek.
 - The sediment transport/channel forming topic is probably a separate discussion for this group to take up. The amount of sheer stress required to move sediment increases as flows increase. There are three elements to a stream: pattern, dimension, and profile. If those are changed, there is a change in sheer stress and thus more erosion.
 - It was suggested that the group look at fixes to Fountain Creek from a holistic approach and not on a site-specific basis.
- Is the U.S. Army Corps of Engineers getting \$300K to fund their study?
 - They are looking to apply funds to the Fountain Creek study, and as of now they think they have identified \$120-160K to get started on the next phase of the plan. The anticipated timeframe is mid-April, so they would need an additional \$149K to complete the study.
- It seems that there is information about the nature of Fountain Creek that indicates the channel has changed over time due to the lifecycle of the stream (as opposed to outside sources). Is that a fair assessment?
 - It is difficult to make this determination in Fountain Creek because of the changes in hydrology and the difficulty of separating what is natural and what isn't. In theory, if flows don't change they should maintain the pattern, dimension, and profile of the stream. However, this is not the case in certain sections of Fountain Creek, as some sections are getting longer and some are getting shorter.
- When we had big storm events, was there a lot of change in the streambed?
 - Yes.

- Because there are only so many aerial photos of the creek historically, there are limited pictures to compare. For example, if you compare pictures from 1955 and the next available set is from 1983, you can't isolate whether any changes were due to the 1965 flood event.
- Aren't we trying to manage peak flows? What are the solutions? Is it possible to manage Fountain Creek during storm events?
 - Yes, we are. What flow you are trying to manage to is an important question for this group to tackle. If you do shape the channel with respect to a 100-year event, you will mess it up for smaller events (e.g., it won't be able to move sediment). The unintended consequences of management actions are important to consider.
 - Concepts like bankfull flow have existed in the scientific world for some time, but haven't yet made it into regulatory arena.
- Channel forming flows are sensitive to impervious surfaces, how sensitive are they to flood plain encroachments?
 - Channel forming flows stay the same. What changes is the dimension of a channel if it is encroached upon; then you've changed the shear stress relationship.
- Is bankfull flow the same as channel forming flow?
 - In a way, yes.
- The system is complex and a lot of particulars that play into the system are extremely site-specific.
- The stream is dynamic and will always be changing. Human impact on the Front Range is changing and will continue to do so. The goal is for the stream to be healthy from a holistic standpoint, and part of that is trying to understand what the state of Fountain Creek is today. We want to be able to look to the future and understand what impact different actions will have on the state of stream. For example, planning for impervious surfaces. The more we improve the stream's ability to function healthfully, the more value we get out of it as a community.
- If we build an off-channel diversion reservoir to manage peak events, would that impact the stream from a holistic point of view ("streaminess")?
 - Yes. As soon as you divert water you could create a major instability in that one area (impact the stress relationship). A single silver bullet fix will never be as successful as multiple, smaller solutions across the watershed.
- What if the reservoir was designed for flood management over a certain cfs?
 - When you manage that way, you do affect the "streaminess," because no one thing in and of itself will solve the issue. People downstream with water rights want peak flows because that may be the only time they get their water. Again, the holistic approach is the one we want to focus on.
- Pueblo Reservoir has managed to meet water rights.
 - There has been tremendous impact downstream because no channel forming flows are making it downstream of the reservoir.
 - Additionally, the peak flows are a part of the "streaminess" of the creek.
- Are there other watersheds this size and complex that we can use as a guide?
 - Cherry Creek was a quality issue only, but is similar in size.
 - Black Foot Challenge (in Montana)
- Key Themes/Lessons
 - There are no silver bullets, but there are solutions.

- Be conscious of unintended consequences.
- Look at the whole system—the big picture is key to finding solutions.
- Policy, institutional, funding, and technical solutions are needed.
- Who can we learn from?
- Better technology/new thinking

Next Steps

- Do we know where the problems are to start brainstorming solutions?
 - Generally speaking, anything you can do to not increase the amount of impervious surfaces is good.
- What about existing imp surfaces? Can we reduce those?
 - It is possible; we can try to reduce existing surfaces while trying to reduce the amount of future impervious surfaces being built. This group might think about setting a specific goal around impervious surfaces (i.e., no net increase, no more than 5% increase/year, etc.)
 - There will be more opportunities for success by changing future aims than trying to change the past.
- A subgroup of the Water Quality Working Group will be discussing stormwater, which is related to impervious surfaces. If we spent a month on something else, we could have that group come talk to us about what they've done.
- How far is this group trying to take this? Recommendations, policy suggestions?
 - There are entities trying to manage to this currently. We need to learn more about what the municipalities require in new developments and if the standards are not good enough we should look to have an impact on those standards.
 - This group will be successful in setting goals around managing to a target, but should also develop broader suggestions on what kind of policy changes they'd like to see (i.e., more green spaces).
- Put together the next panel on impervious surfaces and figure out:
 - Who requires what of developers?
 - Who reviews development plans and what goals are they trying to accomplish? What rules are implemented to accomplish those goals?
 - How does this group change policies?
 - What do the municipalities' criteria manuals say (with respect to quantity and not quality) and do they consider those flow ranges we discussed to be important?
- Chip Rice, Doug Fitzgerald, and Ken Sampley agreed to help put the panel together for the next meeting.
- Next meeting
 - The next Water Quantity Working Group meeting is scheduled for Friday, April 27 from 9:00 a.m. – 12:00 noon in Fountain.

**Fountain Creek Vision Task Force
Water Quantity Working Group
April 27, 2007
Final Meeting Summary**

Attending

Bill Alspach, Carol Baker, Dan Bare, Mark Glidden, Brett Gracely, Kim Headley, Dan Henrichs, Brian Kelley, Carole Lange, Walt Lawson, Dennis Maroney, Jim McGannon, Rex Miller, Jerry Pacheco, Julie Pearson, Alf Randall, Gary Rapp, Chip Rice, Ryan Tefertiller, Paul Thomas, Juan Trujillo, Tim Williams, Chris Woodka, Heather Bergman, and Niki Koszalka

Meeting Objectives

- Hear presentations on water quantity permitting requirements in the watershed
- Decide if/how to move forward with this and other water quantity issues
- Discuss water quantity goals provided by the Consensus Committee

Panel Presentations: Permitting Requirements

Presentation: Jerry Pacheco (City of Pueblo) and Tim William (City of Pueblo)

- ❖ In a 2005 study regarding relative imperviousness, it was determined that, typically, there is a direct correlation between how urban an area is and the amount of impervious surface in that area. There are projections for 2020 showing that there will be many changes in imperviousness in the next decade that will alter Fountain Creek and Pueblo. Pueblo's goal is to have the post development hydrograph match the pre-development hydrograph to the maximum extent practicable. This can be accomplished effectively through a two-pronged approach of stormwater detention and infiltration.
- ❖ The City of Pueblo is attempting to limit the negative impacts resulting from future development and urbanization by the Development Review Process. There are annexation agreements that require developers to keep flows to lower levels. Developers are required to submit master drainage plans and reports for rezoning projects. In advance of any residential development there must be a plan for stormwater and run-off.
- ❖ When looking at the Erosion Buffer Zone, it is necessary to take into consideration the 100-year floodplain and stream boundaries. Inside of the prudent line is a no-build line. The erosion limit line will need to protect the boundary line. If the erosion line is inside the boundary line, there can be no impact on any developed area. The prudent line is a 100-foot setback from the 100-year floodplain.
- ❖ Pueblo also working on a Non-Developable Lands Project, which is a comprehensive land use plan identifying areas should not be developed.

Questions and Answers

Has there been feedback from the community regarding maintaining the historic hydrograph?

The City of Pueblo is only allowed to pursue this goal only through the annexation process. It is a very high standard. The City Council endorses and approves of this goal. It is a requirement if development is part of annexation. In older areas it is still a goal but not a requirement.

Were any issues of volume studied during the drainage basin planning?

The basin studies in the City of Pueblo were just finished and volume concepts were not addressed.

How big are the annexations?

Most of the annexations are small. There will be a more noticeable impact on the historic hydrograph with the larger projects.

Has the requirement to match the historic hydrograph been used effectively?

It has been used in the northeast and has been found to work effectively there.

Does that mean it is workable here?

A lot depends on hydrology and soils as well as vegetation types. Some parts of city will have reasonable success. Other parts, due to poor soils, may see lesser results. Western water law needs to be considered as well.

Please say more about the prudent line/erosion buffer zone.

No development is allowed within 100 feet of the prudent line. Most of the lots within the city are on the “fringe” area.

Do historic areas have to comply with this requirement?

There are no guidelines in place for historic areas. There may be more opportunity to comply than people think. This is especially true for new developments. The older developments are challenging because the lines may not have been in existence when the properties were developed.

If a property wants to re-develop, is that acceptable?

There is no development inside the floodplain for either the Arkansas River or Fountain Creek.

Presentation: Alf Randall (Pueblo County)

- ❖ In Pueblo County, the types of applications in which drainage requirements are imposed include new or redevelopment of subdivisions, planned unit developments, rural land use plans, and special use permits.
- ❖ A drainage report and drainage plans may be imposed as a condition of approval for a special use permit. This depends upon the use covered by the permit and the specific characteristics of the site.
- ❖ There are basic guidelines and requirements for drainage reports and plans. The development will not block or impede flows that historically cross the site from upstream basins, and proposed onsite drainage facilities are adequate to convey drainage without property damage or safety risks. Developments will not result in a higher peak flow rate onto downstream properties.
- ❖ Drainage reports and plans are reviewed by the Engineering Division of the Public Works Department. Approval of the reports and plans by the Public Works Department is typically made a condition of approval for a particular land use application. The Public Works Department also imposes similar drainage requirements on new commercial and industrial developments via the access permit process.
- ❖ Pueblo County Public Works reviews and approves drainage reports, plans, and proposed facilities by using the following resources in review of drainage plans and reports: Storm Drainage Criteria and Drainage Policies for the City of Pueblo and Urban Storm Drainage Criteria Manual (prepared by Urban Drainage in Denver).

- ❖ Pueblo County also requires compliance with any formally adopted master drainage basin studies and collateralized subdivision improvement agreements guaranteeing installation of public improvements.

Questions and Answers

When the city does a drainage basin planning study, is the county incorporated?

Yes, there is serious discussion between the city and the county. There was an idea, initially, that the city and the county would adopt an enterprise, but it needs to have ballot approval. The city wanted a non-approval initiative, but it needs to be balloted.

Does the historic hydrograph requirement encourage developers to use metropolitan areas? Would it tend to bring more metropolitan areas into the county?

Outside of the two metropolitan areas, there is not much development within the county now and we are not anticipating much more. Subdivisions need water and sewers. To get water and sewers outside metropolitan areas, there would have to be an annexation into the city, which entails applying or petitioning with the city.

A comprehensive plan was prepared in 2002. This included a policy to encourage the City of Pueblo to be maintained as the hub of the area. Currently there are only two metropolitan areas (created in the 1960's). New metropolitan development is not encouraged.

How is new metropolitan development discouraged?

Developers are told that the city does not want it new metropolitan districts. All these areas would need water or sewer; again developers would be encouraged to see if there are options for other areas.

Do you encourage enlarging the current metropolitan areas?

No, we do not.

Presentation: Brian Kelley (Colorado Springs)

- ❖ The City of Colorado Springs drainage policy includes the health, safety and welfare of the community. Drainage is considered by Colorado Springs to be a regional issue that affects all governmental jurisdictions, and the master drainage planning should be integrated on a regional level. In addition, it uses a Comprehensive Land Use Plan and includes a 5- and 100-year storm plan.
- ❖ The City of Colorado Springs requires a Drainage Planning Study (DPS). The DPS identifies facilities required to control the 100-year event, delineates sub-basins, and estimates costs of construction.
- ❖ The City of Colorado Springs requires a Master Development Drainage Plan (MDDP) when the phased development exceeds 10 acres. The MDDP has greater hydrologic and hydraulic detail and interfaces with the requirements established in the DPS. The MDDP also delineates rights-of-way required for drainageways and detention facilities.
- ❖ The City of Colorado Springs requires a Preliminary Drainage Report (PDR) for concept plans and non-phase concept plans. The PDR identifies and proposes specific solutions to

drainage and provides detailed analysis of hydrology and hydraulics (which is required). The PDR also provides improvements, located and sized, for both initial and major storms.

- ❖ The City of Colorado Springs requires a Final Drainage Report (FDR) prior to the final plan approval, which provides specific hydrology and hydraulic design. The FDR will provide the detailed analysis needed to complete construction plans for all drainage structures and includes grading, streets, and off-site facilities as applicable.
- ❖ The Subdivision Engineering Review Team (SERT) reviews all the development and drainage plans. SERT is a team of civil engineers and inspectors.
- ❖ The City of Colorado Springs has goals to comply with the Drainage Criteria Manual and to comply with the DPS for the basin and other studies. The City of Colorado Springs also has a goal to comply with all intended land uses and to have responsible/adequate conveyance and detention facilities. The implemented rules to achieve these goals include approval of the applicable level drainage study, inspection of facilities and sites, and financial assurances.
- ❖ The Drainage Criteria Manual for stormwater quantity establishes storm run-off methods of analysis and design criteria for streets, pipes, culverts, open channels, and detention storage.
- ❖ Policy changes are made by The City of Colorado Springs City Council. The City/County Drainage Board makes recommendations to the City Council, and the meetings are held on a monthly basis. All parties realize that new technologies, new drainage concepts, changes to drainage law, and intergovernmental agreements can affect drainage planning policies.

Questions and Answers

Is there a prudent line concept?

There is one in Cottonwood Basin. The prudent line concept will be determined in a basin-by-basin process.

Are there any detention alternatives?

The City of Colorado Springs is looking at historic release. In addition, the City is looking at smaller regional facilities and ones that reduce flow to the level that can be accommodated downstream.

Are you addressing the quantity of water that leaves the facility?

If a historic release is applicable, the City of Colorado Springs will release to the historic criteria. If there is no historic information available, the City of Colorado Springs will release to key.

Is there a requirement for the volume of water that comes off the watershed?

There is no requirement for volume reduction in the current policy.

What were the experiences of the facilities at Sand Creek?

There is only one facility that is completed (at Constitution Avenue). It is functioning and was properly installed in 2002. The facility is designed to reduce the peak flows to what the downstream main stem can handle, which is 240 acre feet at the detention basin. Several more facilities have been planned for up stream if they are needed.

How will you accomplish this?

The Federal Emergency Management Agency (FEMA) mapped the 100- and 500-year floodplains. The streamside ordinance will provide preservation corridors, and engineering will be used to determine if certain areas need to be preserved. The City of Colorado Springs is always looking to improve on what has been done. The Streamside Ordinance was adopted in late 2002, and this is the first major study where it will be used for the DPS.

Presentation: Dan Bare (El Paso County Department of Transportation)

- ❖ Stormwater quantity is defined by run-off, rainfall that causes flow, snowmelt, return flows, and ground water.
- ❖ The framework of stormwater management includes floodplain management, state law, and policy criteria. The goals of stormwater management are to operate on a regional basis, to protect the environment, and to provide an equitable basis for funding. The Land Development Code establishes how the county-wide plan would be implemented, identifies other documents, implements documents, and also identifies drainage basin fees.
- ❖ The Engineering Criteria Manual protects the natural systems via methodologies that are acceptable by the county.
- ❖ The Drainage Criteria Manual (DCM) includes both the 10- and a 100-year floodplains. The DCM works with regional detention and requires major consideration for floodplains and open space. The DCM requires “good channel design” and finds ways to apply hydrology methods.
- ❖ The Drainage Criteria Manual 2 (DCM2) deals with run-off reduction practices (but does not identify how that can be used for runoff downstream in the basin) and recognizes that there will be a need for stream stabilization.
- ❖ To implement the DCM and DCM2, there need to be flood insurance maps, drainage basin planning methods, a fee calculation from the county (based upon impervious acreage not just total acreage), and construction plans.
- ❖ The Department of Transportation completes and reviews the DPS.

Question and Answer

How do you address erosion and sedimentation?

Erosion and sedimentation are addressed in general terms. There are no specific guidelines on how that is to be done.

How is the fee schedule set up with the county?

The system was set up 25 years ago. A regional system would be the best approach. Developers pay into a fund (one for each basin) if they have to build improvements. If the improvement cost is greater than the fee, they get a refund. If not, they pay the difference.

Is there an established budget for major drainage maintenance?

There are no set aside funds. It is something the county has been struggling with. It is in the regular budget. The El Paso Department of Transportation would need to get revenue for stormwater projects. The immediate need is \$45 million, and there is a total need of \$100 million.

Additional Information on Permitting in the Watershed

Brief written notes provided by Ft. Carson

- ❖ Fort Carson does not require any special permitting in terms of water quantity and runoff controls beyond regulatory requirements at this time.

Brief written notes provided by the City of Fountain

- ❖ The City of Fountain has adopted the City of Colorado Springs Subdivision Design and Drainage Criteria Manuals by reference. As such, Development must detain flow to historic levels utilizing the 5-year and 100-year as key design storm events. The City of Fountain is now requiring full spectrum detention pond design with water quality features such as pre-sediment pools, outlet micro-pools and 70-hour excess urban runoff volume release rates. The City of Fountain is also requiring more implementation of low-impact BMP drainage impact improvements throughout the development rather than simply utilizing a single detention pond. Grading, Erosion & Drainage plans are reviewed by the Public works Director/City Engineer's office and a copy kept on site during construction. The City requires private drainage easements and detention basin maintenance agreements. The best way to change policies is by way of City Ordinance. The City of Fountain is currently updating our subdivision regulations. Drainage criteria standard modifications can be included with these subdivision regulation changes or done separately as part of a low-impact development ordinance.

Questions and Answers

How can this information be interpreted to learn the future effects on development in the Fountain Creek watershed?

Obviously there are problems in Fountain Creek. The Task Force is effective but there is more that needs to be done, including: creating best management practices (BMPs), education, keeping City Council aware, and keeping elected officials knowledgeable so that they can make good decisions.

How far back are you looking for the historical hydrology?

(From a participant) We generally look at the hydrograph of today—that becomes the historic hydrograph. If it is developed, developers have to make sure the hydrograph matches what it did at the beginning of their development work.

Isn't volume more important than peak flows?

If left unchanged, volume will continue to degrade the stream and the ecosystem.

Should we look at the issue of volume instead of peak flows?

Solutions for solving issues with Fountain Creek lie in the watershed. There has been a change because we increased instability in the watershed. One way of trying to maintain historic flows and reducing the instabilities would be low impact development (LID). LID helps to stabilize the channel and flow into Fountain Creek. There is no way to stop change in Fountain Creek.

Next Steps

It was agreed that the group needs a better understanding of the relationship between reducing runoff and downstream water rights. This information could help set boundaries on what the

Task Force can do, what it can change, and what it cannot change. It was decided that the next water quantity meeting should address this issue. Dan Henrichs and Bretty Gracely will work together on a balanced panel to discuss this issue.

Water Quantity Goals from Consensus Committee

The group reviewed and revised the water quantity goals drafted by the Consensus Committee. The group agreed that the following revised goals should be sent to the Consensus Committee for final review and approval:

- Regulate/control flows in watershed
- Mitigate existing and wisely manage future impervious surface area
- Stabilize sediment transport patterns
- Effectively manage return flows

Fountain Creek Vision Task Force Water Quantity May 24, 2007 Final Meeting Summary

Attending

Carol Baker, Dennis Caldwell, Stephanie Carter, Scott Cowan, Dennis Darrow, Wesley Eck, Danny Elsner, Stan Feddy, Mark Glidden, Bill Grasmick, Doug Fitzgerlad, Ferris Frost, Jane Green, Kim Headly, Dan Henrich, John Hill, Irene Kornelly, Carole Lange, Greg Langer, Dennis Maroney, David Mau, Bruce Miller, Rex Miller, Bob Miner, Julie Pearson, Cynthia Petersen, Gary Rapp, Lisa Ross, Herb Ryhner, Ken Sampley, Kirsta Scherff-Norris, Mark Shea, Don Steerman, Manny Torrez, Juan Trujillo, Alan Ward, Greg Williams, Tim Williams, Tom Williamsen, Jay Winner, Steve Witte, Niki Koszalka, and Heather Bergman

Action Items

Kim Headly and Doug Fitzgerald	Will help bring a panelist from Pueblo in regards to Southern Delivery System (SDS)
Carol Baker	Will help bring a panelist from Colorado Springs Utilities (CSU) and the federal sector in regards to SDS
Doug Fitzgerald	Will help bring a panelist from Pueblo West in regards to SDS

State of Colorado, Water Rights Division (Steve Witte)

- ❖ There is an interface between water rights and stormwater runoff control. There is no complete understanding of what the laws are. The purpose of this presentation is to add to the whole of the understanding. To administer, distribute and regulate the water of the Arkansas Basin is not something that can be done on a minute level.
- ❖ The subject of appropriation is an issue when dealing with water rights. It was built into the constitution. The Doctrine of Prior Appropriation covers how water is to be allocated. There was the assumption that there would not be a great deal of change in the amount of snow, rain, or hydrologic response to a given storm event. It was further

assumed that runoff would continue within the natural courses. The error in these assumptions is central to this discussion.

- ❖ When precipitation falls on undeveloped areas, the rain has to fill up low places first. A certain percentage of this water has to be detained. There are low-lying areas that have to be filled before there is runoff or any contribution to stream flow. About one third of an inch can fill the detention capability. If rain fell in an excess of half an inch per hour, it would fill up detention capability. The earth can absorb the precipitation at one half inch per hour. These detention numbers become less with the creation of impervious areas and runoff occurs faster from developed areas. When runoff is more rapid, the hydrologic response on a creek is more rapid. A hydrograph would show that a natural response would be slower, gradual and spread over time. Developed areas show more peaks in a hydrograph response curve.
- ❖ When there is infiltration, water goes into the soil-moisture profile and may be consumed by roots. This ultimately makes the runoff less. Once there has been infiltration, there can be a deep percolation that contributes to the groundwater table. This groundwater then contributes to stream flows (days, weeks, years) later depending on how far from the stream they are and what kind of earth they need to travel through. The difference in the hydrographical response creates the question of who is entitled to the flow that has been made available. The issue of why the water is available does not matter. The available runoff is to be allocated by the priority system. This is done by administrators, who daily look at the water supply from streams and allocate to the priorities of the water right holders. Peak flows go to senior water right holders and down the line to the lesser holders. Junior water right holders love the sharp peaks resulting from urbanization and development because they will have opportunities to come into water priorities that otherwise would not exist. Junior water right holders are entitled to runoff to the extent that it is available. It is not clear if part of their entitlement is minimized runoff control so that the water can be diverted. There is not entitlement to wasteful practices, nor is minimized control practiced necessarily entitled.
- ❖ Because this area is so dry, there is the temptation to harvest or collect such rainwater in rain barrels. The official stance of the state, from the state engineer's website, is that grey water and rainwater are waters of the state and are subject to appropriation. These waters are not to be collected or harvested. If you have not gone to court to get a water right, you are not entitled to it. If the predevelopment conditions are compared to the post development condition, some water went into infiltration and was consumed by the native vegetation. There was a natural condition for a fraction of that water to be consumed. If a barrel collected rainwater to water flowers, the flowers would consume some of that water and the rest would be infiltrated. This is the same as predevelopment and preserves the status quo to have some water consumed and the rest returned to the watershed. Perhaps the legal thinking and administrative process is not as mature on that point yet and there is the possibility of a mechanism to allow taking water out of priority. This would need a court order. This would help to explain to those with water rights that a rain barrel does not actually have an impact on their water.
- ❖ In terms of stormwater control, the objective ought to be to maintain predevelopment status quo regarding the hydrographic response. Developers are now required to have stormwater runoff structures, for control, that limit the runoff rates to levels more than the historic predevelopment condition of the 10 and 100-year storm. This methodology is to

preserve the flows that developed the stream channel and does not harm the water right owner. They are no worse off than they were when the water rights were established. Perhaps it takes away the windfall they experienced due to lack of stormwater control in the past. If a flood control criteria state is reached then the Army Corps of Engineers (ACE) takes over and attempts to pass the inflows as rapidly as possible without causing damage down stream.

- ❖ In 1948, Colorado entered a contract with the state of Kansas regarding the John Martin Reservoir for water conservation and retention. Any additional flood control reservoirs cannot deplete shares for Kansas. The operational objectives are to pass the inflow at the same incoming rate with non-damaging flows downstream. If there were a large dam on Fountain Creek, this issue would be much more complex. The dam would cause a change in the hydrology to the water upstream. There would need to be an agreement regarding how inflows would be passed through and not affect their entitlements to Kansas and local water right holders. Not receiving the historic amounts could be compromised if there is over control.

Questions and Answers:

You are not infringing on water rights if the predevelopment hydrographic response is mimicked?

No, there is not interference.

With water rights litigation being so precise, at some point, will developers need to prove that they are meeting historic numbers?

Yes, that very well could happen in the future. The laws are not mature on this subject.

Colorado and the west are unique in terms of water rights. What is the state of our water rights?

Colorado is more sophisticated and mature in thinking about water use issues. Colorado and most western states are delving into the minutia and flexibility regarding movement of water. Nevertheless, Colorado has not come to grips with all the complexities on the subject.

Stormwater management practices will not have an impact on junior water rights holders?

There is not an obvious conflict regarding junior water rights and stormwater management.

In addition, in the 1880's, when water rights were established, were there not runoff and flood events?

Yes, there were floods before there was development. Natural conditions include uncontrollable flooding.

Peaks in the hydrograph caused by development and removing trees, are these waters claimable?

An allocation system is set up to distribute water. If trees or phreatophytes (a deep-rooted plant that obtains water from a permanent ground supply or from the water table) are cut down, the "saved" water is to be allocated according to the priority system. If you increase the runoff rate or volume by paving or land development, that is to be allocated by the priority system.

In terms of rainwater harvesting, how would you perceive the engineering and proof that use was not expanding via evaporation?

In our system of laws, it has to be proved. The official position does make sense, you prove it in court that you are not expanding the use but merely maintaining that historical right.

Why are rain barrels different from the issue of removing trees and phreatophytes?

A water salvage operation from cutting down trees liberates water to the priorities. Water capture is an out of priority appropriation. It needs to be proven in a court of law that rain barrels feeding your lawn or plants are not different from infiltration at historic levels.

Bratton Hill LLC (John Hill)

- ❖ Fluvial geomorphology is the science that deals with the shaping of channels by water flow. The first principle is that nature determines the channel to carry the flow. Fountain Creek was shaped by the frequent recurring flows not the floods. The most energy is the frequent flows. Floods do not normally shape a channel. When impervious surfaces increase, the channel is not always capable of handling the increase in flow and volume.
- ❖ The Colorado Supreme Court decided that cutting down trees does not give the person cutting more water rights. Water is part of the river system, part of what was appropriated to the early settlers.
- ❖ Water rights and flood control do not have much to do with each other. There is no administering for storing water in a flood situation. There is a state appropriated area in Chatfield Reservoir for recreation. Chatfield Reservoir is a multi-purpose recreation center. Floodwater goes to the top. The flood control storage is let out right away. A flood on Fountain Creek could be damaging. If there was a proposed reservoir, it could catch the floodwater and then slowly release it. The only issue would be the delay in release.
- ❖ Constitutionally, there is a right to dig a ditch for water but not to open a head gate. In order to appropriate, there needs to be a permit. The Supreme Court upheld the need for a permit regarding wells.

Questions and Answers

Water cannot be detained for more than a 24-48 hour period. If water is pushed out too quickly, can someone downstream sue for damage that occurred to his property?

This would be looked at more as a trespass issue.

Group Discussion with Panelists

The historic hydrograph is anything that goes back to log in on the gage. Once the gage is in place, everything changes. It was determined that when the water rights were divided up, they were divided on a calculation from a wet year. Colorado divided more water than was available. A legal document would need to be drawn up and accepted to define historic hydrograph in chosen terms. There is a distinction between historical hydrograph and predevelopment. The historic hydrograph was based on what the previous records show. Perhaps a better approach would be to look at the predevelopment condition regardless of what kind of storm falls on it. The historic hydrograph annexation policy looks at the pre-developed state of the watershed. A developer must look at this before putting your infrastructure in. The peaks and volumes must be matched. Historic hydrograph, from an engineer's perspective is predevelopment. This may

not stand from a legal standpoint. Attempts can only be made to control the portion of the watershed that has yet to be developed.

There is not a great deal of difference between having one large wetland facility and multiple facilities. Storage times and release flows would need to be researched. Wetlands creation may be viewed as taking appropriable water out of the stream and would be considered non-beneficial consumption (evaporation). Research could be done on the Charles River in Massachusetts. Wetlands have been helpful regarding flood retention. If there were a created wetland, plants that consumed more water would need appropriations. There was a debate between Natural Resource Conservation Service (NRCS) and ACE regarding controlling water where it landed (#566). This could be useful for the Fountain Creek Vision Task Force. There is the need to augment for evaporation and different consumptive uses.

If there is federal money or permits, all EPA standards and regulations will need to be followed. This includes exploring the alternatives. Many channel improvement projects only move the flood downstream.

During the rain barrel discussion, there was no mention of size. This could be abused and there could be the implementation of a 1000 square foot water barrel. A 55-gallon barrel drum would be of a realistic size. It is an out of priority appropriation. This could be because there was historical consumption with the same precipitation.

The channel that you see today is not the only from the large floods, it is also from smaller flows over time. It would take a large reservoir to begin to contain a large flood and properly operate the criteria for all existing Colorado water rights downstream. It is unclear if the downstream water right holders would be satisfied if there were non-peak flows. If the timing of water is changed, then the ownership can change as well. With a fixed volume of water, different people will be allocated water for a certain period. If the time frames changes, so does the allocation. Timing is an essential factor for downstream junior water-right holders. A change in timing can make rights useless. The breaking point between retention and detention would have to be determined by the courts. However, courts do not answer hypothetical questions. There would have to be a lawsuit. In statute, erosion control dams are limited in their height and capacity but there are criteria that they are brought to two-acre feet in a half hour. Water right owners can hold water for 72 hours in a headwater.

It is important not to flatten out peaks because they are the livelihood of many people. There could be plans to augment the river when you can buy other water rights in the main stem and send them along to the junior water right holders. A flood control project in one place may have benefits but would harm the junior water rights holder. In conjunction with an engineer, other plans need to be developed that do not harm the main stem. Working with channel forming flows instead of flood flows may not make the junior water right holders feel more satisfied. If this was initiated, there could be an attempt by the junior water rights holders to stop it. Ditch owners and attorneys do not want to be obstructionists but they need to protect their water rights.

There is no right to the runoff water in Fountain Creek. This does not change the fact that the water does get used. If you match the historical hydrograph in terms of peak, volume and time,

there is no water rights issue. The issue relates to the existing development over the last 20 years and the lack of rights to the water from impervious areas.

The channel could be made more hydraulically efficient by controlling the amount of vegetation to determine where the flow would go. There are ways that this can be done in an esthetically pleasing way. New development and channel improvement need to be dealt with simultaneously. In terms of fluvial geomorphology, altering vegetation at the stream bank could create more negative issues than positive.

A half-inch or three-quarters of an inch of rain in Colorado Springs may vastly change the Arkansas River water rights. In the 1900's, water from a storm in Colorado Springs would make it back to the river via infiltration. With the current amount of impervious areas, Fountain Creek gets water so quickly that water rights are not hurt. The volume is not the same. There is greater water in a shorter amount of time.

Wetlands could be effective not only for flood control but also for source control. Creating wetlands does cause evaporation. There is no difference between rain barrels and wetlands. They are both out of priority depletion. The legal system forces that you ask the court if there is an injury to water rights holders.

In terms of the water quantity group of the Fountain Creek Vision Task Force, there has been discussion of different ways to detain waters and to keep flooding down. There needs to be an understanding of how to detain water and maintain the historic hydrograph. A group of engineers would be advantageous to determine if "x" happens, how much water will affect the system. Additionally Best Management Practices (BMP) that are verified by the state and attorneys, with out injuring water rights could prove helpful. It would also be helpful to discover if there is a way to formulate strategies that could meet the needs of other people.

Next Steps

SDS, sediment, erosion and stabilization are huge topics for Fountain Creek. It is imperative that this group hold a discussion on SDS. Kim Headly and Doug Fitzgerald will help bring a panelist from Pueblo. Carol Baker will assist in providing a panelist from the federal sector and from CSU. Doug Fitzgerald will also bring in a speaker from Pueblo West.

Fountain Creek Vision Task Force Water Quantity Working Group June 28, 2007 Final Meeting Summary

Attending

Carol Baker, Richard Bartels, Gary Bostrom, Dan Centa, Dennis Darrow, Mike Fink, Ferris Frost, Mark Glidden, Jaci Gould, Brett Gracely, Steve Harrison, Kim Headley, Linda Hobbs, Carole Lange, Marsha Looper, Dennis Maroney, David Mau, Deb Owings, Larry Patterson, Julie Pearson, Bruce Spiller, Jerry Pacheco, Ray Petros, Gary Rapp, Keith Riley, Don Saling, Richard

Skorman, Paul Thomas, Graham Thompson, Bill VanDerveer, Ross Vincent, Alan Ward, Tim Williams, Jay Winner, Chris Woodka, Niki Koszalka, and Heather Bergman

Action Items

Graham Thompson	Let Heather Bergman know who from USGS will help with the sediment transport presentation in August
Outreach Committee, USGS, and Heather Bergman	Work together to arrange a tour of Fountain Creek.

