



2005 Water Master Plan Annual Review

As required by the Water Master Plan, Greeley staff has performed an annual review of the following key areas of the Plan:

- **Key policies.** No policy changes are recommended this year.
- **Driving factors.** No new driving factors emerged in 2005. The four existing driving factors are population, regulations, age, and competition. Population growth exceeded projection for the third year in a row (2.8% actual vs. 2.5% projected). Relaxed water restrictions (3 days per week throughout the summer) during an adequate water year resulted in a record peak day demand in July of 54.1 mgd. As this peak is within 10% of delivery capacity, design of the next 10 mgd plant expansion has begun. The Water Demand Study now in development will define the link between population growth and increasing water demand. Along with the rest of the country, Greeley is facing additional regulatory programs.
- **Changes to options available to meet water demands.** No identified opportunities for additional water supplies have been lost or foregone. Additional water supplies have been pursued with contracts signed for 5.5 Water Supply and Storage shares, half the available Laramie-Poudre Tunnel shares, and the Overland Trail Gravel Pits. Moderation of the drought in 2005 allowed additional water use although both indoor and outdoor use remain depressed from the base year of 2000.
- **Review of integrated strategies.** Several Master Plan Integrated Strategies have been implemented. The Bellvue Residuals Handling Project has been completed and is in service. The Boyd Lake WTP winterizing project and adjacent residuals drying beds have been completed and are in service. The next phase of the Bellvue transmission main, the Farmer's segment (7 miles) has been installed and will be put in service in May 2006. The Fort Collins Routing Study (9 miles) for the next construction phase of the transmission main has been completed. Permitting for Milton Seaman Reservoir expansion has begun. Greeley continues to pursue all raw water options identified in the Master Plan.
- **Update of Greeley's Capital Improvements Plan (CIP).** Greeley's CIP is revised annually to implement the revised and updated water master plan. A summary of work completed in 2005 and work planned for 2006 is attached.

Key Policies

1. Growth shall pay its own way without unduly affecting existing ratepayers. Specifically:
 - a) Greeley will develop a "Future Water Account" of additional water supplies in advance of new growth. The near-term development of the additional supplies shall be limited to the projected growth expected to 2020 by Greeley's Comprehensive Growth Plan, or 6,000 acre-feet.
 - b) New dryland growth will pay cash-in-lieu of water rights as it occurs once new water supplies have been developed in the Future Water Account. Cash-in-lieu shall be priced at the full, actual cost of developing new water at a 50-year drought yield basis so as to completely replenish the water used from the Future Water Account.
 - c) System development charges (plant investment fees) for development shall be based on growth buying into the replacement cost of the existing asset base without deducting depreciation.
 - d) Waivers or reductions of raw water dedication or system development charges by City Council (e.g., for economic development incentives) shall be repaid by the General Fund to the Water Acquisition Fund.
2. Greeley will pursue agricultural water acquisitions from areas outside Greeley's growth boundaries.
3. Greeley will not enter into any additional open-ended outside service contracts.
4. During a severe drought, Greeley shall incrementally increase the severity of water restrictions as drought conditions intensify considering factors such as water storage within Greeley's system and regional water systems (i.e. C-BT System) Greeley is dependent upon for yield.
5. Greeley will develop non-potable systems where equal or less than the cost of potable sources, striving for 15 percent of new development to be served from non-potable sources.
6. Greeley will maintain a strong water conservation ethic and will invest in additional cost effective water conservation. The volume of savings from conservation will be analyzed periodically and Greeley shall only rely on this volume when those savings actually occur.
7. Construction of new treatment and transmission capacity shall begin when peak demands exceed 90 percent of existing capacity.
8. For the foreseeable future, Greeley will maintain the existing raw water safety factor of 7,300 acre-feet to protect against risks that may occur in meeting customer needs.

Relatively little has changed since the Water and Sewer Board and City Council adopted these key policies. In practice, Policy Four (conservation during drought) has resulted in variable water restrictions and enforcement depending on weather and customer response. The Board declared an adequate water year in 2005, so restrictions on outside watering were relaxed to 3

days per week for the whole irrigation season. Policy Seven (construction of new capacity) was triggered when the peak day in July reached 93% of delivery capacity. Expansion design is now underway, although construction may be delayed if the 2006 summer peak falls significantly.

