In October 1993, Council Resolution 93-144 adopted the Drinking Water Quality Policy (Attachment A). The purpose of the policy is to ensure the continuous delivery of high quality drinking water to Fort Collins Utilities’ customers. This 18th annual report summarizes the actions taken in support of the policy goals during 2011 and is a requirement of the policy.

This report was compiled by the Regulatory and Government Affairs Division with contributions from:
Environmental Services Division
Water Field Operations
Water Production Division
Water Resources Division
GOAL #1: The City will provide water services that meet or exceed customer expectations for quality, quantity and reliability.

CUSTOMER SURVEYS
Since 1999, Fort Collins Utilities (FCU) has surveyed residential water customers regarding satisfaction with their water service. To meet or exceed these expectations is a stated goal of the Drinking Water Quality Policy. The following charts demonstrate the percentage of customers who gave FCU a grade of “B” or higher in six categories regarding drinking water.

Water Satisfaction Survey Results

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<tbody>
<tr>
<td>Overall grade</td>
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<tr>
<td>Safety</td>
<td></td>
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<td>Reasonable Price</td>
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<tr>
<td>Quality</td>
<td></td>
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<tr>
<td>Taste</td>
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<tr>
<td>Reliability</td>
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Percentage
WATER RELIABILITY
A multi-pronged approach is taken to provide reliable drinking water. FCU owns and operates the drinking water treatment facility 24 hours a day, seven days a week to ensure a continuous supply of high quality drinking water is delivered to our customers. FCU staff is available at all times to respond to customer complaints and concerns regarding drinking water quality. When a water main break occurs, the situation is generally under control within two hours; repaired and back in service within four hours.

CAPACITY AND REDUNDANCY
The treatment plant has a design capacity of 87 million gallons per day of potable water for build-out of the service area. Within that capacity is the redundancy of systems to provide high reliability with low risk of failure. This ensures the continual production of safe drinking water to the community, and that standards are met for fire fighting and emergency activities.

WATER SUPPLY
In 2003, the Fort Collins City Council adopted a Water Supply and Demand Management Policy. This policy provides general criteria for City decision making regarding water supply projects, acquisition of water rights, and demand management measures. During 2011, the policy provided guidance for staff on the following projects:

• Elements of the current Water Conservation Plan, including educational and incentive programs, continued to be implemented to encourage the efficient use of the City’s water resources.
• Staff continued to cooperate with the U.S. Army Corps of Engineers and various stakeholders who are involved in environmental studies for the proposed Halligan-Seaman Water Management Project. This project is being proposed in response to City policies related to meeting drought criteria and storage needs for a reliable water supply system.

The Policy is in the process of being updated and, upon adoption by City Council, will provide further direction regarding the planning, management and maintenance of the City’s water supplies and demands.
GOAL #2: The City will protect and maintain high water quality in the development of all codes, policies, plans and specifications related to the acquisition, production and delivery of water services to its customers.


The FCU’s source watersheds are under various human and environmental pressures. Pine beetle deforestation, wildfires, climate change, and invasive mussels (zebra and quagga) are all potential sources of future impacts to the quality of the FCU’s source waters. Colorado-Big Thompson (CBT) Project operational changes, including proposed water supply transfers to Horsetooth Reservoir (i.e., NISP), are also potential sources of future water quality impacts. The routine monitoring of the source watersheds is important to help the FCU plan for future challenges and is a proactive approach to maintaining the City’s high drinking water quality standards. Rigorous studies are designed to address specific long-term issues or new concerns that are outside of the scope of the routine water quality monitoring program.

FCU has been involved in watershed water quality monitoring activities for the protection of its drinking water sources since the 1990’s. The FCU watershed program efforts in 2011 again focused on Horsetooth Reservoir, the Big Thompson Watershed, and the Upper Cache la Poudre (CLP) Watershed. FCU is working collaboratively with the City of Greeley and the Tri-Districts on the watershed monitoring programs for both the Upper CLP and Horsetooth Reservoir. The three entities have determined that it is in their best interest to collectively share existing water quality information on their common source waters, address future water quality monitoring needs, and assess the condition and trends in water quality over time. FCU has also continued to work collaboratively with the Big Thompson Watershed Forum to monitor and assess the Big Thompson River and components of the CBT Project that are upstream of Horsetooth Reservoir.
2011 Drinking Water Quality Policy Annual Report
Presented June 2012