Presentations

Southern Delivery System (SDS): Colorado Springs Utilities (CSU) Perspective (Keith Riley and Gary Bostrom, CSU)

- ❖ In 1871, Colorado Springs had a population of 1,000. By 1930, the population had risen to 35,000. In 1942, the first water treatment plant was built. In 1953, there was a west slope delivery system for water treatment and the population rose to 45,000. During the 1960's, Colorado Springs collaborated with Aurora to bring water to Colorado Springs. The population was about 70,000. In the late 1970's and early 1980's, the population grew to 135,000 and started working with the Fryingpan-Arkansas Collection System, as well as Twin Lakes. Today, the population is about 400,000, and more water delivery is needed. CSU devised a Water Resource Plan that was adopted by City Council on March 20, 1996. Included in this plan were conservation and demand-side management, non-potable water development, improvements to the existing system, and the Southern Delivery System (SDS). Even with all of these functioning, it would still not meet the expected future need for water. SDS was compared to other delivery systems along the Arkansas River. In a worst-case scenario, by 2012 water would be desperately needed in the Colorado Springs area if no steps are taken to remedy the situation. This forecast was based on revenue and took into account more drought and development.
- ❖ In 2001, a single-family residential home would use 122 gallons of water per day. This is on the high end of the scale because the data was gathered prior to the drought. The project objectives for SDS are to ensure the needed quantity and quality of water to the Colorado Springs community. It is part of the goal to do this on time, at the optimum cost, and in an environmentally sensitive manner. The SDS charter will implement a water delivery system from the Arkansas River that provides a long-term water supply, utilizes existing water rights, and provides redundancy for existing delivery systems. Currently, the regional partners in SDS are the City of Fountain, the Security Water District, and Pueblo West (conditional partner depending on the source-water location).
- ❖ The formula to determine the size of the water system component has many variables, including the actual water supply and the demand from the community.
- ❖ The chain of events for SDS would be 1) gathering the water source into a regulated storage facility (Pueblo Reservoir), 2) conveying untreated water via a pipeline from Pueblo West to Colorado Springs, 3) storing the water and buffering for seasonal demand, 4) treating the water, 4) conveying the treated water, and 5) storing the treated water.
- ❖ The proposed alternatives include pipelines and pump actions, a terminal and exchange reservoir, and a treatment plant. The federal actions that trigger the National Environmental Policy Act (NEPA) are contracts for storage and conveyance at Pueblo Reservoir. The

regional activities needed for SDS are water partnership, intergovernmental agreements (IGAs), the Preferred Storage Option Plan (PSOP), and Fountain Creek activities.

- ❖ The current water partnerships are with the Pueblo Board of Water Works, the Aurora Homestake Project, the Fountain Valley Authority, the City of Fountain, Security, South East District, and the Colorado River District. The emerging partners are the City of Pueblo, Pueblo West, and the Lower Arkansas Valley Water Conservancy District.
- ❖ The IGAs are with Colorado Springs and the Pueblo City Council. These preliminary discussions occurred in 2003. The Arkansas River Preservation Principles (2003) are also included in the IGA. The three parties signed the IGA in March 2004. A six-party IGA was signed in May 2004 amidst regional IGA negotiations. These regional IGA negotiations addressed Pueblo's concerns of maintaining flows of the Arkansas. In addition to the Arkansas, there was discussion about keeping the flow in Fountain Creek and attempts to explore new ways to do business within the water community. It is important for people to know that there is a partnership process in the works.

Southern Delivery System (SDS): The Environmental Impact Statement (EIS) Process (Bill VanDerveer and Jaci Gould, US Bureau of Reclamation (BoR))

- ❖ The proposed federal actions that trigger NEPA are associated with the FryingPan-Arkansas Project, excess capacity contracts for Pueblo Reservoir physical connection to the Fry-Ark Facility, and conveyance and exchange contracts.
- ❖ The Bureau of Reclamation is the lead federal agency for reclamation. Some of the cooperating agencies are the Army Corps of Engineers (ACE), the US Fish and Wildlife Service, US Bureau of Land Management, the US Environmental Protection Agency. All of these agencies have regulatory responsibilities for the proposed action and have specialized expertise to offer.
- ❖ Part of an EIS is always the Alternatives Screening Process. This is based on purpose and need, impact evaluation, and mitigation. Elements of the NEPA process are public involvement, interagency coordination, process, and documentation. The objective for the Alternatives Screening Process is to develop alternatives for detailed analysis. The screening criteria are significant issues (logistical, technical, or environmental), relative environmental characteristics, purpose and need, cost, NEPA requirements and scoping issues. There are several hundred options for each component in the Alternatives Screening Process. The website for the EIS is www.Sdseis.com.
- ❖ BoR took hundreds of EIS alternative plans for SDS and narrowed them down to 162 complete alternatives. In the fall of 2005, there were seven alternatives identified in public meetings. In March 2006, the seven alternatives were selected for detailed evaluation. The seven EIS alternatives are as follows:
 - The "No action" alternative is what will most likely occur in the future without the major action by BoR.
 - In the "Proposed Action" alternative, untreated water would be stored in and diverted from Pueblo Reservoir, stored in a new reservoir on Jimmy Camp Creek, treated, and distributed to the participants' customers.
 - The "Wetland" alternative minimizes wetland acres that could be permanently disturbed and minimizes surface acres disturbed. There is no return flow storage, and the return flow occurs upstream from Pueblo Reservoir.

- The “Arkansas River” alternative provides the highest minimum flow through Pueblo and withdraws water downstream, returning it upstream of Pueblo. It also minimizes the impact of water quality on the Arkansas River.
- The “Fountain Creek” alternative minimizes erosion, eliminates exchange releases down Fountain Creek, reduces water quality impacts, and avoids marine shale at one reservoir site.
- The “Downstream Intake” alternative is based on public interest in an alternative using an intake downstream of Fountain Creek.
- The “Highway 115” alternative is based on public and participant interest in an untreated water pipeline on Route 115.
- ❖ Indirect-potable reuse was a major component for Colorado Springs for the original No Action alternative. It was removed due to changes in early 2007.
- ❖ The SDS EIS water quantity studies have examined surface hydrology, flood hydrology, floodplains, the Denver basin groundwater, alluvial groundwater, and stream geomorphology. The SDS EIS water quality studies have assessed salinity, Upper Arkansas Basin, Lower Arkansas Basin/Fountain Creek, emerging containments, low flow analysis for permitted discharges, alluvial and Denver basin groundwater, Pueblo Reservoir, proposed return flow reservoir, Turquoise and Twin Lake Reservoirs, and Lake Henry and Meredith.
- ❖ The next steps are the Alternatives Analysis Addendum which should be released in July or August of 2007, preparation of the draft EIS in early 2008, public review and hearings, preparation of final EIS, and the Record of Decision to be signed by the regional director.

Questions/Answers

Would you please describe the scope of the decision that the Bureau of Reclamation is making?
The Bureau of Reclamation will prepare a draft EIS and identify a preferred alternative.

Has the analysis to date ruled out any relationship of increased return flows and sediment transport in Fountain Creek?
That analysis is not done yet.

Will the preferred alternative come off the Municipal Outlet in Pueblo? Are there other uses of that outlet and other pipelines?

CSU plans to use the joint outlet recognizing that there are more requests and need than there is capacity. The pipeline would also connect to the north river intake and help with redundancy.

What is the cost for SDS?

The first phase will cost \$593 million (2006 dollars). The costs will go up with inflation.

What is the cost of enlarging Pueblo Reservoir?

The cost to enlarge Pueblo Reservoir has not been re-estimated since 2002. At the time, it was more cost effective to enlarge an existing reservoir rather than build a new one.

Why is the age of the existing infrastructure a problem for redundancy?

There could be failures on pipelines and there could be land that slides and buckles on the line. In the last 3 or 4 years, there have been major outages along the existing infrastructure. There are continually issues with maintenance, rehabilitation, and/or natural forces.

Has the delay in the ACE study on Fountain Creek affected the SDS EIS?

The best information available needs to be used in order to make good decisions about SDS. There has not been a delay specifically because of the ACE study. ACE has been helpful in the SDS process.

SDS: Pueblo County Perspective (Ray Petros, Petros & White)

- ❖ Pueblo County does not have a position regarding SDS, because there has been no application submitted or public discussion. Pueblo County is attempting to anticipate what may come up in the 1041 process. The 1041 process was legitimized in 1974 when the state legislature thought it necessary to give local governments regulatory power over water projects. This allows a county to require a permit for work involving site selection of new and large municipal water and sewer systems and to make sure that water projects are efficient (including reuse). In 2004, the 1041 regulations were updated. Pueblo County designated efficient use of municipal water and sewer projects for 1041 permits. CSU filed a lawsuit against Pueblo County charging that SDS should be exempt from 1041. Pueblo County enacted its right to 1041, because it had concerns about SDS and wanted to generate discussions and studies about a dam on Fountain Creek. Because of the 1041 litigation, there have been no county meetings to discuss SDS. We know from the litigation that there is a proposed 20-mile long pipeline that would run through Pueblo County. Pueblo County has not been informed what information was studied to generate these alternatives, nor has it been informed of any impacts that have been taken into consideration. Pueblo County does not have the information needed to formulate an opinion.
- ❖ SDS would potentially bring in 80,000-acre feet of new water into Colorado Springs. That is 50% larger than the Fry-Ark project.
- ❖ The concerns of Pueblo County, at this time, are:
 - Fountain Creek already has too much water in it, but CSU wants to build a pipeline through Pueblo. It would seem to be a better option to use the excess from Fountain Creek. It is also an option to change or reverse the systems and build storage on Fountain Creek to help with the high flow and to regulate flows.
 - Pueblo County wonders if the SDS money could be better spent on addressing water supply, flood control, stormwater management, and recreation. It would be terrific to see a multi-purpose water project. There is interest in knowing the impact of the pipeline, if there are any alternatives to spend money better, and if there are ways to minimize effects to Pueblo. In regards to a multi-purpose water project, alternatives should look at ways to harness the water that comes down Fountain Creek, keep it local, and build in redundancy as well. There could be an emergency check dam on Fountain Creek, sending it to an off-channel detention facility. Alternatively, there could be one or more small reservoirs along Fountain Creek to keep the water locally. These ideas are meant to trigger discussion.

Question/Answer

What are Pueblo County's thoughts on Senator Salazar's comment about a dam?

Senator Salazar's proposal was that he would like to see a study to determine if there is feasibility for a multipurpose water project. It is important to see these studies so that the idea

either can stay on or be removed from the table. The options are to enlarge Pueblo Reservoir, a possible reservoir along Fountain Creek, or something on Turquoise Reservoir. The Senator is open and willing to hear from the communities involved.

SDS: Pueblo West Perspective (Don Saling, Pueblo West Metropolitan District)

- ❖ The biggest issue of SDS is the cost and service to the community of Pueblo West. The current population is 31,268; seven years ago, it was under 16,000. Ninety-nine percent of its water comes from Twin Lakes on the western slope. The water is deposited into Pueblo Reservoir. Pueblo West has no water storage rights.
- ❖ There are 12 million gallons per day (mgd) going to Pueblo West. There is only one pipe serving the Pueblo West community. The pump station can convey 20 mgd, and so can the wastewater treatment facility. If Pueblo West reaches its population capacity, it would need 30 mgd. The pipe has been laid to provide the need for 30 mgd but there are restrictions as to how much water they can get. It is necessary to be able to get more water to the residents of Pueblo West. There are issues for water quality when you take water out of a river, including higher costs in terms of water treatments. The best and most cost effective choice would be for water to not come out of the river.
- ❖ The Pueblo West taxpayers realized that to pay for the delivery of 30 million gallons per day, the best thing to do is to tie in with SDS. They realize that the pipeline will come through their community. This will not be a major disturbance other than during the initial construction.

Questions/Answers

What is the build-out of Pueblo West in terms of rates and impacts to people that live there?

The build out for Pueblo West is 50,000 to 60,000 people. It is a friendly community, but those in Pueblo West do not like neighbors too close. Rates have been raised by 32% recently and are reasonable compared to other communities in the area. Pueblo West received a \$6 million bond for improvement of the wastewater facility.

Will Pueblo West eventually have to withdraw water out of the river regardless of SDS?

Yes. When SDS is incorporated, the water coming out of the river will serve as redundancy. There will be a request for proposal (RFP) for the river pump station.

What percentage returns to the Arkansas?

Returning to the Arkansas is 13% and 87% does not, except for infiltration, return.

Group Discussion

- ❖ These discussions have reinforced the concept of determining how much water we want to see in Fountain Creek. The range of flows that is considered ideal for Fountain Creek needs to be determined. There could be many studies that need to be done to determine if flows should be at some certain number. This will need lots of technical information. It is important to note that even if Pueblo SDS does not go forward, the community will still grow. This issue will have to be dealt with at some point.
- ❖ Bringing water into the basin will encourage growth. It will also underscore the need to be careful as to how the watershed is developed. This will cause instabilities not only in Fountain Creek but also in the tributaries. Due to the vision of the Fountain Creek Vision Task Force, there needs to be awareness of development in the watershed.

- ❖ There will be impacts on Fountain Creek due to growth. Through the EIS, some of the incremental impacts of SDS have been quantified. There is a further need to know how much more before it is decided how to deal with it.
- ❖ To a significant extent, all these issues are wrapped up in a never-ending cycle. There needs to be a clearer picture of what the Task Force wants Fountain Creek to look like. This information could help Pueblo and Colorado Springs, in terms of development, and could shape what SDS alternative is to be chosen. The Task Force can weigh in on the EIS that BoR is doing. BoR is willing to see or read a report that is submitted. It would be best to have all input to BoR by the end of September. The Task Force needs to give BoR its vision. Perhaps it would be possible to find an alternative that matches the Task Force vision. If BoR does not get the information at the right time, they will not hold up the process waiting for something from the Vision Task Force. The timeline is to receive technical information by September 30, 2007 and the Task Force vision by the end of December 2007.

Next Steps

- The group decided to table discussion of SDS for the time being.
- The group will begin to discuss sedimentation at its next meeting. Graham Thompson will coordinate a presentation to the Working Group that seeks to answer the following questions about sedimentation:
 - How does development affect sediment transport?
 - How does sediment affect flooding and risks to property?
 - How does flooding affect water rights?
 - How does flooding affect bank stabilization?
 - How much sediment is in Fountain Creek and where is it coming from?
 - If we want to reduce sediment, how could we do this?
 - What benefits does sediment have downstream?
- The group discussed the need for a field trip to visit key areas of the watershed. It was agreed that USGS should coordinate with Heather and the Outreach Committee to plan a field trip that includes, where possible, visits to USGS monitoring stations.

APPENDIX H

Fountain Creek Vision Task Force Water Working Group (Water Quality and Water Quantity Working Groups Combined) Meeting Summaries

**Fountain Creek Vision Task Force
Water Working Group
(Water Quality and Water Quantity Working Groups Combined)
Meeting Summaries**

**Fountain Creek Vision Task Force
Water Working Group
September 28, 2007
Final Meeting Summary**

Attending

Carol Baker, Dan Bare, Barbara Dallemand, Dennis Darrow, Danny Elsner, Ferris Frost, Mark Glidden, Jane Green, Dan Henrichs, Nancy Keller, Irene Kornelly, Carole Lange, Dennis Maroney, Gene Michael, Rich Muzzy, Gary Rapp, Kathleen Reilly, Jane Rhodes, Lisa Ross, Bill VanDeveer, Ross Vincent, Tim Williams, Niki Koszalka, and Heather Bergman

Action Items

Pat Edelman, Carol Baker, and Scott Cowan	Review the writing of the proposal for the 319 grant
Carol Baker	Work with Pat Edelman to find the hydrologic over lay on the selenium map and get the map up electronically
Ross Vincent, Pat Edelman, Dan Henrichs, and Carol Baker	Study the soil overlay map and discuss it with the Water Working Group
Tim Williams and Dennis Maroney	Contact Scott Hobson and Dave Cockrell to see if they are able to help with the 319 grant writing
Dennis Maroney	Email stormwater retrofit information to Heather Bergman
Rich Muzzy and Lisa Ross	Lead the group in planning the workshop
Rich Muzzy, Lisa Ross, Dennis Maroney, Tim Williams, Barbara Dallemand, and Carole Lange	Participate in the workshop planning

New and Pressing Issues in the Watershed

Pueblo Democratic Meeting

- ❖ John Cordova received the majority of votes to take over for Loretta Kennedy, who has left the Pueblo Board of County Commissioners to work for Congressman Salazar.

Colorado Department of Public Health and Environment (CDPHE) 319 Grant Opportunity Update

- ❖ The CDPHE 319 grant is looking to target E. coli and sediment. The grant would also place a 20-foot Streamside System apparatus in Fountain Creek. Plans include having the removed sediment tested for E. coli and pollutant levels. Finding the non-point source for E. coli is a goal. There is a 40% match needed for this grant. The Lower Arkansas Basin Roundtable is a viable source for a match. The match can be in-kind or cash, but it cannot be federal

money and it has to be firm. Pat Edelman, Carol Baker, and Scott Cowan volunteered to review the grant writing. Scott Hobson started to write a grant on Streamside Systems for implementation near the confluence. Dave Cockrell of Pueblo Area Council of Governments (PACOG) may have expertise in this area. Tim Williams and Dennis Maroney will check with Scott Hobson and Dave Cockrell to see if they are able to help with the grant writing.

Selenium Updates (Carol Baker and Gary Rapp)

Carol Baker

- ❖ The Water Working Group reviewed a map showing selenium levels. The levels are higher at Wild Horse Creek and Pinion. The levels are also high in Monument and decrease with the addition of water from wastewater effluent and Fountain Creek. The selenium levels decrease when flow levels are higher. There is a selenium issue in the lower portions of Jimmy Camp Creek and Banning Lewis Ranch. A reduction of runoff would be most beneficial if it occurred upwards in the watershed.
- ❖ The Water Working Group request a selenium-levels map with an overlay with soils, showing what kind/types of soil they are. Carol Baker will talk to Pat Edelman to find the hydrologic soil overlay. Ross Vincent, Pat Edelman, Dan Henrichs, and Carol Baker will study the map and discuss it with the Water Working Group.

Questions and Answers

Is the map showing outcrops?

It is showing the underlying layers, the bedrock. The map shows where the alluvial waters would run over the outcrops, approximately 20-40 foot below the surface.

Are the new reservoirs, planned for Southern Delivery System (SDS), on top of the shale?

The Jimmy Camp Creek reservoir site is not located on shale, the upper Williams Creek reservoir site is partially on shale, and the Williams Creek reservoir site is mostly on shale. Pueblo Reservoir is on shale as well.

Does all the infiltrated water end up in Fountain Creek?

Except for the amount that evaporates, most of the infiltrated water ends up in Fountain Creek. Colorado Springs Utilities is not a proponent of infiltration of alluvial waters from areas over shale. Creating a detention area near the Creek causes the water to flow over a smaller area of shale, on the way to Fountain Creek.

The Army Corps of Engineers has some potential sites for dams. How will these impact selenium levels?

The impact on selenium levels is unknown at this time.

Gary Rapp

- ❖ The Western slope has very high levels of selenium. The infiltration of irrigation water is making the levels of selenium rise. Mancos shale is prone to erosion, especially in an area with under 18 inches of precipitation. When this kind of area is developed and irrigated, it creates a flush of selenium. More efficient irrigation techniques are necessary. The Selenium Task Force (www.seleniumtaskforce.org) has studied different types of vegetation to help uptake selenium. The next question for the Selenium Task Force is how they will deal with urbanization.

- ❖ The new proposed draft of the Clean Water Act Section 303 (d) showed Monument Creek and the lower Fountain Creek no longer on the list. Achieving an ambient standard is due to the selenium being from natural sources.

Questions and Answers

Is it reasonable to suspect that the selenium in the soil and shale will exhaust itself?

The selenium in the soil and shale are a historic problem. They will not go away.

Report on Drainage Criteria Questions (Dennis Maroney)

- ❖ The Drainage Criteria Sub-Group came up with a framework for future discussions on drainage criteria. The framework included the following tasks: education, identifying scope, identifying goals, reviewing published strategies/industry standards for achieving these goals, identifying relationships of the chosen strategies, evaluation, implementation, and considering the recommendations from the Army Corps of Engineers.

Questions and Answers

Could the Land Use and Environment Working Group work in conjunction with the Water Group on the drainage issue?

They could pursue the same course but the outcome might not be the same.

Did the group look at a way to share information with all of the communities?

That was the initial plan. There will need to be a discussion about how to get the information to the communities.

Would it be more effective to invite feedback from the developers?

It would be a good idea to have them participate in the process. It would also be a good idea to give them invitations to participate in the Fountain Creek Vision Task Force working groups.

Report on Policy Review (Dennis Maroney)

- ❖ There are model principles from the “Better Site Design Handbook.” These principles help show how the municipalities match up. The model principles are not appropriate for national design standards. Some of the principles will not apply to the Fountain Creek watershed.
- ❖ The model development principles generally fall into one of three areas: residential streets and parking lots, lot development, and conservation of natural areas.
- ❖ A perfect score is 100. The following numbers in parenthesis are the scores from each entity. Colorado Springs (71), El Paso County (42), Fountain (57), City of Pueblo (55), Pueblo County (49), and Woodland Park (53) all participated in the survey from Better Site Design. The lower the score, the more opportunities exist for improvements.

Questions and Answers

It appears the counties are generally scoring lower than the cities. Is there an obvious reason?

It seems the counties had a harder time answering the questions that the cities. The counties also have fewer building codes, which also may make a difference. Not all of the principles in the Better Site Design book may apply to the Fountain Creek watershed.

What were the common areas for improvement, if any?

Streets and parking lots were a common area for improvement.

Next Steps for drainage criteria and policy review

- ❖ The Water Working Group would like to host a workshop further educating developers, municipalities, homebuilders, planners, and citizens on the principles of Better Site Design and Low Impact Development (LID). There is some grant money available through the education portion of the 319 grant.
- ❖ Rich Muzzy and Lisa Ross will spearhead a group to discuss the workshop. The workshop group will include Dennis Maroney, Barbara Dallemand, Tim Williams, and Carole Lange. Rich Muzzy and Tim Williams will find a speaker about green building for the workshop.
- ❖ Heather Bergman will bring Better Site Design book to the next meeting for the Water Working Group.

Fountain Creek Vision Task Force Water Working Group October 25, 2007 Final Meeting Summary

Attending

Carol Baker, Dan Bare, Pat Edelmann, Mike Fink, Ferris Frost, Mark Glidden, Merle Grimes, Dan Henrichs, Irene Kornelly, Carole Lange, Gary Rapp, Lisa Ross, Graham Thompson, Bill VanDerveer, Ross Vincent, Alan Ward, Niki Koszalka, and Heather Bergman

Next Steps

Heather Bergman	Create a simple outline for current needs and conditions document
Heather Bergman	Send a zoomerang survey to create writing groups for the current needs and conditions document

New and Pressing Issues in the Watershed

- ❖ The Greenway Foundation invited the Task Force to Denver to see the restoration work done along the South Platte River through Denver.
- ❖ The Colorado Streamside Code goes back to City Council November 13, 2007.

Sediment Transport, Erosion, and Channel Stability (Graham Thompson and Pat Edelmann)

- ❖ The major issues for the Fountain Creek Watershed are flooding, erosion, and sedimentation. All of these issues are interrelated. Population growth has led to changes in land use. Changes in land use have led to an increase in water quantity. The stream system responds to these changes by adjusting through erosion and sediment, which are natural processes.
- ❖ When areas erode, the river picks up particles. When there is sedimentation, the same particles picked up by the river later are dropped.
- ❖ It is important to distinguish “channel forming flows” from the peak flows of 1999.
 - Channel-forming flow is a representative flow that is responsible for shaping the natural channel over time. There are three methods for measuring channel-forming flow: bankfull discharge (field morphology), specified recurrence interval (flow

statistics), and effective discharge (mathematical). In theory, the results of all three agree.

- Fountain Creek flows:
 - 1999 flood flow was approximately 20,000 cubic feet per second (cfs)
 - Bankfull discharge is approximately 2,000 cfs.
 - Effective discharge is approximately 200 cfs.
 - Average base flow is 50-100 cfs.
 - 100-year flood is 50,000 cfs.
- ❖ There is some movement of sediment regardless of flows. Low flows are capable of transporting fine to coarse sands. Low flows are capable of undercutting/undermining banks and causing bank erosion, leading to loss of property.
- ❖ Base flow conditions transport about 100 tons of sediment per day at 100 cfs and 10,000 tons of sediment per day at 1,000 cfs.
- ❖ There are reaches in Fountain Creek where sediment deposition occurs, and with specific flow conditions accumulations occur. The Fountain Creek Watershed Study determined that the Creek wanted to erode and identified where it wanted to deposit the sediment. Most of the sediment depositions are close to the point of erosion. Usually a big erosional area means there is a large depositional area. From a planning perspective, approaching sediment from a reach-to-reach basis is imperative.
- ❖ Creeks have the ability to fix themselves, but this takes a considerable amount of time. Dealing with a considerable amount of sediment is also challenging. To cut sediment load by 1/10 and double the amount of channel-forming flow, the channel width would increase to twice as wide and with approximately 155 dump trucks full of sediment needing removal.
- ❖ Taking on a restoration project would include:
 - Using a natural channel design approach
 - Paying a design fee of approximately \$30,000
 - Incurring an estimated construction cost of at least \$50,000
 - Scheduling construction costs for fiscal year 2008
 - Paying an estimated \$30 to \$500 per foot
 - Completing the project (from design work to construction) in about a year
- ❖ When dealing with sedimentation there are applied science techniques that are of assistance such as:
 - Acquiring more sediment load data (also can be used for design purposes)
 - Having more effort to identify source areas
 - Isolating the tributaries and uplands
 - Measuring stable reaches
 - Protecting stable reaches
 - Utilizing demonstration projects
 - Targeting low-hanging fruit and high priorities

Questions and Answers:

Is the volume of the flow more important than the speed?

The size of the flow is reflective of the size of the stream. A consistent flow of 2,000 cfs requires a wider streambed than Fountain Creek has.

Should the group be focused on the base flow or channel flow?

The group needs focus on both.

Would the ideal detention facility trap the water but let sediment go through?

Rivers carry water and sediment. Cutting off one or the other will have impacts on the stream.

There is a perception that the problems in the watershed can be totally solved when there is a natural/necessary element. How does the group find the proper a balance?

It is a challenge to figure out what is a natural process and what is not. In terms of restoration, one does not want to fix something that is not broken. It is important to remember that rivers are naturally dynamic systems, convey both water and sediment, are not straight, and have measurable/reproducible forms. Both erosion and sedimentation are natural processes. When considering balance is it necessary to consider the following:

- ❖ Sediment (it is not evil)
- ❖ Channel stability concept
- ❖ Streams responding to change
- ❖ Impacts can be so obvious, no detailed analysis is needed
- ❖ Methodologies are available to assess whether the observed area impact is natural or induced instability
- ❖ Downstream impacts
- ❖ Corridor encroachment
- ❖ Goals that are functionally established

Rivers are always moving. What do we fix?

- ❖ Floods move through the floodplain. If a floodplain is encroached, there is more chance for a catastrophic flood. Clearing the floodplains could help avoid disaster in a flood event.
- ❖ Attempts to use what will naturally occur on Fountain Creek may result in the ability to articulate the sinuosity of a given reach of the Creek. This also may mean no real estate in certain areas.
- ❖ Another approach prioritizes the induced impacts and determines how to reduce these impacts.

What would a core sample of sediment at the confluence consist of?

There would be bedload and larger particles, but mostly it would be smaller particles. Based on velocity and shear stress of the specific area, it is common to see the bed change by several feet.

Before there were transmountain flows, what were the cfs rates?

An estimate is probably 25 to 30 cfs in Colorado Springs and at Pueblo less than 5 cfs.

How much change has there been in agriculture return flows in the past 50 years?

The return rate was less. This is a function of development, more growth, and more effluent discharge stewarded downstream.

How does vegetation influence the sediment deposition?

There is a lot more deposition. More vegetation will slow down flows and cause more deposits.

What are the major causes of erosion in the tributaries?

- ❖ An over-simplified answer is changes in the base flow. The stream adjusts to more water by deepening or widening the streambed. Anything done to stop further constriction of the floodplain would be helpful. When there is an encroachment issue, it will affect the whole watershed. This affects not only floodplain but also the pattern of meander. If Fountain Creek increases its water quantity, the anticipated natural phenomenon downstream is a widening of the river. However, the actual stream response is to make sharper turns instead of going wider.

Next Steps for Sediment Transport, Erosion, and Channel Stability

- ❖ The interim and ultimate plan needs to include:
 - o Developing a comprehensive master plan and integrating the entire watershed
 - o Developing goals
 - o Approaching ideas and solutions in a system-based manner
 - o Prioritizing areas/reaches
 - o Making difficult choices
 - o Being aware of changing flows and loads
 - o Creating multi-stage channels
 - o Creating small, frequent grade-control structures
 - o Monitoring/maintaining to make sure that the improvements/changes stay

Questions and Answers

Is planning done with a function for the whole watershed or with particular reaches of the creek having a specific function?

Depending on the users and the owners, the goals could be quite different. Function does not have to be the same but they have to be well defined and stable.

Will the Army Corps of Engineers (the Corps) help the Task Force with this process?

The Corps will help to lay the foundation but does not function as an implementation or design entity.

What are options in controlling flow?

Some options for controlling the flow are:

- ❖ Being conservation-minded
- ❖ Being proactive
- ❖ Working with source control
- ❖ Utilizing Low Impact Development (LID) techniques
- ❖ Using detention ponds distributed through out the watershed
- ❖ Creating wetland areas
- ❖ Improving floodplain connectivity and channel sinuosity

Colorado Water Conservation Board Grant Requirements

- ❖ The Task Force has the baseline information including presentations and summaries. The Task Force needs to write up a current needs and conditions report.
- ❖ The Task Force feels it is tending to most of the groups key interests. The group needs to pay more attention needs to stable base flows.

- ❖ Heather Bergman will give the Task Force a simple outline to follow when creating the current needs and conditions report and send a zoomerang survey as an aid in drafting groups to write the report.

Next Steps

- ❖ The Working Group will prioritize the issues that have the most impact on sediment transport and present it to the Consensus Committee.
- ❖ The Working Group will undertake a high-level goal discussion at the next meeting. This discussion will include prioritizing the sources and impacts and establishing what the group wants to see in different areas of the watershed.
- ❖ The Working Group wants to discuss sedimentation with the Consensus Committee to discuss what the low-hanging fruit might be.
- ❖ The next Water Working Group meeting is November 30, 2007, from 9:00 a.m. to 12:00 p.m. at Fountain City Hall.

Fountain Creek Vision Task Force Water Working Group November 30, 2007 Final Meeting Summary

Attending

Bill Alt, Carol Baker, Dale Carter, Barbara Dallemund, Dennis Darrow, Ferris Frost, Mark Glidden, Kim Headley, Dan Henrichs, Mary Jaurequi, Mark Johnston, Irene Kornelly, Carole Lange, Dennis Maroney, Gene Michael, Rich Muzzy, Julie Pearson, Gary Rapp, Sandy Rayl, Lisa Ross, Alan Ward, Niki Koszalka, and Heather Bergman

Action Items

Niki Koszalka	Send a list of the brainstormed potential functions for Fountain Creek
Water Working Group	Flesh out, polish, and resubmit the brainstormed potential functions for Fountain Creek
Heather Bergman	Review, make changes, return, and have the current conditions documents ready for the January Consensus Committee meeting

New and Pressing Issues in the Watershed

- ❖ Colorado Springs Utilities (CSU) considered the input on a wastewater treatment center near Clear Springs. Instead, CSU will put in pump stations and utilize the existing wastewater treatment plants. The Lower Fountain Wastewater Treatment Facility is still under consideration and moving forward.

Groundwater Monitoring at Clear Spring Ranch (Dale Carter)

- ❖ The Clear Springs Ranch Groundwater Monitoring Station is a multi-use property that includes power plants, a gravel mine, and solid waste disposal sites. The solid waste disposal site includes construction debris, alum sludge, ash disposal, and biosolids disposal. After treatment in the wastewater treatment digesters, biosolids are the result of sludge. Before

plowing the biosolids into dedicated land areas, the biosolids undergo further treatment in holding points.

- ❖ Groundwater monitoring occurs for three solid waste disposal sites. Installing seventy wells helped CSU understand the hydrogeology of Clear Spring Ranch. More than 170 additional drilled boreholes help to determine bedrock elevations. The data from the wells and the bedrock help create groundwater contour maps.
- ❖ The test parameters include nitrate, chloride, selenium, arsenic, chromium, and nickel. Nitrates and selenium are indicator parameters, metals are a requested parameter from the Environmental Protection Agency (EPA), and chloride is a recent addition by the Colorado Department of Public Health and Education (CDPHE).
- ❖ The groundwater data for nitrates is:
 - o Drinking water standard – 10 mg/L (milligram per liter)
 - o Up-gradient wells range from 5-23 mg/L
 - o Compliance wells range from 11-18 mg/L
 - o Fountain Creek Alluvial wells range from 1-3 mg/L
- ❖ The groundwater data for selenium is:
 - o Drinking water standard – 0.05 mg/L
 - o Up-gradient wells range from 0.02 to 0.3 mg/L
 - o Compliance wells range from 0.005 to 0.14 mg/L
 - o Fountain Creek Alluvial Aquifer wells range from 0.01 to 0.02 mg/L
- ❖ Arsenic, chromium, and nickel have consistently had “non-detect” results for all monitoring wells.
- ❖ For nitrate and selenium, up-gradient concentrations are compared to down-gradient compliance-well concentrations using software (Sanitas). The analysis shows no statistically significant increase in nitrate and selenium due to the biosolids operations. There is insufficient data for statistical analysis of chloride but data collected so far shows that down-gradient concentrations are lower for chloride.
- ❖ Through the years, a good understanding of the hydrogeology of the site has developed. Analysis of groundwater data shows that adverse impacts to groundwater are not occurring from biosolid disposal operations. Continued monitoring is necessary to detect early signs pointing to further controls needed to prevent impacts from occurring in the future.

