**LOVELAND CITY COUNCIL**
**STUDY SESSION**
**TUESDAY, MAY 14, 2013**
**CITY COUNCIL CHAMBERS**
**500 EAST THIRD STREET**
**LOVELAND, COLORADO**

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**6:30 P.M. STUDY SESSION - City Council Chambers**

**1. ECONOMIC DEVELOPMENT (presenter: Betsey Hale, Marcie Erion 60 minutes)**
**Office of Creative Sector Development (OCSD) Update**
Staff is presenting an update on the accomplishments of the OCSD program, and seeking direction from the City Council on the transition of program staff to a more general role within the Economic Development Department.

**2. WATER & POWER (presenter: Greg Dewey 60 minutes)**
**Updated Water Conservation Plan**
The study session will provide City Council with a DRAFT Water Conservation Plan, as proposed by staff and the Loveland Utilities Commission.

**3. WATER & POWER (presenter: Chris Matkins, Greg Dewey 30 minutes)**
**Drought Management Plan**
The study session will provide City Council with a DRAFT Drought Management Plan, as proposed by Staff and the Loveland Utilities Commission (LUC). Also provided will be information to inform City Council of the City's current water supply status for 2013 and a recommendation as to the drought response level.

**ADJOURN**

**CITY OF LOVELAND**
CITY COUNCIL
Civic Center • 500 East Third • Loveland, Colorado 80537
(970) 962-2329 • FAX (970) 962-2901 • TDD (970) 962-2620

**AGENDA ITEM:** **1**
**MEETING DATE:** 5/14/2013
**TO:** City Council
**FROM:** Marcie Erion, Economic Development
**PRESENTERS:** Betsey Hale, Marcie Erion, Mary Bahus Meyer, Robin Knight, Megan Tracy, and Joshua Tobey

**TITLE:**
Office of Creative Sector Development (OCSD) Update

**DESCRIPTION:**
Staff is presenting an update on the accomplishments of the OCSD program, and seeking direction from the City Council on the transition of program staff to a more general role within the Economic Development Department.

**SUMMARY:**
Financial and policy support for the Office of Creative Sector Development (OCSD) was approved by City Council in the fall of 2010. The position of Business Development Specialist for the OCSD was filled in March 2011. A group of 50+ stakeholders in the Loveland community had developed a vision, mission, goals and objectives for a program with the primary focus being economic development of the creative sector by facilitating the growth, development and retention of the creative sector entrepreneurs and companies.

The metrics for defining a successful program were the following goals to be achieved in three years (36 months):

- Assistance in the creation of 1,000 new jobs
- Assistance in the increase in local event attendance of 65,000
- An event attendee spending increase of $1.5 million dollars.

With only 28 months of the project period completed (78%), the metrics accomplished to date are:

- An increase in net new jobs of 866
- An increase in event attendance of 33,485
- An increase in event spending of $1,205,460

Through the end of 2013, the attendance and revenue figures are projected to finish out at 49,360 and $1,776,460 respectively.

Please note the jobs report from the State is only thru the 3rd quarter of 2012 (seven quarters complete out of a total 12 quarters, or 58%). Staff anticipates that over the remaining 15 months more than 144 jobs will be developed in creative sector businesses. We expect by the end of the three years, this will amount to 1,010 jobs. In addition, many of the local artists and inventors are self-employed and do not file unemployment reports. These entrepreneurs are not included in the job growth numbers.

An additional metric was for the program to become financially sustainable without City investment. The Creative Sector Development Commission established a finance committee to take on this task. Members of the commission will be present to discuss the status of the program funding.

The commission will present to Council, community and business stakeholder support for the City Council's consideration of transitioning this staff position into a more general economic development role. The economic development department budget impact will be neutral if the Council continues to fund the incentive fund with $250,000 annually. The Commission is recommending the dissolution of the Commission itself.

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**REVIEWED BY CITY MANAGER:** William D. Cahill

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**LIST OF ATTACHMENTS:**
OCSD Goals and Results
Metrics Report
Board Recommendation Letter
Abbreviations Key
PowerPoint Slides

**OFFICE OF CREATIVE SECTOR DEVELOPMENT GOALS AND RESULTS**

# GOAL ONE:

**Develop a targeted Economic Development Plan that will retain the existing 2,345 jobs and the addition of 1000 new jobs in the Creative Sector by 2014.**

- **Partner with existing organizations in completion of new contracts and to create an inventory of available equipment and technology in order to cross-pollinate , foster healthy competition, and promote Loveland's business capacities**

  Activities/Results:
  - Creation and ongoing management of Tech Transfer program
  - Completion of over 200 stakeholder meetings to assess needs, acquire local inventory, assess network/supply chain opportunities
  - Project management /ombudsman to support business retention and expansion
  - Site Activation Coordinator of Rocky Mountain Center for Innovation & Technology campus
  - Creation of local Request for Proposals for Artist Business Development
  - Support of and programming for Artists' Collective
  - Technical Support on ArtSpace Proposal
  - Partnerships with NCEDC, Rocky Mountain Innosphere, Colorado Clean Energy Cluster, Colorado Creative Industries, Colorado Workforce Development, Small Business Development Center, Aims Community College, Front Range Community College, Colorado School of Mines, Colorado State University, Colorado University, Denver University, The Loveland Leadership Team.

- **Develop incentive plans and public/private partnerships to leverage new creative sector jobs**

  Activities/Results:
  - Present local companies and their incentive requests- currently working on 4 projects
  - Public/private partnerships: AIMS mural, 4th Street Gallery, McKee Commission, Plywood project, Thompson Valley Arts League, Perfect Square/Destination Loveland, multiple meetings with private companies and non-profit organizations to provide assistance and consulting, successful RFP's (request for proposals/art commissions)
  - Work with the Loveland Development Fund and the Stone Soup Accelerator concept

- **Develop marketing piece to recruit for the Loveland Creative Sector jobs and partner with local organizations to distribute this marketing piece across the country**

  Activities/Results:
  - Creation and support of website www.lovelandarts.org
  - Creation and distribution of TAG- Living Loveland
  - Creation/distribution/support of Rack cards for marketing purposes
  - Support of Destination Loveland programs, Visitor Center, website, marketing efforts

- Live/Cast/Create brochure stocked at Visitor Center, Museum, Sculpture Depot, and given to all sculptors in August shows
- Ads in LAST brochures, ArtSource, National Sculpture Society Publication
- QR codes at DIA Exhibit
- Ongoing coverage of OCSD projects in the Reporter Herald, Northern Colorado Business Report and Innovationews plus occasional Denver Post and TV coverage
- Ongoing presence throughout the state messaging the work of the OCSD and the Loveland Community with Arts for Colorado, Office of Economic Development and International Trade, Colorado Creative Industries, Colorado Tourism Office

- **Partner with Economic Gardening to provide baseline data and then follow up data in each area in 2014**

  Activities/Results:
  - Worked with City staff to develop baseline job numbers for the City of Loveland. Based on data availability, Staff is targeting the end of summer 2013, to provide an update on job numbers through 4th quarter 2012.

- **Finalize Americans for the Arts Survey and present results to community/county partners**

  Activities/Results:
  - Completed in 2012 and created summary which is available in a hard copy and on the website
    - Update data annually for the AFTA survey
  - Request has not been made through AFTA for updated data as of 1/13 as AFTA is evaluating whether or not they want to continue this model

- **Conduct market research with current creative sector to assess the business climate and understand where gaps in services/resources exist, use this assessment to develop recruitment strategy**

  Activities/Results:
  - Ongoing work being done through the Tech Transfer program, business assistance and Artists' Collective to determine needs of the creative sector
  - Based on this- SBIR training, Tech Boot Camps and Professional development classes are offered throughout the year to address these needs through the Tech Transfer and Artists' collective programming
  - Network with regional Economic Development partners to stay up on current trends and needs of local companies and broader based solutions- NCEDC, Rocky Mountain Innosphere, Colorado Workforce Center, Colorado Sectors Summit, Rocky Mountain Ventures,

- **Develop additional revenue generating opportunities that apply to existing businesses**

  Activities/Results:
  - Tech Transfer program liaison, with program designed to help businesses generate revenue and hire more employees- Scion NRL grant, MM Solutions expansion, SBIR funding for Numerica, You See U addition of education partners, Road Narrows trip to NASA to explore

Tech Transfer, explore new contracts for DMB Technologies, Vergent Products, MM Solutions, Western Heritage Foundry, Data Traks

- Created multiple opportunities for local artist engagement including: McKee Commission, AIMS Mural, 4th Street Gallery, Plywood Project, Foote Lagoon art series, Promenade Shops on location, Stars on the Bridge, NSS Trade Show, Visitor Center art merchandise acquisition, email notification of Request for Proposal's (several local artists have received commissions based on these notifications),new exhibit opportunities (Feed and Grain, Library, local businesses, museum), connected creatives with job opportunities, Group Publishing Film Fest

## GOAL TWO:

**Create, strengthen and maintain partnerships and collaboration among P-20 educators, artists, creative sector businesses, the City and others to facilitate innovative education and training**

- **Provide professional development in partnership with the Loveland Center for Business Development (LCBD) and non-profit organizations in creative sector business training, marketing, promotion and financial sustainability**
  Activities/Results:
  - Initiating work with the LCBD on Creative Sector business education program
  - Ongoing support and programming for Artists' Collective
  - Additional Professional Development classes offered throughout the year by the OCSD and the LCBD
  - Development and implementation of Tech Transfer Symposium series
  - Ongoing education offerings for Tech Transfer companies- funding, entrepreneurship training, Pitch classes

- **Partner with AIMS to increase innovative education and training opportunities at the Loveland campus**
  Activities/Results:
  - Created public/private partnership for completion of Mural to highlight AIMS and Art and Science
  - In discussion with CSU and Front Range Community College about a Creative Entrepreneurship Training program in partnership with Aims
  - Promote Aims local art shows and arts-based programming
  - Explored possibilities with AIMS to add additional arts programming to their catalog

- **Partner with Thompson R2J to develop a targeted innovative education component to develop the human capital needed to support local job growth in the creative sector**
  Activities/Results:
  - Ongoing work and support of Loveland Integrated School of the Art, member of advisory board, meet with District Coordinator
  - Help to organize local artist involvement and mentorship with LISA program

- Developed Traveling Sculpture Program
- Statewide advocacy of arts-integrated education
- Meeting set with Thompson School District Superintendent to explore initiating a STEAM (Science, Technology, Engineering, Arts and Math) program in conjunction with NASA at the RMCIT facility
- Support of the Be You education program

## GOAL THREE:

**Increase the number of attendees to Loveland events by 65,000, and increase sales from these attendees by $1.5 million. The destination events were also transferred to other local programmers as part of the Destination Loveland plan through the Visitors Services Coordinator and the lodging tax funds**.

- **Establish local baseline data in these areas and update data in 2014**

  Activities/Results:
  - Ongoing work with local partners to keep attendee numbers current
  - Based on these numbers, the dollar amounts of art event spending that was determined by the CSU survey is used to generate the revenue dollar figure

- **Work with organizations to enhance success of existing events, including**
  - Foster partnerships in services , opportunities and education to increase collaborative funding and marketing
  - Add new components to broaden audience market and sales opportunities
  - Develop new marketing strategies

  Activities/Results:
  - Worked with groups throughout the community on these items including: Show sponsorships, networking amongst organizations, work to combine time and resources on centralized projects (rack cards, combining events, etc), added Park Show Shuttle info booths, NOTT pop-up gallery, pop-up gallery and artist booths during other events and festivals, website, TAG

- **Create new events and destination attractions**
  - Develop unique OCSD programming
  - Partner with local organizations and businesses to develop new events
  - Focus on events that increase tourism, length of stay and increased expenditures

  Activities/Results:
  - Events: DIA Exhibit, Governors Tourism Conference, Embassy Suites Sculpture Exhibit, TEDx Front Range, Innovation After Hours, Tech Transfer and Innovation Showcase, 4th Street Gallery, Event sponsorships, NOTT, Tech Transfer Symposium Series, Lagoon Artist Series, Promenade Art Shows, National Sculpture Society Annual Gala, International Art Exchange
  - Most of this responsibility moved to EL Events and other local events professionals and organizations

- **Marketing, including**
  - Participate in CMC process and work to promote brand in all work with other entities
    Activities/Results
    - Ongoing work with Visitor Services Coordinator with brand, Visitor Center, Destination programming, Trade Booths, Visitor's Resource Guide, ad campaigns

  - Create new opportunities for event exposure
    Activities/Results
  - Use events listed throughout this plan to advertise and promote other events and opportunities, rack cards, ads, resource guides, web listings, email blasts and newsletters

  - Creation of centralized website
    Activities/Results
    - Website created and live December 2011- average over 500 unique visits per month

  - Collaborate with ArtSpace, Rialto Bridge and other related building projects that leverage critical mass into new services and amenities being provided that attract visitors and tourists
    Activities/Results
    - Ongoing collaboration with ArtSpace, ArtWorks Loveland, Feed and Grain programming, temporary Lincoln Park, Museum expansion as requested, Science and Cultural Facilities District as requested, Visual Arts Commission
    - Downtown revitalization projects in conjunction with Mike Scholl
    - Support of creative businesses- brewers, distillers, etc. that attract visitation
    - Working with potential tenants at RMCIT

# GOAL FOUR:

## Achieve Financial Sustainability by 2014 of the OCSD

- Investors: Develop a campaign to encourage investment from local stakeholders
- Grants: Write and submit grants for project and operating support
- Revenue: Create a revenue stream that provides ongoing and steady cash flow
- Organize capital campaign to purchase office/studio/incubator space
- Establish public/private partnerships to leverage space
- Monetize website
- Program revenue generating events

  Activities/Results
  - Explored but incomplete

## Office of Creative Sector Development Metrics (Only 78% of program period complete)

| | Goal | To Date | Projected | % of goal met |
|---|---|---|---|---|
| **Jobs** | 1000 net new | 866 | 1,010 | Over 100% |
| **Attendance** | 65,000 | 33,485 | 49,360 | 76% |
| **Spending Increase** | $1,500,000 | $1,205,460 | $1,776,960 | Over 100% |

| **2011** | | |
|---|---|---|
| **Event** | **Attendance** | **Revenue** |
| Heaven Fest | 2500 | Assuming regional participants, the CSU survey showed an average spending of $36/per person /per event |
| Lagoon Series | 6500 | |
| Artists Collective | 60 | |
| Park Show booths | 3500 | |
| Governors Tourism Conference | 400 | |
| Loveland Art Studio Tour | 450 | |
| Park Show Speech | 100 | |
| NOTT's | 200 | |
| Professional Development | 100 | |
| Snow Sculpture | 1000 | |
| Pastels on 5th | 1000 | |
| Embassy Suites Sculpture Show | 1000 | |
| **Total Attendees** | **16,810** | **$605,160** |
| **2012** | | |
| **Event** | **Attendance** | **Revenue** |
| Foote Lagoon artists painting on location | 6500 | Assuming regional participants, the CSU survey showed an average spending of $36/per person /per event |
| Assemble Show | 2500 | |
| Love and Lights show | 900 | |
| Fiber Show | 1500 | |
| Loveland Art Studio Tour | 400 | |
| Install show | 1000 | |
| DIA- 1,500,000 + exposure to pieces (not included in revenue) | | |
| National Sculpture Society event/Park Show artists party | 250 | |
| TEDx | 400 | |
| Pastels on 5th- | 1250 | |
| Stars on the bridge | 400 | |
| Promenade Shops art walk | 250 | |
| Yancey's Tech Transfer meeting/SBIR | 100 | |
| NOVO Photographic Show/La Paz art exchange | 100 | |
| Mr. Neat's studio/gallery openings/daily attendance | 500 | |
| Artists' Collectives meeting | 100 | |
| Tech Transfer Showcase | 275 | |
| Innovation After Hours 2x | 150 | |
| Professional Development | 100 | |
| **Total Attendees** | **16,675** | **$600,300** |

| Projected 2013 | | |
|---|---|---|
| **Event** | **Attendance** | **Revenue** |
| Lagoon Series | 6500 | Assuming regional participants, the CSU survey showed an average spending of $36/per person /per event |
| Feed and Grain Events | 3500 | |
| Artists Collective | 75 | |
| Loveland Art Studio Tour | 500 | |
| Makers' Faire | 1500 | |
| 4th Street Gallery | 500 | |
| Snow Sculpture | 1000 | |
| Group Film Fest | 500 | |
| Professional Development | 250 | |
| Tech Transfer Showcase | 300 | |
| Pastels on 5th | 1000 | |
| Innovation After Hours | 250 | |
| **Total Attendees 2013** | **15875** | **$571,500** |

| **Totals Attendees for 2011, 2012, 2013** | **Total Revenue for 2011, 2012, 2013** |
|---|---|
| **49,360 plus DIA** | **$1,776,960** |
| | |
| **Beginning Jobs Total** | **Jobs Total through Q3 2012 (DOLA)** |
| **2345** | **3211 (net gain 866)** |

Westwood

February 8, 2013

From: Michael Lang, OCSD Board Chairman

To: The Loveland City Council

**Subject: OCSD Development Specialist and Board**

As one of the original board members of the Creative Sector Development Advisory Commission I have been involved from the first meetings. I was excited by the opportunity, and saw the challenge of trying to create something that could add strength to Loveland's unique creative sector while adding value to the economic development of the city.

I am proud of the commission and the work we accomplished. I feel strongly that the Business Development Specialist position has proven to be a success for Loveland. I would point out that this success has appeared in areas and ways that were never originally contemplated by the charter of the commission. Regardless of what metric is used to assess that role, the added jobs, revenues, and opportunities for the city of Loveland are undeniable. The selection of Marcie Erion to fill that role was a fortuitous choice. Her efforts have defined a role that did not previously exist. She has pioneered the collaboration of resources in the creative sector as well as technology arenas, demonstrating how they can be a 'value multiplier'. The unique perspective of this creative sector - business development specialist position, is something that will benefit the City of Loveland in the future. Therefore, it became the opinion of the commission that this position should be incorporated into the staff of the Economic Development Department.

At the March 21, 2013 meeting, the Creative Sector Development Advisory Commission unanimously recommended that the Business Development Specialist position, that is currently part of the Office of Creative Sector Development, be made a full time, regular staff position under the Economic Development Department. It was further concluded that the Creative Sector Development Advisory Commission would be dissolved.

Sincerely,
WESTWOOD PROFESSIONAL SERVICES

Michael Lang, PLS

Director / Office Manager

Westwood

**ABBREVATIONS KEY:**

**OCSD – Office of Creative Sector Development**

**DIA- Denver International Airport**

**RMCIT- Rocky Mountain Center for Innovation and Technology**

**NASA- National Aeronautics and Space Administration**

**NCEDC- Northern Colorado Economic Development Corporation**

**CCI- Colorado Creative Industries (State of Colorado)**

**RFP- Request for Proposal**

**LISA- Loveland Integrated School of the Arts**

**RMI- Rocky Mountain Innosphere**

**CCEC- Colorado Clean Energy Cluster**

**LCBD- Loveland Center for Business Development**

**FRCC- Front Range Community College**

**OEDIT- Office of Economic Development and International Trade (State of Colorado)**

**DRT- Development Review Team (City of Loveland)**

**BR&E- Business Retention and Expansion**

**SBIR/STTR- Small Business Innovation and Research Grant program/Small Business Technology Transfer grant program**

**EWI- Edison Welding Institute**

**LDF- Loveland Development Fund**

**DOLA- Colorado Department of Local Affairs**

# Office of Creative Sector Development (OCSD)

City Council Study Session

May 14th, 2013

# Objective 13.5.1: City of Loveland Comprehensive Plan:

*"Develop economic development programs such as economic gardening, business and arts incubators, specialized business assistance, (business liaison), and entrepreneurship training that fosters economic opportunities for the Cultural Occupations."*

# History:

- Council asked staff to “investigate”: September 2009
- Staff determines that a “Cluster Initiative” is needed?
- Council ED Subcommittee says: Engage Stakeholders
- January 2010: Stakeholder Meeting
  - ✓ Four Key Areas of Focus identified
  - ✓ Ten Member Working Group developed (9 meetings)
  - ✓ Vision, Mission, goals and objectives developed
  - ✓ Presentations at two ED Subcommittee meetings
  - ✓ July 27th Study Session Presentation

# More History

- ✓ Council approves program support 11/9/2010
- ✓ Staff is hired March 2011
- ✓ Baseline Data was established:
  1. 2345 jobs in the Creative Sector (2010)
  2. 65,000 event attendees
  3. Visitor Spending at arts related events estimated at $1.5 million

# More History

- ✓ Expectations Set…How to measure success?
  1. Assist in the retention of the existing 2345 jobs (2010)
  2. Increase the number of jobs by 1000
  3. Increase event attendance by 65,000 attendees
  4. Increase event spending by $1.5 million

# What's in a Name?

## Definition of the Creative Sector:

" The Creative Industries are those which have their origin in individual creativity, skill and talent which have the potential for wealth and job creation through the generation and exploitation of intellectual property."

# Loveland: Where Art and Science Meet


This is a photo from the Business Appreciation Breakfast that Council Member Klassen and George Lundeen discussed the need for the City to help the Arts Community.