In 2011, the City’s Watershed Program:

- Planned, organized and lead routine source watershed meetings with staff from the City of Fort Collins, City of Greeley, and Tri-Districts;
- Conducted 11 routine Upper CLP watershed water quality sampling events between April and November;
- Conducted eight routine Horsetooth Reservoir sampling missions between April and November; increase of one sampling event (July) over previous two years;
- Prepared the 2010 Horsetooth Reservoir Water Quality Monitoring Program Report, summarizing and assessing data collected in 2010;
- Prepared the 2010 Upper CLP River Collaborative Water Quality Monitoring Program Annual Report, summarizing and assessing data collected in 2010;
- Conducted 11 geosmin sampling events as part of geosmin monitoring and assessment program for the Upper CLP watershed. Five new additional sample sites were selected between Rustic and the FCWTF intake with the goal of determining the geosmin sources and production sites related to the periodic occurrence of elevated geosmin concentrations in the raw Poudre River water supply at the FCWTF. Elevated concentrations were not detected in 2011;

- Continued geosmin monitoring of Horsetooth Reservoir and components of the CBT Project upstream of Horsetooth Reservoir to provide for an “early warning” of potential geosmin issues; 2011 geosmin sampling consisted of four events between August and November at four locations and three depths per location within Horsetooth Reservoir, and four sampling events between August and November in waters upstream of Horsetooth Reservoir, including three Hansen Feeder Canal sites, the Big Thompson River above the Dille Tunnel, and the east Portal Adams Tunnel;

- Prepared and presented the paper and poster on “Navigating Uncharted Waters: Assessing Geosmin Occurrence in a Colorado Rocky Mountain Source Water River” at the AWWA Water Quality Technology Conference (November 13-16, 2011, Phoenix, AZ);
2011 Drinking Water Quality Policy Annual Report
Presented June 2012

- Completed the study “Geosmin Removal by Powdered Activated Carbon over Selected Contact Times” with Dr. Pinar Omur-Ozbek of Colorado State University serving as the principal investigator. Results were published in the CSU Study/Thesis “Measuring and Modeling Geosmin Removal from Horsetooth Reservoir Water by Powdered Activated Carbon for Selected Contact Times” by Kirk Koester (Advisor: Dr. Pinar Omur-Ozbek);

- Participated in the Big Thompson Watershed Forum, including serving as a member of the Board of Directors; Lisa Voytko assumed position on the board, replacing Judy Billica, with Jill Oropeza as alternate;

- Participated as a member of the CBT Project Nutrient Technical Advisory Team and the Horsetooth Reservoir Steering Committee, both organized by Northern Water;

- Continued work on the Horsetooth Reservoir Water Quality Modeling Study, a collaborative project conducted by Hydros Consulting and funded by Northern Water, City of Greeley, Tri-Districts, and City of Fort Collins;

- Continued participation with Northern Water on a collaborative emerging contaminant study of the east slope Colorado-Big Thompson Project and the Upper Cache la Poudre River;

- Completed the Big Thompson Watershed Wildfire Assessment, a project conducted by the consulting firm J.W. Associates, Inc. and jointly funded by the Cities of Fort Collins, Greeley and Loveland and Northern Water.

- Began work in May 2011 to verify locations of mine sites in the Upper CLP and North Fork CLP watersheds, as identified in the CDPHE Source Water Assessments;

- Completed work on Water Research Foundation Tailored Collaboration Project 4282 with the University of Colorado at Boulder titled “Watershed Analysis of Dissolved Organic Matter and Control of Disinfection By-Products”. This project focused on the use of fluorescence to develop relationships between total organic carbon in the FCWTF’s source watersheds and DBP formation at the FCWTF. Results of the study
2011 Drinking Water Quality Policy Annual Report
Presented June 2012

are presented in Chapters 4 & 5 of CU Dissertation “Characterizing Temporal and Spatial Variability of Watershed Dissolved Organic Matter and Disinfection Byproduct Formation with Fluorescence Spectroscopy” by Kate Beggs (Advisor: Dr. Scott Summers). A full formal Water Research Foundation report is expected in 2012; and;


The FCU source watershed water quality monitoring program has been greatly enhanced by collaboration with the City of Greeley, the Tri-Districts, Northern Water, the Big Thompson Watershed Forum, and other entities. Collaborative monitoring and assessment efforts reduce program costs and bring together a significant depth of knowledge. Collaboration is one of the City’s core values and is a sustainable approach for monitoring the large watersheds that are the sources of the City’s drinking water supply.