Questions and Answers

Why did the State ask for the technical analysis method to be changed?

Modification was necessary to fit the method to wells that were not preexisting. The wells are new so the old standards did not work. The State asked CSU to use the new methods instead.

Is vegetation used on the land disposal unit?

The land is plowed so regularly that not much grows. Some weeds will grow between plowing. Salt concentrations will rise to the point that there will be no vegetative growth.

What is a terrigator?

A terrigator is a six-wheeled truck that has plow wheels that dig down six inches and drops biosolids.

Does surface water leave the site?

No surface water leaves the site. The dam keeps water on the land.

Are biosolids tested for toxic material before being added to the soil?

Before transporting the biosolids to the land disposal unit, the treatment plant does much testing. In a groundwater-monitoring program, there is a selected suite of parameters to test. This is a detection-monitoring program.

Where are the two wells for the testing of groundwater, and are they in the area of the downrange munitions?

The wells are near Fort Carson and are considered up-gradient wells.

Are you testing for lead or mercury (by produce of munitions)?

Have not tested extensively, but there are general, overall, and far-reaching testing.

Are the groundwater wells deep and would the above questions be more appropriate if dealing with surface water from Fort Carson?

The wells are 40 feet down. Fort Carson surface water is diverted around Spring Creek.

At what point will the concentrations be too high and what is the extinction period for the monitoring plant?

The land disposal unit will reach capacity when the soil becomes too gummy for the terrigator to turn over the ground. Some of the parameters will be neutralized by naturally occurring microbes. The most apparent constraint will be when the soil cannot take more biosolids and maintain soil consistency.

Has there been any thought or planning to use the biosolids for agriculture fertilization?

That is a different type of operation, with certain kinds of fields. There are issues of metals going out to agriculture land. Many regulations go into making biosolids available for fertilizer.

How is the sludge transported?

All sludge from the CSU wastewater treatment goes to waiting ponds by pipeline.

Are you still operating on the EPA permit that expired in 1999?

No, there has been a new permit.

Why was the pump installed in 1998?

In 1994-1995, there were elevated nitrate levels found beyond the dam. Installing a layer of betonite inside the wall of the dam proved no immediate changes. Installing the French drain and pump outside of the dam had good results.

If the pump back system failed, what could happen?

CSU does not intend to let it fail. If it did, the nitrate numbers could climb.

Are the winds on the open fields an issue?

This is somewhat of an issue from time to time. The biomass does help to bind the soil.

Brainstorm: Potential Functions for Fountain Creek

- ❖ Protect public health, Fountain Creek may decide to meet stream standards as set by CDPHE/EPA
- ❖ Reduce the suspended sediment load transport through out Fountain Creek watershed
- ❖ Reduce flooding potential in Fountain Creek watershed
- ❖ Change development practices to enhance health of watershed by controlling flooding and sediment loads
- ❖ Maintain existing and add additional stable riparian and wetland habitat areas
- ❖ Create and prohibit multi-functional recreational trails connecting all communities
- ❖ Eradicate invasive species and replace with more native species
- ❖ Preserve and protect agricultural, open space, and floodplains
- ❖ Maintain Fountain Creek as an effective and efficient conveyer of water
- ❖ Reconnect the channel to the floodplains and connect the floodplains
- ❖ Protect native ecosystem and wildlife
- ❖ Protect and encourage agriculture in the area including flood control and a buffer zone
- ❖ Meet or exceed established water quality standards
- ❖ Reduce/manage non-native flows, stormwater flows, and wastewater flows
- ❖ Stabilize channel bed/banks
- ❖ Reconnect the floodplains and channels
- ❖ Manage/enhance/acquire riparian habitat
- ❖ Control noxious vegetation; map noxious vegetation
- ❖ Identify and prioritize projects
- ❖ Create common/regional policies and procedures

Progress on Current Conditions Documents

- ❖ The recently started stormwater current conditions document is going well so far.
- ❖ Work on the municipal water and return flows current conditions document is to start next week.
- ❖ The water quality group is well on their way and Rich Muzzy is to finish process next week.
- ❖ The flooding and flood Control group is collecting information and condensing the information to a two-page document.
- ❖ Stephanie Carter is taking on the writing of the sedimentation current conditions document with the help of Mary Barber. They are meeting next week.
- ❖ The current conditions documents are due on December 7, 2007. Heather Bergman will review, make changes, return, and have documents ready for the January Consensus Committee meeting.

Next Steps

- ❖ Coming up with strategies for functions is very hard work and is a brainstorming process.
- ❖ The Water Working Group discussed different options to achieve strategies.
- ❖ Niki Koszalka will send out the brainstormed potential functions for Fountain Creek. The Water Working Group will flesh out, polish and resubmit these ideas.
- ❖ The Water Working Group would like to start this process independently. It will be less intimidating or limiting then working exclusively with the Corps study. The Fountain Creek Vision Task Force will take on the first step, followed by a meeting with the Corps.

- ❖ The Water Working Group would like to have two groups, one reflecting the Corps study and the other working independent of the Corps study.
- ❖ The next meeting for the Water Working Group will be a joint meeting with the Land Use/Environment Working Group. This will be a four-hour meeting on January 17, 2007 from 1:00 to 5:00 pm.

APPENDIX I

Fountain Creek Vision Task Force Land Use and Environment Working Group Meeting Summaries

**Fountain Creek Vision Task Force
Land Use and Environment Working Group
Meeting Summaries**

**Fountain Creek Vision Task Force
Land Use and Environment Working Group
February 23, 2007
Final Meeting Summary**

Attendance

Carol Baker, Mary Barber, Mike Bonar, Rusty Cochran, Scott Cowan, Dennis Darrow, Mike Drabing, Doug Fitzgerald, Ferris Frost, Bryan Johnson, Juniper Katz, Sarah Keith, Jim McGannon, Heather Maio, Dennis Maroney, Rex Miller, Bob Miner, Jonathan Moore, Kevin Moore, Jim Munch, Jerry Pacheco, Gary Rapp, Sandy Rayl, Tom Ready, M.L. Richardson, Lisa Ross, Frogard Ryan, Kirsta Scherff-Norris, Mark Vigil, Meifen Wang, Pat Wells, Tim Williams, Heather Bergman, and Helen Littrell Smith

Action Items

Juniper Katz	Send sentence about task force support for GOCO grant proposal to Heather for distribution to and review by the Consensus Committee.
Keystone	Talk with Rich Muzzy about getting maps of the watershed to refer to during meetings.

Meeting Objectives

- Hear presentations about two planned actions/activities in the watershed
- Ask questions as needed to gain knowledge needed to move forward with prioritization of issues
- Prioritization of land use/environment issues

Panel Presentations: Planned Actions/Activities in the Watershed

Two organizations were invited to present information on planned activities in the Fountain Creek watershed. The purpose of these presentations was to update the group on upcoming actions that may impact the watershed and the work of the Task Force.

Great Outdoors Colorado (GOCO) Legacy Grant Proposal

Presentation: Jonathan Moore, Colorado Open Lands (COL)

- Colorado Open Lands recently finished a planning grant with GOCO to look at the Fountain corridor; broadened the partnership to include The Nature Conservancy, El Paso County, Pueblo County and Colorado State Parks; and came up with the Peak to Prairie approach. They are hoping to bring in broader participation, including cities (Colorado Springs, Pueblo, Fountain), water districts, etc.
- The Peak to Prairie planning grant is available for download on COL's website at: www.coloradoopenlands.org

- The overarching goal of the grant is private land conservation: landscape-scale conservation work, preserving as much as 50-70,000 acres of land in the next three years.
 - Can play a critical role in preserving key agricultural properties, potential recreation properties, and key wildlife habitat properties, to name a few.
 - Often look to work with agricultural producers as well
- Would like to bring a private component to the arena this task force is operating in and provide private landowners with incentives to preserve the habitat of their land through conservation easements. Would work on developing practical solutions with the landowner.
- Now have the opportunity to protect 10-12 key anchor properties that can possibly be linked together.
- It would be good to shape development patterns from a resource perspective
- Landscape grants are due March 23; the GOCO grant request will be around \$6-8 million
- Need to identify sources for matching money (around 25% of grant total) to GOCO funds in order to receive the grant money; need to be extremely creative to come up with those funds.
- Grant concepts are due to GOCO in March, funding notification will take place in mid-summer 2007, and the money is distributed in early 2008.
- State Parks was asked to be a part of the grant and is 100% in support of it. Part of what they are trying to do is set aside open space for trails. Part of what State Parks wants to do is preserve the agricultural way of life by creating and using a park as an educational tool to illustrate what ranching means (hay rides, chuck wagon cook-offs, etc.).

Question/Answer

- This study seems to be bound by a certain area that doesn't go farther north than Highway 24. Are you a member of the Colorado Coalition of Land Trusts?
 - The study does not generally go north of Highway 24 because of the need to key in on an area with the greatest opportunity to be effective and have an impact. This particular project has a boundary, but the organization is generally open to address other areas across the state. To the second question, yes, Colorado Open Lands is a member of the Colorado Coalition of Land Trusts. Their website is: www.cclt.org.
- Is there coordination between COL and county open space entities?
 - Yes; El Paso County's plan was recently updated to reflect work we are doing in the area.
 - There is a need to facilitate a discussion between Colorado Open Spaces and Pueblo City Council to bring them up to speed on the grant.
- What does this project mean for this working group?
 - How much would protecting private land help with the impervious surfaces problem?
 - It won't fix any of the problems, but it can help a little.
 - Other benefits are scenic value, flood absorption, community separator (perhaps with trail connecting), it allows for independent community identities, wildlife habitat (migratory bird habitat specifically, but also fish and mammals), and it preserves agriculture and agriculturalists (ranching way of life).

- Do you address the structure of floodplains? Does it go to the boundary of the 500-year floodplain?
 - The easements we are looking at will help us define floodplains; it really depends on the property.
- An advantage of purchasing natural lands might be the opportunity to remove malfunctioning septic systems in the property.
 - COL is not actually purchasing any property; they purchase the conservation easements (development rights), so they play no direct role in managing the property. This is the beauty of the system, but does not allow for those types of improvements.
- One participant noted that a danger associated with conservation easements is that they do not preclude utilities from coming through the property. With the “Super Slab” highway coming through, it’s something to think about.
- How can the Fountain Creek Vision Task Force help accomplish this project?
 - A letter of support from this group
 - Funding is the critical piece needed—25% matched funds (about \$1.5 million); local government contributions are particularly helpful
 - Other letters of support
 - Communicate support of the project to the communities
 - Private money is also helpful
 - To give money to the project, contact Juniper Katz at 303-988-2373.
- Is the Natural Resources Conservation Service (NRCS) funding any projects?
 - COL would go through the NRCS grant application process for those properties that fit their mission. The other projects that don’t fit the mission of the NRCS are what COL needs funding for.
- In the grant concept paper, Juniper has noted that the Fountain Creek Vision Task Force supports private land protection, and she asked the group whether they feel that is a fair statement.
 - This actually needs to be decided by the Consensus Committee,. Juniper will send the sentence to Heather, who will send it to the group for approval.
- In the 25% matching funds, does landowner donation count as match?
 - Donation of land does not count, as matching funds have to be a cash match.
- Is Working Landscapes a part of this?
 - Yes, not actively on this particular project but overall as an organization.

Lafarge Gravel Pit Plans

Presentation: Kevin Moore, Mark Vigil, M.L. Richardson, and Rusty Cochran; Lafarge North America

- Sundance property proposal overview
 - Currently have permit operating in the area, and there are roughly four years of reserves left at the current site. The site supplies materials into Pueblo, Fountain, and Colorado Springs and employs about 20 people. Lafarge is looking to replace that site with the proposed site.
 - The overall goal is to mine a natural resource and reclaim it—it is a temporary use. At the end of a project, water storage, lakes, land for development, etc. are created.

- o Lafarge has been in El Paso County since 1959, with approximately 190 permanent employees in the county.
- Proposal
 - o Gravel property lease with Sundance Investments for approximately 745 acres
 - o Plan to mine 437 acres, timing based on market conditions
 - o Continue to supply aggregate customers in El Paso County
 - o Plan to reclaim affected acreage for agricultural uses and water storage at the end of the project
- Lafarge Sundance lease
 - o The site is approximately five miles south of Fountain along the west side of Fountain Creek.
 - o Access to the site will be onto I-25 using Exit 122.
 - o Plant sites will encompass about 30 acres.
- There have been some wetlands identified on the property and they are being investigated; there seems to be no connectivity to the rivers thus they likely won't qualify as wetlands.
- Mining will proceed in phases with 20-30 acres mined per year.
- Concurrent reclamation will involve contouring and reseeding the disturbed land.
- Each major phase of mining represents 5 to 10 years.
- Project will result in the creation of two water storage ponds totaling 270 acres; remainder of the site will be returned to agricultural uses.
- Potential sources of water for long-term augmentation of water storage ponds have been identified.
- Plan to have monitoring wells on site to track natural seasonal fluctuations and potential impacts.
- There is a mitigation plan to offset potential impacts to groundwater.
- Setbacks from natural drainages flowing through site--minimum of 200-foot mining offset from any off-site structures, adjacent wells, and Fountain Creek (riparian area)
- Water
 - o Best management practices
 - Settling ponds, berms, containments, silt fencing, etc.
 - Recycling water
 - Controlled discharge locations
 - o State discharge permit
 - Daily monitoring, monthly sampling
 - o Groundwater monitoring and mitigation plan
 - Piezometers (well monitors) (monthly water levels, semi-annual water quality testing)
 - Mitigation efforts (recharge trenches, mitigating water needs with dewatering water)
- Air: Adhere to Colorado Department of Public Health and Environment permits
- Noise/light
 - o Light directed to minimize off-site impacts
 - o Use of berms to shield noise and light
- Traffic
 - o 750 total truck trips per day (design maximum)

- o Will utilize Old Pueblo Road to I-25; majority of traffic will travel to/from the north immediately onto I-25
 - o Access permits from County and Colorado Department of Transportation (CDOT)
- Visual
 - o Screening berms along I-25, north side of plant, and southern boundary of site
 - o Natural riparian area along eastern boundary

Question/Answer

- State Parks would like to make a deal to use reclaimed water ponds for recreational use. Can you leave 270 acres of open water instead of covering it back up? Secondly, regarding highway access, there are a few railroad tracks there. Is CDOT requiring you to hold a permit for that?
 - o Regarding the water rights issue: reclamation of the site is mostly going back to agricultural use. Water storage tanks are actually sealed vessels that will keep water from coming in or out, water in those areas will have to be dedicated through water rights through the landowner.
 - o Regarding traffic: Lafarge is meeting with CDOT and El Paso County on that issue. There is other development going on in the area that CDOT would like them to work with to improve access.
- Is the restoration plan filed?
 - o Yes
- Can the restoration plan preclude invasive species (Russian olive and tamarisk)?
 - o Through permitting, have to put up a performance bond for the reclamation site. There is a seed/weed control program that is a part of the project during mining and during the reclamation process.
- Is there anything proposed in the reclamation plan around flooding?
 - o Working with the county they have identified the 100-year floodplain which is illustrated on the project map. The idea is to keep the storage ponds away from that floodplain. They are conducting a floodplain study for mining and reclamation activities.
- What is the average depth of water and depth of digging?
 - o Water is 10-12 feet; gravel averages 27 feet.
 - o The water will be used in processing; typically no chemicals enter the water in that process
 - o There is a recharge trench to bring aquifer back up to previous levels
 - o Water storage will be constructed via slurry wall to create a natural barrier
- Is it critical to have the plant on this property?
 - o The quality of aggregate at this site will exceed state/county requirements for construction.
 - o It is important to have the plant on site because the aggregate needs to be washed of the clay and there is less impact and truck traffic if the plant is on site. We are also proposing to have concrete and asphalt plants on site.
- For the water you are using, are you accounting for an increase in stream flows in Fountain Creek? Secondly, do 750 trucks/day mean a 24-hour operation schedule?
 - o County requires that stream flow be addressed in the floodplain study.

- The typical operation hours will be 6 a.m. – 5 p.m. Lafarge is asking for the ability to operate 24 hours/day because a lot of major construction projects operate at night, and they will need to be able to ship products to those projects at night.
- How much water will be required per year?
 - 220 acre feet is the anticipated consumption; have current lease with the City of Fountain for 330 acre feet.
 - Landowner has existing water rights that might be an additional source of water
- How many yards/tons are being taking off the site over the life of the project?
 - 15 million tons of sand/gravel
- Do you have any liability for erosion into the creek?
 - Liability is handled through state permits and the stormwater plan. Plan to have small berms around excavated areas to prevent runoff.
- What does this mean for the work of the task force?
 - How does this relate to easements, conservation of wildlife, noise/light pollution?
 - This may be the first of many gravel pits; want to figure out how to interact with this one
 - Visual impact from I-25 and adjacent areas
 - Not long-term, when mining is done all structures, equipment will be removed
 - With choice to not mine mountains, aggregate becomes increasingly rare
 - What is the potential for a conservation easement on the site post-operation?
 - Property owners are open to that idea
 - Would like to see approval be on the condition of a public trail corridor
 - State Parks would like to work with Lafarge when they start putting berms up to make them attractive, trees for birds, camping, etc.

Prioritization of Environment/Land Use Issues

Participants were asked to identify which issues this working group should pursue at its next meeting. The follow options were provided:

- Wetlands: there is major land use along creek that has impacts on water in the watershed
 - Do we have this information or do we need to gather it?
 - Ferris is working on a map of wetlands in the watershed
- Increased urbanization covers the other topics on the list; land use development is also related.
 - Suggest getting maps from PACOG related to increase in impervious areas as a start; there are land use issues separate from water quantity issues.
 - Agree with the bigger issue of urbanization in terms of where we anticipate development; look at Monument to Woodland Park to Pueblo—these areas that appear open are strategically being invested in with an eye towards development.
 - How can urbanization best enhance the ecosystem services in the watershed?
 - Education, planned land use is important.
 - Figure out what development is planned and anticipated impact in watershed for next meeting
 - Suggest speaking in general terms rather than specifics because of confidentiality issues
 - Suggest looking at open space plans as well as development plans

- o Recommend looking at how planning for development can be done in a positive way and how this group can impact ecosystems in the watershed in a positive manner.
- o Who do we want to present at our next meeting?
 - Pueblo City/County
 - City of Fountain
 - El Paso County
 - Colorado Springs
 - Palmer Lake
 - Monument
 - Teller County
 - Fort Carson
- o Jim Munch, Bob Miner (volunteered by group) Sarah Keith, Dave Smesrud, and Mary Barber agreed to help develop the panel for the next meeting.

Next Steps

The next Environment and Land Use Working Group meeting will be held on **Thursday**, March 22 from 2-5 p.m. The meeting will be held at the Pueblo County Conference Room, which is a free-standing building at 1001 N. Santa Fe in Pueblo.

Fountain Creek Vision Task Force Land Use and Environment Working Group March 22, 2007 Final Meeting Summary

Attendance

Todd Ahlenius, Hal Alguire, Carol Baker, Mary Barber, Scott Cowan, Doug Fitzgerald, Ferris Frost, Kim Headley, Bill Healy, Bryan Johnson, Juniper Katz, Sarah Keith, Loretta Kennedy, Irene Kornelly, Rex Miller, Jim Munch, Jerry Pacheco, Julie Pearson, Kae Rader, Gary Rapp, Jane Rawlings, Tom Ready, Jane Rhodes, Kirsta Scherff-Norris, Richard Skorman, Dave Smesrud, Ryan Tefertiller, Parry Thomas, Barbara Vidmar, Tim Williams, Jay Winner, Chris Woodka, Meggan Yoest, Heather Bergman, and Helen Littrell Smith

Action Items

Meggan Yoest	Put images from presentation into a PowerPoint and send to The Keystone Center for posting to the Fountain Creek website.
Meggan Yoest	Connect Tom Ready with the person to whom the Task Force can send comments/input about the La Farge gravel pit.
Ryan Tefertiller	Send links to information in presentation to Keystone to be circulated or posted for the group.
Ferris Frost and Mary Barber	Set up panel to present information about wetlands at the next working group meeting: definition, where do they exist, functions, creation.
Ferris Frost, Richard Skorman, and Bryan	Set up a panel to present to the Consensus Committee on the three imminent development projects, including the various planning

Johnson	departments to talk about their processes.
Richard Skorman	Work with El Paso County to get a heads up about development projects in the works.
Keystone	At the beginning of future working group agendas, ask for updates on known development projects in the watershed.

Meeting Objectives

- Hear presentations about anticipated land use and development in several jurisdictions in the Fountain Creek watershed
- Discuss anticipated developments and possible implications for the watershed with local land use planning experts to ensure a sound understanding of this issue
- Determine if/how to move forward with this issue

Panel Presentations on Anticipated Development in the Fountain Creek Watershed

El Paso County, Meggan Yoest

Note: We expect this presentation to be posted on the Watershed Study website. Questions should be directed to Meggan Yoest at (719) 520-7940.

- The presentation highlighted future and anticipated development in unincorporated El Paso County. Meggan shared a map of the major development applications currently underway, which are mostly residential.
- Eldorado Village: 2.5 acre subdivision intended to move density away from Fort Carson; La Farge is a part of this project.
- Rolling Hills Ranch (8,577 units), Lorson Ranch (7,000 units), Carriage Meadows (161 units), Cuchares Ranch (400+ units), Painted Sky (700 residential + some commercial)
- Ute Pass: Pyramid Mountain and Chipita Ranch; water will come from the Cascade Metro District
- Cimarron Hills: Claremont Ranches, Wilshire, Jessica Heights, Hannah Ridge
- Cathedral Pines (161 units)
- Forest Lakes, Black Forest Reserve, Sanctuary in the Pines, Meridian Ranch
- In 2006, there was an overall decrease in the amount of building permits due to the decline in the housing market.
- Meggan agreed to put the images from her presentation into a PowerPoint and send to The Keystone Center so it can be posted to the Fountain Creek website.

Fort Carson, Hal Alguire

Note: We expect this presentation to be posted on the Watershed Study website. Questions should be directed to Hal Alguire at (719) 526-3415.

- Construction is focused on land use to support the growth of the facility.
- There is construction happening throughout the cantonment area to support mission operations.
- Base Realignment and Closure (BRAC) construction: \$526 million from June 2006 – September 2009
 - Division Headquarters complex: \$104 million
 - Heavy brigade facilities: \$341 million
 - Evans Army Community Hospital alteration and consolidated clinic: \$81 million

- Anticipating the arrival of an additional 4,000 soldiers at Fort Carson from the 1st Brigade of the 4th Infantry.
- The biggest project in the cantonment area is the Digital Multipurpose Range Complex (D/MPRC), most of which is in Pueblo County.
- Community and housing facilities
 - The Army privatized housing units in 1999, and GMH Military Housing LLC is the contractor for these projects.
 - Building 401 additional family housing units
 - A lot of these projects will get pushed out time-wise
- Army/Air Force Exchange Services development will include retail areas, museum, car wash, kennel
- Strategic Mobility includes a facility to process soldiers prior to and after deployment just south of the Colorado Springs airport.
- All construction is built to the LEED® Silver standard.

City of Fountain, Dave Smedsrud

Note: We expect this presentation to be posted on the Watershed Study website. Questions should be directed to Dave Smedsrud at (719) 322-2022.

- The comprehensive plan was updated in August of 2006.
 - It established an overall framework that provides guidance to community decision makers.
- Establishing planning boundaries
 - The Three Mile Plan provides the right to comment on development occurring within three miles of Fountain's jurisdictional lines.
 - The urban growth boundary defines an area the city may be willing to serve if there is clear economic benefit to city.
 - The urban services boundary defines an area where the city shall provide at least three services. The city will likely serve this area in the next 10-15 years because it is anticipated that this is where the most immediate development will happen.
- Land uses
 - Zoning: Developing an annexation plan for unincorporated enclaves to determine whether to bring them into the city.
 - Future land use: The anticipated growth of Fountain will be to the south, east, and northeast of the city.
- Greeninfrastructure plan
 - "Greeninfrastructure" is a term to include any infrastructure that is green/environmentally-sound.
 - Fountain has unique opportunities for wetland protection and other ecosystem enhancement because it is at the confluence of Fountain and Jimmy Camp Creeks.
- Local measures to protect watershed
 - Fountain was the first government entity to require that post-development runoff be limited to historic rates. Fountain also enacted a stormwater detention policy in the early 1980s.
 - Discourage filling or modification of floodway or flood fringe.
 - Prudent Line: New structures have to be set back at least 100 feet from the 100-year floodplain, which gives the creek room to move.

- The city is considering low-impact development standards to reduce impacts from runoff. Low-impact development involves runoff water dispersement (landscaped areas, parks, etc.) instead of funneling it to a detention pond and putting it back in the creek.
- The city requires an environmental assessment study for new development. The developer must study hydrologic conditions and the impact associated with the development.
- Several large ranches are in Fountain's urban growth area. Kane Ranch and a portion of Norris Ranch have petitioned for annexation.
- Fountain's population has grown an average of 7% per year since 2000. It is expected to continue with the influx of additional troops at Fort Carson.
- Most of the city's commercial growth is at the northern end of the city.

Pueblo City/County, Kim Headley and Jim Munch

Questions should be directed to Kim Headley at (719) 583-6100 or Jim Munch at (719) 553-2242.

- The south end of the Fountain Creek watershed is at the north end of Pueblo County.
- The comprehensive plan was adopted in 2002, and it has been undertaken in a manner that evaluates population threshold rather than a specific timeframe.
 - Looked to accommodate a population of 200,000 people. The current population is around 150,000 people.
 - It is anticipated that Pueblo County may reach a population of 200,000 around the year 2030. The comprehensive plan will need to be reconsidered when the population gets close to 200,000.
- Anticipate that growth will continue in Pueblo West, which is receiving 58-60% of Single Family building permits; that has been the trend for the past six to eight years. It is also anticipated that there will be growth to the northwest of the university.
- The proximity between Pueblo West and Fort Carson is important; Pueblo wants to assist the Army in some of the protection of the land surrounding Fort Carson through conservation leases and easements.
- Some of the land in Chico Basin is being managed cooperatively with The Nature Conservancy. [Facilitator's Note: Questions were raised during and after this meeting about the accuracy of this statement. Representatives from Pueblo are investigating this and the results of that effort will be reflected in the final meeting summary.]
- Wildlife: The most intense wildlife density and diversity in the Pueblo portion of the Fountain Creek Watershed is in the riparian area along Fountain Creek, and to some extent to the east of the creek.
- The City and County jointly plan for development. The city adopts the plan separately, but generally the two entities work closely together and they have inter-governmental agreements to allow for the discussion of plans.
- There has been flooding in past years in Fountain Creek. Some of the last undeveloped lands in the Fountain Creek corridor are between Colorado Springs and Pueblo, and the pressure to build will likely occur in that area.
- Most of Pueblo's growth has been in the south corridor, and they are now seeing an aggregated Colorado Springs/Pueblo housing market.
- Pueblo is also seeing an increase in anticipated development

- Water is scarce and some people north of Pueblo (outside the city) are asking Pueblo for water. Pueblo would prefer growth to occur within the city and to see smart growth happening along the Fountain Creek corridor. They are willing to share in the duties of preserving open space along the corridor, but they don't want to be the only entity working on that.

Colorado Springs, Bill Healy and Ryan Tefertiller

Questions should be directed to Bill Healy at (719) 385-5358 or Ryan Tefertiller at (719) 385-5382.

- Colorado Springs is a sizeable community; it is larger in land area and population than Miami, St. Louis, and Cincinnati.
- Demographics
 - There are 10,000 permits issued per year. Of those, there are 1,500 major applications per year.
 - The city has a population of 400,000 people and is growing by 1.3% per year, compared to a regional population of 575,000
 - By 2030, the city's population is anticipated to be slightly larger than 500,000; the region is anticipated to be slightly larger than 800,000 at the same time.
 - Colorado Springs anticipates a downward shift of the city's population as a percentage of the region as growth occurs outside the city--from 69% to 63% (current to 2030); would like to focus growth within the city
 - Two-thirds of the population increases are net natural increase (more births than deaths)
 - One-third is from people moving into the area
- BRAC decision: base closures have impacted the population to some degree
 - 5,000 of the dwelling units are on the base
 - 1,000 single family homes are off the base
 - There are 4,500 off-base apartment units in Fountain, southern Colorado Springs, and Pueblo.
 - There is high vacancy in Colorado Springs now, and it is well-suited to meet the immediate off-base housing needs.
- Growth
 - Mostly in the north and east
 - Estimated that there are 30,000 open land acres, of which 10,000 are in-fill acreage surrounded by or close to existing urban uses.
 - Since 1990, the city land area has grown by 5%. Since 1980, it has grown 206%. This growth trend indicates that land area expansion is diminishing
- Recent and potential annexations
 - Flying Horse Ranch: 1,600 acres
 - Allison Valley: 460 acres
 - Woodman Corridor: 830 acres
 - Sterling Ranch (potential)
 - Tory Ranch: 740 acres
 - Island annexations
 - Have tended towards no annexation without property owner support
 - Typically can't come to agreements with property owners
 - Can't ensure fiscal neutrality to taxpayers in island annexation

- Other activities
 - Confluence of Monument and Fountain Creeks: Colorado Department of Transportation (CDOT) is studying Highway 24 as an option for an expressway. The city is working with CDOT on planning for a greenway along Fountain Creek.
- Urban renewal projects
 - Gold Hill Mesa: cap tailings with good soil to prevent tailings from entering the creek
 - Southwest downtown is being redeveloped
 - N Nevada: “Imagine Downtown” process; in 10-15 years there will be investment opportunities and large high-rises coming to downtown.
 - Transit is doing well
 - City Council stormwater rate approval is creating funding opportunities for stormwater enhancement.
- Proposed Streamside Overlay Changes
 - Streamside Overlay Ordinance was adopted in 2002(*Note: Information on this is posted on the website.*)
- Goals:
 - Improve relationship of land uses along the creek with the creek itself
 - Increase interaction between users and residents to promote stewardship
- Environmental issues
 - Riparian habitat
 - Positively influence water quality and quantity
- Trying to simplify/clarify ordinance, improve implementation. Went to Planning Commission and presented proposed changes. Commission encouraged interaction, coordination, and communication with stakeholder groups. Going back to Commission on May 3.
- Ryan will send links to Keystone to information to be circulated or posted for the group

Question/Answer and Group Discussion

ALL

- What is going on as far as ensuring that developments (specifically Highway 24) mitigate runoff?
 - City of Pueblo: Have funding from the Governor’s office for smart planning. Once annexed, subdivisions are required to be developed according to city regulations using low-impact development. Trying to address that issue with a joint planning grant from the State of Colorado.
 - Pueblo County: Looking at incorporating low-impact concepts (slowing down and spreading out flow). Currently require that post-development flows do not exceed historic, non-development flows.
 - City of Fountain: There is a code around low-impact stormwater development that isn’t being enforced across the region. There is an educational component that needs to happen.
 - Colorado Springs: Streamside ordinances, floodplain, different layers of plans and ordinances are in effect.
 - El Paso County: We have the same drainage criteria as Colorado Springs under the MS4 state permit and similar guidance around releasing to historic rates.

El Paso County

- Where is El Paso County getting water from for these developments?
 - Security and Whitefield Utilities
- Is there any concern about too much urban development happening? Water/well rights—is there concern that groundwaters will be depleted?
 - The long-range planning budget was the first to go into a budget crisis. They are working to update the comprehensive plan. Regarding water, the Squirrel Creek watershed is getting involved in reviewing planning. There is a concern and they are trying to work with local people.

Fort Carson

- Is Gate 19 inevitable?
 - Gate 19 is located west of I-25 and South of Butts Army Airfield and is currently not in use.
 - It is being considered as a possible way to get on and off of Fort Carson.
 - The airfield is important to Fort Carson, and access in that location would be good.
- If the gate is opened and the airfield isn't developed, would people use the gate as a better way to go south (to Pueblo or Fountain, for example)?
 - Today, if you use Gate 19 through the airfield, it would take longer to get north.
 - If Gate 20 is really clogged, Gate 19 might be a relief option.
- Is the aviation field coming to Butts?
 - There has been a lot of back and forth on that; it is unknown at this point.
- Looking for 1.5-2 mile buffers around the expansion in conservation easements and other forms; the main concern is populations to the east (Fountain) and the southeast (Pueblo West).

Fountain

- You showed a continuation blue line on one of your mpas—that was Powers Boulevard at mile marker 123, which is where Clear Springs Ranch is located. Why did that get stopped?
 - Powers Boulevard: CDOT hired URS to do a feasibility analysis. They studied 10-12 corridors and the corridor selected came in at mile marker 123. CDOT doesn't have the funding for it at this time.
- How many units are in development?
 - Improved & platted: around 5,500

Colorado Springs

- Regarding the streamside ordinance changes, is the ordinance going to be weakened?
 - We don't have consensus among all of the parties on how the modifications should occur, nor what should and should not be modified. The biggest concern is how the overlay zone relates to the floodplain; we are trying to focus the overlay zone to improve development along the stream. Instead of planners trying to implement a floodplain fill restriction, the floodplain manager would review the plans. We are also retaining buffer areas and riparian protection. Putting restrictions in the floodplain code would encourage consistency.
- The Council of Neighbors and Organizations (CONO) opposed changes to remove the floodplain from the definition of the overlay zone (removal of 42% of 100-year floodplain). The challenge is to get that operation moved to the regional building department now that the Floodplain Administrator job has been eliminated. There is work to be done to make this understandable and comprehensive.

- We have gone to the Planning Commission and have to go back. In the mean time, we will work to try to address CONO's concerns. It is a proposal at this point, and we are trying to satisfy as many people as possible. A new staff report with further modified ordinances will be available at the end of April/early May.