# Four Key Areas of Focus

- Economic Development
- Education
- Infrastructure
- Branding and Marketing

- Most important for OCSD

# Economic Development

# Types of Businesses

- ✓ Advertising Firms
- ✓ Architecture
- ✓ Arts: Fine, Performing, Visual, literary, Photography
- ✓ Design: Fabric, Furnishings, Fashion, Everyday Living (functional)
- ✓ Crafts: Artisans, Jewelry
- ✓ Cultural: Museums, Galleries, Tourism
- ✓ Software: Video Games, Websites, Graphic Artists
- ✓ Publishing: Paper, Films, Television, music

So Much More……

# Key Question in 2009 was Sustainability

1. Establish a sub-committee on the advisory board to develop a plan
2. Identify potential philanthropic groups and grant sources and apply
3. Develop fundraising events and activities
4. Charge a fee for membership
5. Charge fees for services
6. Solicit private donations

# Big Surprise: Never Anticipated

- The Race for ACE
- The City buys the Agilent Property
- The City sells the Property to CW
- The City begins the Technology Transfer effort
- The property is called the RMCIT
- The City funds Technology Transfer for a second year
- Successful SBIR trainings in 2012 and 2013
- Successful technology showcase in 2012
- Successful Technology Transfer program participants
- Ombudsman for Creative Employers projects

# So What Has Happened



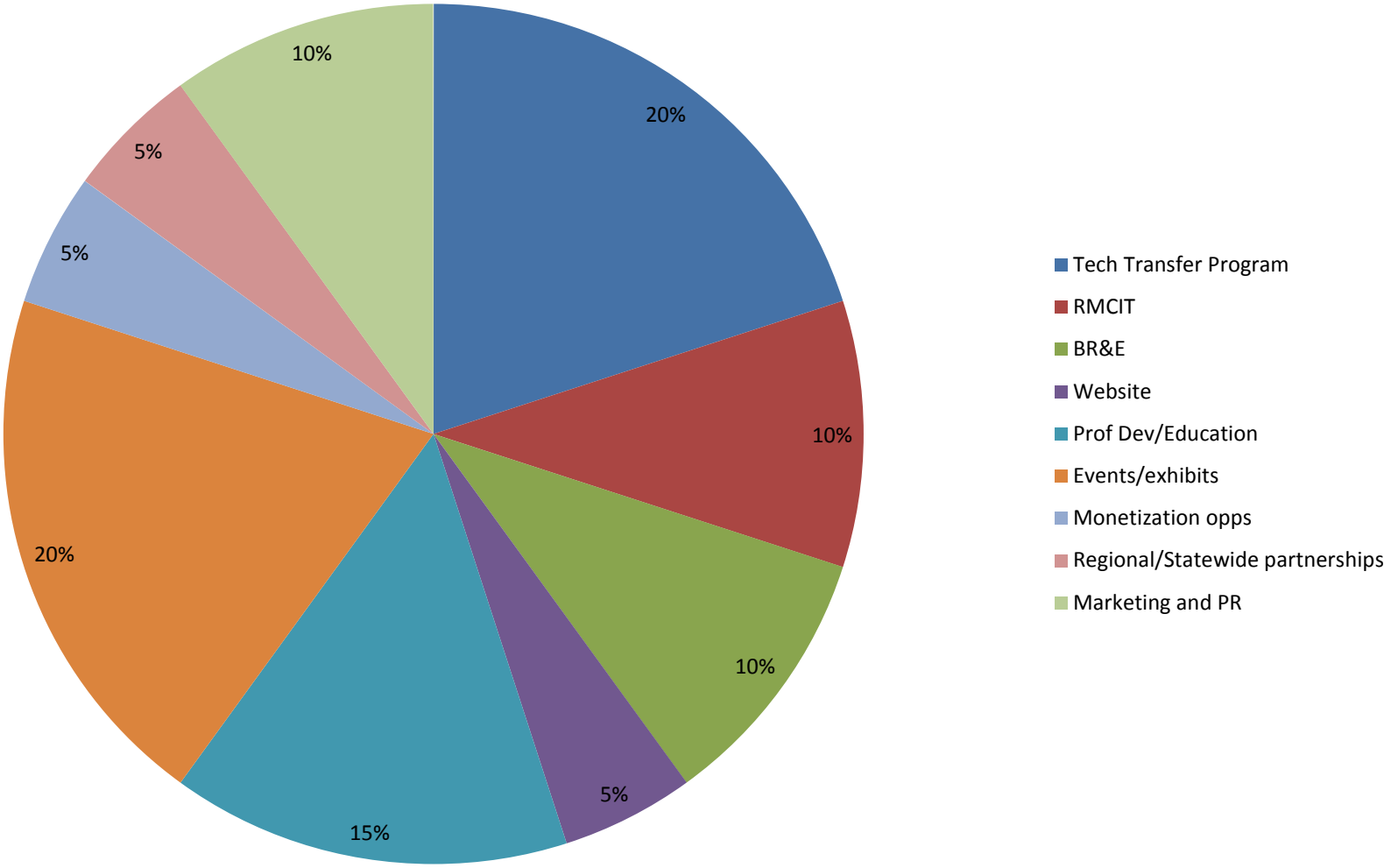
# 2011

- **Met with over 100 creative sector stakeholders**
- **Helped develop Artists' Collective- local networking and educational organization**
- **Finished Americans for the Arts Local Arts Index**
- **Website created and on-line**
- **Created Living Loveland TAG ( like QR code)**
- **Created Sculpture Park inside Embassy Suites for Governor's Tourism Conference, helped with event programming**
- **Organized and activated Pop-up galleries and exhibition opportunities for artists**
- **Acted in advisory role to the Loveland Integrated School of the Arts including traveling sculpture program, artist mentoring opps, open houses and ongoing funding consultation**
- **Designed and distributed multiple marketing pieces**
- **Organized and activated Park Show information booths**
- **Participate locally, regionally, and statewide with other creative sector organizations**

# 2012

- **Sponsorship, programming and assistance with over 16 creative sector events**
- **Tech Transfer Liaison**
- **Site Activation Coordinator- RMCIT**
- **Innovation Showcase with NASA**
- **DIA Sculpture Exhibit**
- **National Sculpture Society Annual Gala**
- **Aims Mural**
- **Mr. Neat's Studio/Gallery**
- **McKee Commission**
- **RFP's won by local artists for commissions**
- **Assisted local companies through building and planning departments and with local partnerships**
- **Ongoing work with Artists' Collective, LISA program, and other partners (RMI, CCEC, CCI, LCBD, Aims, FRCC, OEDIT, NCEDC etc)**
- **Finalized CSU visitor spending survey**

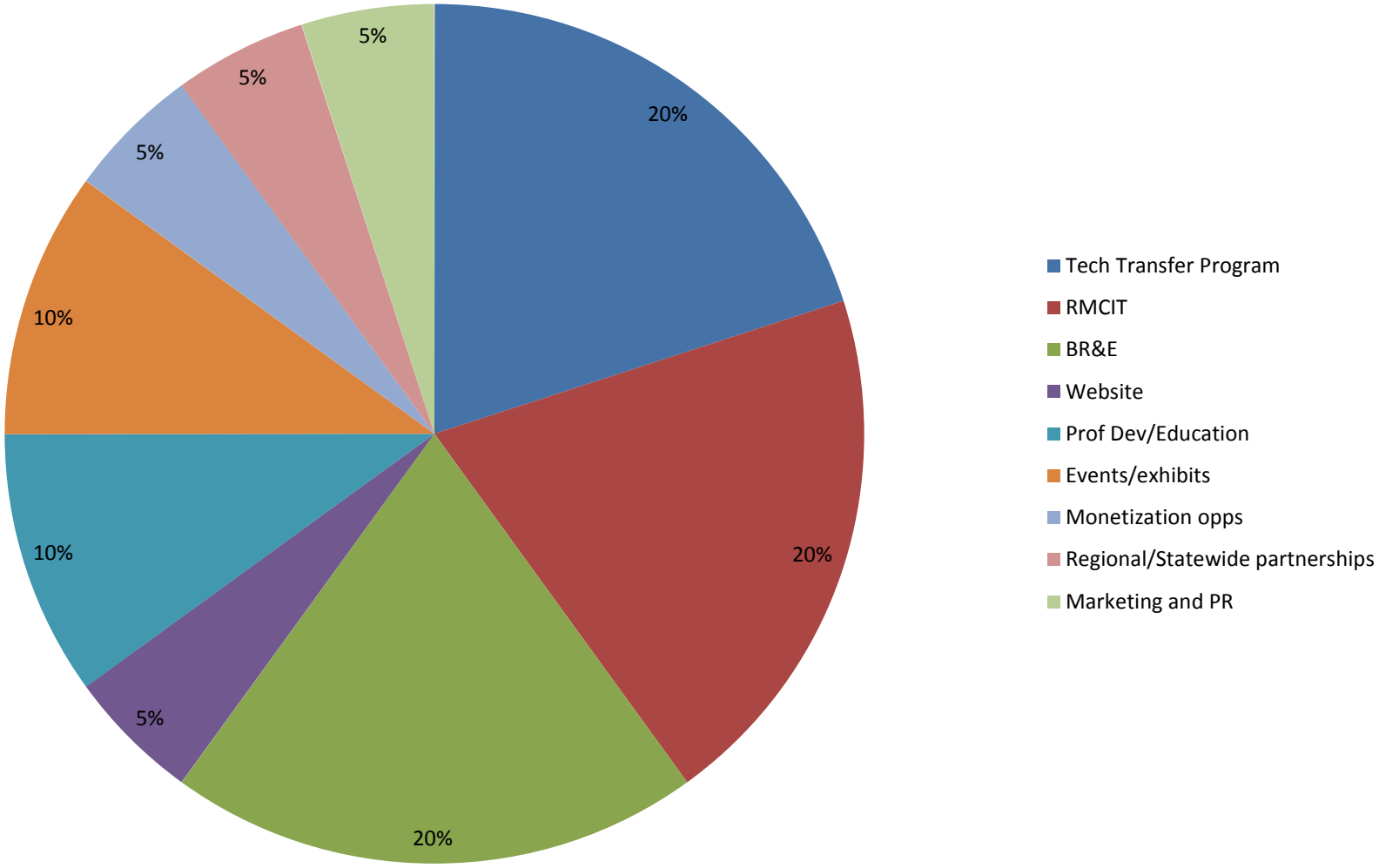
# OCSD Division of Labor 2011-2012



# 2013 to date and ongoing projects

- **2nd Phase Tech Transfer program**
- **SBIR/STTR class**
- **Site Activation Coordinator RMCIT**
- **Business Retention and Expansion with local companies**
- **Attraction of new companies**
- **Innovation After Hours and other programming including Maker Faire, possible NASA Showcase, Poetry Slam, and exhibition opportunities for creatives**
- **NASA/EWI visit**
- **Workforce Development locally, regionally, statewide**
- **ED Department/Creative Sector marketing and messaging efforts**
- **Plywood art project**
- **Ongoing Mr. Neat's programming**
- **Work with ArtSpace**
- **Assist with Economic Development team projects**
- **Life Tree Film Fest**
- **Active team member within city structure- finance, legal, building, planning, DRT, Fee Masters, Land Bugs, and Cultural Services**
- **Artists' Collective and creative sector professional development**
- **Exhibition and sales opportunities for creatives**

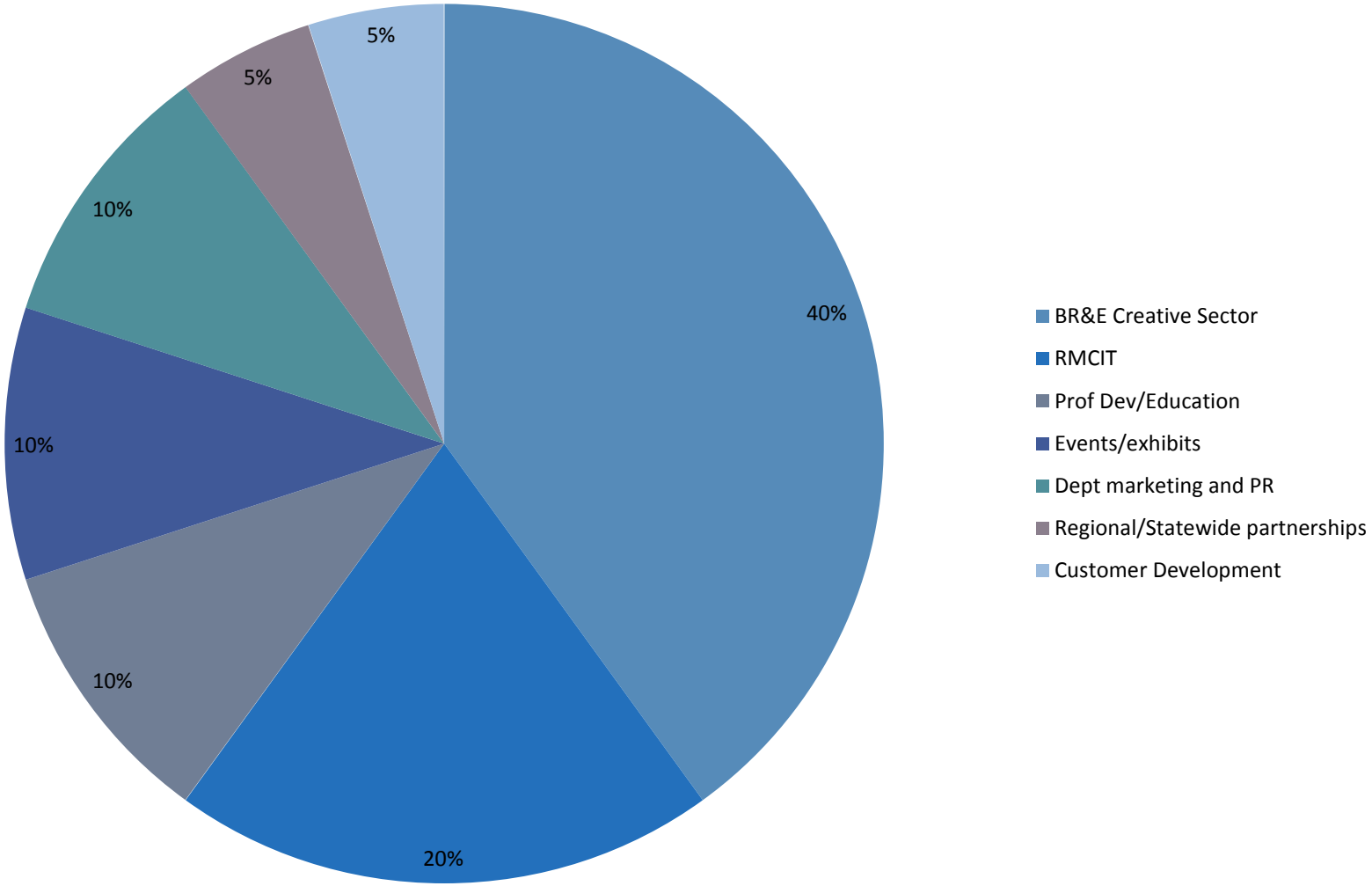
# OCSD Division of Labor 2013



# 2014 Ongoing and anticipated projects

- Tech transfer- model TBD
- RMCIT Site Activation Coordinator
- Finalize Projects currently being managed which will add over 500 primary jobs
- Creative Sector Professional Development
- Workforce Development
- Ombudsman
- Participation with outside organizations- RMI, NCEDC, LCBD, CCI, OEDIT, CCEC, FRCC, Aims, CSU, School of Mines, CU, DU, NASA, LISA, LDF, etc.
- BR&E and Attraction
- Marketing and creation of Creative Sector and Economic Development Department projects and opportunities
- Innovation Showcases

# OCSD Division of Labor 2014-2015



# Community Presenters:

- Mary Bahus-Meyer- OCSD Commission
- Megan Tracy- Artist and Event Coordinator
- Robin Knight- Road Narrows Robotics
- Joshua Tobey- Sculptor

# What we need tonight

- Staff needs direction from City Council about the transition of OCSD staff to a general economic development position.

**CITY OF LOVELAND**
WATER & POWER DEPARTMENT
200 North Wilson • Loveland, Colorado 80537
(970) 962-3000 • FAX (970) 962-3400 • TDD (970) 962-2620

**AGENDA ITEM:** **2**
**MEETING DATE:** 5/14/2013
**TO:** City Council
**FROM:** Steve Adams, Water and Power Department
**PRESENTER:** Greg Dewey, Civil Engineer – Water Resources
Lindsey Bashline, Water and Power Department

**TITLE:**
Updated Water Conservation Plan

**DESCRIPTION:**
The study session will provide City Council with a DRAFT Water Conservation Plan, as proposed by staff and the Loveland Utilities Commission.

**SUMMARY:**
According to Colorado's Water Conservation Act of 2004 (HB 1365), all covered entities – retail water providers who sell 2,000 acre feet or more of water annually – must have a water efficiency plan on file with the state that has been approved by the Colorado Water Conservation Board (CWCB). Staff has updated the City's May 1996 Water Conservation Plan and prepared the plan in adherence to the prevailing state statutory requirement.

In 2012, Loveland Water and Power received in kind services from Recharge Colorado and Symbiotic Engineering to help secure assistance from a consultant, Great Western Institute (GWI). GWI was able to perform the modeling necessary to forecast savings from various water conservation measures, make comparison of plans from other Colorado communities, and provide assistance in drafting the plan.

The Water Conservation Plan includes:

- Summary of the existing water system
- Summary of water demands and historical demands
- Integrated planning and water efficiency benefits and goals
- Selection of water efficiency activities
- Implementation and monitoring plans

Loveland's Water Conservation Plan focuses on assisting future water use efficiency within the utility's service area by:

- Managing City water use both indoor and outdoor
- Identifying and implementing measures and programs that are expected to reduce summertime peak day water demand
- Assisting customers that wish to improve their water use efficiency

Overall, the City recognizes that it is a combination of its actions and the actions and behaviors of its customers that will determine whether or not the water conservation measures and programs presented in the Plan are successful. Therefore, the City is committed to implementing those efforts that will support the long-term sustainability and efficacy of the utility to provide affordable, reliable water to its customers in a manner that the City's citizenry justifiably depends upon.

Specific goals that the City anticipates to achieve include:

- Reducing summertime peak daily demands in the future by about 1 mgd (or about 3 acre-feet per day) during above average demand periods by 2016;
- Reducing non-revenue water from current levels to 10-11% of total treated water by 2020 (which is a reduction in real and apparent water loss of about 575 acre-feet);
- Developing water rates that accurately reflect the cost of service for providing reliable, secure and sustainable water supplies, including infrastructure management and maintenance, and the impact of changing customer water use behavior patterns in the future;
- Supporting the City's sustainability efforts in part by reducing City water use (indoor and outdoor) by another 5% by 2020; and
- Developing technical assistance programs that will support improved water use efficiency by the City's large commercial and irrigation only users.

The DRAFT Plan was available for a 60-day public comment period beginning February 21, 2013 through April 21, 2013. Staff presented the DRAFT Plan to the LUC on February 20, 2013, the City Management Team on April 9, 2013, the LUC on April 24, 2013, and the CAB on April 24, 2013. Revisions reflecting comments received at those meetings were made, with a draft document to be presented at the Council Study Session. The draft document is attached for review and may also be viewed at www.cityofloveland.org/WCP.

Staff will give a brief presentation summarizing the highlights of the proposed DRAFT Plan. Comments, suggestions, and guidance are requested following the presentation.

Following the guidance received, staff will return at the June 4, 2013 regular City Council meeting to obtain approval of the Water Conservation Plan. After City Council approval, staff will submit the Plan to the CWCB. The objective is final adoption by the CWCB of a plan that establishes water conservation in the City's framework.

**REVIEWED BY CITY MANAGER:** William D Cahill

**LIST OF ATTACHMENTS:**
DRAFT Water Conservation Plan
PowerPoint Presentation

# City of Loveland

## Updated Water Conservation Plan

FINAL DRAFT
May 2013

**Prepared by: GREAT WESTERN INSTITUTE**
**Littleton, CO**

*through a generous grant from the Governors Energy Office (GEO) through Symbiotic Engineering, LLC. Boulder, CO*

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# Foreword

Loveland Water and Power has a long history of promoting the responsible use of water in the community, since water is a precious resource in this semi-arid region of the Western United States. The City has long utilized multiple tools to ensure that its citizens and customers are provided with safe and sufficient water supplies now and for future generations. To this point, the City and its citizens have long shared an enlightened relationship, whereby the City's customers understand and value the importance of a reliable and sustainable water supply, and together the utility and the local citizenry work to manage this precious resource responsibly and with mindfulness.

The City of Loveland's Water Utility has been delivering drinking water to customers in and near Loveland since 1887. Today, the Water Utility is part of the Department of Water and Power and serves water to a population of over 68,000 with a service territory of an estimated 32 square miles. Since 1990, the City has seen an increase of nearly 35% in the population served by the utility, which is consistent with the population boom experienced by much of the north Front Range. However, the City and its customers have been able to work together to limit water restriction practices that many other Front Range communities needed to implement during the 2002 and 2003 drought when water supplies became short. Since the drought, the City has been able to limit water demand increases through messaging with its engaged citizenry.

As with other Colorado Front Range communities, the City expects to realize growth and increased water demands over the coming decade. Although the City maintains a diversified water rights portfolio that will meet the needs of the growing community, the current infrastructure has limits that will require expansion and improvement to meet the predicted increases in peak day demands and average annual water delivery and wastewater treatment. In addition, the City is responsible to its customers to provide water supplies, both treated water and raw water, reliably and cost effectively. Therefore, the City has a number of reasons to guide and support customer water use efficiency during the coming years.