**DISTRIBUTION SYSTEM MAINTENANCE**

Maintenance of FCU’s water distribution system includes fire hydrant inspections, exercising water valves, identification of leaks, and the repair of main breaks.

Flushing of the distribution piping is performed every year on approximately half of the city, to maintain water quality.

In 2011, FCU staff maintained, exercised, identified and repaired:

- 2090 hydrants
- 1771 valves
- 159 miles of water mains
- 97 water main breaks
**PARTNERSHIP FOR SAFE WATER**  
In 2011, The Fort Collins Water Treatment Facility earned the Director's Award for 12 continuous years at Phase 3 with the Partnership for Safe Water. This voluntary program strives to enhance water quality through continuous optimization of the treatment process.

**IN-HOUSE TARGETS**  
As a result of the Drinking Water Quality Policy, FCU has developed internal target values for finished water that are more stringent than State and Federal standards and recommendations.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>FCWTF Target Value</th>
<th>State Standard</th>
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<tbody>
<tr>
<td>pH</td>
<td>7.80-8.00 su</td>
<td>6.5-8.5 su</td>
</tr>
<tr>
<td>Chlorine</td>
<td>0.70-0.80 mg/L</td>
<td>4 mg/L</td>
</tr>
<tr>
<td>Turbidity</td>
<td>&lt;0.10 ntu</td>
<td>1 ntu</td>
</tr>
<tr>
<td>Fluoride</td>
<td>0.90-1.05 mg/L</td>
<td>4 mg/L</td>
</tr>
<tr>
<td>Aluminum</td>
<td>&lt;30 ug/L</td>
<td>50-200 ug/L</td>
</tr>
<tr>
<td>Color</td>
<td>&lt;2.5 scu</td>
<td>15 scu</td>
</tr>
<tr>
<td>Manganese</td>
<td>&lt;5.0 ug/L</td>
<td>50 ug/L</td>
</tr>
<tr>
<td>Chlorite</td>
<td>&lt;0.6 mg/L</td>
<td>1.0 mg/L</td>
</tr>
<tr>
<td>Chlorine Dioxide</td>
<td>&lt;0.2 mg/L</td>
<td>0.8 mg/L</td>
</tr>
</tbody>
</table>

mg/L = milligrams per liter  
scu = standard color unit  
su = standard unit  
ug/L = microgram per liter  
ntu = nephelo turbidity unit
GOAL #3: The City’s water supply, treatment, storage, delivery and laboratory facilities will be planned, designed, constructed, maintained, staffed and operated to assure safe, reliable and cost-effective service to the residents of Fort Collins and all those served by the City’s water utility.

OUR CERTIFIED LABORATORY

The City of Fort Collins is required to comply with State and Federal drinking water standards. We must do this by having our drinking water analyzed by a certified laboratory. The City’s Water Quality Lab staff provides State-certified regulatory compliance testing and reporting for FCU as well as ten regional water agencies.

In 2011, the vast majority of all metals testing were consolidated from three onto one analytical instrument: a state-of-the-art ICP-MS (inductively-coupled plasma mass spectrometry). Because of its speed, accuracy and versatility, it serves the needs of both the Water Quality and Pollution Control Labs. In addition, chemists from both labs are now certified by the Colorado Department of Health & Environment to test and report data from the instrument for regulatory compliance.

The City’s Water Quality Lab first achieved certification in bacteriology testing in 1978. Since that time the lab has gained certified status for a large array of water quality tests.

Certified status is achieved through a multi-step process, including:

- The successful completion of formal written applications
  The application process includes documentation regarding the qualifications of lab staff, equipment, facilities and budget as well as proof of successful analysis of “unknown” performance audit samples.