Next Steps

- Is this the information the working group was looking for?
 - We have a good foundation in anticipated residential development, but some areas are looking at heavy industrial development and I don't think we have that piece yet.
- Pueblo and El Paso County have been approached about a potential power plant, and it has been approved in El Paso County at Squirrel Creek (Invenergy). It has a 40-year duration and will be a 450 kilowatt gas turbine plant. The idea behind this is that the best place to put a utility is in an existing utility corridor. Xcel put out an RFP that Invenergy responded to and the municipal planners had little input. The power plant is still waiting for final approval from the Board of Commissioners. A lot of conditions have been placed on the power plant around a water plan, conditions around grading, etc.
- Regional sewage treatment facility: Being considered for land purchased from Hannah Ranch, north of Hanover Road, lower Fountain Metro Sewage Disposal District. It has been on books for a while, and Colorado Springs is proposing their own treatment facility.
 - Have current capacity to handle treatment for 10-12 more years. Still planning on building a regional treatment facility.
- Commercial and office industrial (C&OI) lands in Colorado Springs: reducing emissions to improve air quality is a goal of the development of these types of lands. We have a 20-year build-out plan with a 200-year excess supply of C&OI lands. Trying to figure out where we can support the transfer back to other land uses of C&OI lands. There are heavy industrial demands in the I-25 corridor.
- Fountain: At the end of the power plant's 40 years it is supposed to return to a natural state. The energy company is into renewable energy, and the plant answers short-term need, and long-term power will be transferred in. Regarding the treatment plant, there is a need date where a new plant will have to come online.
- Does it worry people that the vision of this Task Force isn't at the table with some of the development going on? A lot of land use planning is happening, and I am concerned that we won't have the ability to incorporate these developments into our vision if we wait too long.
 - We don't always know what is coming down the development pipeline, and we don't feel like we have a voice in impacting what happens. There is a need to get into the planning loop to get ahead of future development.
 - Maybe this task force should work with land use planning commissions and send comments when a project is coming through the pipe.
 - I am impressed with the level of cooperation between the City and County of Pueblo. Can it happen in El Paso County and Colorado Springs?
 - It depends on the level—there is a lot of staff-to-staff cooperation currently going on; any time development is within three miles of Colorado Springs or Fountain, the various staff members work together on that planning.
 - Denver has a lot of intergovernmental agreements. One recommendation coming out of Fountain's annexation plan is to approach El Paso County with an intergovernmental agreement regarding land use, transportation, and utilities.

- Has the La Farge gravel pit been approved?
 - Not yet; Meggan will connect Tom Ready with the person who the Task Force can send comments/input to.
 - Suggest having one major interchange rather than two within a mile of each other (re: gravel pit and Powers Boulevard) and get ahead of the process.
- How do we make this information exchange about upcoming major land uses happen more often?
 - Find out what is imminent (gravel pit, power plant, wastewater treatment facility) and find out what their process is and how to influence those processes.
- What about enforcement? Are there people enforcing permits, planning?
 - Not really—staffing is an issue; but municipalities are trying to find creative solutions to that problem, such as holding the builder accountable to following mandates.
 - A community monitoring program is an option to get at this issue.
- El Paso County's budget crisis has impacted staff levels in the planning department. When recommendations come in, there is no staff to implement or consider them.
- At the beginning of future working group agendas, Keystone will ask for updates on known projects.

WHAT NEXT?

- The Water Quality Working Group created a small task group to come up with specific ideas on addressing runoff problems. The Water Quantity Working Group decided to investigate what is required in various communities to control runoff and minimize water quantity concerns. What make sense for this working group? This working group could choose to focus on dealing with the three imminent land use projects coming up, but that might be for the Consensus Committee to undertake.
 - Suggest having a panel present to the Consensus Committee on the three imminent projects and have the various planning departments there as well to talk about their processes.
 - Ferris Frost, Richard Skorman, and Bryan Johnson will work with Keystone to put this panel together.
 - Richard Skorman will also work with El Paso County on getting a heads up about development projects in the works.
- See the role of this working group as being to implement what the Consensus Committee comes up with
- Think we need to learn about one of our other top issues while this other panel is going on so we don't get too far behind.
 - Wetlands: need definition, where do they exist, functions, creation.
 - Ferris Frost and Mary Barber will help put together a panel on this topic.
- Next meeting
 - The next meeting will be on Friday, April 27 from 2:00 p.m. – 5:00 p.m. Venue TBD (depending on whether the State Parks headquarters building is ready).

**Fountain Creek Vision Task Force
Land Use/Environment Working Group
April 27, 2007**

Final Meeting Summary

Attendance

Carol Baker, Mary Barber, Mike Bonar, Anita Culp, Katy Fitzgerald, Ferris Frost, Juniper Katz, Steve Kettler, Carole Lange, Walter Lawson, Jim Munch, Jerry Pacheco, Gary Rapp, Jane Rawlings, Tom Ready, Krista Scherff-Norris, Richard Skorman, Ryan Tefertiller, Paul Thomas, Patrick Wells, Tim Williams, Niki Koszalka, and Heather Bergman

Panel Presentations

National Resources Conservation Service – Katy Fitzgerald

- ❖ Hydrophytic vegetation, soils, and hydrology define a wetland. A hydric soil is a soil that formed under conditions of saturation, flooding or ponding long enough during the growing season to develop anaerobic conditions in the upper portion. The vegetation in a wetland is predominantly a plant community that is water tolerant. Some of these types of vegetation include bulrush, spikerush, saltgrass, willow, and cattails.
- ❖ There are different definitions for wetlands. ACE defines a wetland as an area inundated or saturated for at least 5% of the growing season in most years. The Food Security Act defines a wetland as an area inundated for at least seven consecutive days during the growing season. Field indicators for wetlands include watermarks, drift lines, sediment deposits, and drainage patterns.
- ❖ There are several different types of wetlands including riverine (floodplain) wetlands, playas, and wet meadows. Wetland functions are filtration, water storage, habitat, and groundwater recharge.
- ❖ Less than 3% of the surface area of Colorado was originally wetlands. Of that 3%, approximately 40 to 60% of the original wetlands area has been lost. This equals approximately 1-3 million acres. The loss of wetlands, in Colorado, is greater proportionately to the losses in other habitats. Over 75% of native species are dependent on wetland and riparian habitat for a portion of their lifecycle.
- ❖ There are varied impacts to wetlands from development, agriculture and ranching, and water demands.
 - In terms of development, Colorado has one of the highest growth rates in the west. This comes with an increased demand on watershed resources and increases in impervious areas. Big box stores often seek out marginal lands due to low land values and small mitigation costs.
 - In terms of agriculture and ranching, wetlands are often altered to improve drainage or for water storage. Some grazing patterns can influence vegetation structure and diversity within and adjacent to basins, resulting in sedimentation and reduced wildlife value. Tillage through seasonal basins or adjacent to wetlands often results in sedimentation. Irrigation practices have often created wetland features on the landscape.
 - In terms of water demands, growth in populations means increased water usage. Agricultural practices are becoming more efficient and tilled acreage is increasing. There is invasive vegetation such as the tamarisk species that is utilizing more water than the native species.

- ❖ Restoration is very site specific. Restoration for riparian areas can include channel alteration and stabilization. Native vegetation plantings, invasive species control, and graze management can also help restore riparian areas. Restoration of wetlands can include filling of water concentration pits and grazing management. Additionally, installation of water control structures and water level management can aid in restoring wetlands.
- ❖ Some landowner programs that may be of interest to the Fountain Creek Vision Task Force are Wildlife Habitat Incentive Program (WHIP), Environmental Quality Incentive Program (EQIP), Wetland Reserve Program (WRP), Partners for Fish and Wildlife (PFW) and Colorado Habitat Incentive Program (CHIP).

U.S. Fish and Wildlife Service – Steve Kettler

- ❖ The technical definition criteria for wetland plants are that they need to tolerate prolonged periods of saturation. For soils, the technical wetland definition is that there is evidence of regular or prolonged periods of inundation to develop anaerobic conditions. In addition, for hydrology, the technical wetlands definition is that there are flooded or saturated soils for a significant period of the growing season.
- ❖ A wetland is a transitional area between uplands and water that make up a very small proportion of the landscape. Wetlands are very important for wildlife.
- ❖ The functions of a wetland range from biological, biogeochemical, and hydrological. Wetlands provide flood flow alteration in terms of short- and long-term surface water storage. Wetlands also reduce erosion through sediment stabilization and reduce flood damage through energy dissipation. Wetlands help to keep water clean by assisting in sediment, toxicant, and nutrient retention. Groundwater discharge/recharge, transformation, and cycling of elements are also functions of wetlands. The biological functions provided by wetlands include maintaining wildlife communities, distribution, and connectivity across the landscape.
- ❖ Wetlands are often cheaper in the long-term than building and maintaining infrastructure. Wetlands prove to be a benefit for wildlife, recreation, agriculture, aesthetics, and land uses. Wetlands provide a vast opportunity for outdoor education as well as active and passive recreation (hunting, hiking, open space, and bird watching). The value of wetlands is the goods and services that they provide. It is important for society to recognize the importance of wetlands.
- ❖ New York City researched filtration systems and found the estimated cost to be from \$2 to \$8 billion dollars. Alternatively, the cost to purchase land to maintain a functioning watershed, including wetlands, was estimated at \$250-\$300 million.
- ❖ Every 2.7 miles of coastal wetlands can reduce storm surges by about one foot.
- ❖ Conagree Hardwood Swamp in South Carolina removes the quantity of pollutants from the watershed equal to a \$5 million treatment plant.
- ❖ One acre of wetland can store 1-1.5 million gallons of water.
- ❖ Some potential partners in watershed and wetland work are DOW Chemical Company, Fish and Wildlife Service (FWS), Rocky Mountain Bird Observatory (RMBO), Colorado Natural Heritage Program (CNHP), National Resource Conservation Service (NRCS), Audubon Society, Colorado Open Lands, and The Nature Conservancy.
- ❖ Additional information is available from the following websites and resources:
 - o <http://www.epa.gov/owow/wetlands/>

- o <http://www.nmfs.noaa.gov/habitat/habitatconservation/publications/introfinal.pdf>
- o CNHP biological & wetland inventories for Pueblo and El Paso Counties
- o <http://www.cnhp.colostate.edu/reports.html>
- o Tryon Creek Watershed - Portland, Oregon

[Facilitator's note: Mary Barber from Ft. Caron provided the following link for further information on wetlands. <http://www.colorado.gov/oemc/publications/index.htm> (scroll down to the end of the page).]

U.S. Army Corps of Engineers (ACE) – Anita Culp

- ❖ The Clean Water Act (CWA) has jurisdiction over "waters of U.S." which includes lakes, rivers, streams, intermittent streams, and wetlands. ACE defines wetlands in terms of saturated soils during the growing season and a predominance of wetland plants.
- ❖ In the Fountain Creek Watershed, typical wetlands are cattail and bulrush marshes, wet meadows of grasses and grass-like plants, and stands of willow shrubs. The makeup of wetlands in the Fountain Creek Watershed for El Paso County are open water and marshes make up 2.5 square miles, shrublands make up 2.5 square miles, wet meadows make up 5 square miles, and wetlands associated with streams make up 10 square miles.
- ❖ Wet meadows are found in the prairies in northern and northeastern El Paso County. As you go south into Pueblo County, the land becomes more arid and there are fewer wet meadows. Willow shrublands are found throughout the watershed along many streams. Marshes are found throughout the watershed, often along streams. Fountain Creek has a large cottonwood forest and an understory of willow shrubs. The cottonwood forest is filled with pockets of small to large marshes.
- ❖ Colorado Springs, as the largest urban area, has an evolving wetland resource. The increase of urbanization has enabled Fountain Creek to develop with willow shrubs lining the banks. This is not a regular or normal occurrence. Marshes fair less well with urbanization. More water carried by the stream often means downcutting of the streambed and the drying out of adjacent wetlands.
- ❖ Filling a wetland or stream requires a Section 404 permit under the CWA. Nationwide permits are issued at the national level and are available for use with little or no paperwork. Authorized fills include small fills (road crossings or pipelines), small- to medium-sized bank protection projects, and maintenance or rehabilitation of existing structures.
- ❖ Large fills require a Section 404, Individual Permit under the CWA. Typical large fill projects are developments, large bank protection projects, and stormwater control projects. Once an individual permit application is received, ACE must do an Alternatives Review and an Environmental Assessment. A public notice is also issued to solicit comments.
- ❖ Developments usually need an Individual Permit and the permitting issues are flood control and stormwater control. Most developments are required to meet certain stormwater and flood protection standards. This usually involves modifying streams since the easiest way to meet the standards is to hard line the stream banks. Many drainage basin planning studies actually recommend this kind of waterway modification. Wetlands serve several functions related to lessening of flood damage. Wetlands away from streams can act as sponges, absorbing snowmelt or rainfall and keeping the water from rushing quickly into a stream. Wetlands along streams can act as buffers, slowing

down water, allowing the water to spread out and become shallower, and holding the ground in place so that the ground is not eroded. Other permitting issues with developments are loss of wetlands and loss of natural streams. Most developers try to maximize developable land, and this usually involves straightening streams and filling in adjacent wetlands.

- ❖ Depending where in the watershed you are, wetlands (especially wet meadows) either are groundwater discharge points or recharge areas. In the upper watershed prairies, wet meadows and wetland channels are discharge points. They feed lower stream sections creating live streams on the prairie where none would otherwise be. Along Fountain Creek below Fountain, wetlands can be both discharge and recharge areas. During flood flows when water goes out of bank, the many small marshes located within the riparian woodlands, fill up with water.
- ❖ Bank protection projects greater than 1,000 linear feet (lf) usually require an Individual Permit, and land reclamation is often included in the project. The permitting issues at hand are stopping bank or bed erosion, loss of stream meandering with hard lining, loss of bank vegetation, and cutting off the stream from the floodplain including cutting off hydrologic support of adjacent or nearby wetlands
- ❖ Stream-modification projects include straightening channels to protect structures, building grade control structures to stop streambed elevation drop or build back streambed elevations, building drop structures to dissipate energy from increased flows, and building detention ponds to moderate flood flows. Most stream-modification projects require an individual permit. The permitting issues are the impacts to the ordinary high-water flow, loss of natural stream meandering, and protection or restoration of streambed elevations. This can be beneficial to streambank or streamside wetlands, in theory. In practice, the energy that is dissipated at the grade or drop structure causes erosion at the structure and makes it difficult for wetland vegetation to re-establish itself. Grouted structures are especially bad.
- ❖ In the ACE public interest review, weight is given to any drainage basin planning study that has been approved by a county or city. If the study is more than 10-20 years old, less weight may be given to it. It is difficult for ACE to deny a permit for channelizing and hard lining a stream. Watershed plans or goals would be a helpful product give to ACE. If there is an approved plan recommending preservation of wetlands or preservation of floodplains, this helps ACE evaluate proposed developments or stream modification projects and help us to preserve wetlands.

Wetlands Subgroup

- ❖ A wetlands subgroup was created to explore the potential role of wetlands in the Fountain Creek watershed. The subgroup is comprised of Ferris Frost, Tim Williams, Mary Barber, Juniper Katz, Carol Baker, Kirsta Scherff-Norris, and Frogard Ryan.
- ❖ The group identified several questions that would need to be answered before the wetlands discussion can proceed. It was agreed that it would be helpful to invite a wetlands creation and restoration expert to an upcoming meeting so the group can get clarity on some the issues surrounding wetlands creation. The questions the group identified are:
 - Is there a template for wetlands creation at the watershed scale?
 - What lands along Fountain Creek are suitable for wetlands creation or expansion?

- o What are the different functions of numerous small wetlands versus a few larger ones?
- o What are the limitations of creating and maintaining wetlands?
- o What in the watershed would accommodate or facilitate wetlands?
- o How can wetlands be integrated with development?
- o What are the impacts to the water from wetlands?
- o What types of vegetation are necessary for wetlands?
- ❖ The Wetlands Subgroup will schedule a meeting to brainstorm wetlands visioning and the strategic and political issues surrounding wetlands. The Wetlands Subgroup plans to make a presentation at the June 1, 2007 Land Use/Environment Working Group meeting.

Land Use/Environment Goals from the Consensus Committee

The group reviewed and revised the goals for land use and the environment that were drafted by the Consensus Committee. The updated goals for this group, which will be forwarded to the Consensus Committee for review are:

- o Create a common land use vision, including a vision for recreation and other activities in the watershed
- o Establish common land use policies
- o Preserve, maintain, and enhance ecosystem services

Fountain Creek Vision Task Force Land Use/Environment Working Group Final Meeting Summary June 1, 2007

Attending

Carol Baker, Elise Bergsten, Doug Fitzgerald, Ferris Frost, Bill Healy, Kim Headly, Juniper Katz, Jane Rhodes, Gary Rapp, Kirsta Scherff-Norris, Ryan Tefertiller, Tim Williams, Niki Koszalka and Heather Bergman

Action Items

Juniper Katz	Will contact KC Swanson and Tom Ready regarding Front Range Trail/recreation planning
Tim Williams	Will produce a map showing past, present and future ideas for the watershed including proposed and current wetlands
Juniper Katz	Has map information through 2006 and will send it to Tim
Tim Williams	Volunteered to find out Front Range Trail/recreation planning from Pueblo, El Paso County and Fountain
Ryan Tefertiller	Volunteered to find out Front Range Trail/recreation planning from City Park
Juniper Katz	Will arrange with Claudia Brown from Biohabitat for a presentation on wetlands
Heather Bergman, Carol Baker, the Technical Advisory Committee, and the Army Corps of Engineers	Will draw out a chart showing what the timeline of different projects and studies are

Carol Baker, Kim Headly,
and Bill Healy
Gary Rapp

Will ask the Army Corps of Engineers to consider wetlands

Volunteered to track progress of the Fountain Creek Vision Task Force in regards to ecosystem services being integrated with land uses

Wetlands Visioning

- ❖ The Fountain Creek Vision Task Force should incorporate wetlands into its plan. Part of the Fountain Creek strategic plan includes solutions to excess erosion, sedimentation, water quality concerns, and flooding. Another part of the Fountain Creek strategic plan is a Front Range Trail along Monument and Fountain Creeks with amenities for recreation, education and wildlife viewing.
- ❖ According to the Land Use/Environment working group meeting of April 27, 2007, wetlands can help clean containments from the water, attenuate flooding, and help regulate erosion and sedimentation. For wetland creation, there would need to be a diversion with a valve at the front end, it would need to be determined how and when the valve would be switched so water could go off course and into a wetland. The wetland would act like a sponge and there would be specific plants to treat specific pollutants. The wetland would have to be a certain distance from the creek so that the water would infiltrate in the required 72-hour period.
- ❖ Off-channel and on-channel wetlands could be used for erosion prevention, sedimentation control, water quality improvements, and flood attenuation. Approximately 100 acres of wetlands could attenuate 3500-5500 cubic feet per second (cfs) of water in over one hour.
- ❖ There are E. coli problems with higher flows. There could be wetland vegetation around the creek that work to uptake E. coli. It would need to be determined if the channel capacity is reduced by vegetation. The vision is outside of the main stem. The concern in regards to the reduced channel capacity is more for large shrubs and trees than small plants.
- ❖ If the Southern Delivery System (SDS) preferred plan were chosen it could go hand in hand with wetlands creation.
- ❖ The idea of wetlands creation being dependent on the preferred option of SDS caused a debate. There were uncomfortable feelings that they were being lumped together.
- ❖ Three of the SDS alternatives include a return flow pipeline. This would result in base flows being reduced. The wastewater return flows reduce some of the pollutants in the creek. There would be less water available for plants. Currently, 80% of base flow is wastewater. The SDS return flow pipeline would not replace existing return flows. It would remove all return flows. The Environmental Impact Statements (EIS) will look at what the impacts will or will not be due to the pipeline.
- ❖ Wetlands will attract and support birds and other wildlife. The wetlands sub-working group would like to see existing wetlands and riparian areas protected, enhanced, and new wetlands created with in the watershed as much as practicable. The wetland and riparian areas would be designed to create healthy ecosystems to attract wildlife, support it, and improve watershed health. Wetlands would also create environmental and wildlife experience opportunities, provide adequate water to maintain wetlands, and consider current and future landowner plans. The wetlands sub-working group would like to

create a collaborative process with appropriate stakeholders. This group could capitalize on available studies/data, including the Army Corps of Engineers (ACE) study. It will be imperative that the group considers how to best utilize available Federal and State funds for both capital and operations/maintenance needs.

- ❖ The stakeholders could include but are not limited to Fountain Creek Vision Task Force, ACE, the Technical Advisory Committee (TAC), Colorado Water Conservation Board (CWCB), Colorado State Parks, Colorado Open Lands (COL) and other land trusts, State representatives, private landowners and developers, Fort Carson, Sierra Club, Division of Wildlife (DOW), Ducks Unlimited, Rocky Mountain Bird Observatory, watershed counties, cities and area governments, watershed stormwater management authorities, Audubon Society, Trout Unlimited, Xcel, Open space and parks, Natural Resources Conservation Service (NRCS), Recycling Coalition, and conservation districts (Central and Turkey Creek).
- ❖ There is a \$600,000 Request for Proposal (RFP) that Lower Arkansas Utilities and Colorado Springs Utilities create a Corridor Master Plan (CMP) for Fountain Creek. Included in the CMP are measures to improve watershed health, trail opportunities, and collaboration with stakeholders. The CMP will also provide an implementation strategy including a timeline, budget and funding sources. Some frustration was voiced over the spending of \$600,000 on another study and plan. It would be better to see the money go toward implementation. The \$600,000 for the CMP is money that belongs to Colorado Springs Utilities. They will decide how the money is spent and if it is available for implementation or planning.
- ❖ There needs to be a mapping project including proposed and current sites for wetlands. Also included in this mapping are all nature centers, trails, landowners, and infrastructure of the watershed.
- ❖ It is important to know what plan is doing what, when the timing is and what type of collaboration are they interested in. The Fountain Creek Vision Task Force needs to know this so that it can leverage some implementation of its own ideas. There will be some convergence and some divergence between groups. It would be a shame to overlap studies with the CMP, ACE, the TAC and the Fountain Creek Vision Task Force. Heather Bergman, Carol Baker, the TAC, and a representative of ACE need to sit down and draw out a chart. There will have to be much collaboration with the groups. The concern is more that if there is duplication, the community will consider this a waste of money and their support will wane. The public's money should not be spent on studies that are not feasible or useful. It is important the wetlands conversations continue for the next few months. It is important to open the communication between the Fountain Creek Vision Task Force, ACE, CSU and Lower Arkansas Utilities. It would be beneficial to see all the light bulbs go off and begin to work together.
- ❖ The Wetlands sub-working group suggests that a wetland plan is created. In addition, it is suggested that coordination occurs with the CMP and investigation of funding opportunities. Finally, it is suggested that COL and other land trusts be supported in their current work to protect existing wetlands/riparian areas as well as new possible sites. The wetland plan is more detailed than the CMP. The Wetlands sub-working group would like to see the Intergovernmental Agreement (IGA) be signed by nine parties rather than two.
- ❖ The Wetlands sub-working group sees the timeline as follows:

- o Land Use/Environment meeting on Wetlands: April 27, 2007
 - o Wetlands sub-working group meetings: May 9 and May 29, 2007
 - o Lower Arkansas/Springs Utilities initial meeting: May 18, 2007
 - o Land Use/Environment second meeting on wetlands: June 1, 2007
 - o RFP release: June 14, 2007
 - o Recommend to Consensus Committee: July 20, 2007 (?)
 - o Final input for Colorado Open Lands: August 1, 2007
 - o Award contract for Corridor Master Plan: August 7, 2007
- ❖ Claudia Brown from Biohabitat is interested in discussing wetlands with the Fountain Creek Vision Task Force. Biohabitat works with ecorestoration and creates plans similar to the visioning of the Task Force. Alan Carpenter is willing to go to the properties of Ferris Frost and Jay Winner to see if wetlands are appropriate for their properties.

Questions/Answers

It seems that, at times, it is safer to do smaller things higher up in the watershed. Would wetlands work on the tributaries?

Flood attenuation would not be as effective but some of the other wetland uses could be helpful. There are elevated levels of E. coli in Monument Creek. Where there is already development, there is less opportunity to create wetlands. In the upper watershed, it tends to be drier, which would be less effective for vegetation. It would be best to focus between Colorado Springs and Pueblo. There must be enough water to support wetlands.

Does ACE deal with restoration?

Historically, ACE deals in flood control, bank stabilization and channelization. However, they have incorporated restoration recently.

Would it be better for the Consensus Committee or the Wetlands sub-working group to approach ACE?

It would be beneficial to get the Consensus Committee behind the idea of wetlands. The approach to ACE from the Consensus Committee could have more influence than coming from a sub-working group. There is a hope that after presenting the wetlands proposal to ACE that they will want to incorporate the ideas into their study.

Would Biohabitat present material on wetlands in general?

Claudia, from Biohabitat is willing to present material to the Consensus Committee that is specific to the Fountain Creek watershed.

In terms of getting water to the wetlands, would this not be an intrusion of water rights?

There may be the need to purchase water rights. It may be contentious to purchase water rights from people who have to feed crops. There are people who offer CSU the opportunity to purchase their water rights regularly.

Is ACE a viable funding source?

Kim Headly, Carol Baker and Bill Healy will ask ACE to consider the wetlands. A member of the TAC group suggested that all the money in the ACE study has yet to be allocated to specific tasks. It is not important how the information is conveyed to ACE just that it is. It would be

helpful because ACE is a funding source. They now have incorporated environmental restoration as one of their funding issues.

How can the Fountain Creek Vision Task Force initiate a better “cross walk” with ACE in terms of what each group is doing?

A group should go to ACE to bring ideas and ask questions. It is important to gather more information as to what they are planning and working on. If ACE is in the process of an EIS, they may have to do an environmental assessment for projects. The time to procure funding is during the construction and environmental assessment phases. The Fountain Creek Vision Task Force needs to get its ideas and projects involved at that point. In terms of community involvement, the Fountain Creek Vision Task Force has better participation than the TAC. It is important that ACE knows what the desires of the community are. The Outreach Committee is producing a power-point production for the Fountain Creek Vision Task Force. This could be a good tool to use with ACE. Before anything is discussed with ACE, there needs to be approval by the Consensus Committee. Carol Baker, Bill Headly, and Kim Headly will contact ACE before the next Consensus Committee to see if ACE will meet with the Fountain Creek Vision Task Force. This then can be put up for vote with the Consensus Committee.

In the tributaries, are there some wetlands that could be observed?

There are many wetlands in the system that could be observed. Some have been infiltrated by invasive species. There are wetlands in the upper reaches of tributaries. Landowner participation is very important for wetlands as well as flow regime. There are existing wetlands but recreating wetlands that have dried up would be a recipe for failure.

What kind of sedimentation and maintenance issues are there with constructed wetlands?

This is more of a question for Biohabitat. There may have to be some human maintenance because there is no natural system for cleaning them up.

Is there a way to convert woody riparian vegetation to herbaceous vegetation?

No. One critical aspect of a healthy watershed is having the woody plants, not only for the health of the stream but also for wildlife especially raptors and fish. Cattails and grasses can come back to the watershed if there is removal of tamarisks. There has been work to replant cottonwoods. They are great for bank stabilization especially when they are not in the channel. If there is a need for physical removal or planting there may not be a need to fund all of these things. There are environmental groups are dying to get out and get their hands dirty.

Return flows, in terms of transbasin waters, in a pipeline could be diverted. Would this be harder with native waters?

The EIS is covering native and non-native return flow. There is less evaporation with the pipeline. Currently there is not a plan to have exchanges along Fountain Creek but there will be exchanges on the Arkansas. Thirteen percent of the water in the Arkansas is transbasin water, meaning that it comes from outside of the basin. CSU has the right to exchange the water to extinction. Only 4.1% of the water is used by Colorado Springs, the rest is used in agriculture.

When CSU buys transbasin water rights, is it always included that the water will go to farmers after it is used? Alternatively, can CSU use it for what they feel is beneficial? Do we have the right to use it for beneficial uses?

CSU can use it to extinction through exchanges. If CSU uses it for wetlands, they lose what is consumed by the vegetation or through evaporation. CSU would owe the missing water to someone. It would probably more efficient to purchase agricultural rights if available.

In terms of the Land Use/Environment group, who is addressing recreation, the Front Range Trail, fishing, etc?

KC Swanson, a representative from Colorado Springs State Parks has lots of information regarding the Front Range Trail. He would be excited for COL to assist with the project. He feels that it is a top financial priority for his area but there is no money being allocated for the project. There is a hope that COL can work to find if people are interested in easements and in having the trail go through their lands. KC Swanson would be happy to receive information from the Fountain Creek Vision Task Force. He would also like assistance in planning the Front Range Trail from the Fountain Creek Vision Task Forces. The CMP also has plans to assist in the Front Range Trail project. Having a trail and outdoor amenities is part of the CMP. The more the Fountain Creek Vision Task Force can assist with ideas and planning, the more money is available for implementation.

Could the Fountain Creek Vision Task Force bring in someone from the Front Range Trail to show what is in place, where there are gaps, and how the Task Force can help in the process?

There was a discussion with KC Swanson about water quantity in regards to maintaining the floodplain. There is a plan in Colorado Springs for a park with Colorado Springs and El Paso County. Perhaps there should be a panel discussion from all the cities and counties to verify what if any plans are on the table.

What is the difference between a watershed authority and a regional planning authority?

An authority is a mechanism to provide funding and to sign off on all regulatory initiatives. In terms of the Fountain Creek Vision Task Force, the authority would be more coordinating than funding. The authority would have a coordinating role as it affects Fountain Creek and funding.

Next Steps

- ❖ It would be great for the Task Force to have a map that could be rolled out and where new ideas or plans could be shown. There have been several presentations from groups with land use plans for the watershed. Tim Williams offered to produce the map. Juniper Katz has map information up to 2006 and plans to forward it to Tim. There are items that would need to be layered on to the mapping with existing information.
 - o Existing parks and trails
 - o Land Uses
 - o Private and public lands; ownership
 - o 100 year floodplain
- ❖ The Front Range Trail is a good starting point for recreation. This does not have to be the sole focus of the land use/environment group. In terms of recreation, Tom Ready has a host of ideas regarding Fountain Creek and the Front Range Trail. It is a good place to

do brainstorming but does not seem to have any funding. The Trust for Public Land (TPL) has passed a bill to raise taxes without there being an actual tax increase. This could offer funding or support to ideas. It is necessary to understand what each community has planned for trails. To do this, there will need to be a discussion and sharing of ideas among the cities and counties. Tim Williams volunteered to find out information from Pueblo, El Paso County and Fountain. Ryan Tefertiller will find out information from City Park. Juniper Katz will contact KC Swanson to see if he or another staff person would be willing to talk to the group. She will also contact Tom Ready in regards to being a panelist.

- ❖ Juniper Katz will arrange with Claudia from Biohabitat to give a presentation regarding creation, maintenance and visioning of wetlands. Questions that the group would like Claudia to answer are as follows:
 - o What if the water level is lifted above floodplain?
 - o What are the human maintenance needs?
 - o Are woody plants or herbaceous plants better when dealing with wetland function?
 - o Once a wetland is created what is the environmental education needed to help with the wetland to be successful?
 - o What is the cost in terms of plan and creation?
 - o How long does the process of plan and creation take?
 - o There would be various hypothetical questions in regards to SDS and if it changes the flow regime.
 - o Could there be some real world examples show to the group?
 - o Once a wetland is created, is there a differential in terms of cost in regards to location?
- ❖ Gary Rapp will track the progress of the Fountain Creek Vision Task Force in regards to ecosystem services being integrated with land uses.

**Fountain Creek Vision Task Force
Land Use/Environment Working Group
June 29, 2007
Final Meeting Notes**

Attending

Carol Baker, Elise Bergsten, Claudia Browne, Dennis Darrow, Ferris Frost, Mark Glidden, Juniper Katz, Brian Kay, Sarah Keith, Carole Lange, Bob McGregor, Nancy Preevy, Gary Rapp, Kirsta Scherff-Norris, Vince Sortman, Casey Swanson, Ryan Tefertiller, Tim Williams, Niki Koszalka, and Heather Bergman

Action Items

Claudia	▪ Send Kirsta Sheriff-Norris and Ryan Tefertiller the Boulder report on buffers. ▪ Send CAP link to Heather
Heather	Ask the Army Corps about a deadline for getting feedback from this group.
Tim	Send Heather the link to the Greenway trail map.

Presentations

Wetlands in Fountain Creek (Claudia Browne, Biohabitats, Inc.)