The City's water conservation planning effort, which is documented in this report, focuses on assisting future water use efficiency within the utility's service area by:

- Managing City water use both indoor and outdoor;
- Identifying and implementing measures and programs that are expected to reduce summertime peak day water demand; and
- Assisting customers that wish to improve their water use efficiency.

Overall, the City recognizes that it is a combination of its actions and the actions and behaviors of its customers that will determine whether or not the water conservation measures and programs presented in this Plan are successful. Therefore, the City is committed to implementing those efforts that will support the long-term sustainability and efficacy of the utility to provide affordable, reliable water to its customers in a manner that the City's citizenry justifiably depends upon. The City has prepared this Water Conservation Plan in adherence to the prevailing state statutory requirements according to Colorado's Water Conservation Act of 2004 (HB 1365).

# Section 1
# Overview of the City's Water System

The City of Loveland was incorporated in the 1880s, and has been acquiring and administering water rights ever since. The City began acquiring water rights to use water in the Big Thompson River. Some water rights were purchased outright or filed on the river by the City, while others were dedicated to the City. Early transfers of the No. 1 priority on the Big Thompson River and domestic rights diverted at the Loveland pipeline form the base of the City's water rights. Early plats of the City's annexation show dedication of water rights which were appurtenant to the land becoming part of the City. In 1960, the City began formally requiring dedication of water rights prior to development. The City has historically accepted native ditch shares/inches, Colorado-Big Thompson Project water and cash-in-lieu of water rights to satisfy raw water requirements for development. The city owns about 12,000 units of the CBT Project. The City was also one of the original "Six Cities" to invest in the Windy Gap Project. None of Loveland's water supply comes from groundwater. Its sources are renewed each year with snow melt and rain.

Currently, the City has a firm yield[1] of approximately 24,590 acre feet (AF) per year, with another 2,800 AF expected as part of the Windy Gap Firming project. In current years, the greatest annual demand for a combination of potable and non-potable[2] water by the community served by the City's water utility was about 14,300 AF in 2006. Table 1 summarizes the water demand and approximate population served in recent years within the City's service area (which is shown in Figure 1).

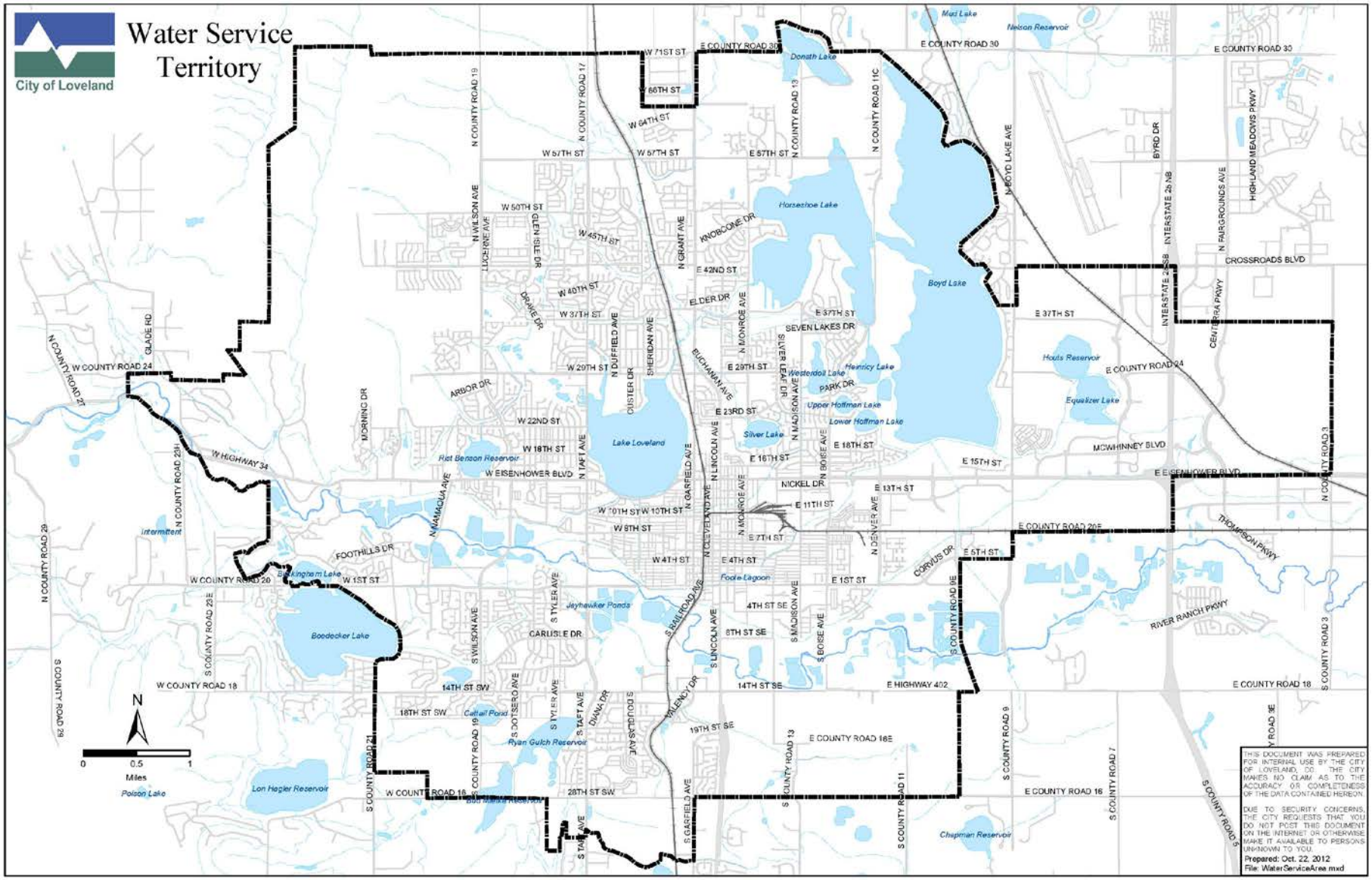
**Table 1 – Summary of Population Served and Treated Water Demand - 2005 to 2012**

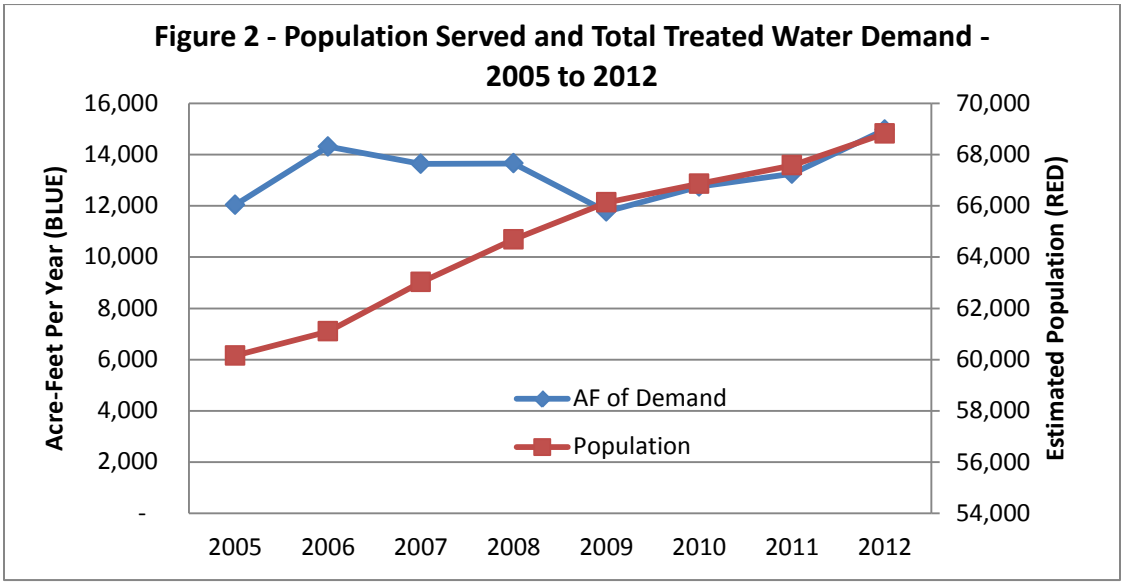
| Year | Approximate Population Served[3] | Treated Water Demand (AF) |
|---|---|---|
| 2005 | 60,157 | 12,040 |
| 2006 | 61,098 | 14,309 |
| 2007 | 63,025 | 13,636 |
| 2008 | 64,690 | 13,652 |
| 2009 | 66,132 | 11,773 |
| 2010 | 66,572 | 12,752 |
| 2011 | 67,455 | 13,284 |
| 2012 | 68,825 | 14,970 |

Note that the City's population has increased each year since 2005; however water demand peaked in 2006, and has maintained a slight downward trend till 2012. Figure 2 further illustrates this observation.

[1] Firm yield is based on the yield of the City's water rights portfolio in conditions equivalent to a 100-year drought.
[2] Currently, the City only has water demand that is for treated water. In the future, raw water use may be used to irrigate municipal facilities and other large areas of turf, as deemed appropriate.
[3] From the "Annual Data and Assumptions Report – January 1, 2011 by City of Loveland Community and Strategic Planning.

Figure 1 - City of Loveland Water Service Area






The City currently provides water to approximately 24,673 connections or accounts for commercial and residential customers, including connections for customers both inside and outside of the City limits. Table 2 presents a summary of the type and number of water customers currently in water service.

**Table 2 – Summary of City Water Customers[4] – March 2013**

| Customer Type | Number of Connections | % of Total Connections |
|---|---|---|
| ***Residential*** | | |
| ***Inside City Limits*** | | ***89.9%*** |
| Single Family | 20,176 | |
| Multi-Family | 1,245 | |
| ***Outside City Limits*** | | ***3.7%*** |
| Single Family | 860 | |
| Multi-Family | 38 | |
| Special Base | 4 | |
| ***Irrigation Only*** | | ***1.4%*** |
| Inside City Limits | 148 | |
| Outside City Limits | 4 | |
| ***Commercial*** | | ***4.7%*** |
| Inside City Limits | 1,083 | |
| Outside City Limits | 89 | |
| ***City Uses (Inside City Limits)*** | 26 | ***0.3%*** |
| Total | 24,673 | ***100%*** |

[4] The City also has water use tracked related to hydrant use (for construction), construction water use, and through an interconnect with the Little Thompson Water District, Fort Collins Loveland Water District and the City of Greeley. These customers are tracked separately from those summarized in Table 2.

Table 3 provides a summary of billed water demand for each of the City's customer categories for the period from 2005 to 2011. An explanation of the customer categories used in this table is provided below.

**Residential** – These two categories (Inside and Outside City Limits) include combined single family and multifamily uses, as well as irrigation only demand, since the City did not differentiate these uses until 2008. After 2008, the City maintained different customer categories for single family and multifamily uses, as well as irrigation only taps for residential customers.

**Commercial** – These two categories (Inside and Outside City Limits) include all commercial uses, including special base customers.

**City Uses** – This category include all City facilities that are currently metered – both for indoor and outdoor use. Note that a small number of City facilities are currently unmetered, and that this water use is currently tracked as non-revenue water.

**Other Uses** – This customer category tracks the water use related to industrial water use and water transferred to (and from) the Little Thompson Water District as wholesale water. Note that the City has not had customers tracked within the industrial customer category since 2007 when the water rate structure provided incentives for these customers to change to the commercial customer category. Therefore, post-2007 "Other Water Use" only includes wholesale transfers to (and from) Little Thompson Water District[5].

**Ranch** – The City maintains a stand pipe at its Service Center that can be used by any customer via pre-paid credit cards at a rate of $1.00 per 300 gallons. Water obtained from the stand-pipe has been used for watering livestock, dust suppression, and other local uses. All water delivered through the stand pipe is metered and billed.

**Hydrant** – The City also maintains a hydrant water use system, which is also a "pay as you go" program typically used to support construction contractors. The permit to use hydrants for construction water includes meter rental and a security deposit on the meter, as well as billed water use at the rate of $1.00 per 300 gallons. Most water delivered through this program is metered and billed[6].

**Non-Revenue Water** – This category of water use tracks the difference between treated water produced by the City and total water sold. The difference between these two

[5] This is the net amount of water purchased wholesale from Little Thompson Water District. Whichever entity received a net of positive water into their service area has to transfer Colorado Big Thompson shares to these uses, as well as pay the treated water charge.

[6] The actual amount of hydrant water being delivered by the City could be characterized by a system wide water audit.

**Table 3 – Summary of Billed Water By Customer Category**

| | Billed Water (1000s Gallons) | | | | | | | | Total Billed | Total Non-Revenue | Total Demand | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Residential | | Commercial | | | | | | | | | |
| Year | Inside City | Outside City | Inside City | Outside City | City Use | Other Uses | Ranch | Hydrant | | | (1000 gallons) | Acre-Feet |
| 2005 | 2,623,544 | 133,597 | 466,292 | 21,020 | 53,628 | 93,248 | 4,610 | 97,001 | 3,492,940 | 430,360 | 3,923,300 | 12,040 |
| 2006 | 3,186,549 | 150,123 | 517,424 | 22,288 | 68,868 | 101,227 | 5,102 | 123,473 | 4,175,054 | 487,646 | 4,662,700 | 14,309 |
| 2007 | 2,989,778 | 139,242 | 515,274 | 20,981 | 68,262 | 54,810 | 3,683 | 53,921 | 3,845,950 | 597,250 | 4,443,200 | 13,636 |
| 2008 | 2,967,702 | 140,831 | 590,295 | 18,266 | 69,194 | 5 | 4,033 | 78,957 | 3,869,283 | 579,317 | 4,448,600 | 13,652 |
| 2009 | 2,516,008 | 120,300 | 510,429 | 14,786 | 56,127 | 0 | 3,166 | 41,004 | 3,261,820 | 574,580 | 3,836,400 | 11,773 |
| 2010 | 2,816,305 | 133,651 | 538,454 | 16,429 | 68,156 | 1,295 | 3,707 | 32,669 | 3,610,666 | 544,734 | 4,155,400 | 12,752 |
| 2011 | 2,875,155 | 134,224 | 572,683 | 16,680 | 71,316 | 1,221 | 3,584 | 27,905 | 3,702,767 | 625,956 | 4,328,723 | 13,284 |
| 2012 | 2,722,723 | 148,685 | 639,077 | 16,517 | 76,257 | 1,488 | 4,112 | 19,464 | 4,213,854 | 651,396 | 4,865,250 | 14,970 |

accountings of water is considered as non-revenue water based on standards set forth by the American Water Works Association[7]. Non-revenue water includes real and apparent losses. Real losses are water that is lost due to leaks; whereas apparent losses are due to unauthorized uses, metering inaccuracies, and unmetered uses and/or metered and unbilled uses. Non-revenue water is further described below.

**Water Supply Limitations**

As previously indicated, the City has a robust water rights portfolio that has been developed over the past 130 plus years. The firm yield that exists as a result of the City's diligence is adequate to provide for current demands even within the 100 year drought.

Between 1986 and 1988 the City initiated work on a two-phase drought study using the services of the engineering firm of Camp, Dresser & McKee, Inc. Phase I of the study contained a recommendation that the City prepare to meet its full demands during a drought event with an average recurrence of 1-in-100 years, which translates into a 1% chance that in any year the City could not meet demands without curtailment. Council accepted Phase I the report, including the recommendation, on October 7, 1986, and the 1-in-100 year level of drought protection remains the goal for the City's raw water supply planning.

This planning policy requires developing sufficient supplies to meet the City's full water demand during the 1-in-100 year drought without water use restrictions. The LUC and City Council reaffirmed this policy as part of the approval process for the original Raw Water Master Plan in 2005 and the update in 2012.

However, the City's infrastructure currently limits the amount of treated water that can be delivered for potable use to the City's customers at 30 million gallons a day (mgd). Although the treatment capacity is adequate to meet average daily demands, summer peak day demands have exceeded 27 mgd in the past three years[8], and are expected to increase as population grows and summertime demands increase.

The City has plans to expand the treatment plant capacity by 8 mgd over the current planning horizon. The timing and cost of the water treatment plant expansion will be discussed in later sections of this Plan.

Noteworthy is that the City maintains an interconnect with the Little Thompson Water District, Fort Collins Loveland Water District and the City of Greeley, which allows treated water to pass between the service area of the two entities on an as-needed basis. This interconnect may provide an emergency source of treated water or support peak daily water demands in excess of the City's current treatment capacity, if needed, until the treatment plant expansion can be constructed.

[7] AWWA Manual M-36 defines standard practices for water loss control and management for water utilities.
[8] Water use data for this report covers monthly and daily use from 2005 to 2011.

The City's wastewater treatment plant capacity may also limit current treated water deliveries, since indoor water use requires wastewater treatment to capture grey and black water for cleansing before it is returned to local receiving waters.

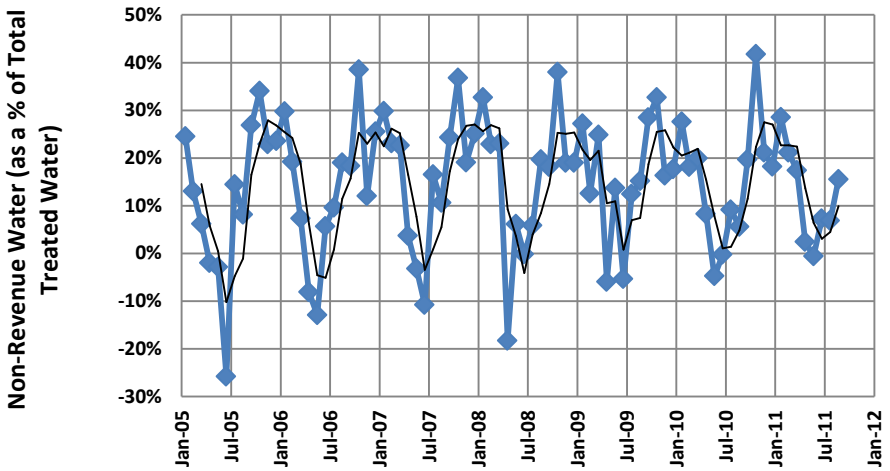
**Water Reuse in the City**

The City has limited opportunities for reusing treated wastewater since a substantial portion of the City's water portfolio is direct diversions from east slope supplies or Colorado Big Thompson water, which cannot be reused. A portion of the City's water portfolio does include some reusable supply from its reservoirs and some Windy Gap allocations. However, reusing these water sources reduces overall firm yield, so the City does not practice reuse in its normal operations.

**Non-Revenue Water**

Based on those data presented in Table 3, the City has an average non-revenue water of about 14%[9], dating back to 2008 when it recategorized its customers into those categories that it currently uses. Non-revenue water changes monthly and appears to vary seasonally, as depicted in Figure 3. The reason for this seasonality is unclear; however, it appears that in late-spring/early-summer each year non-revenue water is calculated to be negative. This trend has been reduced each year since 2005, as evidenced by the 3-month rolling average which is positive in 2009, 2010 and 2011.

**Figure 3 - Monthly Non-Revenue Water (January 2005 to December 2011) with Three Monthly Rolling Average**




Note: The definition of non-revenue water is as defined by the American Water Works Association Water Audits and Loss Control Programs (M-36)

Non-revenue water, which can be segregated into several different "accounts" as depicted in Figure 4, is expected to consist of the following components for the City.

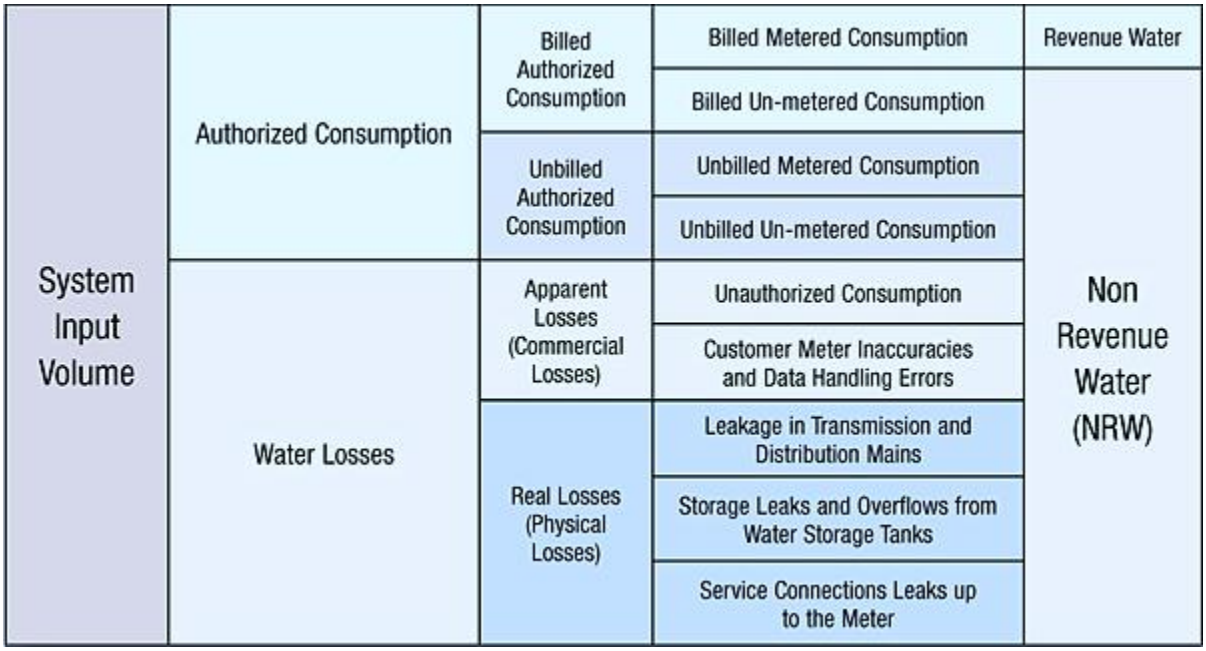
[9] Non-revenue water has ranged from 13 to 14.9% annually since 2008.

