



# 2003 Water Master Plan Annual Review

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

- **Key policies.** Because of the considerable turnover in the policymakers, key policies should be confirmed by Board and Council on an annual basis. The only key policy that staff recommends changing is number 4, drought response, to better match water restrictions to actual water shortages.
- **Driving factors.** No new driving factors emerged in 2003. Of the three factors identified (population, regulations, age), population exceeded projection (3.1% actual vs 2.5% projection); Greeley sued the USFWS over Preble's mouse habitat in order to maintain the opportunity to expand Milton Seaman reservoir and it appears that the mouse may be delisted within the next several years; and maintenance and replacement of aging infrastructure continued strong.
- **Changes to options available to meet water demands.** No identified opportunities for additional water supplies have been lost or foregone, except for the Board's decision to concentrate on expansion of Milton Seaman reservoir instead of participating in the NISP project. In demand management, Greeley declined to institute inclining block water rates because of their inherent unfairness. As an alternative, Greeley is exploring individual water budgets as a method to penalize water waste.
- **Review of integrated strategies.** Several changes to the Master Plan Integrated Strategies are proposed. Without changing the projected capital budget bottom line, Bellvue filter plant may be expanded at half the cost of a new plant, freeing money to accelerate the Bellvue pipeline, which in turn reduces the cost of a Bellvue pump station at Windsor. The winterizing of Boyd filter plant may be replaced by emergency interconnections at a much lower cost. 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 2003 and work planned for 2004 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, extended conservation and water restrictions will be imposed to reduce demand at least ten percent below the demand predicted for the population and climate conditions.~~ Greeley will institute drought restrictions sufficient to limit over-drafting of reservoirs (demand greater than supply) to 50% of reservoir capacity, annually.
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 these policies were adopted by the Water and Sewer Board and City Council. Actual practice has revised Policy Four regarding conservation during drought. Watering restrictions were successful in 2002 and 2003, with Greeley's gallons per capita day (gpcd) water usage 20% lower in 2003 compared with 2001 (182 gpcd vs. 229 gpcd). Note 2001 was the last year Greeley was on even-odd restrictions for the entire season.

Decisions for the Board: given the experience of the last two years,

- Should the minimum level of conservation that can be expected during drought conditions be increased from 10% to 20%?
- Or, does the Greeley Water and Sewer Board and City Council feel the level of conservation measures required in 2003 resulted in an appropriate level of service to Greeley citizens during drought periods?
- Or, should the drought conservation policy be re-drafted as shown, so that Greeley will institute drought restrictions sufficient to limit over-drafting of reservoirs (demand greater than supply) to 50% of reservoir capacity, annually.

For this revised policy to be effective, Greeley will also have to consider the storage levels of regional water supplies (i.e. the Colorado-Big Thompson Project) that play a important role in how much water Greeley's water system yields annually and the resulting amount of water that must be pulled from storage during a multi-year drought. This policy would formalize Greeley's attempt over the last few years incrementally decrease in the level of service to Greeley citizens as drought conditions worsen. This incremental approach is useful in that no one is sure when a drought will end until it is in fact over.

Note that if Greeley is able to increase the efficiency of its water system on an on-going basis, the ability for Greeley to reduce consumption during drought conditions will diminish.

## 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

Nothing has occurred in 2003 that would suggest that the projected growth rate of 2.5% to 2020 as identified in the Comprehensive Growth Plan is too high, and if anything this may be slightly conservative. Some 692 water taps were added in 2003, an increase of 3.1% from 2002.

Greeley has not reduced the size of its long-range growth boundaries and the basic premise that Greeley must plan for growth to 2050 and beyond is still valid.

### Increasingly Limited Raw Water Opportunities

Although the severity of the current drought lessened in 2003, the public awareness of the need for additional water supplies along the front-range continues to be 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. Although Greeley did not finalize any of the raw water options identified in the Master Plan within 2003, Greeley Water Department staff

continues to negotiate for the acquisition of water rights that fit well within the City's water portfolio and storage projects that increase the efficiency of Greeley's water system. Agreements regarding one or more of the potential raw water options currently under negotiations will likely be finalized in 2004.

### **State and Federal Regulations**

The federal protection of critical habitat for the Preble's Meadow Jumping Mouse (Preble's Mouse) is the federal regulation currently creating the most uncertainty for Greeley's water system. The protection of the Preble's Mouse may play a role in Greeley's future expansions of the Bellvue Water Treatment Plant and the potential enlargement of Greeley's Milton Seaman Reservoir as part of a the North Fork Poudre Regional Water Management Project. The area between Milton Seaman and Halligan Reservoirs on the North Fork of the Poudre River has been listed as critical habitat for the Preble's Mouse. Soon after the declaration of this area as critical habitat, Greeley sued the US Fish and Wildlife Service in Federal Court challenging the legality of the entire rule, with particular emphasis on the area above Milton Seaman Reservoir. At the end of 2003, a study by the Denver Museum of Nature and Science concluded that the Preble's is not distinguishable from another common species of North American jumping mouse. The Denver Museum of Nature and Science study is being used to support a petition to delist the mouse. 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.