- ❖ Biohabitats, Inc. is an applied ecology firm whose scope of work includes conservation planning, ecological restoration, and regenerative design.
- ❖ Wetlands may be located along the edges of streams and ponds, as well as on hill slopes and in depressions. Wetlands and stream corridors represent a small percentage of the Colorado landscape. Wetlands are about one percent of the landscape but support 80% of all vertebrate wildlife and more non-bird species than any other habitat area.
- ❖ The value of wetlands includes ecological processes, cultural/historical significance, recreational uses, and economic benefits. The functions of wetlands include water quality, stream bank stabilization, flood flow alteration, and habitat restoration.
- ❖ The Society of Ecological Restoration (SER) is a premier entity regarding ecological restoration. Restoration implies that the natural processes and functions of an ecosystem are self-sustaining.
- ❖ The tools used by in eco-restoration are restoring hydrology, revegetation, placing structures, and realigning channels (natural channel design).
- ❖ Biohabitats projects include:
 - **Warms Springs wetland in South Park, Colorado** This is a former peat mine. The surface material was scraped away. It is very dry and devoid of vegetation. It is considered a wetland mitigation project. Ground water monitors were installed for a year. It was a confirmed hunch that irrigation was the “fly in the ointment.” Engineers came up with a piping plan to put surface water underground. The soil was regrated to create a substrate for the plants, allowing groundwater to flow over the pipe and fill the lower levels of the created wetland.
 - **Rock Creek in Ignacio, Colorado** This project dealt with a lot of eroding sediment. There was a hairpin turn in the meander with increased sediment. Biohabitats helped to realign the chamber and created an oxbow to create a wetland for storage.
 - **Nine Mile Run in Pittsburg** This project involved opening an underground pipe to daylight to create wetlands through the valley. There was also ground water monitoring and creating some depression areas that could hold the groundwater. The City of Pittsburg paid for the design, and ACE paid for the construction.
 - **Howards Branch, Maryland** This was a severely eroded channel, so small check dams were installed, the land was grated to create pockets, and the whole valley floor was re-hydrated. The channel needed to be brought back to the surface. The project was a bit controversial as there was no distinct channel, and some groups felt there should be. The dams are typically made of cobble (stones that are 3-6 inches in diameter) centered around boulder-sized sandstone pieces. This makes a large dbump that is not visual, like a gradual speed hump. The approach is to use natural design and resources/materials found in the area.
- ❖ Wetlands projects like these can be done in urban or rural areas.
- ❖ The City of Boulder has a wetland protection ordinance, including a regulated buffer setback on waterways. The wetlands are mapped and protected. There are over 100 wetlands in the city, and the City is doing evaluations of them. Greenways can be developed as an incentive to restore and protect wetlands. There often is the need for habitat maintenance crews. The City of Boulder recognized the need for a stewardship role. These stewards deal in small-

scale restoration projects, weeding, replanting, etc. The City of Boulder is strategic in picking the sites that they choose.

- ❖ In planning a project, it is important to know for what you are planning.

Questions and Answers

What is a buffer?

A buffer is a transition zone of aquatic and upland habitat. The width of buffer depends on what the goal is. The buffer is the area between the aquatic resource and the built environment. Municipalities often struggle with buffer zones especially when not managed by one entity.

Do the City of Boulder's buffers vary by stream width?

Yes, every buffer is different. The function of each buffer depends on the stream. Currently there are many theories about different buffers for different classes of streams. The buffer around small channels should be bigger, because small channels are more sensitive. Buffers can vary in widths, depending on function. Fifty meters is the minimum.

What is the goal for the buffer?

The goal will determine what the width of the buffer. For Fountain Creek, it would be important to determine the goal and then determine the buffer.

- ❖ Hog Island was an Environmental Protection Agency (EPA) project in Michigan. It was considered an under-performing island. There were stakeholder and visioning meetings. These meetings got people to come together to find a common language about what they care about and to prioritize what it means for restoration possibilities and timelines. The result was an ecological restoration master plan.
- ❖ The Jamaica Bay project needed lots of coordination and stakeholder meetings. This helped to strategize what mix of tools will help them get more “bang for the buck.” It is important to go back and look at the historical context and what the potential of the watershed is. Groups can use a strategy from The Nature Conservancy to do a threats analysis to determine why the system is impaired. There are great tools available. Including the Conservation Action Plan (CAP). Ranking tables are used to help prioritize goals.
- ❖ The Delaware City project dealt with revitalization, organization, and improvement of historic and cultural attractions to draw new residents and visitors.
- ❖ The Biohabitats approach is a stakeholder visioning process, evaluation and planning, design and construction. How a site is evaluated depends on what the group wants to do. Education starts early. Restoration is a good way to bring people together. Out of stakeholder workshop comes a visioning strategy. There is quite a bit of collaboration in the design process, creating the future, the final design drawings, and installation/construction oversight. Wildland Restoration Volunteers (WRV) has over 100 projects. They are good at organizing people, are safety conscious, are talking about seeding new organizations in other areas, and could be a good fit for this area. WRV tends to work best on one-day projects.

Does Biohabitats work with grant money?

Sometimes. We are willing to help clients however we can, and we are always aware of ongoing work and efforts to pay for projects with grants.

Do you have any thoughts on what to do about sediment?

The first thing that has to be determined is where the wetland is situated in the floodplain and how much sediment there is. There is a way to create a wetland farther from the Creek using a less sediment-heavy tributary. It is important to look for opportune places to create a wetland. Fountain Creek has lots of sediment, baseflow, and stormflow. There is a lot of sediment in the floodplain. You need to look for areas that have the best potential for wetlands to survive without getting inundated with sediment. A reservoir system could help hold sediment back. Sediment loads as in Fountain Creek are not a deal breaker for wetlands.

Is the Corps willing to look at our vision and incorporate it into their recommendations?

(Response from a member of the wetlands sub-team.)

The wetlands sub-team met with ACE. Recreation is not the goal for the Corps, but they are interested in wetlands. They will start coming to Consensus Committee meetings, starting with the July meeting. Our impression was that they are willing to try to work with us. ACE does not have the authority to create wetlands. Rehabilitation and creation are not the same thing.

Do you look at source controls for runoff and connect that to habitat restoration?

Biohabitat gets very involved in this. In Jamaica Bay, part of their strategy is to use best management practices (BMPs). Mapping the function of wetlands in Boulder, the wetlands just were not looking better even with all the BMPs. The areas that were already developed were contributing so much to the problem. They determined that you need to have someone monitoring the resources and enforcing the BMPs. BMPs are not a silver bullet.

Can we use runoff from new developments to create wetlands?

Some of the buffer studies show that the developed areas had less sediment than undeveloped areas. The more water that can be captured where it falls, the better.

What techniques do you use to integrate runoff into streams?

This is typical of all urban areas. Urban areas take rainfall and get it into the channel quicker than in the past. The channel is not used to that water, which causes erosion. The best way is to stop that water at the source, at the impervious areas—to get it into the ground and recharge groundwater. Of course, the types of soils and structures all make a difference. The ideal is to create some sort of infiltration (sand filtering, rock filtering, etc.). Infiltration trenches (vegetated swales) and vegetation are very important.

Are there any issues with water rights?

This is a big deal in Colorado. I am not sure how to get around this issue. I think you have to put water rights into the mix. Maybe you could get an in-stream right to sell. It is tricky.

Have you been able to infiltration techniques at the homeowner level?

Yes, we have worked with people to create rain gardens at the bottom of their drainpipes. This helps with infiltration.

What is your failure rate, and do you avoid projects due to difficult circumstances?

We would have to do some research to find out if a wetland can or cannot work in a certain situation. Wetlands seem to be more stable than streams, and they generally seem to do fine. Work in urban area streams does have a higher failure rate.

We do not generally see complete project failures, but from time to time we do see a bank fall out. Our projects are guaranteed for a certain period. At some point, projects turn into maintenance and stewardship endeavors. One of biggest challenges is that everyone wants open space, but it is not always clear who is going to take care of it. Engaging of the community is important and requires a long-term relationship.

Are restoration and creating wetlands different projects?

Yes, but you can do both.

Group Discussion

- ❖ The group determined that it would be useful to get into some of the specific goals for wetlands, but decided that it would be best to do that in a small group.
- ❖ There was discussion about waiting until the recommendations from the Army Corps study become available, but it was agreed that the group can set its own goals in the absence of this information.
- ❖ Several participants felt that it might be useful to identify some areas on a map and set some goals, and then bring these to the public for a discussion. Then, a revised wetlands vision could be presented to the Army Corps for inclusion in the Fountain Creek Watershed Study.
- ❖ The group decided to do some wetlands goal setting at its July meeting. Although it might be good in the long term to provide goals for the whole watershed, it was agreed that goals should first be identified for the Fountain Creek corridor.
- ❖ For a public meeting, the matrix, bar graph, and chart that Biohabitats demonstrated might be useful to get the public involved. Keystone's electronic polling technology could be used.
- ❖ Wetlands banking might also be an interesting idea to pursue. El Paso County may have information about this.

Current Recreation Planning in the Watershed (Tim Williams, City of Pueblo and Pueblo Area Council of Governments)

Tim Williams provided and explained a variety of maps of the Fountain Creek Watershed. These maps included data from Colorado Springs, Fountain, the City of Pueblo, and Pueblo County. Tim indicated that a few other entities in the watershed would like to participate in the mapping effort, but they do not have GIS capabilities. Tim is working on getting data from El Paso County.

After some discussion of the maps, the group asked Tim to prepare more maps for the July meeting. If possible, these maps should include maps of:

- Key invasive species
- Floodplains
- Major projects
- Southern delivery system alternatives

- Public and private lands
- Biodiversity
- Aggregation or degradation of stream banks

Additionally, the group requested that Tim do some groundtruthing of some of the questionable trails on the recreation map and, if possible, provide some composite maps with multiple GIS layers on them so that people could look at two elements together (like floodplains and biodiversity).

Next Meeting

The next meeting of this group will be July 19th from 9 a.m. to noon in Colorado Springs.

Fountain Creek Vision Task Force Land Use and Environment Working Group July 19, 2007 Final Meeting Summary

Attending

Carol Baker, Mary Barber, Dennis Darrow, Ferris Frost, Brian Kay, James Kulbeth, Carole Lange, Dennis Maroney, Jim McGannon, Gary Rapp, Sandy Rayl, Tom Ready, Kathleen Reilly, Lisa Ross, Kirsta Scherff-Norris, Ryan Tefertiller, Parry Thomas, Paul Thomas, Tim Williams, Niki Koszalka, and Heather Bergman

Action Items

Ferris Frost and Tom Ready	Meet to discuss comments on the Lafarge gravel pit project
Lisa Ross	Prepare outfall map information for Colorado Springs
Tim Williams	• Prepare outfall map information for Pueblo • Contact Fountain regarding outfall map information • Send Heather maps from today's meeting for posting on the website

New and Pressing Issues in the Watershed

A participant expressed ongoing concerns about the proposed Lafarge concrete batch plant and asphalt facility and its potential impacts to the Fountain Creek watershed. Ferris Frost and Tom Ready are going to meet to discuss possible additional comments on the gravel pit. These comments will not be submitted on behalf of the Task Force.

Review and Discuss Maps: Tim Williams

The group reviewed a variety of maps to identify possible opportunities for wetlands creation. These maps focused on land ownership, biodiversity, floodplains, existing wetlands, and recreation opportunities. Based on this very high-level examination of the maps, the group identified a series of sites to explore and discuss as options for wetland creation or protection:

- ❖ **Williams Creek** has many wetlands and is currently being studied. CSU is talking about putting a return flow reservoir and may do some wetlands repair. One option for wetlands locations is Williams Creek on the Frost Ranch.

- ❖ **Pueblo Springs Ranch** is about 2,400 acres. There are attempts to keep development out of floodplains and migration paths. The work is pro low-impact development. Pueblo Springs Ranch is also looking to complete wetlands.
- ❖ **Jimmy Camp Creek** is expected to be very well protected.
- ❖ **Banning Lewis Ranch** is also not expected to see much development. New easement properties could have a stipulation as to whether or not wetlands could be created. Research would need to be done to determine if wetlands could be created on properties that already have conservation easements.
- ❖ **At Exit 128 near Fountain**, there are currently wetlands.
- ❖ An opportunity to restore wetlands could be rebuilding **the 60-acre pond on the Greenview Trust in Pueblo** to 47 acres.
- ❖ Some other wetlands restoration opportunities are **treatment facilities** in the watershed, **the Rhodes property at the old Pinon Bridge**, the area around the **current Pinion Bridge, Fort Carson at I-25 and route 85**, and **Fountain Mutual Ditch**.

Determining where the most stable and non-stable areas of Fountain Creek are is an important first step in deciding where to create viable wetlands in and around Fountain Creek. This information will be available in the Fountain Creek Watershed Study. It would also be helpful to look at a map to assess what kinds of birds an area would attract and build wetlands to attract the kinds of birds that people are interested in watching. Entities that may be helpful in this effort include Ducks Unlimited, The Nature Conservancy, and The Audubon Society.

Additional Discussion on Wetlands

- ❖ There needs to be research to see if there are wetlands that could be preserved.
- ❖ It is important to note that not all wetlands can be all things. The group will need to prioritize what they want individual wetlands to do. Overall, the group identified the following priorities for wetlands in the watershed: wildlife habitat, water quality improvement (filtering), recreation, flood control, education/interpretation, and open space protection.
- ❖ Some participants stated that wetlands are dynamic and cannot be forced to achieve a particular function. At any given time, a single wetland will achieve all of the goals, and at other times, it will achieve fewer of the goals.
- ❖ It may be necessary to get more site-specific to decide on a wetlands function.
- ❖ The group expressed an interest in pursuing the matrix-based scoring that was mentioned at a previous meeting by the wetland expert.
- ❖ The consultants who are hired for the Fountain Creek Corridor Master Plan (FCCMP) may be able to come to a future meeting and provide expert knowledge on wetlands creation.

Next Steps

- ❖ The Colorado Department of Transportation (CDOT) has hired a team to assess 5 miles of the Fountain Creek watershed and work with other groups to prepare land use goals for that area. CDOT has offered to come talk to the Land Use/Environment Working Group to share what they have done. Carol Baker will work with CDOT to find an appropriate presenter for the next meeting.

- ❖ The group agreed that existing stormdrain outfalls could be good places to build wetlands. The group will examine this possibility at its next meeting. Tim Williams and Lisa Ross will work together to build an outfall map for the watershed.
- ❖ Heather Bergman will check in with Claudia Browne of Biohabitats to discuss how to proceed on goal prioritization for wetlands.

**Fountain Creek Vision Task Force
Land Use and Environment Working Group
August 23, 2007
Final Meeting Summary**

Attending

Carol Baker, Mary Barber, Dennis Darrow, Dirk Draper, Ferris Frost, Mark Glidden, Merle Grimes, Juniper Katz, Brian Kay, Carole Lange, Mark Morland, Larry Patterson, Gary Rapp, Kirsta Sherff-Norris, Ryan Weston, Tim Williams, Jay Winner, Meggan Yoest, Niki Koszalka, and Heather Bergman

Action Items

Mark Glidden	Look at the hydrology of moving a stream and the implications to the Fountain Creek Watershed
Juniper Katz, Tim Williams, Brian Kay, Carol Baker, Lisa Ross, Meggan Yoest	Work with Heather to put together a panel on local governments' plans for wetlands protection and creation in the watershed

Land Use Visioning and Planning in the Highway 24 Corridor (Along Fountain Creek)

Dirk Draper from CH2MHill shared with the group the vision options for improvements to Highway 24 from I-25 to Manitou Springs (through Colorado Springs). The Highway 24 project is funded by the Colorado Department of Transportation (CDOT), and its objective is to improve road capacity on the highway from I-25 to Manitou Springs. Part of the vision for this corridor is the creation of a greenway along Fountain Creek. Due to the complexity of this project, details from Dirks presentation are not included here, but are available from CH2MHill. (Contact Heather Bergman for more information.)

Questions and Answers about the Highway 24 Project

What would it take to get the highway out of the floodplain?

This is a public safety issue. There were hydrologic studies done along the area. There are seven bridges through the corridor. We looked at the bridges to determine how high they had to be raised or what had to be done to get them out of the 100-year floodplain. CDOT is trying to get the entire highway out of the floodplain, not just the bridges. They are looking at the flood storage capacity and raising the whole highway to get it out of the floodplain. CDOT sees this as a master plan, a long-term vision, and realizes it will take a long time to implement. CDOT will need partners to see this vision to completion.

Are the images on the maps what the planned final product will look like?

Many parts of the maps are hypothetical or options. There is very little likelihood that in 30 years the corridor will look exactly like the visioning maps. Some elements may stay the same, and some may change drastically.

How do you plan to mitigate the noise problems?

This question has not been answered yet. CDOT is receiving mixed messages. Some areas want noise mitigation, some do not. This issue will be further worked on in 2008.

One of the options would put the river between people and several businesses. How do the businesses feel about this separation?

There have not been comments on this topic yet. If there are one or two businesses, potentially it could decrease sales. If there are enough businesses with easy access across the river, there should be no issue with decreased productivity.

What are the stream stability and erosion implications of moving the Creek?

We have not assessed these implications yet. There is the understanding that there will be implications.

How did you address the wildlife movement in each option?

When the project started, there was a meeting with the Colorado Division of Wildlife (DOW). The first comment was how to make the barriers permeable. Six months ago, DOW said that the movement of animals has started to go more up to the mountains. Their suggestion was to have permeable barriers. DOW felt that without permeable barriers, there would be lots of small game as road kill on the highway.

Are the road improvements three lanes both ways?

There will be one lane added where it goes from two lanes to three.

Does CDOT see the transportation mandate of this highway for automobiles?

Part of this goal is to accommodate alternative forms of transportation. As identified by the map, this includes a park and-ride at 31st Street. There are also opportunities to provide trails.

When is the environmental analysis going to begin?

The environmental analysis is to begin in 2008. The scheduled time for completion of the roadway alternative is the end of the year. The environmental analysis will cover only one concept or option.

Where is the project going from here in terms of funding?

CDOT does not have the funding for this project. If CDOT were to fund it, it would have to wait until 2035 (due to backlog of projects). Because the highway is west of 31st Street, CDOT will play less of a funding role on the east side. CDOT is currently exploring ownership maintenance of the greenway and funding opportunities for the greenway. They are looking for funding opportunities.

Following the question and answer session, the group agreed that this was a useful presentation, as it demonstrates the ability of people to come together to create a vision. Because the Highway 24 project does affect Fountain Creek, the group expressed an interest in being engaged in the process and possibly sharing its own great ideas about the Highway 24 corridor with CH2MHill.

Mapping/Visioning for Wetlands

The group reviewed maps of outfalls of urban stormwater drains in both El Paso and Pueblo Counties and identified several possible opportunities for wetlands creation. After this exercise, it was agreed that the group would benefit from brief presentations from local governments about where their current plans for protection and/or creation within their jurisdictions. Juniper Katz, Tim Williams, Brian Kay, Carol Baker, Lisa Ross, Meggan Yoest will work with Heather to put together a panel for this meeting.

Fountain Creek Vision Task Force Land Use Environment September 27, 2007 Final Meeting Summary

Attending

Carol Baker, Chris Butler, Anita Culp, Dennis Darrow, Ferris Frost, Duane Greenwood, Mark Johnston, Brian Kay, Irene Kornelly, Dennis Maroney, John Mihelich, Gary Rapp, Kirsta Scherff-Norris, Ross Vincent, Tim Williams, Niki Koszalka, and Heather Bergman

Action Items

Tim Williams	Invite all the municipal and county planners to a meeting to discuss land use planning criteria
Heather Bergman	Contact Cynthia Peterson and invite her to discuss the AWARE movie at the next meeting.

Presentations on Some Wetlands Studies and Plans in the Watershed

US Army Corps of Engineers (Anita Culp)

- ❖ The US Army Corps of Engineers (Army Corps) has finished identification of wetlands in the watershed. The Army Corps gave this information to the Technical Advisory Committee (TAC) along with a GIS map. When a wetland is “clicked,” more information about the specific wetland will appear.
- ❖ The study is now in the plan formulation process. The TAC asked the Army Corps to identify wetland sites for ecosystem restoration, flood control, and channel stability. The Army Corps identified 40 sites and is currently narrowing these down to the 10 requested by the TAC. All wetlands sites are oxbow restorations from the City of Fountain South. An oxbow is a bow-shaped bend in a river, or the land embraced by it.

Questions and Answers

Does the floodplain line up with the identified wetlands?

Mostly, the floodplain does align with the wetlands. Some of the smaller wetlands are not in the 100-year floodplain. As a result, they may not have much flood-control influence.

How might that affect Low Impact Development (LID)?

One of the strategies for LID is to use and preserve existing wetlands. It is unclear how large of a role and what timing functions the wetlands have in the watershed.

Pueblo City (John Mihelich)

- ❖ Pueblo wanted to think about developing their own wetlands. Most of the proposed wetland areas have continual flow except one. The proposed wetland without the flow can be lowered enough to have the groundwater flow through it.
- ❖ There was a proposed wetland at between Highway 47 and Highway 50. A large amount of sediment and trash collects in this wetland.
- ❖ There is another proposed area outside of Walmart, draining the golf course, with a lot of water flowing through it. If there is slower drainage and the land is flatter, there is a better chance for wetlands to occur. This is all within the 100-year floodplain. There are many drains for the mall and other large box stores. These drains put runoff almost directly into Fountain Creek.
- ❖ Another proposed area is behind Highway 25 and Fountain Creek. There is a large triangular wetland, including a large buffer strip. Detaining and draining the large supply of water is an option. There is a trash rack on the east side of the levy but there is no other treatment for trash and sediment. By removing sediment, Pueblo would like to enhance the wetlands.

Questions and Answers

Are there plans to put these wetlands in?

The City of Pueblo's plan is to think about putting in the wetlands. The City Pueblo is also thinking about what functions the wetlands would serve and what level of maintenance is involved at the potential sites.

El Paso County (Mark Johnston)

- ❖ In its wetland efforts, El Paso County would like to achieve a county wetlands bank, conservation easements, and wetlands mapping.
- ❖ Mitigation Banking
 - A mitigation bank can take a repository of credits. An individual bank can only work on one impact, one bank site. An aggregate bank can work on many impacts but only one bank site. An umbrella bank can work on many impacts and many bank sites. El Paso County chose the umbrella bank.
 - Umbrella wetland banking includes numerous mitigation sites, allows adding and withdrawing of credits, and pre-mitigation of wetland impacts. The county umbrella bank serves a countywide mitigation program for county projects, multiple mitigation projects under a single plan, pre mitigation of wetlands impacts, and identifying important wetland resources. The Army Corps collaborates with the county umbrella bank as well as other sponsors.
 - The three mitigation sites El Paso County is currently looking at are Cibrowski, Dot Lake and the Drake Lake wetlands.
- ❖ Conservation Easements
 - Conservation easements are a non-development easement. El Paso County holds 29 easements covering over 2200 acres. Monitoring the easements occurs annually. Conservation easements provide wetlands and development buffers, protect open space, and protect trails and recreation.
- ❖ Mapping Wetlands
 - El Paso County had the national wetlands inventory maps.

Questions and Answers

Does the county own the land?

The county owns the Dot Lake site and the Drake Lake site. Though privately owned by the County, Cibrowski expressed interest in a wetland and perhaps an easement.

What is the duration of the easement?

The duration of an easement is forever.

How does the mitigation bank work?

If the county has a project, which will ultimately destroy wetlands, the “cost” is enhancing another area. Through the bank, there are established ratios. For example, the destruction of an acre means there is creation of another acre in a designated area.

Does the mitigation have to be in the same watershed?

If possible, it is encouraged. The ratio of enhancement is usually a bit larger within the watershed. If there is not an available area within the watershed, it is preferred to find one within the same ecosystem. If not within the same ecosystem, it is preferred to find one within the same county.

Do you consider the function of the destroyed wetland when attempting to find an area for enhancement of a wetland?

Yes, ideally. Using the best professional judgment determines functionality. The Army Corps is collaborating with Colorado Department of Transportation (CDOT) to work on a methodology to determine wetlands functions.

Does wetland development outside of the floodplain cause a problem?

Not sure overall, but the mitigation banks in El Paso County are outside of the floodplain.

Why were the selected areas for enhancement beyond the Fountain Creek watershed?

The areas selected were because it is a lot easier to receive permission to alter land when it is a county owned property.

City of Fountain (Duane Greenwood)

- ❖ The City of Fountain has been working with improving the LID guidelines and standards. They would like to utilize full spectrum drainage. Full spectrum drainage is detaining a larger volume of water and letting it trickle out over 70 hours instead of the typical 40. This allows more sediment and pollutants to come out, allows for more flood control, and keeps the hydrology at or below historic levels.
- ❖ There is lots of potential for supporting the creek bank and the wetlands along the drainage channel, in and around development, where it drains in to the Creek. There is a great oxbow restoration opportunity south of the regional park.
- ❖ The City is currently trying to protect the floodplain and wetlands. The City is actively trying to get GOCO grants to acquire properties. The city supported the Peaks to Prairie application with Colorado Open Lands, hoping to acquire the green lands at the confluence of Jimmy Camp and Fountain Creeks.

- ❖ The City of Fountain has a drainage basin planning study for Jimmy Camp Creek. They have yet to establish one for Fountain Creek.

Questions and Answers

Is there a general capacity of the detention ponds?

There is an amount, it is regulatory and a city ordinance. Any development has to discharge their flow at historic levels regardless of the rainfall.

Do the full spectrum detention facilities take more maintenance?

Yes, the opening for the drainage outlet is smaller so they need cleaning more often.

If the sediment fills up, do you check it for pollutants?

We have not, at this point.

How much water can be handled and at what point to you exceed capacity?

The requirements state they have to be built for a 2-year to a 100-year flood event. This is a 100-year design.

Fountain Mutual Ditch Company (Brian Kay)

- ❖ Southern Delivery System (SDS) will look for 25 acres of wetlands to mitigate their impacts.
- ❖ The Fountain Mutual Ditch begins at the Vegas Treatment Center. The reduction of flows occurs by diverting water into storage containers. Fountain Ditch owns the water within Johnson Reservoir and the county owns the surrounding lands. This is a potential wetland site. Fountain Mutual Ditch Company, in an attempt to think out of the box, is primarily looking at private-owned property.
- ❖ Discussions occurred about maps and potential wetland opportunities.
- ❖ There is a potential urban park site on the south side of Johnson Reservoir with ball fields and other types of turf fields. There was a 200-acre site, to the east of Glen, offered but it was too wet. A large pond, 20 to 30-acre surface area, exists at this site with wetlands surrounding it.
- ❖ Around Jimmy Camp, the developers have moved the earth. This has created about a 200-foot wide drainage basin. It could be a potential site for holding ponds. As the Fountain Mutual Ditch goes south, it connects with the Chilcott Ditch and diverts water out of Fountain Creek and into William Creek Reservoir. In the past, there has been a discussion of lining the ditch with concrete to increase flow. This is also a good spot for a potential wetland.
- ❖ Another potential site for a wetland is west of William Creek.

Questions and Answers

How much water would these additions need?

They would need the same amount of water that SDS carries up from Pueblo Reservoir.

Would this decrease sediment?

If we could divert water out at Vegas, it would help with sediment problems further down Fountain Creek.

SDS Wetlands Mitigation (Carol Baker Colorado Springs Utilities (CSU))

- ❖ The total impacted wetland acres from SDS would be either 35 or 89 acres. These numbers would depend on the implemented version of SDS. The permanently impacted acres of wetlands will be 1.4 to 24.6 acres.
- ❖ The priority for the location of mitigated wetlands would be near the site of the impacted wetland, if appropriate. This would need also to be functional for operation and maintenance access, public access, and water supply. For wetlands priority, SDS would look to city property, public property, and finally private property. SDS is also considering wetland banking.
- ❖ The wetland mitigation ratio depends upon functionality of the impacted wetland and the distance of the new wetland from the original. The cost of wetland mitigation is \$50,000 to \$100,000 per acre. This cost estimate is dependant on size, location, and function of the wetland. It does not include land cost and construction.

Questions and Answers

With SDS coming down Williams Creek to Fountain Creek, what would more water mean and would this ruin the existing wetlands?

There would be areas where reinforcement is necessary and there will be wetland impacts to Williams Creek.

How is the review of alternatives going?

The Bureau of Reclamation is currently looking at impacts. The release of a draft Environmental Impact Statement is expected in the first quarter of 2008.

Next Steps

- ❖ The Land Use and Environment group decided to table the visioning process for wetlands until the mapping, produced by THK and Parry Thomas, is completed. The completion of the mapping is in March or April.
- ❖ There could be a Low Impact Development (LID) brainstorming session for general ideas. It would need to be determined if the ideas are functional for this area.
- ❖ There are different development techniques and it is important to preserve the drainage corridors so they are consistent with the differing techniques. The use of schematic drawings could also help. Some of the drainage from developments may help create and or support wetlands.
- ❖ Production of maps showing recreational trails and ideas including the Front Range Trail are due for completion at the end of October. The Land Use Environment group decided to wait, until the maps are completed, to work on recreational and park planning.
- ❖ The Land Use Environment group felt there was significant traction with the idea of the development of criteria using the Better Site Design handbook. A start would be to preserve the drainage corridors and open space. This may lead into schematics of development and drainage. It would be good to look at how development and drainage relate to wetlands and perhaps agriculture as well. There is room for improvement. Changes will make regulations better and friendlier toward the watershed. City and county planners need personal invitations to attend a meeting about criteria improvements.

- ❖ Tim Williams will convene a group of city and county planners to begin to assess land use planning needs in the watershed. Heather Bergman will speak with Cynthia Peterson and invite her to discuss LID from AWARE's perspective at the next meeting.

**Fountain Creek Vision Task Force
Land Use/Environment Working Group
October 25, 2007
Final Meeting Summary**

Attending

Carol Baker, Mary Barber, Dan Bare, Chris Butler, Dennis Darrow, Mark Glidden, Amber Jack, Juniper Katz, Brian Kay, Sarah Keith, Carole Lange, Cynthia Petersen, Nancy Prieve, Kirsta Scherff-Norris, Ryan Tefertiller, Ross Vincent, Niki Koszalka, and Heather Bergman

Next Steps

Cynthia Petersen	Email Heather Bergman the published data from the Connecticut development on measured improvements from Low Impact Development (LID)
Cynthia Petersen	Research (and email to Heather Bergman) any entities that provide incentives or rewards for using LID
Rich Muzzy	Provide the Land Use/Environment Working Group an update on the Policy Review Workshop
Tim Williams and Dennis Maroney	Tim Williams and Dennis Maroney will work on combining the LID group and the policy review group.
Carol Baker	Contact and invite the tamarisk technician to present at the next meeting
Juniper Katz and Kirsta Sherff-Norris	Contact representatives from the Department of Wildlife (DOW) and The Nature Conservancy (TNC) to present on wildlife issues at the next meeting
Heather Bergman	Send Zoomerang survey to participants and draft into writing groups

New and Pressing Issues in the Watershed

- ❖ Colorado Open Lands got a small grant from State Parks to coordinate trail planning in the watershed. Juniper Katz (Colorado Open Lands) will offer potential alignment and envision the options with the Task Force in mind.
- ❖ The Greenway Foundation meeting and tour of the South Platte River is November 5, 2007.

LID Methods (Cynthia Peterson, Addressing Water and Natural Resource Education (AWARE))

- ❖ Development affects water cycles with various degrees of runoff. Urban environments and impervious areas cause more runoff than what occurs under undisturbed, natural conditions.
- ❖ A reduction in groundwater infiltration causes less filtration of pollutants and contaminants. This will also produce reduced stream flows in dry weather.
- ❖ Increased velocity and increased flow of runoff cause stream degradation.
- ❖ LID ideals include:
 - o Maintaining the goal of "predevelopment hydrology"

- o Managing runoff close to the source through small, cost-effective landscape features
 - o Relying on non-conventional strategies rather than conventional end-of-pipe strategies
 - o Integrating stormwater controls throughout the landscape, including rooftops, streetscapes, parking lots, sidewalks, and medians
- ❖ Disconnected areas of imperviousness, which allow for infiltration, cause reductions in impacts.
- ❖ Using the Natural Resources Inventory (NRI), a statistical survey of land use and natural resource conditions and trends on U.S. non-federal lands, is an important step.
- ❖ Some good LID practices are clustering developments, having the same number of building sites but with less impervious surface, considering riparian buffers, making streets more narrow, building pocket parks with sidewalks only on one side, providing adjoined reinforced grass to double as roadway for emergency vehicles, and disconnecting sidewalks from the street.
- ❖ Other LID techniques include
 - o Using porous pavers/pavement: plastic reinforcing grid protects grass and stabilizes soil
 - o Zoning a parking area for regular shopping, not for the day after Thanksgiving
 - o Shifting gutters so that runoff is not directed at driveway
 - o Creating ribbon driveways
 - o Redeveloping to remove existing impervious areas
 - o Landscaping naturally, including xeriscaping, using native plants, and saving/amending topsoil to re-establish porosity
 - o Planting a substantial tree cover to reduce volume and velocity of runoff and minimize heat effect
 - o Growing roof gardens

Questions and Answers

Is there a development in Colorado encompassing all of the LID techniques?

No, there is not a development that has done all of them. Stapleton has some.

Is there a measurement of improvements with use of LID techniques?

In Connecticut, a development did LID and traditional techniques for development. Included were separate stormwater systems coming off the different sites. Cynthia Petersen will email the published data to Heather Bergman. The Center for Watershed Protection also has data on LID.

Are there any examples of local governments, states, or other entities that provide incentives or rewards for using LID techniques?

There are a number of communities, especially in coastal areas, looking to fast track LID strategies. The communities are giving credit at building sites. Cynthia Petersen will also research this and get back to Heather Bergman. The Belmar redevelopment in Lakewood developed a fee in addition to regular taxes to pay for the development, which is utilizing LID techniques. If the Fountain Creek Vision Task Force were interested in LID, the Regional Development Building would be willing to host a meeting and have the architect available too.

Is the Environmental Protection Agency (EPA) measuring the runoff from the green roof in Denver?

The EPA is measuring the runoff.

Developed Technology and Modeling for LID (Chris Butler)

- ❖ Some basic axioms of model selection
 - Select a model to suit the problem; do not fit the problem to the model
 - Select as simple a model as possible
 - Do not force a model to do something for which it is not intended
 - Select a model that can be supported by reliable data
- ❖ Available Models
 - TR-20/TR-55. JEC-HMS
 - Developed by USDA and Army Corp of Engineers
 - Intended for large storm events
 - Lumped parameters applicable to large drainage areas
 - Single event simulation
 - Unable to evaluate micro-scale BMPs
 - No pollutant generation and removal capabilities
 - Not suitable for LID
 - SWMM (EPA Stormwater Management Model)
 - Best suited for urban hydrology and water quality simulation
 - Robust conveyance modeling
 - Wide applicability to large and medium watershed hydrology
 - Commonly used version (v. 4.4h) can be “adapted” to simulate LID controls using generic removal functions
 - HSPF (Hydrologic Simulation Program – FORTRAN)
 - EPA program for simulation of watershed hydrology and water quality
 - Produces time history of the quantity and quality of runoff from urban or agricultural watersheds
 - Best suited for rural hydrology and water quality simulation
 - Data intensive, lumped parameter model
 - Wide applicability to large watershed hydrology
 - Models effects in streams and impoundments
 - BMPs simulated as reductions in pollutant load
 - Latest beta version (v. 5) capable of simulating some LID BMPs
 - Not recommended for LID, except at a large scale
 - SLAMM (Source Loading and Management Model)
 - Evaluates pollutant loadings in urban areas using small storm hydrology
 - Heavy reliance on field data
 - 6 land uses (residential, commercial, industrial, highway, etc.)
 - 14 source area types (sidewalks, roofs, parking, turf, unpaved areas, etc.)
 - 8 BMP types (infiltration, biofiltration, swales, pervious pavement, ponds, etc.)