**Unbilled Authorized Consumption** – associated with unmetered, authorized water uses such as may be occurring in a small number of City parks; and metered, but unbilled water uses such as may be occurring at the water and/or wastewater treatment plants, or with some unactive water accounts that may be using water (not as water theft but through billing program and/or accounting glitches, for example).

**Apparent water loss** – associated with inaccurate and malfunctioning meters and with unauthorized water uses (i.e., water theft).

**Real water loss** – associated with detected and repaired and undetected transmission line, distribution system, and service line leaks on the supply side of customer meters. Leaks on the demand side of customer meters are not included in the accounting of non-revenue water.

**Figure 4 – Overview of Treated Water Accounts As Defined by AWWA M-36**




It is likely that a portion of the City's current 14% non-revenue water includes untracked authorized uses within City facilities and at City parks such as the fire training grounds - albeit a small amount, this may be a significant (i.e., measurable) use. The City may also have a small number of inaccurate water meters installed on customer taps, or minor billing and/or accounting glitches that are included in the 14% of non-revenue water. Future water conservation programs that the City will be considering will include a formal audit of the City's meter testing, and accounting systems, and a review of all water use at City facilities. The City has already begun this audit process.

**Meter Testing and Replacement Policies and Procedures**

In July 1979, the Loveland City Council approved an ordinance requiring water meters for all new construction and for existing homes when ownership changed hands. Before that time, the City only required meters for commercial accounts within the City and for all accounts served outside the City limits. Less than a year later, June 1980, the council passed another ordinance requiring meters for all water customers.

By 1981, the City was the first municipality in the state to be completely metered, at a cost of over $3 million. The average annual water usage declined by 20 percent. Before metering, the water treatment plant's maximum day demand was 22 million gallons per day. After metering, the maximum day demand was 16.7 million gallons per day (City of Loveland, 1989). On a per capita basis, these reductions remain reflective in today's uses.

Since being fully metered in 1981, the City has maintained an aggressive meter testing and replacement program. This program involves annual testing of most meters that are 1 ½ inch or greater in service in the City (see Table 4 for an inventory of meter types and sizes currently maintained by the City). The City tested 420 meters last year, 400 meters in 2011 and 516 in 2010. Meters that are subjected to testing are evaluated for accuracy and either replaced or repaired to restore meter accuracy and maintain the accuracy of City water billings.

**Table 4 – Current Inventory of Meters Maintained by the City (February 2013)**

| Meter Size (inches) | Count |
|---|---|
| 0.75 | 23,616 |
| 1 | 729 |
| 1.25 | 1 |
| 1.5 | 375 |
| 2 | 274 |
| 3 | 56 |
| 4 | 27 |
| 6 | 7 |
| 8 | 1 |
| TOTAL | 25,086 |

Meters that are less than 1 ½ inch are tested and/or replaced on an as needed basis based on bringing into service new customers, observed meter damage, or observed losses in meter accuracy detected by meter readers and/or utility billing services.

A limited number of new meters installed for large water use customers have included automated meter reading (AMR) technology to allow for remote data collection (e.g., drive by) of water use. Expansion of the AMR program may be considered by the City as part of the Water Conservation Plan implementation.

**Water Rates and Billings**

The City maintains a comprehensive water use billing program that provides for different rates for each of its different customer categories. The rates include a base fee and a water use fee. Overall, the City maintains a water rate structure that is designed to create revenue to cover both its fixed and variable expenses – with the base fee covering the fixed expenses and the use fee covering the variable expenses. In this way, the City has more predicable revenue generation based on actual operating costs (see Appendix A for details).

In 1887, the Water Utility established a flat annual billing rate, based on the type of dwelling and the number of fixtures. Customers paid the yearly fee in advance. Until 1968, water rates were based on a flat fee determined by fixture counts. Keeping track of the number of bathrooms and toilet fixtures in homes as the City grew became increasingly difficult, and in July 1968, the City developed a flat rate charge per family based upon average water usage. Since the installation of meters in 1981, the monthly billing has reflected actual water use, and uses a uniform rate for residential customers.

In 1989 City Council approved a series of rate increases that specified water rates from 1990 to 1997. A portion of the revenues from these rate increases allowed Loveland to purchase additional CBT units, cash fund the Green Ridge Glade Reservoir expansion, and set aside money to pay off the City's obligation in the original Windy Gap Project. In 2001, once the specific needs for the rate increases were met, the City lowered rates by 33 percent. Rates are set periodically using a cost of service methodology, meaning that the rates are designed to reflect as closely as possible the real cost of providing water service to customers.

The City bills its customers for water monthly, except for those water users that utilize "ranch" and "hydrant" water sources. These two water services are provided on an as-needed "pay as you go" basis using pre-paid credit cards and use fees.

The City maintains a couple of noteworthy incentive programs within its rate structure to support water use efficiency. The first is the City's excess water use surcharge that it accesses to commercial accounts that exceed a specific individual base amount of annual water use. This fee is accessed to aid in recovering the cost of replacement water for those large water users.

The second is the City's impact fee credit for irrigation only taps that take advantage of native plantings and other outdoor water use efficiency practices to reduce the tap size required to serve the property, as well as the water right dedication or raw water requirement. The City has been piloting the efficacy of native plantings to reduce expected irrigation water requirements in various settings such as at the Medical Center of the Rockies[10].

[10] The pilot program has involved the installation of multiple hydrozones to evaluate Xeric landscape in various settings including boundary landscapes, parking lot islands, heliport landing area, etc.

The City conducts water rate studies to correctly and fairly price its water and services, on a three to five year cycle. A water rate study was just finished in 2012, with another planned for 2015. Additional water rates evaluations, post-2015, will be considered for inclusion in the implementation of this Plan.

**Leak Detection and Repair**

The City has maintained a proactive leak detection program for many years. Currently, the City has implemented an acoustic emissions program that detects distribution system leaks between adjacent valves. In 2011, the City had a goal of testing 50 miles of pipe; however, the number of leaks that surfaced during this time diverted staff from finding leaks to fixing leaks. Nonetheless, the technology detected 6 leaks in 2011 that had not surfaced, saving an estimated 310,000 gallons per day (gpd) in water losses (and another 2 leaks in 2012 saving an additional 130,000 gpd).

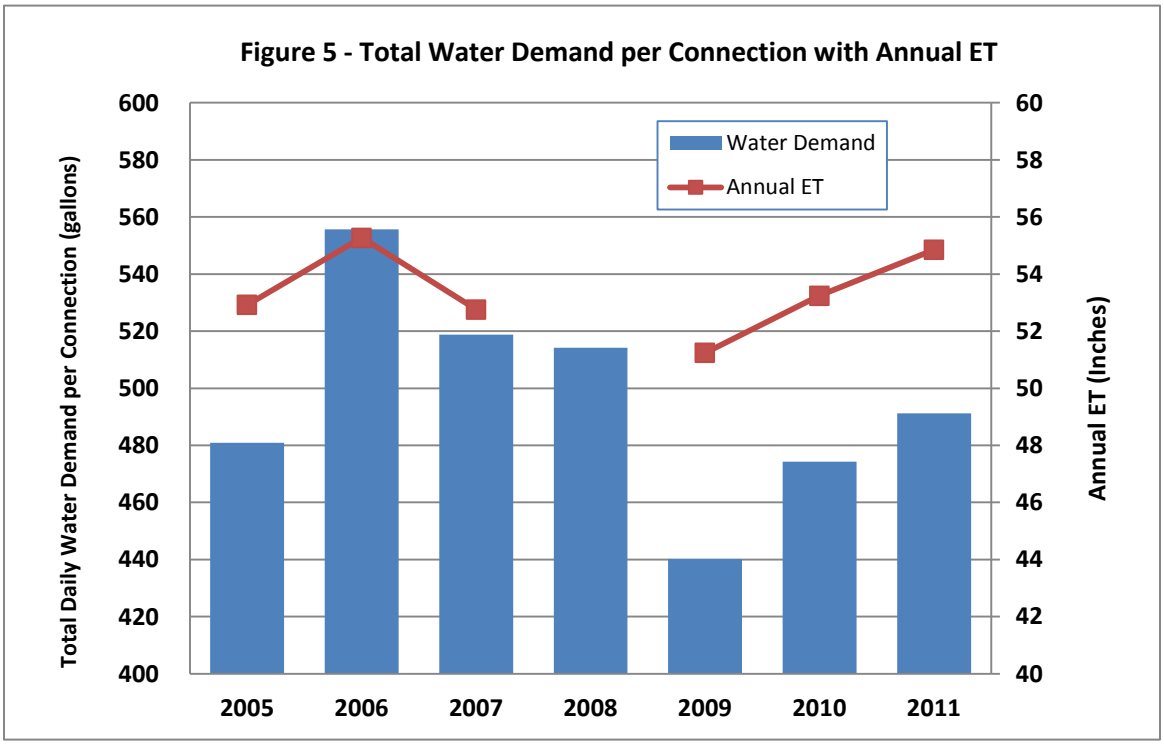
Despite the City efforts, the number of leaks being detected and fixed by the City in recent years (and the related water loss) has been increasing, as illustrated in Table 5. Based on this data, the repairs conducted by the City have reduced water loss by approximately 42 million gallons in the past 4 years. This represents about 1% of the City's total treated water demand or about 7% of the City's non-revenue water in 2011 (not including the found leaks listed above).

**Table 5- Summary of Leaks Detected and Repaired by the City**

| | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|---|
| **Number of Leaks** | **73** | **62** | **61** | **62** | **100** | **76** |
| **Estimated Losses (millions of gallons)** | **n/a** | **6.2** | **3.1** | **8.9** | **23.9** | **27.8** |

# Section 2
# Past Water Use Trends and Ongoing Conservation Programs

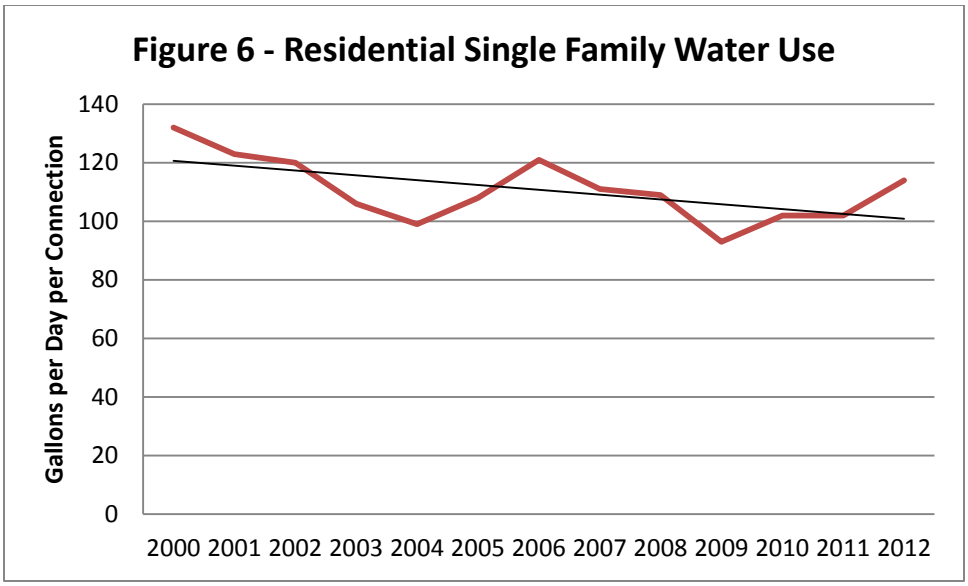
As previously indicated, the City's total water demand has not increased in relation to the City's population, as illustrated in Figure 2. Figure 5 presents the change in per connection water use observed over the past 7 years. Figure 5 also presents the observed evapotranspiration for the years 2008 through 2011[11]. As can be seen in Figure 5, total water demand per connection correlates well to annual ET – meaning that total demand is substantially influenced by outdoor irrigation needs of the community based on prevailing weather conditions (i.e., precipitation, wind and temperature).



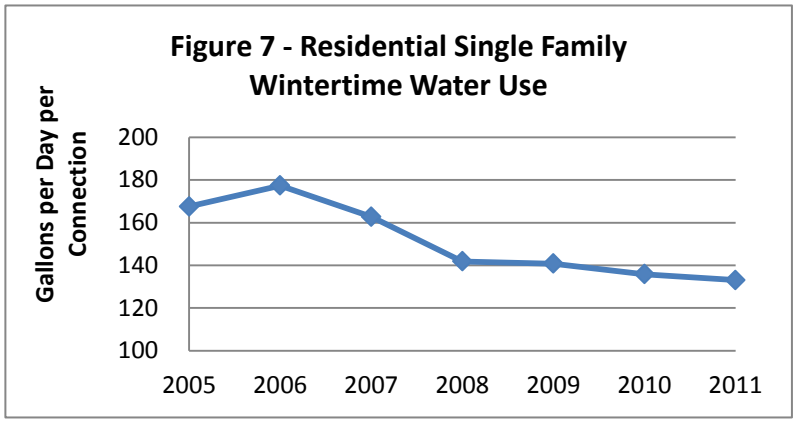

ET- evapotranspiration

Figure 6 demonstrates the observed water use of a residential single family over the last twelve years. While use varies slightly from year to year, overall gallons per capita day demonstrates a downward trend.

[11] ET for Alfalfa is based on weather data maintained by Northern Water for the Loveland station at http://www.northernwater.org/WaterConservation/WeatherandETData.aspx.




This downward trend can further be demonstrated in indoor water use within the City, which is illustrated in Figure 7. Figure 7 presents the daily water use by single family residential connection for the winter months only. This figure indicates that since 2006, average daily water use in the winter has dropped. Noteworthy is that starting in 2008, the residential water use category was revised, segregating single family from multifamily accounts. For this reason, the observed drop from 2007 to 2008 shown in Figure 7 may not be a result of true indoor water savings. However, since 2008, average daily indoor water use for single family residential customers has dropped by 6%.




The 6% drop in residential wintertime per connection use correlates well to expected passive savings that were reported by the CWCB (2010). Specifically, passive savings are those water demand reductions that have occurred, and will continue to occur, as a result of new technology in appliances and fixtures improving customer water use efficiency independent of local water conservation programs conducted by water providers. Residential customer toilets, dishwashers, and clothes washing machines have become substantially more water efficient, and as customers replace aging and broken appliances and fixtures, passive savings have, and will continue to occur organically within the water utility's service area. To this

end, the City has and is expected to continue to see average indoor residential demand decrease into the future as more customers replace and upgrade toilets, dishwashers and clothes washing machines.

**Ongoing Water Conservation Programs**

In light of this trend in indoor water demand reductions, the City supports and promotes local water conservation using the following programs – which are generally focused on reducing outdoor irrigation requirements for its customers.

- **Educational programs** – the City's educational programs include producing and distributing flyers and informational materials, maintaining an informational website, public events, and maintaining two demonstration Xeriscape gardens: one at the downtown Civic Center and another at the City Service Center.
- **Outdoor residential irrigation audits** (AKA, Slow the Flow) – the City supports the Center for Resource Conservation (CRC) Slow the Flow audits at 70 to 75 individual residents each year.
- **Commercial customer energy audits** (through the Energy-Water Efficiency Express) – the City provides financial support to this program. As a result, Efficiency Express installs low flow faucet aerators and pre-rinse spray nozzles in conjunction with energy audits that it conducts.
- **Garden-in–a-Box** residential Xeriscape program – The City provides 80 discounted Garden-in-a-Box kits to local residential customers through this CRC program.
- **Hydrozoning** (and water credits) – As previously indicated, the City supports an impact fee reduction for new customers (and water rights development credits for existing customers) that utilize water efficient landscaping to reduce long-term water demand for a specific tap within the City's service area. The reduction in water demand allows for a discount to be provided with respect to the expected cost of replacement water for new construction, and a credit to be provided to existing construction. This is a new program that is currently being piloted in cooperation with the Medical Center of the Rockies.
- **Larimer County Conservation Corps, Energy and Water Program and the Home Energy Audit Program**– The City supports and offers these energy and water programs, which provides home assessments and audits to residents. These assessments and audits include replacing faucet aerators and showerheads, installing toilet dams and providing dye tablets to test for leaking toilets. These programs reach about 400 homes each year.

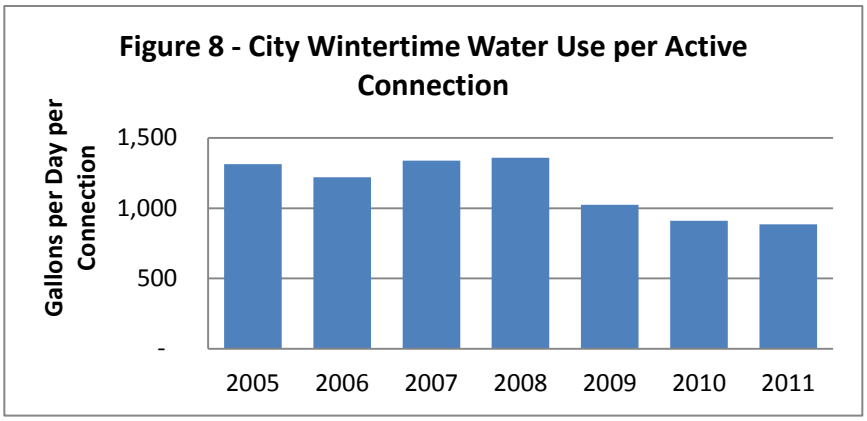
As another example, the City also has water waste ordinance as follows:

> **City of Loveland Municipal Code 13.04.170 Wasting water.**
> Consumers shall prevent unnecessary waste of water and keep all water outlets closed when not in actual use. Hydrants, urinals, water closets, and other fixtures, must be kept in repair so that they will not cause unnecessary waste of water. The supplying of water may be discontinued for any violation of this section. (Ord. 997 § 6, 1968; prior code § 13.13).

In practice, the City utilizes this ordinance to support water waste complaints filed by local customers. The City dispatches staff to investigate the complaint, and most often it is against a home owner who was unaware of their water waste issue. Once the home owner has been made aware, the problem is fixed and no additional complaint is lodged. Typically, about 3 complaints are filed a year with the utility.

**City Water Use**

The City uses water at about 70 to 80 different parks and facilities during the course of the year; with about 25 of the connections used year round. Indoor water use has been managed effectively by the City. This is evidenced by the consistently lower wintertime water use in City facilities, as illustrated in Figure 8.




**Irrigation Plan for the Parks**

Irrigation water use in the parks operated by the City includes both raw and treated water applications[12]. The majority of the irrigation water is raw water and is applied through a centralize irrigation controller system that monitors real time ET and rainfall updates, to support human judgment in the management of individual hydrozones which can be remotely operated using SCADA. Only a very small number of park facilities are without centralized irrigation controllers[13].

In 2008, the City of Loveland Parks and Recreation Department developed a detailed Irrigation Conservation Plan for most of the properties that the City irrigates. The plan (see Appendix B) provides details on each park and public space, including size, and average annual irrigation volumes. The plan also presents a four tiered irrigation program that may be implemented in case of drought and water shortages.

Integral to the City's Irrigation Plan is the understanding that application of irrigation water to the City's properties is not a one-size-fits-all program. As the Irrigation Plan states:

[12] There are 17 parks and 18 public grounds on treated water. 9 parks, 1 public ground and 3 golf courses on raw water. The large parks (LSP, Fairgrounds/Barnes, North Lake, Centennial, Kroh) are all raw water.

[13] Everything but 2 detention ponds (total of 2.3 acres) and 2 small planter beds in the Old Town are on central irrigation control.

> Several factors need to be applied when calculating actual turf watering requirements: types of grasses being irrigated (Blue Grass, Buffalo Grass, Turf Type Fescue, etc.); site conditions (shady, sunny, hillside, low area, soil type, soil compaction, etc.); site impacts (low use, high use, sports turf, green belts, etc.); safety concerns regarding recreation activities (hard playing surfaces, large cracks in the soil, bare ground, etc.); current weather conditions (evapotransporation rates, temperatures, soil moisture levels, wind, sunshine, weekly rain totals); aesthetics (public buildings, sculpture parks, planned public events, etc.).

Overall, the irrigation water used by the Parks Department is efficiently managed at all times leveraging the benefits of centralized controllers with human judgment, as conditions warrant, since Parks staff can remotely operate the irrigation systems at 98% of the park and public spaces for which the City is responsible. Noteworthy is that based on the four tiered irrigation program, Park irrigation has been used effectively by the City in the past as a drought buffer.