### **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: A \$14 Million facilities upgrade at the Bellvue WTP was completed in 2003. The upgrade included adding equalizing storage at the Bellvue Plant and replacement of plant facilities that were either past or nearing the end of their useful lives.
- Bellvue Transmission: The Bellvue Transmission Line Program will install 30 miles of 60-inch pipeline from Greeley's Bellvue WTP to the Gold Hill finished water reservoir west of Greeley. In 2003, this program was initiated through the award of a \$2.5 million construction contract for the installation of 2.2 miles of pipeline. By the end of 2004, it is expected that approximately seven miles of pipeline will be installed. The installation of this new transmission line will increase the capacity of the transmission line as well as provide additional redundancy to Greeley existing transmission lines.

## **Changes to Options Available to Meet New Demands**

### **Water Conservation – Water Budget Program**

A large number of water conservation measures were considered by Greeley officials prior to the 2003 irrigation season in response to the on-going drought. One conservation measure that has been implemented widely in Colorado is inclining block rates. This rate structure increases the cost of water to the customer as water use increases above pre-defined use levels or blocks.

Greeley did not implement inclining block rates in 2003 because of the inherent inequity resulting from rates charged to water users with small lots compared with water users owning large lots. The people with large lots felt they were being unduly punished because they would have to pay the higher rates even if they were using water efficiently whereas a person with a small lot could be inefficient with their water use and yet still may not use enough water to be penalized by the inclining block rates. Greeley staff then suggested a “water budget” program to reduce this inequity and promote efficient use of water.

A water budget determines the customer-specific amount of water needed for indoor and outdoor use, depending on the number of persons living at a residence, the square footage of irrigated area at each residence, and local weather data. Water used beyond the allotted budget is subject to an inclining block rate designed to penalize water waste. By taking into account the number of people within a residence and the irrigated area of the water customer’s lot, the program is a more equitable way of applying an inclining block rate structure. A portion of the money generated from penalties on wasted water could be used for conservation programs designed to help water users who are currently inefficient, which is the overall goal of the program.

Greeley staff is evaluating the weekly water use within six subdivisions to determine how the Water Budget Program could be implemented and to identify the potential impacts of the program on actual water customers. Results of the study will be presented to the Water and Sewer Board and City Council in early 2004.

## 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. Based upon additional engineering and investigations, four revisions to the current Capital Improvement Plan (CIP) are proposed. It is important to note that the changes below do **NOT** increase the overall projected budget.

1. **Bellvue Filter Plant - 10 mgd Upgrade vs. 10 mgd Expansion** - The October 2003 version of the master plan showed an expansion of the Bellvue filter plant from 23-mgd to 33 mgd, budgeted at \$14 million in 2007 and 2008 to meet peak demands. We now believe that by rehabilitating and upgrading the existing sedimentation and filter systems, as well as replacing undersized piping, the existing filter plant may be re-rated by the State to produce 33 mgd at a cost of approximately \$6.0 million. The \$8 million savings could be of greater benefit in the Bellvue Transmission Line Program. (see next item)
2. **Bellvue Transmission Line Program** – The savings from the Bellvue WTP upgrade could be utilized to accelerate construction of the new Bellvue transmission line to Greeley’s Gold Hill Reservoir. This program was recently initiated with the groundbreaking of the Chimney Park Phase I segment ( 2.2 miles of 60-inch pipeline) in the Windsor/Kodak area. Infusion of this additional funding over the next six years will accelerate the pipeline construction and increase flow to Greeley sooner; taking

three years off the program duration; from 2015 to 2012. Constructing the pipeline sooner, prior to growth occurring, will reduce the cost of installation, add reliability to the existing Bellvue transmission system, and downsize the Chimney Park Pumping Station - (see next item)