- Calculates runoff, particulate, and pollutant loading for each land use and source area
 - Routes particulate loadings through drainage system, to BMPs and outfalls
- o Prince George's County BMP Model
 - Uses HSPF to derive flow, pollutant loads
 - Applies flow and loads to LID BMPs
 - Two generic BMPs: storage/detention, channel
 - Simulates flow processes in each BMP
 - Water quality processes simulated as first-order decay and removal efficiency
- o MUSIC
 - Simulates hydrology, water quality (TSS, TN, TP, debris)
 - Scale from city blocks to large catchments
 - Aimed at planning and conceptual design of SWM systems
 - User-friendly interface
 - Event or continuous simulation
 - Sources: urban, agriculture, and forest
 - BMPs: buffers, wetlands, swales, bioretention, ponds, GPT (gross pollutant traps)
 - Pollutant removal by first-order kinetics
 - Australia default parameters from worldwide research
 - Extensive output statistics
- o LIFE (Low-Impact Feasibility Evaluation Model)
 - Specifically developed by CH2M HILL to simulate LID micro hydrology
 - Models water quantity (volume, peak flows) and water quality
 - Physically-based, continuous simulation
 - New development and redevelopment
 - Numerous controls: bioretention, green roofs, rainwater cisterns, pervious pavements, and infiltration devices
 - Optimization module balances competing priorities
 - Drag-and-drop user friendly interface, GIS linkage

Questions and Answers

Is there a validation on the LIFE system?

Not here, but validation occurred back east.

Is there a model completed on a watershed the size of Fountain Creek?

Not here, large-scale modeling occurred in Maryland.

What model would be used for an area the size of Jimmy Camp Creek?

SLAMM would be the best option.

Are there data needs for the models and how is the data recovered?

Completion of hydraulic analysis is necessary before modeling.

Which model works for a huge area?

SWMM is the best for bigger area.

Land Use Planning Criteria/Policy Review (Tim Williams)

- ❖ The group initially discussed how LID principles sometimes conflict with current principles of land use planning, civil engineers, and public works departments.
- ❖ Communities are more interested in receiving LID options instead of packages.
- ❖ Tools for implementing LID/smart growth
 - Implementing annexation agreements
 - Changing regulation/policies
 - Collaborating and cooperating
 - Initiating discussions at pre-application meetings
 - Encouraging with economic rewards
 - Touring of examples on the ground in Colorado
 - Having code evaluations and changes
 - Continuing with education and outreach
 - Explaining the economic benefits to developers and developing a handout or information to pass out
 - Getting cities, counties, and various agencies to discuss issues
 - Writing comprehensive plan
- ❖ Limitations/barriers to the LID/smart growth process
 - Existing regulation by cities and counties makes the process cumbersome
 - Funding opportunities: trying to get grants or other funding to develop a demonstration project
 - Re-working development codes is a huge task
- ❖ Watershed coordination is important.
- ❖ Rich Muzzy will give an update on policy review workshop to the Land Use/Environment Working Group.

Questions and Answers

Are the techniques available for cities, counties, and the watershed as a whole?

Yes.

Who is going to make sure the rules will be followed and is there currently sufficient monitoring/compliance?

The control inspector makes sure entities follow the rules. There is a reduced stormwater fee if maintenance of the area occurs.

Is LID useful at any size storm?

A 500-year event is containable with LID. The engineering community struggles with what size storm is too big to be contained by LID.

Working Group Progress to Date

- ❖ The Fountain Creek Vision Task Force applied for the Colorado Water Conservation Board (CWCB) grant. To accept that money, the Land Use/Environment Group needs to record and produce the current conditions/needs assessment document. Heather Bergman will send a Zoomerang survey around to the group and, from the information received, draft writing

teams. When writing the current conditions/needs assessment document, it is important to include:

- o Thinking of the watershed as an asset and an amenity
- o Creating a greenway connector between the communities
- o Providing recreation opportunities
- o Providing commuting opportunities
- o Protecting wildlife, for its own sake and as an indication of ecosystem health
- o Maintaining the viewshed

Next Steps

- ❖ Tim Williams and Dennis Maroney will work on combining the LID group and the policy review group.
- ❖ The Land Use Environment Working Group determine that it must work on the goals of LID.
- ❖ Heather Bergman will work on writing groups for the final project for CWCB grant application.
- ❖ The Land Use Environment Working Group wants to invite a tamarisk removal technician. Carol Baker will work to bring the technician in for the next meeting.
- ❖ In January, the working group would like to hear more about the Peak to Prairie work and more on the Greenway connector including Tom Ready's vision of campgrounds. Also in January, the working group would like to hear transportation presentations from Pike Peak Area Council of Governments (PPACG) and Pueblo Area Council of Governments (PACOG).
- ❖ Juniper Katz and Kirsta Scherff-Norris will contact a representative from the Department of Wildlife (DOW) and The Nature Conservancy (TNC).

**Fountain Creek Vision Task Force
Land Use/Environment Working Group
November 30, 2007
Final Meeting Summary**

Attending

Carol Baker, Chris Butler, Stephanie Carter, Steve Cooley, Dennis Darrow, Gary Dowler, Ferris Frost, Mary Jaurequi, Juniper Katz, Sarah Keith, Irene Kornelly, Carole Lange, Greg Langer, Dennis Maroney, Bob Miner, Rich Muzzy, Cynthia Peterson, Gary Rapp, Scott Rappold, Sandy Rayl, Tom Ready, Lisa Ross, Kirsta Sherff-Norris, Ryan Tefertiller, Tim Williams, Niki Koszalka, and Heather Bergman

Action Items

Tom Ready	Present the vision of State Parks to the Land Use and Environment Working Group (at February meeting)
Low Impact Development Criteria Task Group	Update the Land Use and Environment Working Group on the Low Impact Development (LID) document reflecting land use issues

New and Pressing Issues in the Watershed

- ❖ Colorado Springs Utilities (CSU) considered the community input on a wastewater treatment center near Clear Springs. Rather than building this facility, CSU now plans to put in pump stations and utilize the existing wastewater treatment plants. The Lower Fountain Wastewater Treatment Facility is still under consideration and moving forward.
- ❖ Xcel Energy Company bought out the Invenergy Power Plant and all plans for the original plant are off the table.
- ❖ Andersen consulting is doing the FEMA floodplain study on Fountain Creek.
- ❖ The Great Outdoors Colorado (GOCO) legacy will announce the awardees on Monday. Colorado Open Lands is expected to receive a significant award for work along Fountain Creek.
- ❖ Lower Arkansas Conservancy District recently discussed a plan to lease water in the Fountain Creek Area.
- ❖ Freemont County voted to become part of the Upper Arkansas Conservation District.

Low-Impact Development Criteria Task Group (LIDCTG) Update (Tim Williams)

- ❖ The LIDCTG met to discuss Low Impact Development (LID) in the Fountain Creek watershed.
- ❖ The goal of adopting LID practices in the Fountain Creek watershed is to develop and implement strategies (such as the use of best management practices (BMPs) appropriate for the watershed) to:
 - Address the discharge of pollutants from new development and redevelopment projects, and/or
 - Maintain or restore hydrologic conditions at sites to minimize the discharge of pollutants and prevent in-channel impacts associated with increased imperviousness.
- ❖ Adopting LID strategies will achieve, or help to achieve, many of the goals identified by the Fountain Creek Vision Task Force.
- ❖ Important considerations about LID include the need to:
 - Focus on areas of greatest potential for improvement in the watershed
 - Build on opportunities that may be common to several communities
 - Identify low-hanging fruit or those activities that can be most quickly or easily undertaken
 - Recognize unique community needs, allowing each community to adopt some or all of the proposed regulations
 - Create a watershed-wide entity that could be helpful in implementing and promoting LID in the Fountain Creek watershed
- ❖ Recommendations from the LID group:
 - Explore LID opportunities throughout the land use process
 - Formulate watershed-based drainage criteria
 - Develop criteria that each community could choose from to incorporate into their existing criteria
 - Encourage watershed coordination to look at opportunities for collaboration and cooperation
 - Develop an education and outreach effort
 - Incorporate economic incentives

- o Develop a master list of LID resources and a map of examples in the watershed and/or Colorado
- o Research grants or other funding entities to develop an LID demonstration project in the watershed

The Land Use Environment Working Group discussed these recommendations, made observations, and offered comments and suggestions including:

- o The importance of developing an outreach and educational proponent of LID
- o The need for tangible information and a list of the potential outcomes
- o The intersection of the goals for LID and the goals of the Army Corps of Engineers study
- o The inclusion of benchmark standards from the Center for Watershed Development and the LID Center
- o The need to identify cities or entities that are upgrading drainage systems or retrofitting to better utilize LID
- o The need to add green building and smart development elements as well (The LIDCTG will work to update this document and will present a revised version at the January meeting.)

Tamarisk Removal (Top Cut Dirt Works and Restoration LLC, Andrew (EZ) Zanghi)

- ❖ Top Cut Dirt Works and Restoration have 20 years' experience moving dirt and doing project-specific and restoration work.
- ❖ There are lots of kinds of tamarisks and cottonwoods along Fountain Creek.
- ❖ Top Cut Dirt Works and Restoration uses large machinery to remove and incinerate unwanted vegetation. In order to eliminate damage done by a broken fuel line, the machines use vegetable oil. The machines also have rubber tracks to eliminate further damage to the surrounding areas.
- ❖ Tree disposal is usually an issue, as landfills cannot handle them. Top Cut Dirt Works and Restoration burns the trees in an air burner and it makes disposal much easier.

Questions and Answers

What do Top Cut Dirt Works and Restoration charge?

The charge is by the hour, and a client only is charged when the machines are running.

Does Top Cut Dirt Works and Restoration work with the state weed boards?

No, Top Cut Dirt Works and Restoration has only worked with the counties.

Do you selectively cut down some trees and leave others?

Yes, the natural vegetation remains.

When dealing with the small plants that come back after cutting down the tamarisk trees, what do you do?

After cutting down the tree, spraying the stump is necessary. It takes 2-3 years of spraying new growth so the tamarisks do not return. After cutting down the Tamarisk, it needs spraying. The window for spraying is within three minutes.

If the tamarisk is cut down and sprayed, are there repercussions of this chemical in the watershed?

Yes, the chemical can damage the watershed. Nothing will grow where the spraying occurs.

If there is an island of tamarisk in the middle of the stream, can your machinery remove these?

Yes, the machinery can remove it.

Wildlife in the Watershed (Gary Dowler, Department of Wildlife (DOW))

The Lower Cheyenne Creek Stream Rehabilitation was the last project DOW worked on. The principles and ideas generally will work from stream to stream.

- ❖ In response to a draft project plan provided by the Colorado Department of Transportation, DOW recommended several changes to maintain habitat and water quality:
 - Increasing number of rock weir structures and decrease height from 1-2 feet
 - Placing more emphasis on revegetation
 - Placing additional 6-8 inch cobble
- ❖ Project timetable:
 - Permitting started in 1999-2000
 - Rehabilitating the stream started in fall of 2003
 - Revegetating started in the spring 2004
- ❖ Additional details:
 - The rock weirs are made out of boulders about 2-3 tons each.
 - Small structures allow fish to travel upstream to find suitable spawning areas and allow small fish to go back downstream.
 - The self-cleaning pools provide a hydrological source for riparian vegetation and allow fish to live in them when there is no flow.

Questions and Answers

How much did this specific project cost?

Approximately \$50,000 - \$80,000.

How many cubic feet per second (cfs) is it designed to hold?

It is designed for 0-500 cfs.

Was there a cost difference when the plan changed from a two-drop structure to a five-drop structure?

There was a slight cost increase. The first plan called for grouting structures, most of the cost increase was absorbed by the estimated and unused cost for grouting.

Is this being implemented in other places in Colorado by DOW and Department of Transportation (CDOT)?

There are a few other projects done with CDOT but not very many. DOW does a lot of this kind of work throughout state.

This project is through an urbanized area. Has work been done to mitigate the water quality from urban runoff?

DOW looks at water quality and flows. There is no control over the flows. DOW works within the parameters and tries to design structures to fit into the current conditions.

Was a fish bypass instead of the drop structure ever considered?

There is not a whole lot of data available to find out what it would take to design and build a fish ladder for fish that do not get larger than three inches long. The velocity that the fish can tolerate would have to be determined. It is the interstitial spaces between boulders allowing fish through the structure.

Is DOW working on other projects on Fountain Creek?

DOW and US Geological Survey (USGS) work with inventory and sampling the fish that live in Fountain Creek. There is annual monitoring of these populations. There is a minimum of 4000 fish per mile. It is hard to accurately count and give an estimated population.

Are the 12 fish species downstream of Colorado Springs native?

Most are native.

Ideally, what is important for fish?

Fish need clear cool water, pools, and for streams to reach a steady state of stabilization (volume and water quality).

Additional Questions for DOW about Wildlife in the Fountain Creek Watershed

What are the general corridor issues of wildlife in the Fountain Creek watershed?

Animals use any corridor they can to navigate from point A to point B. When there is barrier, like Colorado Springs, the animals are stuck at a dead-end and there are confrontations with humans occur. The watershed remaining contiguous and open will be the best option for the wildlife.

Is Fountain Creek a quality habitat for amphibians?

There is some degradation to amphibian habitat and flooding events remove the desired habitat.

What are the importance of the corridor for migrating birds and the impact of noxious weeds?

The salt cedar and tamarisk create a monoculture, which causes a problem for many migrating birds. It creates a biological desert. The salt cedar and the tamarisk do not provide much of a benefit for living creatures.

What terrestrial species is of most concern?

The flood events and tamarisk are reducing the population of wild turkeys.

How is the badger habitat and population?

As with any top-level predators, there are fewer badgers due to more development. If there are large populations of prairie dogs, there are plenty of badgers. The belief is that as a development is developed, the species of animals relocate them selves.

Next Steps

- ❖ The Land Use Environment Working Group agreed to have a joint meeting with the Water Working Group in January to start strategizing.
- ❖ In February, Tom Ready will present to the group on the State Parks vision for the watershed. The group is also interested in having presentations on a greenway connector and sustaining agriculture.

APPENDIX K

Fountain Creek Vision Task Force Funding Options and Long-Term Management Working Group Meeting Summaries

**Fountain Creek Vision Task Force
Funding Options and Long-Term Management Working Group
Meeting Summaries**

**Fountain Creek Vision Task Force
Funding Options Working Group
August 28, 2007
Final Meeting Summary**

Attendance

Carol Baker, Gary Barber, Jeff Chostner, Sallie Clark, Dennis Darrow, Ferris Frost, Merle Grimes, Leslie Hickey, Bruce McCormick, Rich Muzzy, and Heather Bergman

Action Items

Gary Barber	Prepare a matrix of functions and entities in the watershed for the group to discuss and complete
Merle Grimes and Gary Barber	Work with Heather Bergman to create a summary description of each of these types of entities for discussion at the next meeting.

Possible Goals of a Funding Entity

The group brainstormed possible goals for a funding entity for the Fountain Creek watershed, *understanding that the final funding option selected for Fountain Creek may not be tasked with achieving all of them.* These goals included:

- Shared responsibility
- Collaboration
- Regulatory authority
- Super-structure
- Being above politics
- Getting and providing money
- Coordination of policies and projects
- Integrating Task Force vision, Army Corps recommendations, and other efforts

The group also agreed that the funding entity would need a carefully defined geographic, temporal, and functional scope to ensure that its purpose was clear and that it was able to accomplish its goals. Some participants stated that the entity should start small (in geography and/or function) and then grow and evolve over time; others felt that it should be designed to be large in geography and/or functional scope from the beginning. It was suggested that legislative authority might be necessary to create an entity, depending on what its final desired function is.

It was agreed that the group needs to have a better sense of what functions are currently being served by other governmental entities in the watershed before it can discuss functions for a new entity. Gary Barber agreed to prepare a matrix of functions and entities in the watershed for the group to discuss and complete. This will help the group understand what holes, if any, exist in current functions and authorities in the watershed.

Concerns about a Funding Entity

Several concerns were raised about a funding entity, how it would be created, and what it would do. These concerns included:

- Having biological priorities drive the scope of the entity
- Territoriality among local governments
- Water supply impacts
- Source of funding (non-profit that gets grants, taxing authority, membership, etc.)
- Getting Consensus Committee agreement
- Having authority or “teeth”
- Lack of a regulatory or legislative driver
- Definition of scope (starting small, expecting evolution over time)
- Hurt feelings and appearance of bias (who is included, who is not)
- Semantics (what we call it)

Funding Options for Fountain Creek

Based on their current knowledge, the group brainstormed a list of possible approaches to creating a funding entity for the Fountain Creek watershed. Some of these options might be implemented in conjunction with others; some could operate independently. Options included:

- Urban drainage district (like Denver has)
- Greenway Foundation
- Funding pass-through (like the El Paso County Regional Transportation Authority)
- Watershed authority (models include Chatfield, Cherry Creek, and Bear Creek)
- Voluntary association, member-based (like the North Fork River Improvement Association)
- Conservation district
- Special district

The group agreed they do not currently know enough about what each of these kinds of entities does, how they are created, how they are funded, and who participates in them. Merle Grimes and Gary Barber agreed to work with Heather Bergman to create a summary description of each of these types of entities for discussion at the next meeting.

Next Meeting

The next meeting of the Funding Options Working Group will be on Thursday, October 4th, from 12:30 p.m. to 2:30 p.m. at the Fountain City Hall.

**Fountain Creek Vision Task Force
Funding Options Working Group
November 6, 2007
Final Meeting Summary**

Attending

Carol Baker, Elise Bergsten, Jeff Chostner, Sallie Clark, Dennis Darrow, Ferris Frost, Carole Lange, Dennis Maroney, Gary Rapp, Richard Skorman, Barb Vidmar, Ron Mitchell, Niki Koszalka, and Heather Bergman

Action Items

Heather Bergman	Will create a funding entity evaluation form

South Platte Tour

- ❖ The guests who attended the South Platte tour realize that people and the community need to be interested in the watershed so there is personal investment. The work on the South Platte began in 1974.
- ❖ The Urban Drainage and Greenway Foundation model obviously works. It is an excellent model. The Taxpayers' Bill of Rights (TABOR) could present challenges to this model. The Fountain Creek watershed has different challenges including protecting agriculture land and ranchers. The Fountain Creek watershed needs cooperation between two counties and the local government entities.
- ❖ A good vision can be easy to sell. A key part is going to be the infrastructure from the drainage district. Even with political discourse, the South Platte group worked together in non-threatening meetings.
- ❖ To engage and involve the community, there is the need for education and outreach.
- ❖ South Platte received lots of matching money. Jeff Shoemaker from South Platte is willing to help the Fountain Creek Vision Task Force in any way he can.

Completed Functions Matrix

- ❖ The group reviewed the matrix of potential functions for a funding entity for Fountain Creek. The matrix shows what government entities are working in certain function areas of the watershed. The group also discussed any gaps or overlaps in the matrix.
- ❖ The biggest gaps found were floodplains and insurance, sedimentation, erosion, and wetlands.
- ❖ The most obvious overlaps found were with land use. The anticipated growth in the watershed is huge. The local level is the best way to deal with land use.
- ❖ There is also noticeable overlap with parks, trails, and open space. There needs to be communication in all land use planning within the watershed.
- ❖ The FOWG brainstormed a list of potential criteria for evaluating existing models' appropriateness for Fountain Creek:
 - Maintenance
 - Construction
 - Planning
 - Prioritization
 - Funding
 - Land use oversight or consultation
 - Acquisition of land or easements
 - Floodplain management or oversight
 - Outreach or education
 - Recreational and environmental amenities
 - Enforcement

- o Maintain the hydrological model
- o Policy guidance

Substantive Areas for a Funding Entity to Address

- ❖ The group discussed the substantive issue areas that a funding entity for Fountain Creek should/could address:
 - o Flood control
 - o Land use
 - o Water quality
 - o Water quantity
 - o Stormwater management
 - o Floodplain management
 - o Erosion
 - o Sedimentation
 - o Wetlands
 - o Operations and Maintenance
- ❖ Heather Bergman will prepare a funding entity evaluation form for future meetings.

Fountain Creek Vision Task Force Funding Options and Project Implementation Working Group January 16, 2008 Final Meeting Notes

Attending

Carol Baker, Jeff Chostner, Sallie Clark, Dennis Darrow, Ferris Frost, Mary Jaurequi, Carole Lange, DeAnne McCann, Cam McNair, Gary Rapp, Ken Sampley, Jennifer Teal, Aimee Tihonovich, Ross Vincent, Terri Velasquez, Niki Koszalka, and Heather Bergman.

New and Pressing issues in the Watershed

- The USGS released its report on E. coli in Fountain Creek. Cam McNair will send the report or a link to Heather Bergman, who will distribute to the group.
- A water retention and storage project is being considered on the east side of Pueblo. Jeff Chostner will keep the group informed of any further information on this topic.

Enterprise Zones (Aimee Tihonovich and DeAnne McCann)

- An enterprise zone (EZ) is an economically distressed area of the state in which special tax incentives are offered to businesses that are local or expand into the zone.
- An enterprise zone is designated based on high unemployment, low income, or slow population growth.
- The purpose is to create new jobs and investments in the EZ.
- There are various tax credits (including investment tax credits and job training expenses tax credits) available for enterprise zones.
- Enterprise zones need a structured training or basic education program to improve the job skills of the taxpayer's employees or "qualified job training."
- There are credits available for new business facility (NBF) jobs and NBF employees.

- The research and development credits are based on the increase of a company's qualified research and development expenses. The credit is 3% of an increase. Various research and experimental expenditures credit qualify.
- There are various credits available for vacant building rehabilitation.
- The EZ statute gives authority to local governments to refund local sales taxes on purchases of equipment, machinery, machine tools, or supplies used in a qualifying business in the EZ.
- There are various EZ property tax incentives.
- Various tax incentives are available for contributions to EZ projects.
- The eligible project categories include work with the homeless population, business assistance, job training, infrastructure/capital, marketing, health care facilities, and other community development.
- The benefits to being an eligible project include:
 - Providing incentives to individuals and businesses to donate to the project
 - Increasing taxpayer donations
 - Increasing visibility of project
- EZ does not provide grants.
- Certification of contributions may be disclosed as a public record. In-kind contributions are also accepted.
- For more detailed information on enterprise zones and contact information, please see the presentation posted on www.fountain-crk.org.

Questions and Answers

What about credits for in-kind contributions?

They are not eligible for federal tax credits but are eligible for state tax credits.

If the Fountain Creek Vision Task Force formed a non-profit organization and housed the offices in an enterprise zone, will the group qualify for tax credits?

The tax credits would be a percentage of the contributions. It is very important that the office is located in the zone.

If the Fountain Creek Vision Task Force created a demonstration project, would the land donated be eligible for tax credits?

Yes, and this seems to be a good fit for qualifying as an enterprise zone project.

Can the enterprise zone be a cross-county project?

Yes, but contributions have to go to each county separately.

Colorado Springs Stormwater Enterprise (Ken Sampley and Jennifer Teal)

- The Stormwater Enterprise was established to fund projects like maintenance, repair, rehabilitation projects, and municipal discharge permits.
- The City of Colorado Springs explored many options for funding and created a citizen task force in 2005 to look at possible funding mechanisms. The group came up with a recommendation for the Stormwater Enterprise. The fee structure was based on amount of impervious areas for different types of properties. A density component was later added. The Stormwater Enterprise will generate approximately \$18 million per year, and is believed by the City to be an effective approach that provides sustained funding over time.

- Colorado Springs uses the term “enterprise” to refer to fee-based businesses. Many other cities run their stormwater businesses through their utility departments.
- The City Council oversees the Stormwater Enterprise and the budget. The Stormwater Advisory Committee influences the decisions of the City Council.
- The limitations or challenges are the public acceptance of the fee. The Stormwater Enterprise has met some resistance with the fee structure. The public feels it is just another bill and has voiced frustrations. The Stormwater Enterprise spends much time explaining to the public the fee structure and where the monies are spent. The billing process was changed several times in the last year and has proven to be more extensive than the Enterprise thought it would be. Most of this has to do with feedback from and interaction with the public.

Questions and Answers

Is the Stormwater Enterprise doing anything with the money or just collecting it?

There is a list of prioritized capital improvement projects. The majority of money goes to hard projects and to stormwater system maintenance.

Are the fees large enough to meet the need?

Right now the money is enough to get the Stormwater Enterprise started.

Where does the Stormwater Enterprise stand with the challenge from former El Paso County Commissioner Bruce?

There are two petitions. One is aimed at making the City’s enterprises voluntary, and the other toward restricting loans and payments between City enterprises and the City’s general fund. It is anticipated that they will collect enough signatures to be on the next ballot. A public communication process will be a separate effort to ensure that voters are informed.

If you were to advise another group to set up a funding entity, would you suggest the form that Stormwater Enterprise followed?

Yes, but it requires both a technical approach and a political approach as well. Denver’s South East Metro Storm Water Authority (SEMSWA) is probably akin to what a Fountain Creek stormwater entity could look like. The cross-jurisdictional boundary issues will make a Fountain Creek stormwater entity more challenging. For the entire watershed, it would be hard to have a Colorado Springs-like enterprise for stormwater.

With all the interest in low-impact development (LID) and matching the hydrology, what would happen to the fee structure if these other things were set in place?

LID may mean there are more maintenance issues while addressing water quality and quantity. The Stormwater Enterprise recognizes that planning and development need to work together to properly incorporate and utilize LID.

Next Steps

- The group has identified several other potential models for a funding entity for Fountain Creek. Participants agreed to contact representatives from these entities to invite them to speak at the next meeting. Heather Bergman will provide contact information and presenter questions to those who are making these calls.
 - o Carol Baker will contact Urban Drainage and the Greenway Foundation.

- o Heather Bergman will contact a representative from the Chatfield Watershed Authority.
- o Ken Sampley and Cam McNair will contact SEMSWA.
- o Carole Lange will contact the Blackfoot Challenge in Montana.
- o Jeff Chostner will contact someone to speak about special districts.
- The next meeting will be Tuesday, February 19, 2008 from 1:00 to 4:00 pm.

**Fountain Creek Vision Task Force
Funding Options and Project Implementation Working Group
February 28, 2008
Final Meeting Notes**

Attendance

Carol Baker, Andre Bracken, Russell Clayshulte, Dennis Darrow, Ferris Frost, Mary Jaurequi, Mark Johnston, Brian Kay, Carole Lange, Bob Miner, Ron Mitchell, Margaret Montano, Annie Oatman-Gardner, Larry Patterson, Gary Rapp, Ross Vincent, Niki Koszalka, and Heather Bergman

New and Pressing Issues in the Watershed

Carol Baker and Jay Winner gave a presentation on the Fountain Creek Corridor Master Plan to the Pueblo City Council and are preparing a presentation for the Fountain Creek Vision Task Force.

Chatfield Watershed Authority (Russ Clayshulte)

Why / how was the entity created or formed?

- Water Quality Authorities – the Bear Creek Watershed Association, much like the Chatfield Watershed Authority and the Cherry Creek Water Quality Authority, were formed to help address water quality issues that were measured in the respective reservoirs through US EPA Clean Lakes Studies. The studies demonstrated water quality and beneficial use impairment.
 - o The resulting early total maximum annual load (TMAL) study was taken to the Colorado Water Quality Control Commission (WQCC) for establishment of regulations to address the problem.
 - o Additionally the Denver Regional Council of Governments (DRCOG) recognized these authorities as water quality management agencies, which required approval by the DRCOG board and then the Governor of Colorado.

What was the social, political, environmental, financial context for this entity?

- For Bear Creek Association, key drivers were/are:
 - o Environmental water quality management: to meet the control regulation and watershed growth and development.
 - o Financial savings: the control regulation allowed a collective monitoring and implementation program
 - Collective monitoring: \$45,000 to \$65,000 per year
 - Separate monitoring estimate: \$250,000 per year

- Political unity: the regulatory process allows a local-to-state process, rather than a state-to-local process
 - If political unity could be demonstrated
 - Most of the authority processes in the early stages were not social and a number of conflicts arose and were resolved

What is the primary purpose of this entity?

- The Bear Creek Watershed Association, like the Chatfield and Cherry Creek Authorities in the DRCOG area, serves as a management agency to meet the requirement of the DRCOG metro Vision Plan.
 - Growth and development
 - Watershed planning
 - Wastewater planning and management
 - Meeting standards and classifications
- Control regulation: help monitor and implement specific requirements in respective control regulations for total maximum annual loading.

Who identified this purpose and by what process?

- The purpose was identified by DRCOG and the Water Quality Control Division staff.
- Water quality data collected by the state had demonstrated a water quality problem. DRCOG identified all potential players, helped organize early meetings, and later helped with the formation of the groups.
- The key decisions on the group formation required action by the DRCOG Board of Directors through a formalized public process, including public testimony at a series of public meetings

How much enthusiasm was there for this entity?

- There was a mixed reaction because of the following issues:
 - Identifying the decision makers
 - Appropriate role of political leaders
 - Long-term cost issues
 - Political unity concerns
 - Uncertainty of long-term success
 - Uncertainty of science
- Many individuals were more enthusiastic than were larger groups; DRCOG staff helped generate support and success
- Keeping interest alive can be difficult, have to review vision and mission

How much resistance was there to the creation of this entity?

- The hardest sell was to:
 - Local government
 - Boards of water and sanitation districts,
 - Metropolitan districts
 - Counties
- The financial burden was a major local concern
- Cost share, who should pay the tab and biggest share; unfunded mandate issue

Did government agencies react differently than other stakeholders?

- Clearly different reactions
- The state and federal government agencies viewed it as a necessary “duty”
- Local government agencies were less enthusiastic
- The environmentalists didn’t think the process went far enough, still don’t
- Businesses were generally left out, and still are
- Private citizens have only ever engaged at the margins, but there is growing public interest

How has the current function of the entity evolved or changed over time?

- All the authorities have evolved over time
- The Bear Creek Association expanded its mission
 - Taken a broader spectrum of watershed issues
 - A great interest in water rights, and Board review
 - Fisheries and environmental studies
 - Environmental education and outreach
- The authorities have remained key in monitoring and data analyses
 - Cost of monitoring and extent has grown
 - More reporting
- The authorities have become referral agencies to counties and local governments
- How is this entity governed?
 - Board of directors
 - Technical review committee

How do associations/authorities involve the public in planning, implementation, monitoring efforts?

- The Bear Creek Association
 - Involves citizen and other interest groups in the technical review committee and board discussions
 - Homeowner associations members
 - Invites citizen attendance and involvement at meetings
 - Open formatting for any citizen issue
- Monitoring process invites others to observe and assist with sampling
 - The association shares data with Trout Unlimited, the Colorado Division of Wildlife (DOW) and local schools
 - Information is shared via website.

How is the entity funded?

- Bear Creek and Chatfield Authorities are dues-based
- Board approved fee schedules are based on a combination of wastewater discharge, population, and contribution to the problem
- The Chatfield Authority also used assessed valuation to set initial levels
- Applies for state and federal grants

How are funds distributed?

- Bear Creek and Chatfield Authorities approve invoices at meetings and issue checks

- They have annual budgets to determine distribution amounts
- Within fixed annual budgets

Who decides how funds are distributed?

- Board of directors

What are the primary strengths and or benefits of this approach to problem solving?

- The authority process has been successful
 - Has generated political unity
 - Shared monitoring savings
 - More comprehensive evaluation of data and solutions
 - Better science
 - Improved collaboration among membership
 - Better education of membership on issues and solutions
 - Improved trust
 - Watershed approach
 - Point of focus; issues forum

What have you found to be the limitations or challenges of this approach?

- Limited resources (failure of one big member to pay annual dues could collapse effort)
- Personalities
- Maintaining long-term interests
- Tendency for members to push for status quo
- Fear of more regulation
- Environmental uncertainty
- Pressure from outside groups
- Increased citizen interest
- Lack of education of watershed population
- Not all stakeholders at table (by design and choice)
- Politics

Questions and Answers

Who approves a water quality authority?

Once they are established as an authority, it is under the state laws. State law gives them the recognition.

How do the state and a water quality authority interface?

DRCOG and the water quality authority get together on a monthly basis.

Are the authorities assuming some of the responsibilities of the state health department?

Yes, under the federal Clean Water Act, a water quality authority has to have a plan. DRCOG became a source for writing the plans and the Total Maximum Daily Loads (TMDL). The state now takes on this role.

Do all councils of government (COGs) in Colorado have the authority to set up water quality authorities?

Yes

Are most of the authorities under one COG?

Yes, most are. Chatfield keeps El Paso County in the loop but not for decision making--more for information.

An entity has a water quality issue, the state tells the entity to form a group to aid in the water quality issue, the group gets formed, and the state forms a management agency. Is this how the process goes?

Mostly yes. The state had to allow planning agencies, like COGs, to write plans. The management agencies work to get grants to do the work and subsequently write the plan.

When was the Bear Creek Watershed Authority formed?

Bear Creek was formed in 1981.

How do you interact with the Colorado Water Conservation Board?

The groups do not directly interface. State agencies are welcome to join the board but if they are not so inclined, they are not pushed to.