**Data Collection and Assessment of Programs**

The City does not currently conduct an assessment of the effectiveness of its water conservation programs per se[14]. The City does track total treated water production and water billings on a monthly basis, and uses this information to track non-revenue water. However, no formal data tracking program is in place to support an assessment of individual water conservation programs. The City will identify future data tracking and reporting programs that will be implemented as part of this Plan to support the assessment of individual water conservation programs, as well as maintain compliance with new state regulations (i.e., HB 11-1051).

Given that the City maintains customer categories that differentiate residential single family from multi-family water use, from commercial use, from City use, it will be fairly straightforward for the City to conduct assessments and evaluations of specific water conservation programs – especially those that focus on specific types of customers and water use.

**Past Water Savings from Water Conservation**

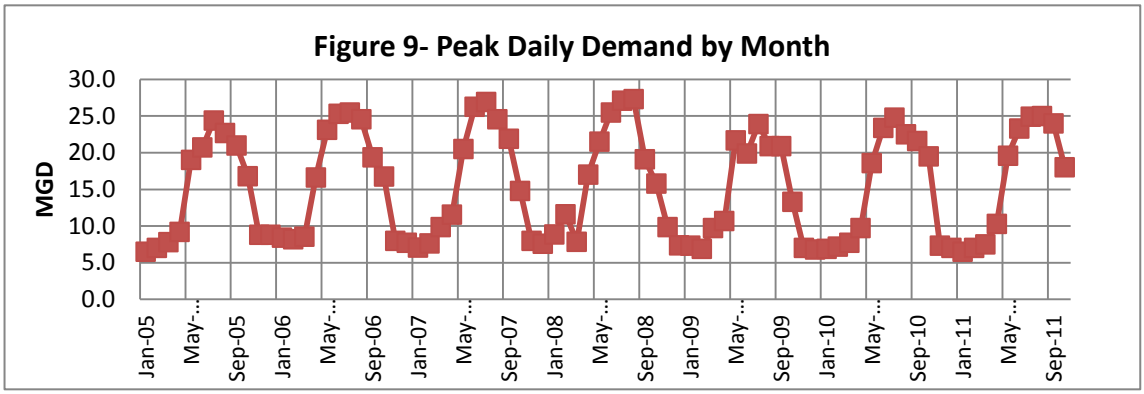
Based on the available data, it is difficult to identify specific water demand reductions that have occurred as a result of the City's programs with the exception of the City's indoor water use reductions observed between 2008 and 2011 (which is an approximate 30% reduction from 2005 and 2006 to 2011, accounting for about 8 AF annually or about 0.06% of total annual treated water demand)[15].

[14] Some tracking of water efficiency improvements is conducted as part of programs that the City supports such as the Efficiency Express, the Home Energy Audit Program and the Larimer County Conservation Corps assessment and audit programs.

[15] Outdoor irrigation conservation efforts conducted by the City were implemented in the early part of the last decade, such that water demand reductions associated with these programs likely occurred prior to the time when data used in this Plan were collected. However, since 2009, the ratio of peak day demand to total demand and to observed ET have both been reduced, perhaps indicating that some improved efficiencies have occurred with regard to summer time peak day usage.

Other City water conservation programs appear to be overshadowed by the effects of "passive savings" that are occurring organically as residential customers repair and upgrade their water using appliances and fixtures.

It does appear, based on current trends in water use, that the City's customers, including residential and commercial customers, are reducing their average water use on an annual basis. However, peak daily demand, which occurs during the heat of the summer, appears to be on the rise since 2009 (see Figure 9). This trend tracks with observed ET during this period of time (see Figure 5). Given that in the future the City will have a larger service population and the potential for variable weather conditions (which influence peak demand), future water conservation programs that the City implements will likely need to address peak daily summertime uses.



# Section 3
# Forecast of Future Water Demands

Forecasting water use (or water demand) is a critical part of water conservation planning since water conservation may be used to offset increases in future water demand – identified as increasing water use within specific customer categories – and/or postpone infrastructure improvements that are needed to support growing demands.

Forecasts can range from simple projections based on anticipated growth in the population to complex models using several variables to explain variations in water use. Forecasts can be made for a water system as a whole; however, forecasts are considered more accurate and valuable to water conservation planning when they are based on expected trends for each category of customers, since residential growth may not mirror commercial or institutional growth. For this reason, the demand forecasting developed for Loveland evaluated expected growth of peak daily, monthly and annual water demand for each of the City's customer types – single family residential, multi-family and commercial groups for both inside and outside of the City Limits plus City uses and pre-paid uses (i.e., Ranch and hydrants), and the annual figures compare reasonably with projections in the City's Raw Water Master Plan.

The potential effects of future water conservation programs that the City chooses to implement have not been included in the demand forecast prepared during this step. Demand forecasting at this point in the planning process only incorporate trends in future customer water demand based on a continuation of the current and ongoing water conservation efforts and "passive conservation" as older fixtures and appliances wear out and are replaced with models that meet current efficiency standards. A revision to the demand forecast based on implementing the conservation measures selected by the City is made later during the planning process, and is presented in Section 8.

## Forecasting Method

To begin with, the forecasting methods that were developed for this planning effort focused on predicting future treated water demand based on the continuation of ongoing trends in water use and expected population growth in the City's service area.[16] The forecasting methods were used to estimate average conditions water demand, as well as above average water demand in future years[17]. A presentation of the forecast model assumptions and results are provided in Appendix E.

[16] Data for forecasting was based on average monthly per connection water use for the period 2005 through 2011; during which time recent trends in municipal water use were established. Characterizing variability in City water demands was performed using either this entire database, or some subset as is described in the assumptions listed in Appendix E.

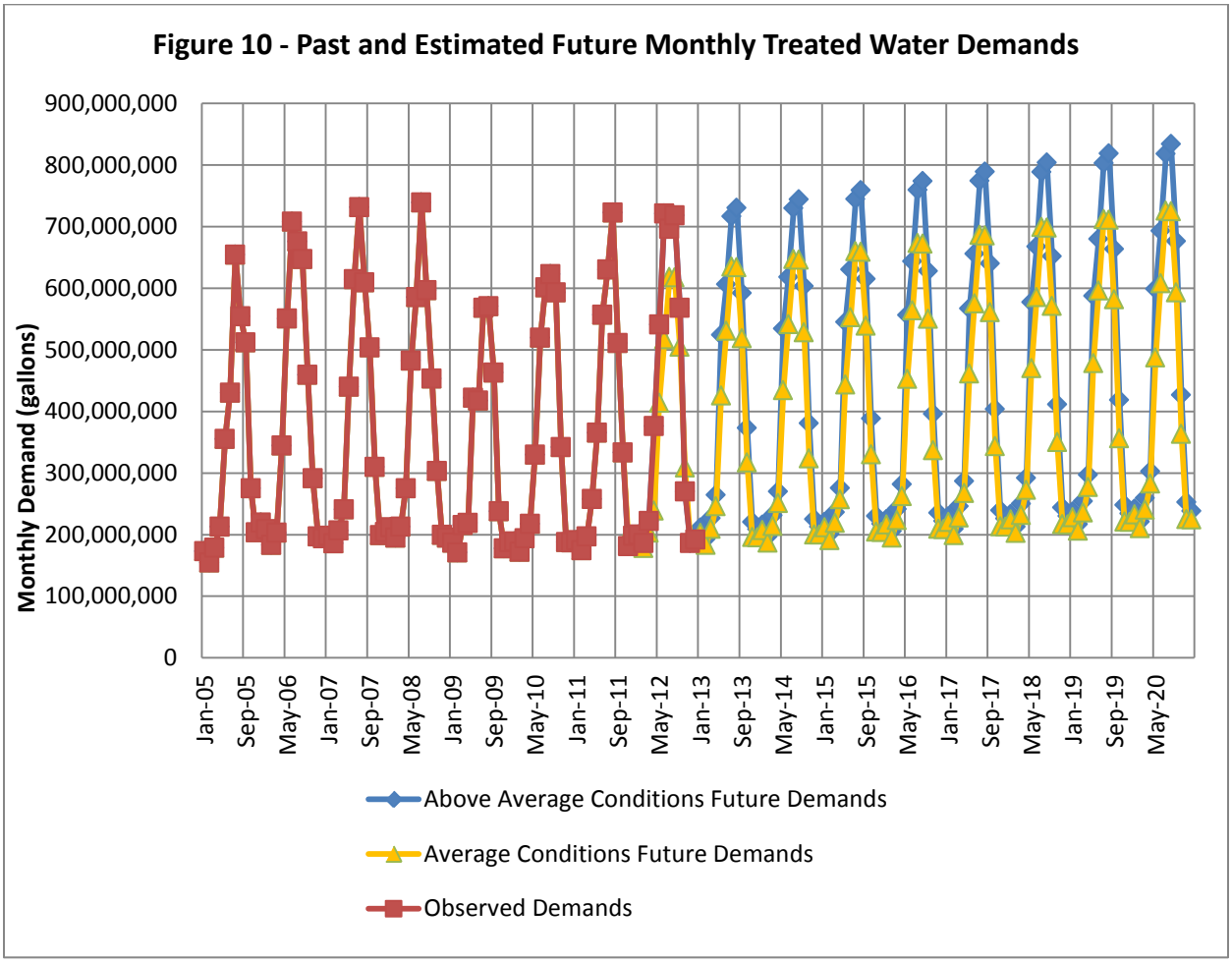
[17] Variability of future water demand was developed assuming that the water demand over the past record is normally distributed and that natural variability of weather and customer water use behaviors will continue through the planning period in a manner consistent with those observed since 2005. The available data was determined to be adequate for predicting variability in future demand over the coming 8 years, but not adequate to estimate extreme variations due to drought or wet weather with more than a 8 year return period.

The specific forecast model results of interest to this Plan and related analyses include future annual treated water demands and future peak day demands, both of which are based on estimated future monthly treated water demands. Therefore, the results for each of these three future demands are presented below.

### Monthly Treated Water Demand

Monthly water demand is the basis of all other estimated future water demands. Appendix E presents how future monthly water demands were developed and how these demands were used to estimate future annual and peak daily demands. Figure 10 presents the results of the predicted monthly treated water demands throughout the planning period for both average and above average conditions[18].

**Figure 10 - Past and Estimated Future Monthly Treated Water Demands**




As this figure illustrates, future monthly demand is not expected to peak as sharply as has been observed in the past four years (from 2007 to 2011), based on average conditions. However, peak monthly treated

[18] The reduction of treated water demands related to expected passive savings are not included in the monthly treated water demands; since they are calculated on an annual basis. Therefore, passive savings are integrated into reported annual treated water demands. Monthly water demands are presented only to illustrate the seasonal nature of monthly demands and the relative differences between average and above average conditions.

water demand for above average conditions (i.e., one standard deviation above average conditions), which are about 12% higher than average conditions[19]. The peak treated water demand difference between average and above average conditions is about 110 million gallons in August 2020.

**Annual Water Demand**

Annual water demand projections were developed by summing the monthly water demands for each calendar year and subtracting the estimated annual impact of passive savings[20]. Figure 11 presents the annual treated water demands in the past and as estimated through the planning period as a result of those analyses presented in Appendix E.

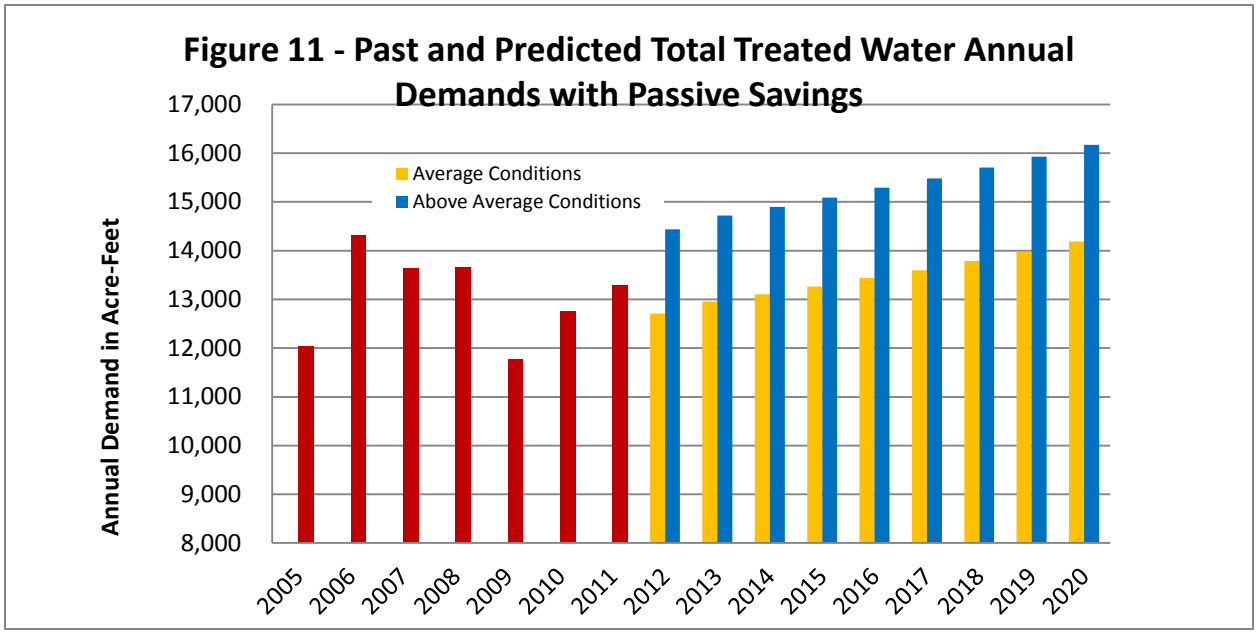



Figure 11 illustrates the relative impact of demand variability on estimated future treated water demands. Above average annual treated water demands vary over the planning period from about 14,440 to 16,170 acre-feet (AF), whereas average annual treated water demands vary from about 12,710 to 14,185 AF. These values compare reasonably with the city's Raw Water Master Plan when adjusted for the impact of projected passive savings. This difference illustrates the challenge of planning for average conditions (i.e., those that occur only 5 out of 10 years), versus planning for conditions that occur 8 out of 10 years; given that demands may reasonably vary over average conditions by as much as 2,000 AF by the end of the planning horizon (2020).

For the City of Loveland, this variability is not significant given the current water portfolio used to provide the City with potable water supply. It may be that at some time in the future, the estimated demand

[19] Above average treated water demands vary from about 4 (January) to 23% (August) of monthly average treated water demands; averaging about 12% higher over the course of a year.
[20] Passive saving water demand reductions are estimated to be about one quarter billion gallons of treated water per year in 2020.

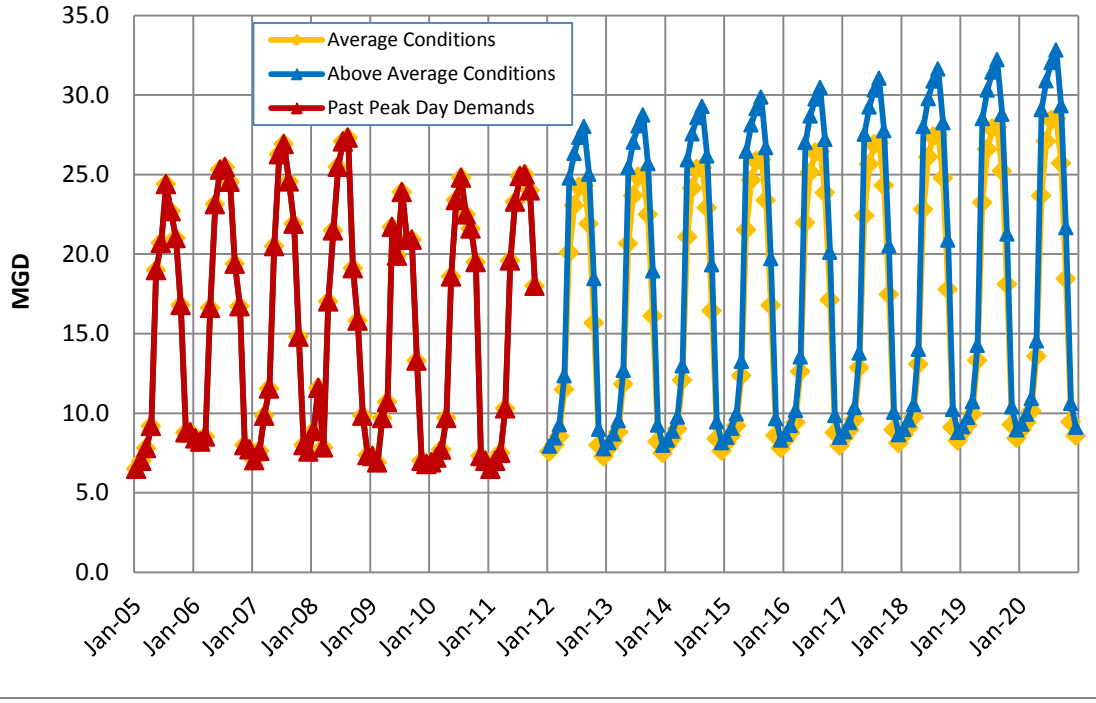
variability may impact the City's ability to provide potable water on an annual basis, but it is not expected to be rate limiting over the current planning horizon.

**Peak Daily Forecasts**

The City's current peak day treatment capacity is approximately 30 MGD; whereas peak daily demands in the summer of 2008 topped 27 MGD. Peak day treatment capacity is therefore an issue for the City.

Peak day demands were estimated for each month in the planning period based on the average peaking factors presented in Appendix C. Figure 12 presents the results of the forecast modeling used to estimate peak day treated water demands for the period 2012 through 2020 (compared against past peak day demands).

**Figure 12 - Past and Predicted Peak Day Treated Water Demand for Average and Above Average Conditions**




Based on the analyses presented in Figure 12, average conditions peak day treated water demands are not excepted to exceed 30 MGD during the planning period (the highest annual peak day demand in 2020 is estimated to be about 28.5 MGD); whereas for above average conditions, the highest annual peak day demand exceeds 30 MGD in 2016 (30.5 MGD). Although the City has the ability to utilize an interconnect with Little Thompson Water District to meet peak day demands above 30 MGD, future peak day water demands in the summer will require that additional water treatment capacity is developed by the City, unless water conservation programs can be developed and implemented that "shave" peak day demands, effectively postponing (or eliminating) the need for the treatment plant capacity expansion.

# Section 4
# Capital Improvement Projects

The City maintains a detailed 5-year capital plan that identifies design, consulting and construction costs associated with ongoing and upcoming water related projects, including:

- Transmission and distribution projects (focusing on replacing steel and cast iron pipe with plastic in critical areas)
- Water treatment plant
- Water resources
- Upgrades and extensions (AKA – oversizing and extensions)
- Miscellaneous operations and maintenance (O&M) budgets

The projects that the Water Utility are currently tracking include water line replacements, water storage tank construction, meter upgrades and replacements, treatment plant upgrades and improvements, water resources projects, vehicle purchases, and various O&M projects. A specific breakdown of the City's 5-year detailed capital project list is provided in Table 6.

**Table 6 – Summary of City's 5-Year (2013-2017) Detailed Capital Improvement Plan for Water Projects[21]**

| | | 5-Year Total |
|---|---|---|
| **Transmission and Distribution** | | |
| | Water Line Replacements | $7,834,020 |
| | Water Storage Tanks | $240,140 |
| | Meter Replacements | $440,930 |
| **Water Treatment Plant (general)** | | $9,978,360 |
| **Water Resources** | | |
| **SIF Projects** | | |
| | Water Lines | $860,130 |
| | Water Storage | $240,140 |
| | Water Treatment | $11,566,810 |
| **General Plant** | | $971,200 |
| **O&M Projects** | | $3,907,780 |
| | **5-Year Total** | $36,039,510 |

Capital projects that are considered as a part of the City's water conservation programs include water line inspections, replacements and upgrades (which are expected to help reduce water losses); and meter replacements (which are expected to help reduce apparent water losses). The costs of these programs will be included in the overall water conservation program costs provided later in this Plan.

[21] From the 2013 CIP for the Water Utility

# Section 5
# Goals for Water Conservation

The City has a number of goals for its water conservation programs. Perhaps the most important relates to the City maintaining a connection with the community that it serves; such that it can promote the importance and value of water use efficiency in maintaining a reliable, secure and sustainable water supply now and into the future. To do this, the City will rely on a number of integrated programs, each of which is described in the following section. The City understands that it is the true integration of water conservation and water resources management, in a conscientious, deliberate and transparent manner that will allow for the City and its customers to work together to reach the overall goals stated below.

Specific goals that the City looks to achieve include:

- Reducing summertime peak daily demands in the future by about 1 mgd (or about 3 acre-feet (AF) per day which is about 10% of peak demand) during above average demand periods by 2016;
- Reducing non-revenue water from current levels to 10-11% of total treated water by 2020 (which is a reduction in real and apparent water loss of about 575 acre-feet[22]);
- Developing water rates that accurately reflect the cost of service for providing reliable, secure and sustainable water supplies, including infrastructure management and maintenance, and the impact of changing customer water use behavior patterns in the future;
- Supporting the City's sustainability efforts in part by reducing City water use (indoor and outdoor) by 5% by 2020; and
- Developing technical assistance programs that will support improved water use efficiency by the City's large commercial and irrigation only users.

Through the implementation of the Plan, and beyond, the City will strive to reduce per connection water use by about 11% between 2012 and 2020, for an estimated demand reduction of about 1750 AF[23,24] within that time frame.