Driving Factors

Four driving factors were identified by the *Water Master Plan*.

- Population and Economic Growth
- Increasingly Limited Raw Water Opportunities
- State and Federal Regulations
- Aging Infrastructure

Listed below are updates regarding each of the areas described above:

Population and Economic Growth

Some 655 water taps were added in 2005. A growth rate of 2.8% but down substantially (19%) from 2004. Suggesting that the projected population growth rate of 2.5% to 2020 as identified in the *Comprehensive Plan* is still reasonable.

Increasingly Limited Raw Water Opportunities

Although the severity of the current drought continued to lessen in 2005, along the front-range the public awareness of the need for additional water supplies continues high. Denver suburbs have become acutely aware of the need to develop additional water supplies and are beginning to evaluate water sources within Weld County. Thornton intends to begin taking a portion of their Water Supply and Storage Company (WSSC) water, exchanging the water to Thornton via gravel pits, and consequently drying up a about 2,000 acres a year for the next several years. In 2005 Greeley did sign contracts for some of the raw water options identified in the Master Plan. Details are in the Raw Water section below.

No new to non-treatable non-potable supplies were developed in 2005.

State and Federal Regulations

Along with the rest of the country, Greeley is facing additional regulatory programs. An intensive evaluation of the distribution system for trihalomethanes and haloacetic acids and source water monitoring for *Cryptosporidium* will soon be required. Similarly, rules for management of Technologically Enhanced Naturally Occurring Radioactive Material (TENORM) as occur in water plant residuals, are being considered by the State. The State is also implementing a Source Water Assessment and Protection program to protect against contamination of drinking water supplies. Greeley is participating in all these new programs.

The US Fish and Wildlife Service designation of critical habitat for the Preble's meadow jumping mouse (Preble's) is still the federal regulatory issue creating the most uncertainty for Greeley's water system. Protection of the Preble's has delayed the repair of Bellvue raw ponds and may affect Greeley's expansion of Bellvue as well as the enlargement of Milton Seaman Reservoir, now beginning federal permitting as the Halligan-Seaman Water Management Project. The area

between Milton Seaman and Halligan Reservoirs on the North Fork of the Poudre River has been designated as critical habitat for the Preble's. Soon after the critical habitat designation, Greeley sued the USFWS in Federal Court challenging the legality of the entire rule, with particular emphasis on the area above Milton Seaman Reservoir. In April 2004, Greeley agreed to stay the suit until the USFWS could determine whether to delist the mouse based on evidence developed by the Denver Museum of Nature and Science. If the Preble's is delisted, the associated critical habitat designation will be removed, which would eliminate the uncertainty created by the mouse on Greeley's operations. If the mouse is not delisted, Greeley plans to reinstate the lawsuit challenging the validity of the critical habitat designation above Milton Seaman Reservoir.

The State of Colorado, Water Supply and Storage, Greeley and (briefly) the U.S. Forest Service, appealed the U.S. District Court's ruling that the Forest Service permitting of Long Draw Reservoir was incorrect and should be remanded. As this bypass flow issue is of concern to Greeley's existing water rights and operations of facilities on Forest Service Land, Greeley will be involved in the remand of the Long Draw Reservoir which will include evaluation of the effectiveness of JOP after 11 years of operation.

Aging Infrastructure

Greeley continues to work diligently to replace or repair aging infrastructure. In particular, Greeley is improving the reliability and adding capacity to the Bellvue treatment and transmission system, identified as the most vulnerable portion of Greeley's water system within the *Water Master Plan*.