Is there anything that prohibits watershed associations from crossing COG lines?

No, there is nothing prohibitive and nothing that precludes this occurrence.

Is the physical manager of an authority based at the COG site?

No. In the beginning, the managers were staff of DRCOG but independent managers were proven to be needed.

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Is there flexibility for changing an authority's vision and mission?

Yes.

What portion of the funding can be expected from federal/state funding?

The expectation should be for none and then you can be grateful if any comes through.

Federal money is not stable?

No, it is not stable, and it is very competitive. EPA has some large grants available. It is always worth a try.

Do authorities have broad latitude of things that can be incorporated into the authority?

Yes, there are broad latitudes. This allows authorities the ability to write broad watershed plans.

Did Chatfield opt not to expand and take on new issues? Does choosing not to expand put a block on making things happen?

Yes, and sometimes new groups are formed to take on the new issues. Chatfield now has three different groups, and it causes confusion to the general public. Some groups have become a referral point in growth and zoning. This allows a group to look at projects upfront and to have water quality issues looked at as well.

Are the other groups set up in Chatfield authorized by the COG?

No.

Do the boards of the associations/authorities accept in-kind contributions?

Some do pay with in-kind contributions.

What is used for the fee structure?

Growth projections are used. Traffic analysis zones are also used. Most fees are assessed based on population.

Do any of the association/authority players have septic returns?

Most are working toward moving in that direction. Approximately 27,000 septic systems can produce about 29,000 pounds of phosphorus. Some associations/authorities want to make a fee attachment to septic systems which will fund projects to reduce the mineral load in the watershed.

Do all of the authorities have a reservoir as a component of what is monitored?

Yes, except Clear Creek, which was set up in the mid 1990s.

Is there anything you would have done differently?

Each project was a huge learning experience. It would have been helpful to have had more organization and a better watershed plan. The biggest limitation is funding; there is no question most of these groups are under funded. Anything that will assure money coming in is a good step.

How are associations/authorities structured?

Management agencies have memorandums of understanding in terms of how the governments will interact. Bylaws are now the key mechanism and are recognized through the COGs.

Are associations/authorities funded by the government or are they a line item in a COG budget?

Who manages the money?

Each group, being dues based, has their own bank accounts, writes their own checks and pays their own bills. They do have a federal tax number and are categorized as "not for profit watershed authorities" by the Internal Revenue Service.

Do you have any stand-alone enforcement entities?

No, we have to work with the cities and counties.

In your experience has any local entity withdrawn or refused to participate?

The Forest Service has not participated. They own a lot of land and should be at the table. The burn areas and beetle issues will have a direct impact on watersheds. At one point, Jefferson County decided to withdraw from Bear Creek. In hindsight, Jefferson County realized it would cost them more not to be involved. All associations/authorities are at the mercy of the big players and having a major player withdraw is a serious concern.

If an association/authority is set up as a non-profit, is this similar to a regional building authority?

Yes, this is the Lake Tahoe model. The Lake Tahoe Authority was set up as the taxing agency.

If there is only money for a few projects a year, how do you prioritize new projects, or do you find yourself mostly fixing old sins?

Yes, fixing of old sins happens. Sometimes the fixing of old sins creates new things like wetlands. \$30,000 in state fines were turned over to Bear Creek and created new wetlands. There are new regulations that appropriate some monies back to the basin.

With much development in the region, is the creation of a Fountain Creek association/authority too little too late?

The Bear Creek Association was initially formulated to deal with growth and development. Growth patterns impact water quality. Do not consider Fountain Creek too late or behind the curve. At this point, an entity needs to be set up. The best suggestions are to think broadly and to get a lot of diverse minds to produce numerous ways of thinking.

Can best management practices become a regulatory requirement?

In Cherry Creek, it is regulatory. New best practices may still emerge. For example, associations/authorities are faced with finding a way to go after septic systems to reduce non-point source pollution. The group may end up in front of the water control board to see if there can be language introduced.

Do you think this mechanism allows you to leverage more dollars than another approach?

It is a good leverage tool, and there are partners that will bring in dollars. Being designated as a 501(c)(3) organization opens up a lot more options. One reason to take the 501(c)(3) route is it opens up donation dollars. South Platte has had amazing success with this.

How many times have you sued or been sued?

I cannot think of a single lawsuit. Authorities are technically subject to citizen lawsuits but it has not occurred.

Next Steps/Next Meeting

The group agreed to have their next meetings on March 25, 2008, from 12:00 p.m. to 4:00 p.m. and on April 15, 2008, from 1:00 p.m. to 4:00 p.m. The focus of the March meeting will be learning about the remaining models for potential funding and project implementation entities. The April meeting will be a group discussion about the various options with an eye toward creating a recommendation for the Consensus Committee.

Fountain Creek Vision Task Force Funding Options and Project Implementation Working Group April 22, 2008 Draft Meeting Summary

Attendance

Carol Baker, Gary Barber, Jeff Chostner, Aimee Cox, Steven Cox, Dennis Darrow, Ferris Frost, Carole Lange, Richard Lawrence, Dennis Maroney, Bob McGregor, Ron Mitchell, Annie Oatman-Gardner, Larry Patterson, Gary Rapp, Ken Sampley, Richard Skorman, David Struthers, Terri Velasquez, Chris Woodka, Niki Koszalka, and Heather Bergman

New and Pressing Issues in the Watershed

- In Manitou Springs, beginning in September, there will be a pilot restoration project to restore aquatic habitat at Soda Springs. This project is being paid for with a grant through the Department of Wildlife (DOW) Fishing is Fun program.
- The Fountain Creek Corridor Master Plan (FCCMP) team is presenting to the Consensus Committee on demonstration projects on April 25, 2008. The FCCMP team will also give a presentation to the Working Groups on May 6, 2008. The team will look for feedback from local landowners and will give a presentation at the Pinon truck stop from 6:00 p.m. to 8:30 p.m. on May 28, 2008.
- Pueblo is hosting the State of Colorado's Renewable Energy Workshop on June 8-10, 2008.

Possible Funding Opportunity for Fountain Creek (David Struthers and Richard Lawrence)

- The Fountain Creek Foundation (FCF) is composed of enthusiastic people from Florida to California. The group is committed to protecting and enhancing Fountain Creek and is actively recruiting board members and volunteers.
- The FCF emerged from the Fountain Creek Corridor Master Plan process. The formation of the FCF was contingent upon it being transparent and without any hidden agenda of any client, stakeholder, or entity.
- The FCF is currently focusing on funding for environmental stewardship projects, including education, recycling, restoration, and protection.
- The FCF has preliminary drawings for a 300-acre donation of land midway between Colorado Springs and Pueblo. This acreage will be a hub for wildlife observation and bike/walk paths.
- The FCF has \$1 million in contributions, hopes to have \$5 million by December, and would like to have the Environmental Stewardship Center open by May 2010.
- The FCF exists to be a resource to bring money to the watershed to enrich Fountain Creek, make it more community accessible, and to help teach children about the watershed and to respect it. The FCF is ready to explore every fundraising opportunity.
- The motivation of the FCF is the hard work done by the Fountain Creek Vision Task Force.
- The mission of the FCF is as follows:
 - FCF exists to encourage and promote environmental and generational stewardship of the Fountain Creek. The FCF is a united and neutral voice with a transparent process for Fountain Creek, drawing attention to the Creek's important contributions and risks to urban and rural Southeast Colorado. We, the FCF, work to promote and help finance educational, recreational and economic opportunities all along the waterway. The FCF's missions primarily carried out through fund-raising, the internet, public programs, media, partnerships, eco-tourism, and distribution of literature and construction of facilities.

1. Environmental and Generational Stewardship means to take ownership and responsibility to manage the Fountain Creek resource in a healthy condition for perpetuity.
2. United and Neutral Voice of the Fountain Creek means the FCF champions only the Creek. The FCF Board will be vigilant to start and stay neutral, while maintaining complete transparency. The Board will only recognize policies, procedures, and legislation that positively contribute to the health of the Creek Corridor.
3. Transparent means the FCF will be very visible and deliberate in the execution of the mission. The Board will be very open and forth-right in managing the activities of the FCF.
4. Contribution means the historical significance of the waterway to multiple cultures, including the importance of a healthy environment for humans, animals, and plants. It also recognizes opportunities for expanded contributions in recreation, learning, and community partnerships that have yet to be fully realized.
5. Risks include the loss of a major natural resource, flooding, erosion, and contamination.
6. Urban and Rural means universally important and appealing to every family within the watershed.
7. Encourage and Promote means the FCF will apply social, classroom, political, and media muscle to achieve the stewardship mission.
8. Promote and Help Finance means the FCF will take a lead role in procuring financial resources to achieve the stewardship mission. This will include resources to be used in construction, management, and education for perpetuity.

Questions and Answers

Is the creation of this entity recent?

Yes, the articles of incorporation were just filed.

Is the focus going to be to get urban peopling to rural areas to education them?

Yes, but also focusing on Fountain Creek and the incredible ecosystem. FCF wants to raise funds for many projects including ecotourism.

Who initiated this organization?

THK and Kevin Shanks reached out to David Struthers. David, Richard, and others then took the lead in forming the organization.

How is the Environmental Stewardship Center going to differ from the Nature Center in Fountain?

FCF aims to complement and not be duplicative with the Nature Center in Fountain.

What is the geographic area of interest of the FCF?

The FCF is mainly focused on the area of Colorado Springs to Pueblo in the short-term, but the organization hopes to expand its purview as funds become available.

Is the FCF willing to incorporate the upper watershed?

The FCF has a willingness to be open to the upper watershed. FCF has not put people in second tiers. The focus right now is to raise funds for the educational projects. This was not meant to be a message of exclusion to the other entities in the upper watershed.

Is the FCF modeled after any other organizations or funding entity?

The inspiration came from the Fountain Creek Vision Task Force and the Greenway Foundation on the Platte River in Denver. The unique aspects for the FCF are the mixture of urban and rural areas in the watershed.

Is the FCF a sole solution entity or will it look to pair with another type of entity?

Taking on all the issues discussed by the Task Force will take a mixture or combination of entities.

It seems the FCF will focus more on educational components. How will the FCF address further deterioration of Fountain Creek?

The FCF believes the only way the watershed will be maintained is by educating future generations.

In the mission statement, the word “develop” was not used with regard to education, though the word “promote” is used. Will the Foundation develop education materials or just promote education?

The FCF intends to develop materials as well as incorporate education.

How do you see this entity integrating with the Task Force’s final plan?

The FCF will need to integrate with the primary entity created by the Task Force.

Where are the 300 acres mentioned as a donation?

The 300 acres are north of the Pinon Ranch.

The Greenway Foundation often works with stormwater managers as a way to resolve flood control and environmental issues. Will the FCF consider doing something similar?

Yes, this thinking will continue as the FCF grows.

Is the FCF open to volunteers?

Yes.

Is the FCF holistic in its approach, including environmental and generational aspects, health and wellness, and safety to the citizens?

Yes, the intention is to be holistic. The FCF feels the Environmental Stewardship Center is a perfect place for the reality of the watershed to be discussed and presented.

Please explain how FCF has not jumped the gun or preempted the work of the Task Force?

The FCF was formed when the opportunity arose and the time was right. The time and place seemed logical. FCF hopes to establish a relationship with the Fountain Creek Vision Task Force or any entity to be created.

Group Discussion on Possible Funding Entity

The group discussed the information, ideas, and questions that they have taken away from the last few months of presentations on model entities for long-term funding and project implementation. The following are the highlights of this conversation; these are not consensus or group statements, but rather individual comments and points of discussion.

- In order to form an entity capable of making improvements to the watershed a reality, there will need to be political buy-in.
- Urban Drainage may be a strong model, although one area of concern is that it had to go through legislation and this took a long time. Urban Drainage and the Fountain Creek watershed encompass the same size area.
- The Chatfield Watershed Authority and the Bear Creek Watershed Association were formed by water quality management agencies. During the formation of these entities, the councils of governments (COGs) were already in power or designated and had authority over certain water issues.
- The local COGs in the Fountain Creek watershed, along with the Technical Advisory Committee (TAC), could help to envision an entity that can be taken to the legislature. Both Urban Drainage and Southeast Metro Stormwater Association (SEMSWA) deal with the regional multi-governmental approach.
- Urban Drainage was formed after the flood of 1965. It may take a flood to motivate people to create a similar entity for Fountain Creek. Without such an event, there will have to be creative thinking to get an entity adopted. There was a flooding event in 1999, this helped bi-lateral COG work and also helped establish the Army Corps of Engineers study.
- It is inevitable that another flood will occur. Using this notion to leverage support is imperative. It is also important to start organizing an entity now so that when a flooding event occurs, a vote of the people will pass.
- Enterprises and foundations do not require a vote of the people.
- No solution is going to be quick.
- There are a variety of ways to receive money from the public. One issue is that sales tax continues to decline due to internet sales.
- The Fountain Creek Vision Task Force needs to create an entity the right way by trusting the intelligence of the people. Sell the entity as green space, bike or walking paths, and bird viewing. If there was a legislative act signed with El Paso County and Pueblo County, this could have much traction with the public.
- There needs to be serious consideration to what the public is willing to spend on this type of project.
- The issue of geography needs to be addressed. If a vote of the people is needed, it will be important to identify which people are included and why.
 - Going to a bigger voting area asking for a smaller mill levy may gain more traction than asking fewer people to pay more.
 - It may be better to have whole counties vote rather than culling off a specific area where it looks like a vote would pass.

- The Fountain Creek Vision Task Force needs to start a dialog now. It could take several years to get the organizational details in order, a couple years to get the vote, and a couple years to gather money.
- A regulatory role for a new entity may be hard for the public to accept. It may be smarter to plan to keep land use regulation at the county level and use the secured funding as a carrot to encourage participation and adherence to voluntary requirements.
- Lakewood has put a storm drainage enterprise in front of the voters four times—it finally passed the last time. Aspen had a similar vote which passed 70 to 30. It would be a good idea to poll the community to see if an entity would pass by 60%. If it did not garner the 60%, more community education is needed.
- It is important the entity is marketed to help with cleaner air and water as well as habitat restoration. This is a great message for voters.

Planning for the Next Meeting

At the next meeting, the Working Group will discuss key attributes of an entity for Fountain Creek in order to help determine what the right entity might be. Key elements of this discussion are geographical jurisdiction, funding sources, and representation on a governing body or board.

Fountain Creek Vision Task Force Funding Options Working Group October 31, 2008 Final Meeting Summary

Attending

Kathy Andrew, Carol Baker, Gary Barber, Mary Barber, Jeff Chostner, Sallie Clarke, Barbara Dallemand, Cole Emmons, Ferris Frost, Dwight Gardner, Dan Henrichs, Juniper Katz, Dan Kogovsek, Carole Lange, Dennis Maroney, Cam McNair, Rich Muzzy, Annie Oatman-Gardner, Gary Rapp, Jane Rawlings, Ken Sampley, Mark Shea, Larry Small, Terri Velasquez, Barbara Vidmar, Ross Vincent, Jay Winner, Chris Woodka, Niki Koszalka, and Heather Bergman

Result of Brainstorming on Technical Advisory Group (TAC)

- The Fountain Creek Watershed Technical Advisory Committee (FCWTAC) had a meeting to discuss general issues of creating a Technical Advisory Committee (TAC) for the Fountain Creek Watershed Drainage, Flood Control, and Greenway District (the District). After finding many unresolved issues, a working group was formed.
- The FCWTAC agreed it could be disbanded as the US Army Corps of Engineers study is complete and it would be repetitive along with the District TAC.
- FCWTAC also felt the TAC and the Citizens Advisory Group (CAG) should exist independently from each other but have a liaison who may attend the other committee meetings.
- Membership for the TAC should mirror the board of directors and have six technical representatives which represent specific subject matters including agriculture, recreation, open space, water quality, ecosystems, municipal water, and federal regulation/military installation along with others. The technical experts will evolve over time and are hired to plan a budget and complete tasks.

- The goals of the TAC would need to be divided into short- and long-term goals. The short-term goals are to prioritize main projects and on-going activities as well as to secure grants and other funding mechanisms for high-priority issues. The long-term goals include input to the District staff and to recommend/review spending for specific projects.
- The technical experts on the TAC were drawn from the subcomponents of the FCVTF strategic plan. The categories listed can evolve or change. Another member would like to have land use included. The TAC felt land use was covered by the city planners. The group agreed there is value in having a different mix of technical experts. It is important to recall that technical experts are not voting members. The group agreed to include all subcomponents of the strategic plan including land use and flood control.
- Urban Drainage does have the power to change the floodplain but has never used this power. They also own nothing; all services and maintenance needs are contracted out. Urban Drainage is so powerful because it has been successful and this is the hope with the District as well.

Questions and Answers

How many of the TAC members would be members designated with specific areas of expertise?

There was not a specific number discussed but an estimate would be six to nine. These members would be a resource to be called up as needed to meet specific goals.

Is there a reason under long-term goals the language is “to input to the District staff”?

The thought was the District staff would be working for the TAC and the CAG. The staff would be preparing the budget and completing all work needing to be done. Representatives from the cities and the relevant subject areas will be working for the two groups.

Will there be a connection to the state and federal watershed authorities?

Yes, there will be a connection. As with the Fountain Creek Vision Task Force, there will be the option to participate but they will not be voting members.

Next Steps

The lawyers assisting the process will look at changes to the TAC sections and make sure all language is correct. Heather Bergman will send the updates to the group who will then submit approval, comments, and/or concerns back to Heather.

Result of Brainstorming on Citizen Advisory Group (CAG)

- The group working on the structure of the CAG focused on giving it continuity with the FCVTF. The language in the intergovernmental agreement (IGA) is basic and states the CAG would advise the board. The group also felt there should be an audit committee including some members of the CAG.
- The CAG would be made of 15 seats, 10 or 11 coming from the Consensus Committee. The person holding the CAG seat on the board is intended to be the voice for the entire CAG.
- The group felt the first CAG would come from the FCVTF. The FCVTF or the Consensus Committee should nominate two people and present these to the signatories to the IGA. The signatories to the IGA would have the choice for the first member of the CAG.
- The spirit of the overall governing board is balance and compromise. The group is asking the Funding Options Working Group (FOWG) to accept the nomination process for the CAG.
 - A member feels this process would not work politically or with the efforts of balance and compromise.
 - The group thought it would be important for the citizens to have a direct impact on the CAG. The counties will have the authority to appoint other board members and it would be important for the CAG to come from the citizens not the commissioners.
 - A member felt the ultimate decision should be made by the Commissioners. The appointment of the CAG is a sensitive one. Much thought and time has been put into making sure there is balance, equal participation, and parity with the counties and the entities. The counties would need to feel comfortable with the choices. It is important the CAG member on the board be representative of the CAG as a whole.

- o A member suggests having a list of options for the CAG member to be presented to the counties. The 10-members on the CAG should offer suitable options to the counties.
 - o The group agreed to have a minimum of two options to present to the counties.
- The proposal for the CAG nominations is:
 - o IGA gets signed;
 - o El Paso County and Pueblo County are the first signatories;
 - o CAG person(s) is/are recommended;
 - o Counties would appoint a CAG representative to the board; and
 - o Counties would accept the 10 recommendations from the FCVTF to the first CAG.
- A suggestion was made to include the business and/or development community in the CAG and perhaps in the TAC as well. The TAC discussed this option and felt the six technical members from the cities and counties would be defending the LID and other development processes.

Questions and Answers

If the IGA were signed within a month, would the two counties consider a nomination from the Task Force?

The counties would be willing to consider a nomination but if the parties nominated are not suitable to the counties, they reserve the option to refuse appointment.

Would the CAG have nominations from any other venue other than the Task Force or Consensus Committee?

No, the pre-statutory CAG would be nominated by the FCVTF or Consensus Committee.

Will a business or development community member be included on the CAG?

It is not currently a recommendation. There are four additional, non-designated seats available for the CAG. *Note: One participant indicated that this feels non-inclusive and is sending the wrong message. The business/development community will be impacted by the District and should be included. The inclusion will provide a better representation of the community at large.*

How can the CAG be crafted to ensure that the members are not representing themselves but the community as a whole?

As with most groups, the CAG members will advocate for themselves at first and will eventually advocate for each other and the watershed or the District in general.

How does Urban Drainage deal with having professional engineers on the board?

The professional engineers remove themselves from competitions to win projects.

Next Steps

- The group agreed to add a member of the business/development community to the CAG.
- All the subcomponents from the FCVTF strategic plan will be represented in the TAC as experts to be called on as needed.

- The TAC can have a member available to attend CAG meetings as there could be clarification of technical issues needed at CAG meetings. This may not be the same person. The bylaws state the CAG will utilize the TAC when technical advice is needed.
- The CAG will nominate two of its members to El Paso County and Pueblo County to fill the seat on the board. The counties will choose from the nominations or go back to the CAG with a request for more choices.

IGA

- In November the El Paso County and Pueblo County attorneys will read through the IGA for county approval.
- The timeline challenge for the IGA is the Consensus Committee does not meet until December 5, 2008. To get legislation considered by the general assembly, it has to be turned in by December 1, 2008. If necessary, Heather Bergman will call each member of the Consensus Committee to make sure all members are on board to submit the IGA.
- Once the IGA is submitted, some of the content could be tweaked but the title would remain the same. The most important issue is to have signatory agreement with the IGA.
- The group discussed the issue of oversight and the language in the IGA. A member felt further signatories would have trepidations signing on unless there is a clear definition as to oversight. Heather Bergman will send out the language, take responses, and send the responses to Gary Barber. Gary will then take the responses to the attorney team.

Questions and Answers

What does direct oversight mean?

It means land use oversight. It is similar to the statutory powers of the Urban Drainage District.

In section 4.2, could a statement be added to reflect the intention to implement the goals and strategies of the FCVTF and the Army Corps of Engineers study?

This is currently included in the “whereas” section of the IGA. Also in section four states the intent to achieve the strategic plan of the FCVTF.

Fountain Creek Vision Task Force Funding Options and Project Implementation Working Group Preliminary Recommendation to the Consensus Committee May 16, 2008

The Funding Options and Project Implementation Working Group has spent several months researching a number of existing approaches to managing water issues that could serve as possible models for a long-term funding, management, and project implementation entity for Fountain Creek. The following models were included in this assessment:

- Southeast Metro Stormwater Authority
- Blackfoot Challenge
- Special Districts
- Denver Urban Drainage and Flood Control District (and the Greenway Foundation)
- Chatfield Watershed Authority
- Economic Development Zones

After group discussion and deliberation, the Working Group would like to recommend that the Consensus Committee consider the following approach to creating an entity for Fountain Creek.

1. In terms of function, we should incorporate many of the elements in the model provided by Denver's **Urban Drainage and Flood Control District**. (Information about Urban Drainage follows.)
2. Ideally, the entity **should be created by the Colorado State Legislature**, as this makes it a permanent entity. *(Note: It is unclear at this time how successful such an effort might be and whether local support for such legislation could be garnered.)*
3. While we work on getting legislation passed, we should **use inter-governmental agreement(s) (IGA(s))** as the basis for an intermediary entity that can begin work on structural and non-structural efforts in the watershed. Funding during this intervening period could come from contributions from participating entities, with contribution amounts determined by a mathematical formula (such as the one used for the Army Corps study.)
4. The entity should ultimately **be funded by property taxes, and the taxing district should include all of Pueblo and El Paso Counties**. Teller County is welcome to participate as well, although it is understandable if they choose to do otherwise.
5. In order to gain taxing authority for the long-term funding of the entity, we will need to go to **a vote of the people**. Until this is successfully accomplished, funding will continue through the IGA commitments.
6. The entity should have a broad mandate to serve as **an advocate for the long-term health and viability of the watershed**. It should address issues of water quality, water quantity, land use planning, agriculture, and recreation (among others).
7. Regarding land use planning and policy, **the entity will not have regulatory or other authority**, but rather will provide best management practices and guidance about key issues that governments can voluntarily adopt. *(Note: One alternative is to allow governments to cede authority as they deem appropriate, such as giving the entity authority over planning and projects in their respective jurisdictions that are in the 100-year floodplain or within a certain distance from the Creek.)*
8. The entity should have a **plan for dispersing project funds. This plan would likely need to be dynamic over time to reflect changing funding levels and priorities change**. However, in general, funds would be divided among:
 - a. Projects that address water quantity concerns (flooding, flood control, etc.)
 - b. Projects that address water quality concerns (E. coli, sedimentation, etc.)
 - c. Projects that promote recreation (parks, trails, etc.)
 - d. Maintenance and operations of existing projects and infrastructure
 - e. Region-wide planning, best management practices, etc.
9. **Projects should be primarily focused on the Fountain Creek corridor** and along its tributaries, with additional attention to other areas as deemed necessary and appropriate.
10. The entity should have **a plan for prioritizing projects** (balancing benefits, costs, and other factors).

*Notes on Urban Drainage and Flood District
Copied from March 25, 2008 Funding Options Meeting Summary*

Urban Drainage and Flood Control District (UDFCD) (Dave Lloyd)

- UDFCD covers 1,608 square miles, has 7 Metro area counties, and 33 incorporated entities. There are 1,600 miles of major drainage ways that serve a population of 2.8 million.
- UDFCD was created by Colorado legislature in 1969 as an independent municipal corporation and operates pursuant to the authorizing statute. The Board of Directors has 23 members.
- UDFCD is funded by \$21.4 million in revenue and a mill levy.
- UDFCD has several major policies. It has monies for construction and maintenance allocated to each county based on the revenues received. UDFCD facilities and maintenance facilities are owned by local governments. UDFCD pursues multiple uses of drainage ways such as maintaining access used for hike/bike trails and to keep drainage ways open and green. The district has the authority to regulate floodplains if the local government does not. UDFCD maintains a small staff of 25 full-time employees. UDFCD partner most efforts with local governments. There is a 50% match required for construction and master plan work, but UDFCD pays 100% for maintenance work. UDFCD contracts for most services with the private sector, including but not limited to master planning, design/construction, environmental consulting, maintenance of facilities, and meteorology.
- The major program activities taken on by UDFCD are master planning, floodplain management, flood warning, stormwater quality, research, writing criteria manuals, design and construction, maintenance, floodplain preservation, and work on the South Platte River.
- When working with master planning, UDFCD addresses the entire watershed/tributaries and actively involves all local governments.
- UDFCD includes in its floodplain management duties regulating floodplain development, mapping flood hazard areas, determining maintenance eligibilities, notifying residents they are in the flood plain, conducting flood damage surveys, developing geographical information system (GIS), distributing flood warning plans, and creating rainfall/runoff stations.
- UDFCD assists communities with permit applications and stormwater compliance. UDFCD also funds and coordinates stormwater quality monitoring/analysis efforts and is actively involved in influencing state and federal laws and regulations.
- Over \$155 million has been spent on the design and construction of local projects since 1974 by UDFCD.
- UDFCD funds its preservation program with an allocation of \$800,000 from its maintenance budget. The purpose of the preservation program is to acquire available floodplain properties throughout the year. The preservation program requires a 50% match from the local government.
- UDFCD also has program activities on the South Platte River. This is the largest waterway in the district, traveling 40 miles and through 12 local governments. The program activities include capital improvement projects, floodplain acquisitions, noxious weed management, and a cross-section monitoring and analysis program.

Questions and Answers

Where did the money come from for the South Platte improvements?

The money came from a different mill levy. UDFCD obtained a mill levy in about 1986.

UDFCD allocates money on a five-year basis by county. Projects are then done in the same counties. How do you determine where in the county projects will occur?

This is a challenge UDFCD faces. Many projects involve more than one local government. UDFCD internally tracks what counties are getting money and makes sure that all counties get their fair share. UDFCD has not often been challenged on its fairness and is fortunate enough to work really well with local governments. It is helpful to have the local governments represented well on the Board of Directors.

If the majority of the population was in the upper basin, how would UDFCD deal with a project in the lower basin, which produces less income and is dealing with issues produced by the upper watershed?

The best option is to discuss all projects and issues with all local governments. In the 1980s the economic conditions were such that some counties had trouble paying the 50% cost share so the board allowed UDFCD to take on 75% of the payments.

What drove the upper-basin communities to take on the projects?

The upper-basin communities had stormwater outfall needs.

Does UDFCD create the master plans?

Yes, though the inter-governmental agreement (IGA) will specify the funding.

Does UDFCD get around the taxpayer's bill of rights (TABOR)?

No, nothing gets around TABOR.

Where does UDFCD get its revenue?

The revenue is all taxes.

Does UDFCD do hydrological modeling?

Yes, UDFCD typically likes to take the lead in all modeling in the master plan. Fifty percent of the master plans done today are updates of ones done in the 1970s. There are significant land use changes and long-term rainfall changes. The preference is not to change the hydrology in the basin.

Where do the floodplain boundaries come from?

Most floodplain boundaries come out of our own master plan.

Is it a blurred line between what UDFCD is authorized to do and what the local governments do?

Yes, UDFCD provides a funding source to governments and considers itself to be their technical arm.

How would UDFCD regulate floodplains in a county when they are not in the district?

There is not a way to control boundaries outside of the district.

Under today's circumstances, could UDFCD get the vote from the people?

No, drainage is a very hard sell.

What does Denver spend on stormwater?

A guess would be close to \$0.5 billion for the Metro area. Most cities/towns have drainage utilities, which is where UDFCD's money comes from, not the city/town capital budget.

What would be Denver's grade on its efforts with drainage?

Denver's grade would be a B+. Drainage has come to the forefront in the last few years with Fastracks. There is a plan to do \$30 million in improvements on the South Platte. Fastracks drives this.

In the criteria manual, is there a requirement to match pre-development and post-development hydrographs?

No, there is not.

When water leaves the South Platte, do communities downstream raise issues?

No, the downstream areas are fortunate enough to have huge amounts of flood storage areas.

While UDFCD does the master plans, who pays for initial construction of stormwater improvements and do they have to be built within the guidelines?

A developer may want to know why he has to take care of people downstream. UDFCD will often collaborate with the developer to take on some of this cost. This is on a case-by-case basis.

Does UDFCD pay as it goes or does it bond?

UDFCD has the ability to bond but has not utilized it.

Does UDFCD use low-impact development (LID)?

UDFCD is working with different groups on LID and is developing a brochure for the development community. UDFCD has done research in quality stormwater best management practices (BMPs) and has monitored different porous concrete and rain gardens.

APPENDIX J

Fountain Creek Vision Task Force Water and Land Use/Environment Working Groups, Joint Meetings Meeting Summaries

**Fountain Creek Vision Task Force
Water and Land Use/Environment Working Groups, Joint Meetings
Meeting Summaries**

**Fountain Creek Vision Task Force
Water and Land Use/Environment Working Groups
Joint Meeting
January 17, 2008
Final Meeting Notes**

Attendance

Mary Barber, Barbara Dallemund, Ferris Frost, Judith Rice Jones, Juniper Katz, Brian Kay, Sarah Keith, Irene Kornelly, Dennis Maroney, Gene Michael, Rich Muzzy, Jane Rawlings, Tom Ready, Ryan Tefertiller, Alan Ward, Tim Williams, Niki Koszalka, and Heather Bergman

Strategy Brainstorming

Participants self-selected into nine discussion groups to brainstorm strategies for addressing the current conditions in the watershed. The strategies that emerged from these efforts are listed below. The groups all stressed three critical issues: 1) the importance of creating and maintaining synergies between strategies for different goal areas; 2) the need to develop and continue education and outreach on all of the issues listed below; and 3) the necessity of establishing a plan for monitoring and maintenance of all projects.