[22] For the purposes of actual demand reductions and predicted impacts on future revenue, that real and apparent losses constitute 80% and 20% of the observed non-revenue water loss, respectively.
[23] Passive savings are estimated to be about 780 acre feet (AF) between 2012 and 2020; such that the City conservation goal of 1,750 AF is in addition to the estimated passive savings.
[24] The City's goal of 1,750 AF was developed based on an average per connection daily use from 2008 to 2011 of 480 gallons; decreasing to about 426 gallons per day per connection in 2020 (for an estimated 29,000 connections serving a population of about 80,000).

# Section 6
# Identification and Evaluation of Candidate Measures and Programs

As indicated in the previous section, the City has identified that water conservation efforts can best support the needs of the water utility through:

- Reducing summer time peak demand;
- Reducing current system wide water loss; and
- Supporting improved water use efficiency for the City's commercial and large irrigation customers

Therefore, the City will identify, evaluate and ultimately select water conservation measures and programs that support these goals.

The State has regulations (CRS 37-60-126 – see Appendix C) which require that covered entities that develop water conservation plans for review and approval by the CWCB consider a broad range of potential measures and programs for the plan to be complete. Table 7 presents each of the categories of water conservation measures and programs that the City considered, aligned with the regulation, as it developed its "short list" of measures and programs for detailed evaluation.

A few key points related to this analysis are noteworthy.

- Based on the CWCB SWSI Levels Analysis (June 2010), the City has decide not to actively support the retrofits and related incentives (e.g., rebates) for indoor water using fixtures and appliances, since home and business owners will be naturally replacing and upgrading toilets, faucet aerators, clothes washers and dishwashers naturally, with newer, high efficiency models in the future. This market driven process does not benefit from the City spending additional resources to accelerate the impact of these passive savings.

- The City does not currently provide water to any large commercial or industrial customer that would benefit from improved process water retrofits and upgrades. Hospitals and large laundry services, car washes, and greenhouses may benefit from improved water use efficiency upgrades; however, the City will focus its commercial programs with a higher rate of return on investment (e.g., faucet aerator retrofits, shower head replacement programs). In future years, the City may decide to evaluate process water efficiency improvements, but they are not included in this version of the City's Water Conservation Plan.

- The City has not agreed philosophically or politically with the use of inclining rate block structures for residential customers that are not based on the cost of service. For this reason, the City maintains a flat residential water rate, which is raised periodically as fixed and variable costs increase. The City does have a surcharge for commercial customers that exceed a specified quantity of water use in a year; which is associated with the cost of replacement water.

**Table 7 – Summary of Measures and Programs that Must Be Considered During Plan Development**

| CRS 37-60-126 Category of Measures and Programs* | Current Efforts | Future Evaluations Proposed by the City |
|---|---|---|
| **Water-efficient fixtures** and appliances, including toilets, urinals, clothes washers, showerheads, and faucet aerators | The City currently provides replacement of showerheads and aerators through energy and water assessments and audit programs. The City does not currently have programs to support customer replacement and/or upgrade of appliances. | These types of programs will only be considered for large commercial customers, since residential customers will be replacing toilets, faucet aerators, clothes washers and dishwashers with more water efficient models organically (based on CWCB, 2010). |
| **Low water use landscapes**, drought-resistant vegetation, removal of phreatophytes, and efficient irrigation | The City does not currently have specific programs to support customer replacement of landscape materials; however the City supports Garden-in-a-Box (which provides water efficiency landscape materials to interested homeowners); has been installing water efficiency landscapes in selected City parks and facilities; and maintains a tap fee structure that allows for reduced impact fees for customers that can demonstrate the appropriate use of water efficient landscape materials. | The City will continue its current programs |
| **Water-efficient industrial and commercial water-using processes** | The City does not currently have a program for industrial or commercial water customers – associated with process water use. | The City's customer base does not justify development of a process water focused water conservation program. |
| **Water reuse systems** | The City has limited opportunities for reusing treated wastewater since a substantial portion of the City's water portfolio is direct diversions from east slope supplies or Colorado Big Thompson water, which cannot be reused. A portion of the City's water portfolio does include some reusable supply from its reservoirs and some Windy Gap allocations. However, reusing these water sources reduces overall firm yield, so the City does not practice reuse in its normal operations. | The City may obtain some water rights that would allow reuse through the Windy Gap firming project; however, until such that that project occurs, reuse opportunities do not exist for the City. |

**Table 7 – Summary of Measures and Programs that Must Be Considered During Plan Development (continued)**

| | | |
|---|---|---|
| **Distribution system leak identification and repair** | The City currently has a water loss control program including leak detection and repair projects, meter testing and replacement, and water loss tracking; however these programs can be improved | The City will evaluate measures and programs to improve its current supply-side water loss management efforts. In addition, the City will evaluate strengthen its overall messaging regarding water use efficiency, water management, and the importance of maintaining and upgrading water infrastructure to support customer needs with respect to reliable, secure and sustainable water supply. |
| **Dissemination of information** regarding water use efficiency measures, including by public education, customer water use audits, and water-saving demonstrations | The City maintains a strong relationship with the community that it serves through messaging, educational efforts, and its "lead by example" mentality. The City also supports customer water use audits employing outdoor irrigation audits for residential customers (AKA, Slow the Flow); indoor audits and retrofits for low-income residences; and combined energy/water audits for selected commercial customers. | The City will evaluate the efficacy of each of these programs with respect to measurable results and maintain those that can be shown to have positive impacts on managing customer water demand. |
| **Water rate structures and billing** systems designed to encourage water use efficiency in a fiscally responsible manner. | The City has a flat residential block rate that is based on the cost of service which in turn is based on fixed and variable costs; including a reserve for infrastructure replacement and management. Commercial water rates are also a flat rate with a water use surcharge included for high annual water use. Irrigation only water rates are inclining block rate based on a water budget for established landscapes. | The City performs a rate study every 3-5 years to keep its rates in balance with costs; which included a 4% rate increase in 2011. The City will maintain a flat block rate which reflects the cost of service to its customers; while utilizing other methods to manage future water demands. Part of the City's efforts will include utilizing a reduction in tap fees for irrigation only customers that can demonstrate reduced water use via native plant materials and efficient hydrozones. |
| **Regulatory measures** designed to encourage water conservation | The City maintains a water waste ordinance. | The City will evaluate methods to broaden its water waste ordinance. |
| **Incentives** to implement water conservation techniques, including rebates to customers to encourage the installation of water conservation measures | The City has not used rebates in the past to encourage water use efficiency. | These types of programs for indoor uses will only be considered for large commercial customers, since residential customers will be replacing toilets, faucet aerators, clothes washers and dishwashers with more water efficient models organically (based on CWCB, 2010). Outdoor water use efficiency incentives and rebates will be evaluated by the City. |

* In developing a water conservation plan, state regulation requires that each covered entity shall, at a minimum, consider these categories of measures and programs.

- The City has an incentive program to reward landscape irrigation efficiency through either a refund of a new tap impact fee and/or a credit for water rights provided during development. This program is relatively new, and is in the pilot phase, but will continue to be offered as the Water Conservation Plan is implemented.

- The City has seen a consistent reduction in its own water use, both indoors and outdoors. Indoor water demand reduction has been associated with the installation of upgraded fixtures and more efficient water use practices. Outdoor water use efficiency has been improved with the installation and use of centralized irrigation controllers that manage each zone of each park individually. These improvements are examples of how the City "leads by example."

- In addition, the City Parks Department has developed an in depth Drought Management Plan detailing water use reductions in each park during times of water supply shortage.

- The City has a water waste ordinance that has been used in the past to respond to citizen complaints; however, the City has not allocated resources to conduct more hands-on efforts to identify and correct wasteful watering practices (e.g., driving inspections for over watering, time of day watering violations, etc.). The City may wish to consider allocating resources to conduct "on the street" assessments to help control summer peak demand in the future. In addition, the City may want to consider adding language to its current ordinance that would designate time of day watering restrictions and/or overspray requirements.

Based on the City's past efforts, current policies, and future infrastructure limitations, it proposed to evaluate the efficacy of implementing the following suite of water conservation measures and programs.

To reduce summer time peak day demands, the City will evaluate the following:

- Continue management of the City's parks utilizing the central controllers and drought management plan;
- Expand the City's water waste ordinance to detail actions that the City may take to identify and potentially penalize water waste repeat offenders;
- Continue to support residential outdoor irrigation audits (Slow the Flow) and residential Xeriscape planting (Garden-in-a-Box) programs;
- Develop and broadcast a new community water use messaging to stress the need for summertime use reductions (e.g., initiate voluntary watering restrictions), infrastructure management and maintenance, and general water use efficiency; and
- Initiate large commercial and irrigation only audit programs to improve outdoor irrigation efficiency.

To improve water loss management and water rate structures:

- Conduct a system-wide water audit using the American Water Works Association (AWWA) M-36 methodology;

- Implement recommendations from the system-wide water audit related to metering, data collection and management, and leak detection;
- Perform annual system-wide water audits as a means to track water loss patterns and verify that improvements are in-fact reducing real and apparent water losses; and
- Continue to perform water rate studies to evaluate and set water rates based on the cost of service for water supply to each customer. The water rate studies may also evaluate issues such as excess water use surcharges, commercial and industrial customer billing options, and creating more commercial customer categories.

Other relevant programs:

- Continue K-12 education by supporting the Loveland Water Festival;
- Continue to support the Efficiency Express such that water efficient faucet aerators and showerheads can be installed as energy audits are conducted; and
- Continue to support and offer the Larimer County Conservation Corps, Energy and Water Program and the Home Energy Audit Program for residential customers.

A detailed evaluation of each of these potential measures and programs are provided below.

**Summertime Water Demand Management**

**Parks irrigation watering management** – The City will continue its programs to manage the use of irrigation water on its parks, which has been a success story leveraging both human judgment and centralized controllers to efficiently apply irrigation water as conditions, and the City's irrigation conservation plan dictate. However, the parks will be evaluated for turf replacement with native plant materials, depending on the park use, location and character. In addition, minor improvements will be evaluated to further improve the current efficiency of the park irrigation efforts (MP rotors to replace older spray rotors, improving some hydrozones to support new native plantings, etc.).

Irrigation in the City main parks covers nearly 275 acres with about 26 AF per week during peak summertime use. The MP rotors will not only reduce total irrigation water demand for the City, but it will lower peak day demand by about 0.6 mgd.

**Costs** - $70,000 (for materials, no labor) for replacing all existing rotors with MP rotors over the next five years.

**Estimated Savings** – 70 to 80 AF (based on a 15% improvement in irrigation application efficiency)

**Expanded Water Waste Ordinance** - The City's water waste ordinance provides general guidelines for unacceptable water waste by its customers, and allows for the City to shut off service for offenders. The City will consider developing two key amendments to this section of the municipal code:

i) Time of day watering restrictions that discourage outdoor irrigation between 10 am and 6 pm from May 1st to September 15th.

ii) The ability of the City to fine observed water wasters for violations (see Appendix D for an example from the Colorado Water Wise Best Practice Manual).

On the heels of these amendments, the City will consider methods to identify and if necessary, penalize repeat water wasters as a means of broadcasting a low tolerance for inappropriate irrigation practices.

**Cost** - $1,500 for Ordinance Revision

**Estimated savings** – savings are included as a part of the messaging campaign describe below.

**Slow the Flow and Garden-in–a-Box** – The City will determine whether or not to continue its support of two popular programs. Both are provided by the Center for ReSource Conservation (a non-profit operating out of Boulder). Costs carried by the City will include providing for up to 120 residential audits; and up to 80 Garden-in-a-Box native planting kits. Combined, these programs will continue the City's engagement and support of its residential customers, and in the future be linked to the City's overall efforts to reduce summertime peak water demand.

**Cost** - $17,200 (for 80 Garden-in–a-Box Kits (City pays $50 per kit); and 120 Slow the Flow residential irrigation audits (City pays about $110 per audit))

**Estimated savings** – 2.5 % of outdoor irrigation water use per connection in the program (about 6 AF[25])

**Wise Water Use Messaging** - The City will consider developing water messaging campaign that will include a tag line, logo, and related materials to help announce and publicize the implementation of the new water conservation programs; to educate and engage its customer base about the need to reduce summertime peak demand; and to ask for support of the new water waste ordinance, new water rates, overall infrastructure management and water loss control, and voluntary watering restrictions. The logo and messaging may also be incorporated into the stenciling on the City's service vehicles; water billings; educational programs; the City website; and printed information provided during customer water audits.

The City will connect the messaging effort to customer surveys that are conducted by the utility on to test messaging, identify customer hot buttons and key water topics, and evaluate public opinion regarding various water conservation strategies and programs.

[25] Based on residential summertime usage in 2007 and 875 total customers participating in the programs over 5 years.

**Cost** - $20,000 to $25,000 for message development and initial launch (printing, web update, etc.)

**Estimated savings** - dependent on the breath of the City's efforts to publicize and engage the community. Expect a reduction of about 0.75 to 1.5% of community water demand reduction due to combination of the messaging campaign with other City water conservation efforts including the water waste ordinance, the improved City facility water use, reduced distribution system water loss, and increased water rates. The messaging campaign will focus on creating synergies linking City actions with customer water use behaviors (e.g., lead by example), (75 to 100 AF[26]).

**Commercial Water Audits and Retrofits** – The City will consider initiating a program to provide free water audits to its largest water customers coupled with retrofits for showerheads, faucet aerators and pre rinse spray nozzles, depending on the nature of the business. The largest water users in the City have been identified to include schools, manufacturing facilities, churches, business offices, nursing homes and elderly care, and City facilities. Of these, the City will focus its audits and retrofits on those with large outdoor irrigation uses coupled with indoor uses that may be receptive to the proposed retrofits[27].

The proposed audit program that the City would implement would involve obtaining grant funding to support data collection and analysis efforts, water use modeling and retrofits to improve the water use efficiency at each location listed in Table 8. The proposed audit program would be similar to programs conducted in other parts of the State supported by CWCB water efficiency grant funding. To this point, the costs of the first year or two of commercial facility audits and the estimated water savings are in line with those reported by past CWCB grant recipients. Note that although the water savings predicted from the audits includes both indoor and outdoor water use reductions; the audits will be focused on those organizations that may reduce summer time irrigation use, thereby supporting the City's goal to reduce peak summertime demands.

**Costs** - $ 36,000 – $45,000 for audits and retrofit fixtures (depending on how many of each retrofit type is installed - faucet aerators, pre-rinse spray nozzles and showerheads). This estimated cost includes $12,000 to 15,000 for one nursing home facility customer.

**Estimated savings** – 8 AF and 20,600 gpd during peak demand (see Table 8).

[26] This water demand reduction is based on the positive results of the City's past efforts to reduce customer water use demand solely through messaging and public relationship programs.
[27] The retrofits being proposed are low cost and energy efficient, which therefore make them cost effective as compared to upgrades or improvements to kitchen and laundry equipment, air cooling equipment, and/or other commercial wash uses.

**Table 8 – Summary of Potential Commercial Facility Audit Locations and Savings**

| | Average Annual Water Use (gallons) | | Potential Savings | |
|---|---|---|---|---|
| | Indoor | Outdoor | AF (annual[c]) | GPD (during peak) |
| Manufacturing Facility | 2,355,000 | 1,970,000 | 1.5 | 3,500 |
| Nursing Home (one customer) | 9,375,000 | 3,172,000[a] | 4.1 | 8,600 |
| Publishing Facility | 988,000 | 2,931,000 | 1.2 | 3,900 |
| Manufacturing Facility | 303,000 | 584,000 | 0.3 | 1,000 |
| Office Building | 232,000 | 369,000[b] | 0.2 | 600 |
| Office Building | 297,000 | 1,570,000 | 0.7 | 2,300 |
| Office Building | 135,000 | 537,000 | 0.2 | 700 |
| TOTAL | | | 8.2 | 20,600 |

[a] uses last 4 years of water use for outdoor estimate

[b] high water use in 2010 not included in estimate of potential savings

[c] including savings from both indoor retrofits and outdoor efficiency improvements

**Water Loss Management**

**System Wide Water Audit and Recommendations** – The City will consider conducting a system wide water audit using the methodology specified in the AWWA M-36 Water Loss Control Manual. Specific tasks that the City should consider paying special attention to relate to tracking and quantifying, where possible, metered, unbilled and unmetered, unbilled water uses; as well as looking at meter reading accuracy for large taps. In addition, the City should evaluate the accuracy of its current billing system to track all billable water accounts including those that are transferred from one customer to another. Seasonal variations in non-revenue water should also be evaluated and characterized. The audit should be provided by a third party working closely with all utility departments that handle and manage water use accounting and billing.

Recommendations from the audit may include, but not be limited to such tasks and actions as:

- Install system pressure controllers to reduce system pressure and thereby reduce supply side leaks.
- Locate and install meters on unmetered uses.
- Calibrate and repair/replace large meters including totalizing meters on water treatment plant effluent, commercial and irrigation only customers, etc.
- Accelerate the installation of AMR and AMI technologies to assist the City in identify and tracking supply side and demand side leaks, improving data handling and billing accuracy, and reducing City loss time injuries.
- Add system metering redundancy for measuring water treatment plant through distribution system subareas or management areas, and other key locations of potential apparent water loss.

**Costs** – for the audit $25,000 to $40,000 (depending chiefly on the extent to which meter testing is incorporated into the scope); with costs to implement audit recommendations variable based on findings during the audit.

**Estimated savings** – It is possible that the City will be able to reduce its current average water loss by about 3 percent (i.e., from about 13.5% of total demand to about 10.5% by 2020) as a result of the audit – which includes better understanding the City's real and apparent losses. This reduction corresponds to a reduction of non-revenue water by about 575 AF on average[28]. Noteworthy is that these savings will result from a combination of the audit and the implementation of key audit recommendations.

**Water Rate Study and Implementation** – The City has a policy of conducting water rate studies once every three to five years to maintain appropriate customer water rates based on the cost of service. The City has just completed a water rate study in 2012 to assess current and projected future costs, and to fine tune current policies regarding:

- Excess water use surcharge for commercial customers,
- Commercial and industrial customer billing options, and
- Creating more commercial customer categories.

A water rate study can also examine the impacts of alternative tap fee incentives for new and existing customers that install water efficient landscapes and appropriately designed irrigation systems for those landscapes.

The water rate study is important to the water conservation planning effort for three reasons. First, the water rates will need to be developed in a manner consistent with the projected future demands – based on the impacts of both passive and active savings and expected peak day demand reductions. Second, the development of new and/or expanded water rate categories (e.g., for different customer classes, to account for seasonal variability in fixed and/or variable costs, etc.) should support water use tracking as new water conservation measures and programs are implemented. This will help to ensure that water demand reductions can be attributed to active programs conducted and funded by the City.

Third, the water rates should include the costs of the water conservation measures and programs selected for implementation, such that the true cost of services can be included in the base and rate fee structure. In addition, the City should ensure that costs for emergencies, capital projects, leak detection and prevention, improved metering and data management, and overall system wide loss control are included in water rates and fees. Finally, the City will evaluate options and efficacy of including additional tiers of water rates in its pricing for residential and commercial customers.

[28] Real and apparent losses constitute non-revenue water. Based on the assumption in footnote 25, the real and apparent losses contribute 460 and 115 AF, respectively. The real loss reduction represents a reduction in demand; whereas the apparent loss reduction represents an increase in water sales revenue.

Currently, the City has identified substantial water rate increases that it will put into practice over the next 10 years. These rate increases, presented in Table 9, will be used to raise revenue for capital projects, as well as to assist in achieving specified water conservation goals. Insomuch as the rate increases will be happening, Plan implementation will include tracking the impacts of the rate increases on customer demand and water use – individually and collectively.

**Table 9 - Proposed Water Rate Increases Through 2022**

| Years | Rate Increase |
|---|---|
| 2014 | 13% |
| 2015-2019 | 9% |
| 2020-2022 | 8% |

These proposed rate increases will increase the cost of 1000 gallons of water by about 120% between 2013 and 2022.

Water demand reductions related to the proposed rate increases are expected to be significant[29] given the scope of the proposed program; although the actual savings are expected to be on the low end of the literature values given that water is currently priced at less than $2 per thousand gallons. Nonetheless, overall savings even at 0.1% per 1% increase is expected to total over 1,000 acre-feet by 2020, and perhaps as high as 3,000 acre-feet. Even with these large expected demand reductions, the City should plan to integrate the water rate fee changes with its messaging on wise water use and water conservation to help educate and engage its customer base regarding the justification for increased water rates, and to manage customer expectations regarding further water rate increases.

**Cost** – $25,000 for a water rate study in the future assuming the City has the engineering data need to assess meter reading accuracy and effectiveness, and characterize overall system wide water loss (which indicates that the system wide water audit should be completed prior to the next water rate study).

**Savings** – For a 46% water rate increase ( about $0.84 per thousand, assuming $1.83 as the current starting point), a water demand reduction of between 500 and 1,700 AF may occur by 2017 (and 1,100 and 3,500 AF in 2020[30]) could be expected under average conditions, especially if the City introduces the new wise water use messaging along with the increased water rates; however, due to the relatively low cost of water in the

[29] Water rate increases at the City may reduce overall water use by between 0.1 to 0.7% per 1% increase in water rate based on Stevens, et.al.(1992), at an average of about 0.33% (Olmstead, et. al., 2006).
[30] Increased demand reductions are estimated for 2020 based on increased water demand from a combination of growth and reduced apparent losses, both of which increase water deliveries to customers.