- Bellvue Treatment: Upgrades to the filter plant have begun with a \$4 million renovation to the residuals handling system, which is in service and operating as planned; a \$1.2 million renovation to the flocculation-sedimentation basins (adding new plate settlers, new sludge vacuums, and correcting hydraulics), is in service and operating better than expected; and 6 of the 18 filter effluent pipe systems have been replaced by our own crews. The project to add toe drains to the two large raw water ponds to improve their embankment's factor of safety could not be constructed due to the Department of Fish and Wildlife not yet issuing an incidental 'Take' permit for Preble's mice which could be disturbed during construction. We anticipate acquiring the permit in 2006 and constructing the project.
- Bellvue Transmission: Installation of the new transmission line will provide redundancy to Greeley's existing transmission lines, which are over fifty years old, as well as increase the delivery capacity from Bellvue. The 7 mile Farmer's segment of the new 60-inch pipeline is complete and will be put into service in May 2006. Greeley now has 10 of the 30 miles of new transmission line from the Bellvue WTP in service. The Fort Collins Routing Study for the next 9 miles has been completed and approved by Larimer County and the City of Fort Collins. Design and easement acquisition for half of this routing study, the Mulberry Segment, is currently underway.

Changes to Options Available to Meet New Demands

Water Conservation – Water Budget Program

Greeley staff continues to evaluate the weekly water use within six subdivisions to determine how a Water Budget Program would affect actual water customers. Results of the study will be presented to the Water and Sewer Board and City Council later in 2006 if staffing permits.

Review of Integrated Strategies

Treatment and Transmission

Greeley continues to work diligently to improve the treatment and transmission portion of the integrated strategy outlined in the October 2003 *Water Master Plan*. The following six items represent the major changes and updates on the most important aspects of treatment and transmission.

1. **Bellvue Residuals Handling** - The October 2003 Water Master Plan anticipated a \$1.4 million improvement to the plant's existing sludge handling system. During feasibility design, it became clear that the existing slow sand filters would be entirely inadequate to handle the sludge volumes created by the new federal regulations. Construction of a new system, including equalization tank, thickener, pumps, and drying beds, adequate for the present plant capacity was recently completed at a cost of \$4 million and is satisfactorily addressing the plant's residuals.
2. **Bellvue WTP – 10mgd upgrade** - Due to the 18% increase in the 2005 peak day demand over the 2004 peak day demand, design of a 10mgd upgrade to the plant that is under way. The expansion is anticipated to be operational by the summer of 2007. This upgrade will give the plant in excess of a 10% safety factor with regard to capacity.
3. **Bellvue Transmission Line Program** – This 30 mile 60-inch potable water transmission line was originally scheduled for completion in 2015 but has been accelerated to be complete in 2012. To date 10 miles are in the ground and the next contract for 5 more miles (the Mulberry segment in Fort Collins) should start construction by the end of 2006. When completed in 2012 the entire pipeline will allow an additional 50 mgd (71 mgd total) to flow by gravity to Greeley.
4. **Finished Water Storage** – The amount of finished water storage needed is a function of the system capacity. As the system grows, so does the need for in-town storage. The optimal sized and located finished water storage project(s) will be better understood after a computerized water distribution model is completed, expected by the end of 2006.
5. **Seaman Reservoir Expansion** – Although the Water Master Plan does not anticipate the need for an expanded Milton Seaman reservoir until after 2020, Fort Collins and Greeley have entered into a cooperative effort to obtain permits for a joint Halligan-Seaman Water Management Project (HSWMP). Two permits will be issued. The project anticipates a single NEPA process to create a single EIS for the project. One for Fort Collins to expand Halligan reservoir by 2010, the other for Greeley to expand Milton Seaman reservoir around 2020. Halligan reservoir is expected to be enlarged to

about 40,000 and Seaman by 55,000 acre-feet. The project is intended to provide drought protection for existing and future water demands, more efficiency in managing existing and future water rights, operational redundancy, and possibly some environmental benefits. The Nature Conservancy, which owns property along the North Fork, along with other environmental groups, has expressed preliminary support for the project.

6. **Boyd WTP Winterizing** – The \$1.6 million budget shown in the Water Master Plan CIP was intended to enclose Boyd's flocculation/ sedimentation basins, allowing the plant to operate in the winter months and providing back-up to Bellvue. Because the preliminary design cost estimate came in at \$4 million, basin enclosure was deleted. The likelihood of a Bellvue system failure lasting more than a few days is believed to be remote and Greeley has finished water storage sufficient for four or five days in the winter. In addition, Greeley has three finished water interconnections, with Loveland and North Weld and ELCO water districts, in case of a longer-term outage. Those existing interconnections can supply Greeley with about 17 mgd in the winter, which is today's demand. In addition, the Boyd WTP today has the ability to start up in the winter within 24 hours, although extra effort is required to prevent freezing problems. A winterizing project completed in 2005 at a cost of \$745,000, provided a structure that not only enclosed the chemical feed tanks in a heated environment for quick winter use, but the structure was extended to include a much needed maintenance / storage area.