- Wetlands
 - Preserving existing wetlands
 - Identifying some prime locations for new wetlands
 - Assessing the functionality of wetlands including cost/benefit
 - Integrating a management plan related to the overlap of land use and recreation
 - Looking at the whole system of wetlands and developing a comprehensive system to determine how wildlife uses it for movement
 - Considering the water quality impacts from wetlands including the concentration of pollutants
 - Studying wetland vegetation and the uptake of pollutants
 - Maintaining and managing constructed wetlands
 - Enhancing and creating wetlands
 - Creating an environment to reduce sediment before it reaches wetlands
 - Creating a treatment train with staged wetlands
 - Maintaining wetlands to ensure their functionality
 - Using wetland banking as an option to preserve wetlands in one area, making up for the loss of wetlands in another area
 - Creating incentives for the preservation of wetlands
 - Developing tourism and funding options
 - Evaluating monetary value of wetlands for ecological purposes
 - Developing standards, regulations, or guidelines for development around and in wetlands

- o Clarifying wetland regulations
- o Using wetlands in channel stability and treatment of stormwater runoff
- o Managing tamarisk and other invasive species
- o Improving diversity and benefits of wetlands for outdoor education opportunities
- o Encouraging wildlife
- o Introducing endangered species
- o Introducing species of concern precluding future listing under the Endangered Species Act (ESA)
- o Creating wetlands to mitigate invasive species
- o Educating developers, ranchers, and farmers about the value of a wetland on properties
- o Creating pilot projects to demonstrate effectiveness of wetlands
- o
- Recreation
 - o Improving water quality and creating recreation along Fountain Creek as a positive and desirable experience
 - o Coordinating plans to create a coherent list of recreational links
 - o Publishing a coherent map of recreation opportunities within the watershed to include surrounding communities and the location of and connections to the Front Range Trail
 - o Managing and maintaining a plan/strategies to address problems with trails
 - o Developing trails for multiple uses including recreational, commuter, and wildlife
 - o Addressing motorized vs. non-motorized trails and realizing there is a need and desire for both including a management plan
 - o Addressing both positive and negative conflicts with horse use and other trail users
 - o Managing the riparian corridors for best management practices including weeds and how to control them
 - o Problem solving on issues of dog use
 - o Tackling problems with mussels and other noxious species
 - o Creating opportunities for the following:
 - Archery
 - Frisbee golf course
 - Flat water recreation canoeing
 - Bed and breakfasts
 - Bird and wildlife viewing
 - Fishing and hunting
 - Sustainable trail design
 - Off-highway vehicle park
 - Nature center
 - Camping, including huts and yurts
 - State park
 - Radio-controlled toys park
 - Trail system including bicycle and pedestrian trails
 - Community supported agriculture (CSA)
 - Pole boating
 - Whitewater course

- Raptor center
 - Wildlife sanctuary
 - Working ranch/ranch education
 - Sightseeing, including enhancing the viewshed where applicable
 - Volunteer opportunities
 - Shooting range
 - Outdoor event center
 - Sports events, including bike and running races
 - Coordinated events calendar
 - Community art center
 - Reservoirs
- Secure funding through:
 - Great Outdoors Colorado (GOCO)
 - Foundations (private)
 - State Parks
 - Private enterprises
 - Municipalities/counties
 - Tax increase for parks construction and maintenance
 - Partnerships with federal agencies
 - Conservation easements
 - Non-profits
 - Friends or citizens groups
 - Military
 - Corporate sponsors
 - Developers and/or utility providers
 - Railroad
 - Lafarge and other resource extraction corporations
 - Colorado Department of Transportation (CDOT)
 - A future Fountain Creek funding and project implementation entity
 - State, federal, or local dollars
 - User fees to help pay for improvements and new construction
- Residential/Commercial Development
 - Changing land use policies for consistency across watershed and municipalities
 - Using best land management
 - Removing the barriers for low impact/green building (examples: reduce commercial parking standards, promote shared use parking and a parking maximum)
 - Promoting xeriscaping, utilizing native plants (including limits on amount of bluegrass on commercial sites), and creating regulations and incentives for residential properties
 - Retrofitting existing properties for better stormwater management
 - Developing standards and criteria on impacts to the watershed
 - Allowing grey water use
 - Prohibiting building within the floodplain
 - Utilizing streamside overlay ordinances
 - Developing criteria/standards of impact to the watershed
 - Obtaining conservation easements

- o No over-regulating to the point of losing jobs or negatively limiting growth (example: Boulder)
 - o Improving mass transit; expanding transportation options and alternatives
 - o Improving mixed use opportunities, less sprawl, better utilize cluster development, and supporting appropriate density
 - o Preserving open space and agriculture in cases when it makes sense and creating a coherent system to help with human and wildlife corridors
- Industrial land uses
 - o Handling waste on site (onsite wastewater area)
 - o Determining a policy on how waste is to be handled and follow up with site clean-up when site is “used up”
 - o Developing standards/criteria for impact on watershed with an explanation as to how a development will affect the watershed, including light pollutants, habitat, water quality, water quantity, and view corridors
 - o Creating time and money incentives
 - o Constructing wetlands
 - o Creating a regional watershed comprehensive land use plan including incentives and regulations
 - o Obtaining conservation easements
 - o Including low-impact development (LID) practices in a local pilot or demonstration project site
- Water Quality
 - o Identifying E. coli sources
 - o Creating a buffer zone and enhancing riparian zone
 - o Utilizing best management practices to reduce run-off (porous pavement, sediment basins, infiltration basins, and wetlands enhancements)
 - o Assessing effectiveness of water quality standards
 - o Accessing current policies and regulations
 - o Enhancing wetlands
 - o Developing policies and regulations (especially for LID, sand/salt uses, and dog issues)
 - o Locating funding sources
 - o Formalizing non-structural best management practices, including street sweeping, doggie stations, and policies
 - o Creating incentives for maintenance of water quality facilities
- Wildlife
 - o Creating viewing areas and birding trails
 - o Maintaining migration corridors
 - o Enhancing, managing, and protecting habitat connectivity and easements
 - o Producing a wildlife management plan for the watershed, including baseline data
 - o Building wildlife sanctuaries
 - o Defining wildlife in the watershed, including birds, mammals, amphibians, reptiles, fish, and insects
 - o Investigating agro-forestry as a compatible land use
 - o Using annexation agreements to accomplish goals
 - o Identifying compatible adjacent uses

- o Deciding on hunting/no hunting
- o Managing noxious weeds
- o Using domestic animals for weed control
- o Managing Canada geese
- o Assembling greenway under and over passes for wildlife
- o Making ponds and water sources for wildlife
- o Manufacturing fisheries
- o Looking at studies that currently exist: Department of Wildlife (DOW), The Nature Conservancy (TNC), and Colorado Natural Heritage Program (CNHP)
- o Managing wildlife collaborations within the watershed
- o Having incentives for buffers and smart growth within the watershed
- o Creating green campsites
- o Managing recreational uses
- o Constructing a bison ranch (tourism option/education/agro-tourism)
- o Creating an inventory of endangered/threatened species
- o Locating best locations for development
- o Identifying funding sources
- o Prioritizing project areas
- o Maintaining serviceable water quality
- o Collaborating with ranchers and planting crops for wildlife
- Sedimentation/Erosion
 - o Reducing run-off volume
 - o Determining stable sedimentation concentrations
 - o Characterizing sediment as bed load or suspended sediments
 - o Constructing a pilot project on sediment modeling
 - o Accessing downstream impacts of projects including channel forming flow
 - o Maintaining channel stability and capacity
 - o Maintaining geomorphic characteristics of the stream
 - o Dredging
 - o Limiting sediment sources during construction
 - o Matching the post-development to the pre-development hydrograph
 - o Altering detention system design for sediment bypass
 - o Creating a pilot project using the Streamside System equipment
- Stormwater Management
 - o Reducing source control volume reduction
 - o Rewriting land use regulations and policies
 - o Assessing downstream impacts
 - o Matching pre- and post-hydrographs
 - o Utilize structural and non-structural best management practices
 - o Implementing LID techniques
 - o Implementing a demonstration project
 - o Developing a watershed authority or entity
 - o Producing annexation requirements
- Flood Control
 - o Researching the construction a dam on Fountain Creek
 - o Identifying gaps in flood protection

- Assessing flood risk and channel capacity
 - Using appropriate detention/retention
 - Retrofitting to reduce runoff from existing development
 - Mapping historic floodplain, assessing meander belt, and encouraging conservation easements
 - Buying out floodplain properties
 - Reassessing hydrology to remap current floodplain
 - Re-examining floodplain regulations
 - Re-connecting floodplains to channel
 - Rehiring floodplain manager
 - Developing watershed-wide floodplain ordinance
 - Creating a watershed entity to help with funding
 - Producing flood warning systems
 - Recertifying of levees
 - Evaluating off-line storage
 - Encouraging conservation easements
 - Restricting development in floodplain and meander belt
 - Matching historic hydrographs
- Municipal water needs and return flows
 - Deciding on no growth or growth
 - Achieving more direct reuse
 - Designing efficient plumbing and dual systems (potable and non-potable)
 - Conserving both indoor and outdoor water (agriculture and municipal) water use
 - Establishing tiered rate structures
 - Creating water efficient landscape ordinances and education
 - Furthering potable direct reuse
 - Re-writing water law
 - Producing incentives for water conservation
 - Constructing water storage for surface and aquifer return flows
 - Improving water main leakage
 - Considering cloud seeding
 - Increasing tap fees
 - Minimizing channelization from return flows
 - Creating a grey water system
- Recommendations from the US Army Corps of Engineers Study that the working groups felt were should be reiterated as strategies:
 - Constructing remedial projects in the watershed should be developed with a consistent approach and methodology for project design and construction, including downstream impacts
 - Creating a Fountain Creek Watershed Authority could serve as a funding source for large scale projects, and to assist entities with training, review, and/or maintenance
 - Modifying development policy to include more consideration of open space needs in development (focus on more habitat development within traditional parks)
 - Rehabilitating riparian areas to a healthy, functioning condition
 - Preserving existing wetlands and creating additional wetlands when opportunities exist

- o Limiting sediment sources during construction by minimizing over-lot grading in large-scale developments
- o Adjusting development policy to include the concepts put forth by the Center for Watershed Protection (cwp.org) and LID (lowimpactdevelopment.org)
- o Altering development policy to require the post-development hydrographs to match the pre-development hydrographs for peak, volume, and timing
- o Changing development policy to require the post-development sediment transport to match the pre-development sediment transport
- o Revising development policy to require assessment of downstream impacts, and particularly the impacts due to small, frequently occurring storm events such as the 2-year event
- o Educating and training staff in the principles of geomorphology and sediment transport to support the review process for new development and to support the ongoing efforts of their entities in the watershed.

Next Steps for Strategies

- Several members of the group will work on refining these draft strategies so that the full group can form them into very specific strategies at the next meeting.
 - o Flood control: Dennis Maroney
 - o Stormwater: Lisa Ross
 - o Water quality/sediment: Gene Michaels
 - o Agriculture: Juniper Katz
 - o Wetlands: Kirsta Scherff-Norris
 - o Wildlife: Tim Williams
 - o Recreation: Sarah Keith
 - o Land Use (residential/commercial and industrial): Tim Williams
 - o Municipal water: Carol Baker
- The next meeting is scheduled for Wednesday, January 13th from 1-4:00 p.m.

Fountain Creek Vision Task Force Water and Land Use/Environment Working Groups February 13, 2008 Final Meeting Notes

In Attendance

Stephanie Carter, Scott Cowan, Barbara Dallemand, Dennis Darrow, Mike Fink, Ferris Frost, Juliet Glass, Mark Glidden, Amber Jack, Mary Jaurequi, Juniper Katz, Sarah Keith, Carole Lange, Dennis Maroney, Gene Michael, Rich Muzzy, Annie Oatman-Gardner, Cynthia Peterson, Tom Ready, Kirsta Scherff-Norris, Ryan Tefertiller, Brian Vanden Heuvel, Alan Ward, Niki Koszalka, and Heather Bergman

Updates on E. coli Studies

US Geological Survey Study (Rich Muzzy and David Mau)

- Objectives of the presentation is to describe fecal source tracking and to provide information about the sanitary survey in Fountain Creek, and planned fecal source tracking investigations
- Basic concept of source tracking assumes that the intestinal bacteria of animal groups are expected to be different because of basic habitat (body temperature, food supply, and digestive system)
- The process for this source tracking is to:
 - Choose source-specific targets that are in the feces of local source groups
 - Characterize “reference material” (also known as manure and sewage) from local sources
 - Test water for fecal contamination
 - Associate contamination with sources
- We apply these tools to Total Maximum Daily Load (TMDL) and related efforts by:
 - Evaluating whether marker concentrations increase at the same rates as indicator-bacteria densities
 - Testing whether sources contribute to contaminated waterways (e.g. sewer line leaks, manure lagoon seepage)
- The project’s vision for integrating Microbial Source Tracking (MST) into existing TMDL processes is to
 - Conduct evaluation of when and where fecal contamination enters the waterway (through a sanitary survey and publicly-available data)
 - Look for obvious sources
 - If no obvious sources, collect more data through targeted monitoring, MST markers, and chemical tracers
- Project Timeline
 - Sanitary Surveys started May 2007
 - Microbial Source Tracking started October 2007
 - Draft Report May 2009
- Historical E. coli data (2000-2005)
 - Densities in Fountain and Monument Creeks tend to exceed the 126 Colony Forming Units (CFU)/100 milliliter (mL) criterion
 - In warm-weather months, infrequently in cold-weather months
 - During high flow
 - Upstream from Colorado Springs
 - Over the entire reach from Colorado Springs to Pueblo
- Sample sites on and below Ruxton Creek led to the discovery of leaking and compromised wastewater lines.
- Next phase
 - Identify major contributions of fecal contamination and test for specific fecal contamination sources in key samples.
 - Collect monthly (winter) or biweekly (summer) samples at selected sites
- Further analyses will be performed on E. coli densities, nutrients, wastewater organic chemicals, and microbial source tracking markers
- Anticipated Outcome
 - Identification of specific E. coli sources and source areas
 - 303(d) delisting of upper Fountain Creek
 - Identification of additional downstream E. coli sources

Questions and Answers

When a “hot spot” is found, how is it determined whether the E. coli levels are from a homeless population or from a wastewater break?

The best option is to further research and delve further up into the watershed.

Are there preliminary conclusions that can be made from the study at this point?

Yes, but these need to be scientifically proven before they are released in order to maintain the legitimacy of the study.

Will the study be continued throughout the Creek?

That is the hope. This type of study is expensive, so cost will be a factor.

When is the study going to be completed?

The draft from the study is anticipated for release in March of 2009.

Colorado State University at Pueblo Study (Brian Vanden Heuvel)

- MST methods are used to help identify sources responsible for the fecal pollution of water systems. There are two ways of doing this:
 - Library-Dependent Studies
 - Isolate bacteria from known sources
 - Type or fingerprint bacteria
 - Isolate bacteria from water
 - Match unknowns from water to library (very expensive; uncertain results)
 - Library-Independent Studies
 - Use “biomarker” to determine presence/absence of a host-specific bacteria
 - Attempt quantification by comparing to traditional E. coli counts and quantitative Polymerase Chain Reaction (qPCR)
 - This is the approach used in this study.
- The methods of this study are consistent with the USGS study.
- There are 27 Fountain Creek drainage E. coli monitoring sites, including 4 on the Upper Fountain, 10 on Monument Creek, and 13 on the Lower Fountain.
- The Colorado water quality standard for E. coli density is CFU per 100 mL
- The monitoring sites show higher levels of E. coli occur after storm events.
- The data gathered at Manitou Springs matched the data from USGS.

Questions and Answers

Are you measuring below stormwater outfalls?

The sites are mostly in coherent points like under bridges.

Do you have any preliminary data on the kind of animals that may be contributing to the E. coli levels?

There has been DNA detected in the water of animal species but the kinds of animals can not be discussed at this time.

Vision for a State Park in the Fountain Creek Watershed

Presentation by Tom Ready of Colorado State Parks

- The vision for a State Park in the Fountain Creek Watershed includes opportunities for:
 - Educating
 - Recreating both summer and winter
 - Volunteering
 - Building hiking trails, yurts, wildlife viewing areas, picnic areas, bridges, shelters, and playgrounds
 - Fishing and camping
 - Documenting history of area
 - Accomplishing use by all people
- State Parks looked at 280 acres called the Green View Trust where all main buildings are out of the floodplain. There is a lariat annexation for a 2200-acre area of Pueblo Springs Ranch. State Parks would like to have the Front Range Trail come through this area.
- Stewardship Planning Process
 - Information gathering
 - Baseline natural resource inventory
 - Vegetation
 - Noxious weeds
 - Wildlife
 - Geology soils hydrology
 - Comprehensive stewardship plan
 - Significant features
 - Ecological sensitivity zones
 - Objectives
 - Monitoring plans

Questions and Answers

Is Baculite Mesa included in the plans?

Baculite Mesa is not included in the front-range trail plans

How far along is the establishment of a route for the trail?

The exact route has not been proposed at this time; additional discussion with the various municipalities is needed.

Is El Paso County not part of the vision for a state park because of the lack of land availability?

Yes, but there could be some land opening up if the wastewater treatment facility is not built.

Refining of Brainstormed Strategies from January Meeting

The Water and Land Use/Environment Working Groups worked to refine the strategies brainstormed at the January meeting. In particular, the groups began the refinement process for the following issue area: land use, flooding, agriculture, wildlife, and water quality. The group determined the need for additional time to work on these strategies. This will resume at the next meeting. The remaining five issues will be discussed at the next meeting: sedimentation, wetlands, municipal water and return flows, stormwater, and recreation.

Next Steps

- The group will continue to refine the strategies at the next meeting.
- The next meeting is scheduled for March 11, 2008, from 9:00 a.m. to 1:00 p.m.

**Fountain Creek Vision Task Force
Water and Land Use/Environment Working Groups
March 11, 2008
Final Meeting Summary**

Attendance

Carol Baker, Stephanie Carter, Scott Cowan, Barbara Dallemand, Dennis Darrow, Jeff Drabing, Mike Fink, Ferris Frost, Juliet Glass, Kim Headly, Jim Houk, Amber Jack, Neil Katz, Brian Kay, Sarah Keith, Irene Kornelly, Carole Lange, Gene Michael, Rich Muzzy, Cynthia Peterson, Kirsta Scherff-Norris, Ryan Tefertiller, Tim Williams, Daryl Wood, Niki Koszalka, and Heather Bergman

New and Pressing Issues in the Watershed

- The Fountain Creek Vision Task Force did not receive the Heritage Grant for the planning policy workshop.
- The Fountain Creek Corridor Master Plan (FCCMP) is applying for federal earmark funding to pay for two demonstration projects in the watershed. The funding will enable project construction to begin in 2009.

Review of Current Conditions Maps

Prior to the meeting, Thomas and Thomas, the mapping contractors, began to categorize some information from the current conditions papers on to maps. Jim Houk from Thomas and Thomas brought draft current conditions maps to the meeting for the group to review. Participants asked questions, and then provided feedback to Thomas and Thomas about the data on each map and how the data are represented visually on the maps. The group also provided specific recommendations for improvement to the maps. Thomas and Thomas will prepare revised maps that address these issues as much as possible.

[Note: Because the draft maps are not available in electronic form and the questions and comments from the group about the maps only have meaning if you can actually see the maps, the questions and comments will not be reproduced here. To see the individual questions and comments about the draft maps, please email Niki at fountain@keystone.org.]

Refining Strategies

Participants broke into small groups to continue to refine addressing the current conditions papers and strategies. Some groups completed this effort, while others agreed to continue to work together until they finish. All of completed strategies will be presented to the Consensus Committee meeting on March 21, 2008.

**Fountain Creek Vision Task Force
Water and Land Use/Environment Working Group
April 8, 2008**

Final Meeting Notes

Attendance

Carol Baker, Stephanie Carter, Scott Cowan, Barbara Dallemund, Danny Elsner, Ron Enserro, Mike Fink, Ferris Frost, Juliet Glass, Annie Oatman-Gardner, Cynthia Peterson, Juniper Katz, Sarah Keith, Irene Kornelly, Gene Michael, Rich Muzzy, Lisa Ross, Ryan Tefertiller, Tim Williams, Niki Koszalka, and Heather Bergman

Action Items

Water and Land Use Environment Working Group	Submit any incomplete strategies to Heather Bergman by April 15, 2008
Rich Muzzy and Danny Elsner	Collect list of requested studies to verify if comparable studies have been completed

New and Pressing Issues in the Watershed

- Carol Baker and Rich Muzzy are presenting at the State of the Rockies River Workshop but are not representing the Fountain Creek Vision Task Force (Task Force).
- There is a Southern Delivery System meeting at Carson High School at 6:00 pm on April 8, 2008.
- The Fountain Creek Corridor Master Plan (FCCMP) is moving forward. A draft of their work will be available to the Task Force by mid April. The Task Force agreed to hearing a presentation by the FCCMP.
- Thomas and Thomas will bring the maps to the April 25, 2008 Consensus Committee meeting and plan to have them at the Water and Land Use/Environment Working Group meeting in May.

Prioritize Strategies in Small Groups

- The Consensus Committee was receptive to the presentation of the strategies but felt the information was hard to assimilate. The amount of information was beyond the depth and breath of comprehension by the Consensus Committee. A draft of the entire plan was requested and the Consensus Committee agreed to reading assignments from the draft plan.
- There are currently 334 strategies. The facilitator explained this is too many for a strategic plan. The strategies need to be prioritized into a shorter and more coherent list. In the 344 strategies, there were several areas of overlap/convergence including:
 - Creating an entity to coordinate, fund, and regulate the Fountain Creek Watershed;
 - Requesting studies (the group agreed Rich Muzzy and Danny Elsner will collect the list of requested studies to determine if comparable studies already exist);
 - Mapping and planning;
 - Maintaining and creating wetlands;
 - Establishing best management practices (BMPs);
 - Having education/outreach programs; and
 - Instituting pilot projects.
- The facilitator created a chart showing the pros and cons of each group and the work completed thus far on strategies.

	Need Goals	Too many Strategies	Action Items as Strategies	Needs Specificity
Agriculture		X	X	
Water Quality		X	X	
Recreation		X		
Flooding		X	X	
Wetlands	X			X
Wildlife	X			X
Outreach				X
Municipal Water	X			
Land Use				

- A participant felt wetlands was as a strategy not an end to a goal. Wetlands are a strategy and a reality. The group agreed the goal statements came from the Consensus Committee and the strategies need to be in line with the goals. The group will write goals and strategies and present them to the Consensus Committee who has the option to say yes or no.
- A participant voiced concern over what strategies stay in the document and which end up in the appendices. The process, including strategies in the document, is the decision of the Consensus Committee. Once the Consensus Committee agrees on a document, the public will have the opportunity to attend a meeting to discuss the document and see maps/charts. Political support is needed to back up the document.
- The facilitator reviewed the differences between a goal and a strategy per the request of a participant. An example: A goal is to increase after school programs by 50%. A strategy is to hire an after school coordinator. Action items include allocation of funds, writing/posting a job description, and interviewing/selecting top candidates.
- The facilitator tasked the group to come up with 10 strategies for the 10 issue areas. The participants worked in small groups to identify the top three strategies for inclusion in the strategic plan. All other strategies will be recorded in an appendix but will not be included in the body of the plan. After breaking into small group discussions, the groups reported back on the strategy writing progress.
 - The flooding group narrowed down the strategies to five and adopted the stakeholder goals.
 - The municipal water and return flows group returned with three strategies and seven goals.
 - The wetlands group decided upon goals and need to work on strategies and action items under the goals.
 - The wildlife group is hoping to have fewer than ten strategies for both wetlands and wildlife. The group also discussed if the wildlife goals could fit under the land use/environment heading. Wetlands would need to remain separate if wildlife is incorporated into land use/environment.
 - The water quality/quantity and sedimentation group have goals with recommended changes. They also have five strategies.
 - Agriculture requested giving one goal to wildlife/wetlands and has five strategies.
 - The land use/environment group created one goal. The Water and Land Use/Environment group discussed the wording of the goal and agreed to utilize

the terminology “ecosystem viability and functionality”. Eight strategies and several action items were established.

- o The recreation group will have goals and strategies to Heather Bergman by April 15, 2008.

Action Planning

Participants begin identifying the individuals and/or entities responsible for leading the implementation of each of the remaining strategies. They will also identify partners in implementation and target dates for each strategy.

The group scheduled the next meeting from 11:30 to 3:30 on May 6, 2008.

**Fountain Creek Vision Task Force
Water and Land Use/Environment Working Groups
Joint Meeting
May 6, 2008
Draft Meeting Summary**

Attendance

Carol Baker, Gary Barber, Chris Butler, Scott Cowan, Dennis Darrow, Ron Enserro, Ferris Frost, Dwight Gardner, Juliet Glass, Merle Grimes, Jim Houk, Amber Jack, Juniper Katz, Sarah Keith, Irene Kornelly, Carole Lange, Dennis Maroney, Gene Michael, Rich Muzzy, Annie Oatman-Gardner, Cynthia Peterson, Lisa Ross, Ryan Tefertiller, Graham Thompson, Ross Vincent, Tim Williams, Chris Woodka, Niki Koszalka, and Heather Bergman

Action Items

Flooding group	Complete action items and submit to Heather Bergman by May 13, 2008
Rich Muzzy (water quality group)	Complete action items, goals/strategies, and benchmarks and submit to Heather Bergman by May 23, 2008
Agriculture group	Complete action items and submit to Heather Bergman by May 16, 2008
Wildlife group	Complete action items and goals/strategies and submit to Heather Bergman by May 20, 2008
Municipal water group	Complete benchmarks and submit to Heather Bergman by May 15, 2008
Chris Butler (land use group)	Complete action items, goals/strategies, and benchmarks and submit to Heather Bergman by May 23, 2008
Outreach group	Complete action items, goals/strategies, benchmarks, and current conditions and submit to Heather Bergman by May 23, 2008
Recreation group	Complete action items and submit to Heather Bergman by May 20, 2008

Wetlands group	Complete action items and goals/strategies and submit to Heather Bergman by May 12, 2008
Carol Baker, Annie Oatman-Gardner, Juniper Katz, Dennis Maroney, Ross Vincent, and Tim Williams	Meet with Jim Houk and Gary Barber to discuss mapping data
Heather Bergman	Send the contact information for the National Resources Conservation Service (NCRS) riparian restoration expert to the group

New and Pressing Issues in the Watershed

- An expert from NCRS came to Pueblo and presented on new strategies for riparian restoration. Pueblo has a project working to restore 10-acres. Heather Bergman will send out contact information from the expert.
- The Fountain Creek Foundation (FCF) has been established and is holding a press conference on Saturday May 10, 2008. FCF's work will focus mainly on outreach and education on the watershed.
- There was a watershed network information sharing workshop in Pueblo about the data sharing network.

Opportunities and Constraints Maps (Jim Houk)

- The maps show different saturations of color indicating the number of attributes or specific watershed indicators. The maps are also broken down into sub-watersheds. The challenge is to determine how to consolidate data into useful categories. Opportunities and constraints in the watershed can be used to create a vision map. The maps show that several of the sub-watersheds have saturated color for positive and negative attributes.
- Rich Muzzy and Pikes Peak Area Council of Government (PPACG) provided data on impervious area. The map revealed several trends in the watershed. The darker saturation of color represents the higher percentage of impervious area. There was a discussion at the Consensus Committee meeting suggesting the numbers represented on the map for impervious area are incorrect. The map data for 2020 may reflect build out and assumes there is no low impact building (LID).
- The individual attributes that contribute to the saturation of color on the maps, are weighted equally. During the Consensus Committee meeting a conversation was engaged in to discuss whether they should remain equally or differently weighted.
- The facilitator sent a survey to the Consensus Committee to determine if the attributes needed to be weighed differently. The intention of the survey was also to remove items from the attributes list that are not helpful.
 - Certain attributes are driving factors for other listed attributes. Impervious area is a driving factor for water quality. A participant suggested heavier weighting for the attributes with driving factors.

- A participant felt the influence of the Audubon Society on the attributes was obvious and suggested the attributes that are good for the Creek need to carry different weights.
- The facilitator urged the group to tell the map makers where to proceed next and to help determine what the maps will ultimately represent. The maps the group looked at today are a beginning point, not an end point.
 - One participant felt the addition of types of soil, specifically hydrological A and B would be a helpful tool. Soil information is available in the county soil maps.
 - Another suggestion was to create a map that had broad stroke constraints including where the railroad is or if I-25 will prohibit the development of a park in a certain area.
 - Tim Williams, Ross Vincent, Carol Baker, Annie Oatman-Gardner, Dennis Maroney, and Juniper Katz agreed to meet with Jim Houk and Gary Barner to discuss mapping data.

Questions and Answers

Will these maps be available on an interactive web based site?

The maps will be posted but interactive access will be limited.

Can the document contain a layer for each decided or agreed upon attribute?

Yes, but it is an immense amount of work. The question the maps are intended to answer is: what is the non-consumptive water use of the Fountain Creek watershed.

How far down can the aggregated attributes be disaggregated?

There is a map layer for each attribute.

Is it possible to produce a map showing what the Creek would look like if certain changes occurred to the watershed?

No, the hope is for the maps to have enough information to show areas of focus and to make better use of resources.

Goals, Strategies, Action Plans, and Indicators of Success

- The facilitator asked the participants to work in small groups to refine the goals and strategies. The group also needs to develop an action plan. When the Consensus Committee reviewed the goals and strategies they wanted to know what success looks like and what are the quantitative benchmarks for success. Benchmarks for success are needed for 2, 5, and 10-years in the future. Benchmarks are a great tool to hold a group accountable to its goals.
- The group broke into sub-groups and reported back their progress.

Flooding

- The flooding group created an action statement and modified/completed benchmarks.
- They will complete their action items and submit to Heather Bergman by May 13, 2008.

Water Quality

- Rich Muzzy will complete action items, goals/strategies, and benchmarks. He will turn them into Heather Bergman by May 23, 2008.

Land Use

- Chris Butler will complete action items, goals/strategies, and benchmarks. He will turn them into Heather Bergman by May 23, 2008.

Agriculture

- The agriculture group has completed the benchmarking exercise. The benchmarks include:
 - Work with landowners to voluntarily protect 1,000 acres each year until 2012, of agricultural land and associated water rights. Assess future conservation goals for the following 5-years in 2012.
 - By the end of 2008, hold a workshop with local producers to learn what would help their businesses be more sustainable and successful; by March 2009, issue a report on increasing the sustainability and success of agriculture in the watershed.
 - By 2013, create a demonstration project on sustainable agricultural practices in the watershed.
 - Compile baseline documentation for ecosystem health. In 5-years use data to assess the impacts of sustainable agriculture practices. The agriculture group plans to refine this benchmark.
- The agriculture group is waiting for further clarification from the Consensus Committee on the goals/strategies.
- They will complete their action items and submit to Heather Bergman by May 16, 2008.

Recreation

- The recreation group has completed the benchmarking.
- They will complete their action items and submit to Heather Bergman by May 20, 2008.

Wetlands

- The wetlands group has completed the benchmarking.
- They will complete their action items and goals/strategies and submit to Heather Bergman by May 12, 2008.

Wildlife

- The wildlife group has completed the benchmarking.
- They will complete their action items and goals/strategies and submit to Heather Bergman by May 20, 2008.

Municipal Water

- The municipal water group has completed the action items and goals/strategies.
- They will complete the benchmarks and submit to Heather Bergman by May 15, 2008.

Outreach

- The outreach group will submit the action items, goals/strategies, benchmarks, and current conditions paper to Heather Bergman by May 23, 2008.

Fountain Creek Corridor Master Plan (FCCMP) (Merle Grimes and Graham Thompson)

- The overall master plan goals include:
 - Improving watershed health by reducing erosion, sedimentation and flooding and improving water quality;
 - Creating stable riparian and wetland ecosystems to attract and support native wildlife and vegetation;
 - Sustaining productive agricultural lands along corridor;
 - Laying-out trail from Colorado Springs to Pueblo with recreational and educational opportunities; and
 - Gaining public and private support through partnerships to facilitate implementation and future funding.
- The planning philosophy is:
 - To provide general planning criteria and an overall concept for establishing a healthy Fountain Creek that is:
 - Stable;
 - Healthy creek ecosystem (wetlands, bugs and birds, aquatic life and mammals);
 - Self-maintaining;
 - Cost effective; and
 - Long-term sustainability.
 - The FCCMP has additional considerations including:
 - Action/reaction;
 - Creek is a system;
 - Flow of water and sediment;
 - Cross section and profile along with pattern; and
 - Implementation strategy.
- The FCCMP is trying to accomplish:
 - Improvements in health and safety;
 - Improvements in water quality;
 - Improvements for wildlife;
 - Improvements in stream stability;
 - Improvement to fisheries;
 - Improvements in stream health;
 - Reduction in flooding;
 - Reduction in sedimentation; and
 - Improvements in access and visibility.
- The FCCMP will accomplish this by:
 - Understanding the difference between an unhealthy and healthy Fountain Creek; and
 - Recommending a course of action for making unhealthy portions of the Creek healthy.
- A natural river channel includes:
 - Systems that are dynamic systems;
 - Water and sediment being conveyed;
 - Erosion and sediment are natural processes;
 - Meanders in the river; and

- o Measurable and reproducible forms
- Healthy creek characteristics include:
 - o A natural creek meander; and
 - If there was no sinuosity the meander would be straight.
 - Creeks change sinuosity when there is an obvious reason like a railroad bridge or there was previous channelization.
 - o A typical riparian ecosystem. This includes:
 - Aquatic wetland (cattails);
 - Semi-aquatic wetland (rushes and sedges);
 - Upland riparian (cottonwood and willow trees); and
 - Sandbar.
 - o A picture of a healthy reach of creek showed:
 - Good meander pattern;
 - Good buffer zone;
 - No encroachment of land use;
 - No highly eroded cutbacks;
 - No down cutting or up cutting;
 - No further sedimentation due to the road being set back;
 - Good balance of energy between the creek and the floodplain;
 - o A picture of an unhealthy reach of creek showed:
 - Road in floodplain;
 - Bridge connecting to roadway;
 - Banks poorly defined;
 - Agriculture encroachment;
 - Vegetation along the creek;
 - Higher costs more for farmers to maintain land; and
 - Vegetation debris
- Options for repairing Fountain Creek include:
 - o Emulating nature when ever possible; and
 - o Drafting working criteria and mitigation for FC master plan improvements.
- The FCCMP plans to apply what is known about Fountain Creek to:
 - o Develop a program to educate and encourage landowners to repair their reach of the creek;
 - o Seek potential matching funds;
 - o Provide creek restoration and stabilization criteria;
 - o Provide examples of how to correctly repair the creek;
 - o Provide planning and design assistance; and
 - o Review the approval process prior to implementation
- The FCCMP feels partnerships with groups can:
 - o Improve watershed health;
 - o Create stable riparian and wetland ecosystems;
 - o Sustain productive agricultural lands;
 - o Bring ideas and dollars to the project (partnerships);
 - o Connect trail from Colorado Springs to Pueblo; and
 - o Create a regional amenity/“Crown Jewel”.

Questions and Answers

What assumptions are being made on the flows of Fountain Creek?

The work being done is only a concept and is based on bank-full flow, the existing sediment loads, and current plan form. For the design and implementation stage the flows will need to be determined and taken through a design process. FCCMP plans to set up benching in appropriate cross sections to alleviate changes in the flows.

To what extent do soil types matter when dealing with stream meander?

Soil types alone do not determine the meander of a stream one way or another. There are other attributes that can play into the meander pattern.

Has the FCCMP taken into account the variables in flow rate?

Some flow rate and future use assumptions will need to be made. FCCMP is open to revisiting the master plan to determine any necessary mitigation.

What data is being collected and by whom?

There is the need for sediment/flow study and the United States Geological Survey (USGS) is planning to start a 2-year study. The intent of the USGS study is to establish the sediment load gaps.

Is the USGS study for the whole watershed?

No, it is just for a small area in the upper part of the Fountain Creek watershed.

Is the FCCMP considering purchasing areas outside of the floodplain?

Yes.

Will this master plan be used to shape policy?

Yes.