3. **Chimney Park Pumping Station** - This \$3.1 million, 30 mgd booster pumping station on the Bellvue transmission line near Windsor, was required in order to boost the maximum flow of the existing transmission lines from 20-mgd to 30-mgd to meet peak day demands in Greeley. Once enough new transmission line is installed to increase the Bellvue transmission capacity to 30-mgd, the pumping plant would be taken off-line. Accelerating construction of the 60-inch Bellvue Transmission Line will allow more flow by gravity and reduce the needed pump station to a much smaller 5-mgd. We anticipate that the 5-mgd pumping station will not cost more than \$500,000. This results in a savings of \$2.6 million that could be used to accelerate the Bellvue Transmission Pipeline project even further.
4. **Boyd WTP Winterizing** - A budget of \$1.6 million is shown in the Master List of CIP projects to enclose the exterior flocculation/ sedimentation basins at the Boyd WTP. The intent was to allow the plant to operate in the winter months in addition to its current operation as a summer peaking plant. The Water Master Plan does not forecast any expansion of this plant. As such, wintertime operation will be limited to emergencies when Bellvue WTP or Bellvue transmission line(s) are down. The likelihood of a failure lasting more than a few days is remote and finished water storage is sufficient for four or five days. In addition, Greeley has two interconnections to take water from the City of Loveland and North Weld Water District in case of a longer-term outage. The existing interconnections with adjacent water providers can supply Greeley with up to 17-mgd of water in the winter months which is today's demand. In addition, the Boyd WTP has the ability to start up in the winter months within 24 hours and produce the needed flow of water to Greeley, with extra effort to prevent freezing problems. Only about \$200,000 is needed to enclose existing chemical feed tanks. The resulting savings of \$1.4 million will be utilized to fund the under-budgeted sludge handling project currently under design for the Bellvue WTP.

## 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. The Firming Project likely will not be operational until close to 2010. Greeley continues to move toward selling a portion of its Windy Gap Water to generate funds for the firming of a portion of Greeley's remaining Windy Gap Units. Greeley plans to enter into a contract with other municipal water providers in 2004 for the sale of up to 20 units.
- Upper Poudre Gravel Pit Storage – Greeley continues to negotiate for the acquisition of gravel pit storage on the upper Poudre River near its Bellvue Water Treatment plant that would provide drought storage and additional flexibility to Greeley's water system. One storage option currently being negotiated could add approximately 2,500 ac-ft of storage to Greeley's water system over the next ten years.

- Lower Poudre Gravel Lake Storage – In 2003, Greeley finished the lining of 25<sup>th</sup> Ave. gravel lake storage project which met the State Engineer’s Office requirements for lined storage. Greeley then entered into a mining lease to create additional storage at the site. The current storage at the site is approximately 1,500 ac-ft. The ultimate amount of storage at the site will be determined by how much additional sand and gravel is mined with the potential for up to 1,000 ac-ft of additional capacity at the site (for a total capacity of 2,500 ac-ft). This project increases the efficiency of Greeley’s water system by improving the reliability of Greeley’s non-potable water supplies so potable supplies do not have to be released to meet potable demands in drought periods. Inlet and outlet works projects are underway.
- Large Non-potable Development Projects – Greeley spent a considerable amount of time in 2003 evaluating the feasibility and negotiating the potential Raindance Ridge Project (aka dirt pits). Although Raindance Ridge LLC has rejected Greeley’s last offer, the city has requested the owner to reconsider. The current design of this project appears more costly than other options Greeley has for the excess non-potable supplies available near Greeley.
- Blocks of Agricultural Water – Greeley continues to monitor the availability of blocks of agricultural water rights that fit well within its water system and is trying to begin negotiations for rights as they become available.
- Shares in Agricultural Ditch Companies - Greeley is also monitoring the availability of individual ditch shares that would fit well into Greeley’s water portfolio. Greeley is focusing on the acquisition of large blocks of ditch shares due to the cost/time involved in getting water court approval for municipal use of agricultural ditch shares.
- Regional water supply project – Over the past year Greeley evaluated various projects to meet Greeley’s long-term storage needs. Projects evaluated included the Northern Integrated Water Supply Project (NISP) being proposed by the Northern Colorado Water Conservancy District and the joint enlargements of Halligan and Milton Seaman Reservoirs by various participants within the Poudre Basin, primarily the cities of Ft. Collins and Greeley. Although Greeley may not need a regional storage project until near 2020, assuming short-term raw water options described above are implemented, due to the long timeline required to receive the necessary federal permits to construct a regional storage project, Greeley feels it is prudent to begin the federal permitting process in the near-term. In December, Greeley’s Water and Sewer Board decided to pursue the joint enlargement of Halligan and Milton Seaman Reservoirs to meet its future storage needs and to begin the federal permitting process. The timing and purpose of this project are more specific to Greeley’s needs than the NISP Project.

## Water Conservation

The implementation of a Water Budget is a key to showing the City is making efficient use of its water supplies, an important step in obtaining the necessary permits to build the regional water project. Efficient outdoor water use will also reduce the City’s peak water demands, delaying the need for costly water treatment plant expansions.