Raw Water

Below is an update on the raw water projects identified in the *Water Master Plan*.

- Windy Gap Firming Project - The Windy Gap Firming Project entered the Federal Permitting process in 2003 and expects a draft EIS in the Fall of 2006. The costs for the firming project will be paid using the revenue from the sale of Greeley's other Windy Gap units. In 2005 Greeley sold three units to Fort Lupton. Twelve units were put under contract with the Little Thompson Water District, and another five units with the City of Evans, both have scheduled closings on or before the reservoir permit issuance. In September the Windy Gap Firming Project Purpose and Need was published. The document declared the Firming participants need to; "... *deliver a firm annual yield of approximately 30,000 AF of water by 2010 from the existing Windy Gap Project ... Firm water deliveries from the Windy Gap Project are needed to meet a portion of the existing and future demands of the Project Participants.*"
- Upper Poudre Gravel Pit Storage – Greeley, along with the Tri-Districts, purchased the Overland Trail Gravel Pits. When fully online (2022) the pits will increase operational flexibility and serve to maximize existing and newly acquired supplies.
- Lower Poudre Gravel Lake Storage –Greeley completed construction of the 25th Avenue gravel lake pump station and inlet/outlet facilities. The City completed the work necessary to meet the State Engineer's requirements for lined storage in 2003. Mining of the site has been completed for the near future and current storage at the site is

approximately 1,500 ac-ft. As much as 1,000 ac-ft of additional capacity can be created at the site (for a total capacity of 2,500 ac-ft) with additional mining. This project increases the efficiency of Greeley's water system, by allowing the retiming of untreatable supplies to more effectively meet non-potable demands. Inlet and outlet works projects have been completed. Design of improvements to the filling ditch is complete and the improvements are scheduled to be complete in early 2006.

- Large Non-potable Development Projects – The City is investigating the feasibility of constructing several “Lower Equalizer” reservoirs on the Greeley Loveland and Boomerang Lateral ditches. These reservoirs would facilitate the shift of untreatable Poudre supplies to Big Thompson non-potable demands. Evans, University of Northern Colorado, Aims Community College, Sunset Memorial Garden and the Greeley Country Club have indicated interest in participation in this project to acquire shoulder month supplies for non-potable irrigation systems. The initial feasibility was completed in 2005 narrowing the potential sites down to six. Land purchase options for the most feasible sites will likely be finalized in 2006.
- Blocks of Agricultural Water – The City entered into an agreement with North Weld County Water District and the Fort Collins-Loveland Water District to purchase 150 shares of the Laramie Poudre Tunnel owned by the Windsor Reservoir and Canal Company. The purchase agreement proved to be far more complex than originally thought. Scheduled to close in April 2006, Greeley is near to acquiring the last large block of wholly consumable water in the Poudre basin, which will yield an additional 1,100 ac-ft to Greeley.
- Shares in Agricultural Ditch Companies - In 2005 Greeley declared its desire to acquire shares within the Water Supply and Storage Company (WSSC). Greeley has been successful in getting 5.5 shares of WSSC under contract with closings scheduled for 2006. Other contracts are in negotiations.

Water Conservation

The citizens of Greeley have demonstrated their willingness to conserve significant water supplies when a water shortage is declared. After an adequate water supply was declared in 2005, Greeley citizens began to use more water than in the drought, reaching an all-time peak demand in July. It should be noted that annual demand in 2005 was 9.1 billion gallons, 5% below 2000, even after adding more than 3,500 taps. Greeley's per capita water use continues to be higher than most other cities along the Front Range and the lack of inclining block rates has been noted by environmental coalitions, most recently in a letter to the Bureau of Reclamation (lead Federal agency for the Windy Gap FIRMING project). Implementation of a Water Budget still appears to be a reasonable way to demonstrate, that although Greeley may have a comparably high per capita water use that the City is making efficient use of its water supplies, and not wasting.