City, it is anticipated that actual water savings related to water rate increases will tend to be at the low end of the literature-based savings estimates[31].

**Other Programs**

**K-12 Education** – The City will continue its efforts to support local K-12 educational efforts including participation in the Loveland water fair, classroom presentations on responsible water use and management, and other adhoc water related events. The City's presence at these events helps to engage the community and instill a general sense of water awareness in its attendees. There is no specific attempt to quantify potential water savings that are attributed to these expenditures; however the City believes that the support of local K-12 education is a basic responsibility of the utility that will continue to be funded.

**Cost** – The City has $5,000 in the water utility budget for educational support, in addition to the other programs outlined in this plan.

**Larimer County Conservation Corps, Energy and Water Program and the Home Energy Audit Program –** The City has provided funding for these programs in the past to support the audits and retrofits of residential housing with water and energy efficient fixtures including faucet aerators, showerheads, toilet dams and dye tablets (for toilet leak detection). Although this program has not provided explicit reporting back to the City regarding measured water savings, the staff will visit, audit and retrofit 400 homes each year. It is estimated that the showerheads and faucet aerators reduce the typical indoor single-family water use by about 10% (or about 135 gallons per connection per day for each of 400 homes).

**Costs** - $8,000 for purchasing and installing 400 faucet aerators, showerheads toilet dams and dye tablets to support residential retrofits.

**Savings** – 6 AF (for each year the program is conducted)[32].

**Efficiency Express through Platte River Power Authority –** Loveland Water and Power has joined with the Platte River Power Authority to fund energy and water audits for qualifying commercial and industrial buildings to support building energy tune-ups and efficiency upgrade assistance. Although the program components are focused on energy efficiencies, some water use efficiencies are possible (with respect to ice making and other food service equipment). For example, the audit team will provide educational support to facility managers regarding rebate opportunities and technical support. Since the City is not supporting rebates, the potential water savings that could occur as a result of this program relate to City retrofits of faucet

[31] A 13% rate increase would increase an average water bill for a single family residential customer by about $1.20/month for wintertime use and by about $9.60/month for summertime use (assuming 5,000 per month and 40,000 per month, respectively).

[32] Based on reduction from 2.5 gpm to 1.5 gpm in the shower for an 8 minute shower per person per day; and from 2.2 gpm to 0.5 gpm for 2.3 minutes of bathroom sink use per person per day; for an average of 2.5 persons per audited household.

aerators and showerheads. The City could potentially link the commercial water audit program to the Efficiency Express Program to support finding interested and qualifying commercial water customers.

Given that the actual water savings related to this program will likely occur as the result of fixtures that are replaced by the City as part of its commercial water audit and retrofit program, the savings for this program are imbedded in that program.

**Costs** - $2,500 for 10 facilities in conjunction with the Brendle Group's scheduled facility assessment.

**Savings** – no savings were estimated for this program since the nature of the water savings can vary substantially from year to year, and the overall expected water savings are expected to be small.

# Section 7
# Summary of Candidate Measures and Programs

Table 10 presents a summary of the water conservation measures and programs evaluated and selected by the City for implementation during the period 2013 to 2017. Details of the proposed budget are provided in Section 9.

**Table 10 - Summary of Selected Water Conservation Programs for Implementation**

| Measure/Program | Estimated Annual Cost | Estimated One Time Cost Over Planning Period | Estimated 5-Year Cost | Estimated Savings[33](AF) | Comment |
|---|---|---|---|---|---|
| **Summertime Demand Management** | | | | | |
| **Park Irrigation Improvements** | | $70,000 | $70,000 | 70 | Includes both landscape efficiency and conversions from spray rotors to MP rotors |
| **Expanded Water Waste Ordinance** | | $1,500 | $1,500 | Included in savings estimate for Smart Water Use Messaging | Includes increasing nature of ordinance to allow for penalties to water wasters |
| **Slow the Flow/Garden-in–a-Box** | $17,200 | | $86,000 | 6 | Helps to develop good will and support the City's messaging |
| **Wise Water Use Messaging** | $8,000 | $25,000 | $65,000 | 92 | must be performed in close coordination with other measures and programs identified for implementation to achieve savings |
| **Commercial Water Audits** | | $30,000 | $30,000 | 8 | partnership for management of City's biggest customers |
| **System Wide Water Audit and Recommendations** | $275,000 | $40,000 | $1,415,000 | 294 | mid-term commitment to future reduction of non-revenue water |
| **Water Rate Study and Implementation** | | $25,000 | $25,000 | 544 | part of City's typical management program |
| **K-12 Education** | $5,000 | | $25,000 | n/a | It is the right thing to do for the City |
| **Water and Energy Assessments and Audits** | $8,000 | | $40,000 | 31 | Supports low income families |
| **Efficiency Express** | $2,500 | | $12,500 | n/a | Included in Commercial Water Audits |
| | **$ 315,700[b]** | **$191,500[c]** | **$ 1,770,000** | **~1,045** | |

[a] Includes $260,000 annually from CIP for meter and water line replacement
[b] includes $40,000 for financial software and public relations expenses
[c] includes $70,000 from parks, $25,000 from public relations; and $25,000 from finance and administration.

[33] Estimated as average annual water demand reduction after five years of program implementation

Note that one of the City's implementation goals for this Plan is to reduce summertime peak day demand by about 1 mgd by 2016. The projected savings of 1045 AF by 2020 represents about 0.93 mgd, which on first blush appears to be slightly short of the goal. However, the 1 mgd peak demand reduction goal only relates to a water supply condition that occurs during a few weeks in the summer, rather than over the entire year. Therefore, the total annual demand reduction related to summertime peaking is in the range of only 125 to 170 AF (which corresponds to a 6 to 8 week period). The summertime peak demand reductions related to irrigation improvements in the parks and at commercial facilities, as well as for residential customers, are focused on the current June through August peak day demands. These programs, if implemented by the City and its customers, could trim peak day water use by 1.5 to 2 mgd.

# Section 8

# Integration of Proposed Water Conservation Program with Water Demand and Sales

The impact of the proposed water conservation program will be apparent with regard to both total water demand and water sales in the City. The design of the water conservation program focuses on reducing both real and apparent water loss, summertime peak demand, and overall customer water use efficiency, helping to postpone capital improvement projects and reducing long-term water supply development requirements. However, water conservation and demand reduction cannot be counted on alone to reduce long-term water needs for the City. The City will need to continue its practices related to the integration of storage and efficient water use to meet the needs of its customers – since the nature of a future water supply that is reliable, secure and sustainable will change in response to a growing service population, evolving commercial and business uses, and changing climatic conditions.

It is also vital to note that overall water demand reductions are estimates based on experience, literature assessments and expected trends in the City's municipal and industrial water use. Actual water savings may vary widely dependent on customer behaviors, weather conditions, City messaging efforts, and any number of other external factors. However, with the City's investment in water conservation, individual customer water use will trend downward as more responsible water use is condoned and supported. For the City to manage its practices and understand the impact of its expenditures, it is vital that a robust water use monitoring program be established to track individual and sector water use on a daily, monthly, quarterly and annual basis as plan implementation occurs. Therefore, the City will need to commit staff resources to managing the implementation phase of the water conservation program such that mid-course corrections can be identified and executed, allowing the City to best leverage its resources to achieve meaningful water conservation.

Table 11 presents the estimated decreases in future water demand associated with the proposed water conservation measures and programs presented in the previous section. The table presents demand reductions for both average conditions and above average (i.e., one standard deviation above average demands) conditions. Above average conditions savings are greater due to the impact of improved water loss management, and the associated reduction of real losses associated to delivering future water to the City's customers, since real losses are accounted for as a percentage of water deliveries.

Figure 13 presents the predicted impact of improved water use efficiency on City water sales revenues. The base case of water sales revenues is calculated maintaining water rates at the current rate of $1.83 per thousand gallons. The scenario with the current plan absent the water rate increases is shown, with a decrease in water sales revenue of about $400,000 for average conditions based on reduced water sales revenues due to customer water conservation (which translates to about $500,000 in above average year - one standard deviation above average). With the water rate increase and the related water use reduction, revenue for the City is up by about $4.45 million in an average year, which translates to about $5 million in above average years. This increased water sales revenue clearly offset

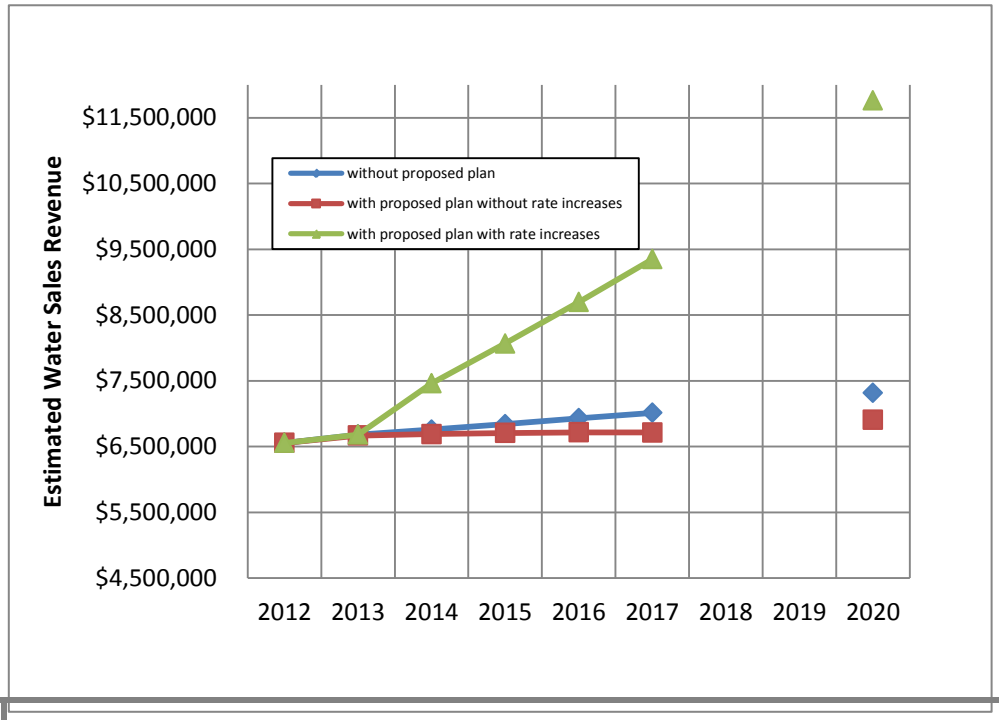
the impact of reduced customer water demand and provides for substantial revenue for treatment plant expansion and other capital improvement project needs.

**Table 11 - Impact of Proposed Water Conservation Program on Average and Above Average Future Annual Water Supply Demands**

| | Average Conditions (AF) | | | Above Average Conditions[a] (AF) | | |
|---|---|---|---|---|---|---|
| | Without Proposed Plan | With Proposed Plan | Demand Reductions | Without Proposed Plan | With Proposed Plan | Demand Reductions |
| 2012 | 12,712 | 12,712 | 0 | 14,436 | 14,436 | 0 |
| 2013 | 12,954 | 12,933 | 21 | 14,717 | 14,696 | 21 |
| 2014 | 13,103 | 12,841 | 262 | 14,894 | 14,599 | 295 |
| 2015 | 13,324 | 12,837 | 487 | 15,084 | 14,535 | 549 |
| 2016 | 13,439 | 12,681 | 758 | 15,292 | 14,439 | 853 |
| 2017 | 13,599 | 12,555 | 1,044 | 15,484 | 14,307 | 1,177 |
| 2020 | 14,185 | 12,425 | 1,760 | 16,168 | 14,091 | 2,077 |

[a] above average conditions are described in Appendix E.

**Figure 13 – Water Sales Revenue Impacts Related to Proposed Water Conservation Program and Proposed Water Rate Increases**



Note that adjustments to water rates in the future will need to incorporate more factors than simply changes to future water demand associated with water conservation impacts. For example, the predicted impact of passive water conservation savings is in the range of 780 AF by 2020[34]. Water rates will need to be adjusted in accordance with expected passive water savings to maintain appropriate levels of water sales revenue independent of the impacts of the proposed water conservation program. Other factors such as changes in debt service, the need for cash reserves, costs of labor, energy and materials, and the scope of capital improvements will all affect future water rates as well.

The overall water demand reduction of 1,760 AF projected for the City by 2020 has a replacement value of about $20.9 million (based on the cost of storage, transmission, treatment and distribution).

[34] Lost revenue associated with passive water savings estimated in 2020 are calculated to be about $465,000 using the current rate of $1.83 per thousand.

# Section 9
# Implementation

The City has identified those measures and programs that it chooses to implement to reduce future customer water demand; however the specific staging and order of measure and program implementation is clarified in this implementation plan. Clearly the City will earnestly pursue meaningful water conservation in compliance with the elements of this Plan and the direction of City Council. Future capital funding and annual budgets will be developed in accordance with the funding requirements laid out in the preceding chapters. However, future appropriations of City funding for the various measures and programs contained herein cannot be guaranteed given that the nature of future City priorities may change due to acts of God, public health issues, or other unforeseeable issues.

To this point, the implementation plan for water use efficiency by the City needs to maintain flexibility to adapt to the changing needs and requirements of not only the City's resources, but the water use efficiency program as well. As portions of the water use efficiency program are implemented, new data and information will be acquired which may dictate or influence future water use efficiency program needs not predicted at the time of this planning effort. Therefore, this Plan will be implemented in an adaptive management approach, incorporating changing conditions and influences into the year to year, and month to month, water use efficiency activities planned and executed by the City. This City will also perform surveys on various customer classes to gain a better understanding of the customers' current perception of water, water use and interest in various water measures and programs. Results from these surveys will aid the City in planning and implementation of this Plan.

Given this framework and understanding of how water use efficiency will be best implemented in the City, the Plan is best served through the identification of the staging, or sequencing, of the various selected water use efficiency measures and programs; and a listing of those measures and programs that are of the highest priority to the City as of this writing. In this way, the first set of measures and programs that the City plans to implement can be identified (i.e., those measures and programs that will be implemented in the next 1 to 2 years). As new information becomes available over the next 1 to 2 years, the City will revise and update its water efficiency methods to best address the circumstances at that time (with regard to data collected, current fiscal resources, changing customer needs, etc.).

**Sequencing**

Although the City understands and supports the implementation of meaningful water conservation, its resources are not unlimited; therefore, it has chosen to sequence the implementation of its selected water use efficiency measures and programs in accordance with its current needs, expectations for future fund allocations, and perhaps most importantly due to the logical connection and interaction between specific measures and programs. For example, a system-wide audit of the City's water treatment, distribution and billing systems will be used to inform decisions to implement new meter testing, repair, and/or installation activities.

Table 12 presents a summary of the estimated annual costs for selected water use efficiency measures and programs as understood at this time. The costs have been developed based on the following assumptions:

- Various departments within the City will be included, and will contribute to the implementation of the water conservation program, including utility finance, public relations, and engineering;
- Individual water customers of the City's will be interested and participate in the various measures and programs, especially the residential and commercial programs;
- The system-wide audit will help to identify areas for City improvement regarding measuring and reducing non-revenue water uses; and
- The City will coordinate the budgeting of its Capital Improvement Projects with the annual water conservation budget.

**Table 12 – Proposed Water Conservation Program Implementation Budget 2013- 2017**

| | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|
| | | | | | |
| Park Irrigation Retrofits | $ 14,000 | $ 14,000 | $ 14,000 | $ 14,000 | $ 14,000 |
| Water Waste Ordinance | 1,500 | | | | |
| Slow the Flow | 13,200 | 13,200 | 13,200 | 13,200 | 13,200 |
| Garden-in–a-Box | 4,000 | 4,000 | 4,000 | 4,000 | 4,000 |
| Wise Water Use Messaging | 25,000 | 8,000 | 8,000 | 8,000 | 8,000 |
| Commercial Water Audits | | | 15,000 | 15,000 | |
| System Wide Water Audits | 40,000 | 15,000 | 15,000 | 15,000 | 15,000 |
| Meter and Water Line Replacement | 260,000 | 260,000 | 260,000 | 260,000 | 260,000 |
| Water Rate Study | | | 25,000 | | |
| K-12 Education | 5,000 | 5,000 | 5,000 | 5,000 | 5,000 |
| Larimer County Conservation Corps, Energy and Water Program and the Home Energy Audit Program | 8,000 | 8,000 | 8,000 | 8,000 | 8,000 |
| Efficiency Express | 2,500 | 2,500 | 2,500 | 2,500 | 2,500 |
| **Total** | **373,200** | **329,700** | **379,700** | **354,700** | **329,700** |

**Priorities**

For the City, the implementation of water conservation to support future demand reduction begins with the management of current non-revenue water (which aligns with one of the State-defined foundational water use efficiency elements) and water rate increases. Non-revenue water management includes characterizing and reducing both apparent losses that effect City billings and revenue, and real losses, which effect City operational costs. The City is focused on reducing the current level of non-revenue water, estimated to be about 13.5% of total treated water to about 10.5% in the next 9 years. To achieve this goal, the City will need to:

- Plan for and conduct a system-wide water audit to better characterize current non-revenue water and identify areas for utility improvements (e.g., revising the customer billing categories, identifying unmetered uses, developing cost estimates for making various proposed improvements to current water accounting practices);
- Improve meter reading accuracy on existing accounts;
- Identify and measure unmetered water uses; and
- Continue testing and repair of water distribution lines to manage leaks and other real losses between the treatment works and customer meters.

The City has budgeted for both the system-wide water audit and meter and water line replacement projects, allowing for substantial investment to occur in improving and upgrading the City's infrastructure. The costs to conduct these projects, along with the costs to upgrade the water treatment plant and other projects presented in Table 6 (see page 24) is one of the motivations behind the proposed water rate increases.

For this reason, the water rate increases is another key component of the water conservation program implementation, for the rate increases not only will provide for the revenue needed to improve water loss management and construct new, required facilities; increased water rates are expected to reduce customer water demand assisting the City in achieving its specified water conservation goals. The linkage of these two programs is vital to the overall success of the City in continuing to maintain a high level of stewardship related to the management of its water resources.

It is also imperative that the City develop and launch a water value messaging campaign to inform and engage its customers regarding the value and importance of a water system that is reliable, secure and sustainable. The messaging effort will focus on developing talking points, themes, and outreach efforts that help water customers to understand the nature of water supply and development in the City; the importance and value of maintained water supply infrastructure; and the need for water use efficiency by all. The City will use the proposed water conservation measures related to water loss control, water rating setting, improved water use efficiency at City facilities, better defined water waste management via ordinance, and various customer support programs (commercial audits, Slow the Flow and Garden-in-a-Box, etc.) to lead by example. The City will also develop and execute a customer survey to initiate the messaging campaign, gathering information regarding customer perceptions and values regarding water and water supply.

These programs and projects are therefore funded in 2013 to initiate the City's water conservation program.

The next highest priority for the City will be to conduct those measures and programs that improve the water use efficiency of the City's facilities including those measures and programs that will improve water use efficiency for both indoor and outdoor uses.

Other water use efficiency measures and programs that will support a better understanding of specific customer uses and improve their water use efficiencies, while considered important to the management

of future water demand are considered less important than those measures and programs controlled entirely by the City. Future implementation of customer water conservation programs will be conducted dependent on available funding and overall customer water use trends.

**Public Input**

The summary of public input will be provided after the comment period has closed. Public comment is expected to open on February 21, 2013. The public comment period will be announced through the City's webpage and notice in the local newspaper. Copies of the Final Draft plan will be made available at the Water Utility Offices and the City Public Library. Appendix F contains copies of the public notices used by the City to advertise the public comment period.

Public comment will continue for 60 days during which time City Council and the Water Utility Department will collect public comments, which will be used to inform the Final Plan. The Plan will be finalized after the public comment period has been completed and the guidance is provided by City Council. The Final Plan should be prepared and ready for CWCB review in May 2013.

# Section 10
# Monitoring and Evaluation of Measures and Programs

It is important to identify an approach to monitoring as many of the measures and programs as possible so the value of each program can be evaluated as it is implemented. In this way, adaptive management of the Plan components can be performed, and resources from the City allocated.

Generally, the City has selected water use efficiency measures and programs that can be tracked.[35] However, some measures and programs such as customer education and the effect of increasing water rates cannot be measured directly. For these measures and programs, overall customer water use metrics such as per capita residential water use and total per capita water use will be tracked. Other measures and programs, such as the audits conducted on large commercial water users and Slow the Flow can be monitored on an individual basis.

Monitoring efforts and metrics that the City proposes are summarized in Table 13.

**Table 13 - Summary of Monitoring Methods for Estimating Water Savings**

| Use Efficiency Measure/Program | Real Water Losses | Apparent Water Loss Reductions | Quantity of Audits/Packages Used | Individual Water Use | Per Capita Water Use | Peak Monthly Demand |
|---|---|---|---|---|---|---|
| System-Wide Audit | X | X | | | X | |
| Messaging Campaign | | | | | X | X |
| Water Rate Increase | | | | x | X | X |
| Residential Programs | | | X | X | X | X |
| Commercial Audits | | X | X | X | X | X |
| Efficiency Express | | | X | X | | |
| Water and Energy Assessments and Audits | | | X | X | | |

**Plan Updates and Revisions**

On an annual basis the City will monitor the metrics proposed in Table 13. The results will be reported to the Water Commission and City Council on a semi-annual and annual basis. The annual reports will help prepare the City for updating the Water Efficiency Plan every five to seven years, as required by the CWCB. It is the City's intent to update this Plan at the end of 2016.