- Performance audit tests
  These periodic audit tests involve the analysis of samples from EPA that contain unknown quantities of unknown constituents.

- Periodic on-site Colorado Department of Public Health and Environment (CDPHE) inspections

FCU Chemist, Forrest Shrupp, analyzes water samples using the new ICP-MS Unit
Evaluation of lab staff includes review and verification of their formal educational qualifications, lab training, and lab-related work experience as well as hands-on demonstration of laboratory skills. In addition, details of written and actual test methods and procedures are reviewed to ensure “to-the-letter” compliance with required EPA specifications. Certification inspections also include review of the lab’s budget, equipment and facilities.

**WATER QUALITY COMPLAINTS**

In 2011, the City received 49 drinking water quality complaints, equating to a rate of 1.3 per 1,000 customers. Most complaints centered on discoloration of the water or taste/odor problems. Based on the most recent QualServe report from the American Water Works Association (AWWA), this put the City near the top of the “best” quartile of 0.7 complaints per 1,000 customers. This level of complaints also was much better than the 2009 QualServe-midpoint of 3.7 complaints per 1,000 customers.
**ASSET MANAGEMENT**
In 2011, FCU continued efforts updating the risk forecast within its water production and distribution asset base. Additionally, key business processes were identified to keep data up-to-date. The information is being used to generate long-term forecasts of financial needs to keep these systems operational in the future.

**ENVIRONMENTAL MANAGEMENT SYSTEM**
The Water Treatment Facility has implemented an Environmental Management System (EMS) that addresses the plant’s activities and associated environmental impact during operations. The EMS is designed to meet requirements defined by the International Organization of Standardization (ISO). ISO:14001 establishes standards for legal compliance, pollution prevention and continual improvement of WTF operations. The WTF EMS Core Team is preparing for external audits leading to program certification in September 2012.

**ENVIRONMENTAL LEADERSHIP PROGRAM**
The Environmental Leadership Program is a statewide environmental recognition and reward program administered by CDPHE’s Sustainability Program. The Environmental Leadership Program offers benefits and incentives to members that voluntarily go beyond compliance with state and federal regulations and who are committed to continual environmental improvement. The WTF is currently a Silver Partner, and is focused on achieving Gold Partner status by implementing a fully-functioning EMS.

**STATE CERTIFIED OPERATORS**
The water treatment facility operators are all certified by the Colorado Department of Public Health and Environment as certified water professionals. Nine operators, plus the plant superintendent and plant manager, have earned the highest level of classification as Class A. Additionally, one operator is certified at the Class B-level, and one operator is certified at Class C-level.

**SOURCE OF SUPPLY**
The Source of Supply section of the Water Production Division is charged with managing the Michigan Ditch, Joe Wright Reservoir, and associated water supply structures on the Cache la Poudre River watershed. They maintain constant vigilance in keeping the snowmelt and water flowing in the ditch, so that it can reach the reservoir and river, and subsequently secure the City’s water rights and supply.
The record snowfall in 2011 was challenging for the Source of Supply crew. The ditch and road were not cleared from snow until late June, almost 6 weeks later than normal. In addition, the influence of the vast amount of water caused part of the pipeline to move and therefore needed to be re-aligned. The area of this slide will be monitored in the future to assure that the integrity of the ditch system is intact. The Michigan Ditch plays a large part of the City’s reuse plan. Although the summer was relatively short, modifications on two structures on the ditch were completed.

Repair Work on Michigan Ditch Structure 2011;
Photo by Tom Hardy, Hydro Construction
Attachment A

RESOLUTION 93-144
OF THE COUNCIL OF THE CITY OF FORT COLLINS
ADOPTING A DRINKING WATER QUALITY POLICY
FOR THE CITY

WHEREAS, the City Council has previously adopted an Environmental Management Plan; and

WHEREAS, the Plan calls for the creation of a formal policy regarding City standards for drinking water; and

WHEREAS, the citizens of Fort Collins want and expect high quality drinking water; and

WHEREAS, a Water Board/City Council committee established by the Council has drafted a drinking water quality policy; and

WHEREAS, the draft drinking water quality policy has been reviewed by the City's Water Board, Natural Resources Advisory Board, and Planning and Zoning Board, and recommended by each for adoption by the City Council; and

WHEREAS, representatives of the Fort Collins-Loveland Water District, East Larimer County Water District and the North Weld County Water District have also reviewed the draft policy and are supportive of its adoption by the City Council.

NOW, THEREFORE, BE IT RESOLVED BY THE COUNCIL OF THE CITY OF FORT COLLINS as follows:

Section 1. That the Council hereby establishes and adopts the following drinking water quality policy for the City of Fort Collins:

Preamble: The people of Fort Collins established the City's water system to assure the effective delivery of services vital to the health and well being of the community.

Goals: The City will provide water services that meet or exceed customer expectations for quality, quantity and reliability. The City will protect and maintain high water quality in the development of all codes, policies, plans and specifications related to the acquisition, production and delivery of water services to its customers. The City's water supply, treatment, storage, delivery and laboratory facilities will be planned, designed, constructed, maintained, staffed and operated to assure safe, reliable and cost-effective service to the residents of Fort Collins and all those served by the City's water utility. The City will achieve these goals through:

- Effective Management
- Pro-active Monitoring and Testing
- Protecting, Developing, and Preserving Water Resources
- Advancing Treatment Technology and Operations
- Operating and Maintaining the Water Distribution System
- Assuring the Quality of Water Service
Coordinating Drinking Water and Wastewater Treatment Management
Cooperating with Other Water Providers and Users
Annual Reporting

Effective Management: The City will regularly collect information to understand its customers’ valid requirements, realize their expectations, and to evaluate customer satisfaction regarding the quality of water services. The City will use the knowledge and experience of its personnel in decision making processes for the planning, capital improvement, and operation and maintenance of water treatment and distribution systems.

Pro-active Monitoring and Testing: Timely and accurate information regarding the safety and quality of our community’s drinking water is critical for future planning as well as to safeguard the health and well being of the people. The City will provide water quality monitoring, testing and information services to protect the drinking water and wastewater treatment systems, to respond to customer concerns and requirements related to water quality, to meet current operational needs, to anticipate planning and design needs, and to meet or exceed the requirements of the Safe Drinking Water Act and its amendments.

Protecting, Developing, and Preserving Water Resources: The City will protect raw water sources from contamination or any other activities that would diminish the quality of water provided to customers, or that would result in increased treatment costs. The acquisition and development of future water supplies and the improvement of existing water supplies will be consistent with the goals of the City’s water quality policy.

Advancing Treatment Technology and Operations: The City will develop and adhere to water quality standards, treatment practices and procedures that provide the highest level of health protection that can be realistically achieved. The City will actively pursue opportunities for process and system improvements that protect and enhance the quality and reliability of water service and water quality, while reducing long term costs to its customers.

Operating and Maintaining the Water Distribution System: The water distribution system will be planned, designed, constructed, operated and maintained to protect water quality, to safeguard the long term health of the community, to protect present and future customers from excessive financial burden, and to provide continuous supply and sufficient pressure to meet fire protection requirements while maintaining service to individual customers.

Assuring the Quality of Water Service: The City will ensure that water system materials, components, processes and operations are sufficiently safe and dependable to avoid foreseeable situations that might jeopardize water quality, and will respond quickly and effectively to unforeseen problems. The City will take reasonable and prudent measures to protect against the accidental or willful contamination of the water or destruction of any part of the water system.
Coordinating Drinking Water and Wastewater Treatment Management: The City will optimize drinking water systems and processes in order to reduce negative impacts on wastewater treatment systems and processes, and thus promote the efficiency and environmental protection provided by both systems.

Cooperating with Other Water Providers and Users: The City will pursue cooperative efforts with other water providers and users that are consistent with these water quality policies, enhance water quality in the basin, and produce desirable long term benefits for the community.

Annual Reporting: The Water and Wastewater Utility Director will provide the City Manager, Water Board and City Council with an annual water quality report for the purpose of providing an update on the goals and strategies included in the City’s water quality policy.

Passed and adopted at a regular meeting of the Council of the City of Fort Collins held this 5th day of October, A.D. 1993.

[Signature]
Mayor

ATTEST:
[Signature]
City Clerk