[35] The City may have to implement some changes to its current protocols to track targeted customer water use, such as the City's water use and raw water uses, to complement the City's active water conservation efforts.

# Appendix A
# City of Loveland Current Water Rates

# CITY OF LOVELAND,

# COLORADO

## Water and Power Department

## Schedule of Rates, Charges and Fees

*Effective 1/1/13*

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# SUMMARY

## *Electric Rates*

| | | |
|---|---|---|
| Annexation Surcharge | 5% | |
| Renewable Energy Premium per 100 kilowatt-hour (kWh) | $2.70 | |
| | Jan.-June, Oct.-Dec. | July-Sept. |
| Residential (Schedule R) | | |
| Base Charge per Month | $8.91 | $8.91 |
| Energy Charge per kWh | $0.06600 | $0.07220 |
| PILT per kWh | $0.00593 | $0.00633 |
| Residential Demand (Schedule RD) | | |
| Base Charge per Month | $18.00 | $18.00 |
| Energy Charge per kWh | $0.02800 | $0.02800 |
| PILT per kWh | $0.00466 | $0.00497 |
| Demand Charge per kW | $8.21 | $8.75 |
| Small General Service (Schedule SG) | | |
| Base Charge per Month | $14.20 | $14.20 |
| Energy Charge per kWh | $0.06640 | $0.07100 |
| PILT per kWh | $0.00554 | $0.00586 |
| Plant Investment Fee per kWh | $0.00514 | $0.00514 |
| Large General Service (Schedule LG) | | |
| Base Charge per Month | $65.00 | $65.00 |
| Energy Charge per kWh | $0.03350 | $0.03490 |
| PILT per kWh | $0.00466 | $0.00499 |
| Plant Investment Fee per kWh | $0.00514 | $0.00514 |
| Demand Charge per kW | $10.49 | $11.51 |
| Primary Service with Customer Owned Transformer (Schedule PT) | | |
| Base Charge per Month | $81.00 | $81.00 |
| Energy Charge per kWh | $0.03276 | $0.03413 |
| PILT per kWh | $0.00384 | $0.00412 |
| Plant Investment Fee per kWh | $0.00499 | $0.00499 |
| Demand Charge per kW | $9.49 | $10.51 |

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## *Electric Rates Cont'd*

Transmission Voltage by Contract (Schedule TS)

| Area Lighting (Schedule AL) | Jan.-Dec. |
|---|---|
| Rate per watt of bulb | $0.04717 |
| PILT per watt of bulb | $0.00353 |

| Flat Rates (Schedule FR) | Jan.-Dec. |
|---|---|
| Signal Amplifiers | $27.80 |
| PILT | $2.08 |
| Automatic Sprinkler Controls | $4.13 |
| PILT | $0.31 |
| Bus Shelters | $17.09 |
| PILT | $1.28 |

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## *Wastewater Rates*

| Monthly Flat Rate | Inside City | Outside City |
|---|---|---|
| Single-family residential | $18.81 | $28.22 |
| Multi-family residential per unit | $11.22 | $16.83 |
| Non-residential property (Commercial or Industrial) | $125.87 | $188.81 |
| | | |
| Metered Water Service | | |
| Monthly base charge – single-family residential | $8.22 | $12.33 |
| Monthly base charge – multi-family residential | $3.43 | $5.15 |
| Monthly base charge – commercial | $8.00 | $12.00 |
| | | |
| Volume charge per 1,000 gallons – single-family residential | $2.59 | $3.89 |
| Volume charge per 1,000 gallons – multi-family residential | $2.59 | $3.89 |
| Volume charge per 1,000 gallons – commercial | $3.21 | $4.82 |
| | | |
| High Strength Surcharge | | |
| BOD charge per pound when discharge is greater than 276 mg/l | $0.44 | $0.66 |
| TSS charge per pound when discharge is greater than 207 mg/l | $0.26 | $0.39 |

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## *Water Rates*

Metered Rates

The monthly service charge shall be the sum of the base charge and the use fee per 1,000 gallons as set forth below:

Single-Family Residential Base Charge

| Tap Size (in inches) | Inside City | Outside City |
|---|---|---|
| 0.75 | $10.07 | $15.11 |
| 1.00 | $12.97 | $19.46 |
| 1.50 | $15.86 | $23.79 |
| 2.00 | $23.84 | $35.76 |
| 3.00 | $82.53 | $123.80 |
| 4.00 | $104.27 | $156.41 |
| 6.00 | $155.00 | $232.50 |

Multi-Family Residential Base Charge

| Tap size (in inches) | Inside City | Outside City |
|---|---|---|
| 0.75 | $14.83 | $22.25 |
| 1.00 | $17.73 | $26.60 |
| 1.25 | $19.18 | N/A |
| 1.50 | $20.62 | $30.93 |
| 2.00 | $28.59 | $42.89 |
| 3.00 | $87.24 | $130.86 |
| 4.00 | $108.96 | $163.44 |
| 6.00 | $159.64 | $239.46 |

Commercial Base Charge

| Tap size (in inches) | Inside City | Outside City |
|---|---|---|
| 0.75 | $10.07 | $15.11 |
| 1.00 | $12.97 | $19.46 |
| 1.50 | $15.86 | $23.79 |
| 2.00 | $23.84 | $35.76 |
| 3.00 | $82.53 | $123.80 |
| 4.00 | $104.27 | $156.41 |
| 6.00 | $155.00 | $232.50 |

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Irrigation Base Charge

| Tap size (in inches) | Inside City | Outside City |
|---|---|---|
| 0.75 | $10.07 | $15.11 |
| 1.00 | $12.97 | $19.46 |
| 1.50 | $15.86 | $23.79 |
| 2.00 | $23.84 | $35.76 |
| 3.00 | $82.53 | $123.80 |
| 4.00 | $104.27 | $156.41 |
| 6.00 | $155.00 | $232.50 |

Charges for larger taps will be set by City Council.

| Use Fee per 1,000 gallons | Inside City | Outside City |
|---|---|---|
| Single-Family Residential | $1.75 | $2.63 |
| Multi-Family Residential | $1.61 | $2.42 |
| Commercial | $1.76 | $2.64 |
| Irrigation | $2.15 | $3.23 |

| | |
|---|---|
| Hidden Valley Monthly Base Charge for 0.75 inch tap | $160.70 |
| Excess Water Use – Surcharge per 1,000 gallons | $0.75 |

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## *Water Rates Cont'd*

| | |
|---|---|
| Fire Hydrant Charge per month | |
| Residential | $2.50 |
| Commercial | $6.20 |
| Fire Protection Tap Service Fee per month | $1.80 |
| Tank and Hydrant Rate per 300 gallons | $1.00 |

## *Plant Investment Fees - Electric*

| | |
|---|---|
| Residential Service | |
| Residential over 150 amp service | $1,630.00 |
| Residential 150 amp service or less | $1,270.00 |
| Non-Residential per kWh | |
| Small General Service | $0.00514 |
| Large General Service | $0.00514 |
| Primary Service w/customer equipment | $0.00499 |

## *System Impact Fees – Wastewater*

| | Inside City | Outside City |
|---|---|---|
| Detached one-family dwelling | $2,510.00 | $3,770.00 |
| Attached one-family dwelling, per unit | $2,240.00 | $3,360.00 |
| Two-family dwelling, per unit | $2,240.00 | $3,360.00 |
| Multifamily dwelling containing 3-8 dwelling units, per unit | $2,240.00 | $3,360.00 |
| Multifamily dwelling containing 9 or more dwelling units, per unit | $1,620.00 | $2,430.00 |

Nonresidential

| Tap size (in inches) | Inside City | Outside City |
|---|---|---|
| 0.75 | $5,450.00 | $8,180.00 |
| 1.00 | $17,820.00 | $26,730.00 |
| 1.50 | $31,360.00 | $47,040.00 |

Nonresidential taps above 1.5-inch pays the capital recovery surcharge

## *Capital Recovery Surcharge – Wastewater*

| | |
|---|---|
| Inside City per 1,000 gallons of sewer billed | $0.745 |
| Outside City per 1,000 gallons of sewer billed | $1.118 |

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## *System Impact Fees – Water*

| | Inside City | Outside City |
|---|---|---|
| Detached one-family dwelling | $4,670.00 | $7,010.00 |
| Attached one-family dwelling, per unit | $2,810.00 | $4,220.00 |
| Two-family dwelling, per unit | $2,810.00 | $4,220.00 |
| Multifamily dwelling containing 3-8 dwelling units, per unit | $2,810.00 | $4,220.00 |
| Multifamily dwelling containing 9 or more dwelling units, per unit | $2,010.00 | $3,020.00 |

Nonresidential

| Tap size (in inches) | Inside City | Outside City |
|---|---|---|
| 0.75 | $5,480.00 | $8,220.00 |
| 1.00 | $17,350.00 | $26,030.00 |
| 1.50 | $31,890.00 | $47,840.00 |

Irrigation

| Tap size (in inches) | Inside City | Outside City |
|---|---|---|
| 0.75 | $11,930.00 | $17,900.00 |
| 1.00 | $32,760.00 | $49,140.00 |
| 1.50 | $84,120.00 | $126,180.00 |
| 2.00 | $105,940.00 | $158,910.00 |
| 3.00 | $271,720.00 | $407,580.00 |

Tap sizes larger than 3-inch shall be established by City Council. The impact fee for taps larger than 1.5 inch applies only to irrigation meters. Nonresidential taps above 1.5 inch pay the capital recovery surcharge.

**Hidden Valley Water Tap Activation Fee**:
This fee applies to all water taps applied for on or after January 1, 2010 to serve lots authorized pursuant to Resolutions #R-35-2004 and #R-83-2005. Payment of this fee shall be due upon application for the water tap. The fee shall be calculated as follows: A x B x C = fee.

A = Number of months from July 1, 2005 to the activation fee due date
B = $67.00 per month
C = *Engineering News Record* 20 Cities Construction Cost Index (used to inflate the construction costs to current dollars)

## *Capital Recovery Surcharge - Water*

| | |
|---|---|
| Inside City per 1,000 gallons of water | $0.721 |
| Outside City per 1,000 gallons of water | $1.082 |

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## *Fire Tap Plant Investment Fee*

| | |
|---|---|
| Fire Tap Plant Investment Fee (outside City only) | $553.00 |

## *Raw Water Development Fee*

| | |
|---|---|
| Detached One-Family Dwelling | $1,000.00 |
| Attached One-Family Dwelling, per unit | $1,000.00 |
| Multifamily dwelling containing 2-24 dwelling units, per unit | $626.00 |
| Multifamily dwelling containing 25 or more dwelling units, per unit | $123.00 |

Nonresidential

| Tap size (in inches) | |
|---|---|
| 0.75 | $1,000.00 |
| 1.00 | $1,700.00 |
| 1.50 | $3,300.00 |
| 2.00 | $5,300.00 |
| 3.00 | $10,000.00 |

Tap sizes larger than 3-inch shall be established by City Council. The impact fee for taps larger than 1.5 inch applies only to irrigation meters. Commercial taps above 1.5 inch pay the capital recovery surcharge.

## *Raw Water Capital Recovery Surcharge Per 1,000 Gallons*

| | |
|---|---|
| Raw Water Capital Recovery Surcharge Per 1,000 Gallons | $0.15 |

## *Electric Fees*

| | |
|---|---|
| Service Turn-On at the meter | $35.00 |
| Service Turn-On at the meter – After Hours | $65.00 |
| Service Turn-Off at the meter resulting from an unauthorized Service Turn-On | $30.00 |
| Disconnect/Reconnect Services | $155.00 |
| Disconnect/Reconnect Services with Engineering | $255.00 |
| Permanent Service Connect (No Disconnect Needed) | $155.00 |
| Permanent Disconnect of Service | $155.00 |

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## *Electric FeesCont'd*

| | |
|---|---|
| Charges When Access Denied | |
| Appointment or Special Trip to Read the Meter | $15.00 |
| Appointment or Special Trip to Read the Meter After Hours | $25.00 |
| Appointment or Special Trip to Change the Meter | $55.00 |
| Appointment or Special Trip to Change Meter After Hours or Weekends | $70.00 |
| Service is disconnected at the junction box or the overhead pole | $155.00 |
| When access to the pole is denied, actual costs will be billed | |
| | |
| Residential Service Installations | |
| Typical Underground with 1/0 CIC | $590.00 |
| Typical Underground with 4/0 CIC | $800.00 |
| Typical Overhead | $310.00 |
| | |
| Multiplex 3-6 Units | $700.00 |
| Multiplex 7 or More Units (deposit, to be billed on actuals) | $855.00 |
| | |
| Field Engineering Deposits | |
| | |
| Residential and duplex single phase installations, 1-2 lots | $800.00 |
| Single commercial buildings, transformer upgrades, raising, lowering, or removing existing power | $1,200.00 |
| Residential subdivision of 3-25 lots, commercial subdivision of 2-10 lots, raising, lowering, or removing existing power | $1,600.00 |
| Residential subdivision of more than 25 lots, commercial subdivision of more than 10 lots, malls, shopping centers, hospitals | $3,000.00 |
| | |
| Other Deposits – See Section Fees – Electric "Other Deposits" | |
| | |
| Temporary Residential Connections | $170.00 |
| | |
| Termination and energizing electric services to small devices | $285.00 |
| | |
| Installation of Area Light | $325.00 |

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## *Wastewater Fees*

| | |
|---|---|
| Pretreatment Inspection Fee | $70.00 |
| Pretreatment Significant Industrial User (SIU) Laboratory Analysis | $60.00 |
| Pretreatment SIU Public Notification of Violation | $82.00 |
| Tapping Fees 4 inch or 6 inch Tap | $215.00 |
| | |
| 4 inch Saddle and Stainless Strap | $60.00 |
| 6 inch Saddle and Stainless Strap | $80.00 |

## *Water Fees*

Construction Water Fee

| Tap size (in inches) | |
|---|---|
| 0.75 | $34.00 |
| 1.00 | $56.00 |
| 1.50 | $113.00 |
| 2.00 | $180.00 |
| 3.00 | $336.00 |
| 4.00 | $559.00 |

Above 4.00 inch tap will be negotiated with the Water and Power Department

| | |
|---|---|
| Water Turn-on Fee – Regular Hours | $35.00 |
| Water Turn-on Fee – After Regular Hours | $60.00 |
| Water Turn-off Fee for Unauthorized Service Turn-on | $30.00 |
| Water Meter Appointment Fee – Regular Hours | $20.00 |
| Water Meter Appointment Fee – After Regular Hours | $30.00 |
| Raw Water Cash-in-lieu Fee per Acre-Foot (City Code Sec.19.04.040) | Set by Loveland Utilities Commission |
| Native Raw Water Storage Fee per Acre-Foot | |
| Barnes Ditch | $5,750.00 |
| Big Thompson Ditch & Manufacturing Co. | $3,530.00 |
| Buckingham Irrigation Co. (Geo. Rist Ditch) | $7,400.00 |
| Chubbuck Ditch | $7,400.00 |
| Louden Irrigating Canal and Reservoir Co. | $6,850.00 |
| South Side Ditch Company | $6,770.00 |

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## *Water Fees Cont'd*

| | |
|---|---|
| Construction Hydrant Meter Deposit | $1,000.00 |
| Hydrant Meter Rental | |
| Daily Rental | $5.00 |
| Install Fee | $25.00 |
| Remove Fee | $25.00 |
| Moving Meter Fee | $25.00 |
| Water Use | $1.00/300 gallons |
| Meter Fees | |
| 0.75 inch Meter and Readout | $180.00 |
| 1.00 inch Meter and Readout | $255.00 |
| Install Meter and Inspection | |
| Meter inspect | $45.00 |
| Meter install | $75.00 |
| Water Tapping Fee | |
| 0.75 inch | $285.00 |
| 1.00 inch | $285.00 |
| 1.50 inch | $325.00 |
| 2.00 inch | $340.00 |
| Above 2.00 inch | $355.00 |

## *Miscellaneous Fees*

| | |
|---|---|
| Late Payment Penalty | $12.00 |
| Field Collection Fee | $18.00 |
| New Account Fee | $11.00 |
| Reactivation Fee | $10.00 |
| New Account Meter Reading Fee | $10.00 |
| Interfering or Tampering with a Meter – electric or water | $50.00 |
| Return Check (Insufficient Funds) Charge | $25.00 |
| Filing Fee for Unpaid Bills | $35.00 |

# I. Rates - Electric

## *Resale of Electric Current Prohibited*

It is unlawful for any consumer who purchases electric service from the City to sell such service to others.

## *Surcharge*

There is imposed a surcharge in the amount of five percent of base charges plus charges for energy, demand, payment-in-lieu-of-taxes (PILT) for the sale of electric power to services that come into existence in all areas annexed to the City after January 31, 1987, which areas were formerly a part of an exclusive service territory granted to a cooperative electric association by the Public Utilities Commission. Such surcharge shall expire ten years after the effective date of annexation of each such area.

## *Renewable Energy Premium*

**Availability**
The renewable energy premium is available as an option to all residential, commercial, and industrial customers served under Schedules R, RD, SG, LG, PS, and PT. The renewable energy premium is not available to Transmission Voltage Service, Area Light or Flat Rate customers served under Schedules TS, AL or FE.

**Monthly Rate**
Premium per each 100 kWh increment of energy .....$2.70
This charge is in addition to all other regular charges the customer incurs for electric service.

**Monthly Minimum**
The minimum bill shall be $2.70 for each 100 kWh increment requested by the customer in the service agreement, plus the minimum bill as identified in the principal rate schedule for the customer.

**Conditions**
Service Restrictions – The supply of renewable energy is limited to the resources made available to the department by its power supplier, Platte River Power Authority (PRPA), and is therefore subject to all terms and conditions identified in PRPA's tariff for Renewable Energy Service.

**Service Agreement**
The renewable energy premium is an optional charge and requires the customer to sign a service agreement with Loveland Water and Power.

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**Service Agreement Period**
The renewable energy premium for all eligible rate schedules shall be available for a minimum initial period of 12 consecutive months and then continuing month to month thereafter until terminated. After the minimum period, the obligation to purchase or provide renewable energy may be terminated upon 30 days notice by either party. Termination of the principal service shall also terminate the agreement unless the customer chooses to advance the agreement to the new service address.

**Service Agreement Amount**
Customer may request renewable energy in 100 kWh increments. The billable monthly renewable energy premium will be the number of 100 kWh increments requested by the customer in the service agreement. The actual kilowatt-hours used by the customer in any given month may be more or less than the average.

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## *Self-Generation Rate*

**Availability**
The Self-Generation Rate is available as an option to all electric service customers who own, operate and maintain their own generation equipment.

**Monthly Rate – System Size 1-50 kW**

| | **Jan. – June, Oct. – Dec.** | **July – Sept.** |
|---|---|---|
| **Residential** | | |
| Base charge | $8.91 | $8.91 |
| Energy charge per kWh | $0.06600 | $0.07220 |
| Buyback charge per kWh | $0.03798 | $0.04071 |
| Monthly minimum bill | $8.91 | $8.91 |
| System size range limitation | 1-50 kW | 1-50 kW |
| PILT per kWh | $0.00593 | $0.00633 |
| **Small General** | | |
| Base charge | $14.20 | $14.20 |
| Energy charge per kWh | $0.06640 | $0.07100 |
| Buyback charge per kWh | $0.03798 | $0.04071 |
| Monthly minimum bill | $14.20 | $14.20 |
| System size range limitation | 1-50 kW | 1-50 kW |
| PILT per kWh | $0.00554 | $0.00586 |
| Plant Investment Fee per kWh | $0.00514 | $0.00514 |
| **Large General** | | |
| Base charge | $65.00 | $65.00 |
| Energy charge per kWh | $0.03350 | $0.03490 |
| Demand per kW | $10.49 | $11.51 |
| Buyback charge per kWh | $0.03798 | $0.04071 |
| Monthly minimum bill | $65.00 | $65.00 |
| System size range limitation | 1-50 kW | 1-50 kW |
| PILT per kWh | $0.00466 | $0.00500 |
| Plant Investment Fee per kWh | $0.00514 | $0.00514 |

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## *Self-Generation Rate Cont'd*

**Conditions**

The city will net meter all energy consumed by the customer and produced by the customer's generation system. Net metering shall be, for billing purposes, the net consumption as measured at the service meter on a monthly basis. Consumption will be measured monthly and in the event net metering is negative in a given month, such that the customer's generation system production is greater than the customer's consumption, there will not be a monthly cash credit for such production. All such excess energy, expressed in kilowatt-hours, shall be carried forward from month to month and credited against the customer's energy consumption, expressed in kilowatt-hours, in subsequent months. In the event that a negative net consumption balance remains after twelve consecutive months following the effective date of customer's commencing on the Self Generation Rate, or any annual anniversary thereafter, the City will pay the customer for such negative balances at the Self Generation Buyback Charge Rate.

Monthly Rate – System Size 51 – 400 kW

| **Large General Service** | **Jan. – Jun.**<br>**Oct. – Dec.** | **July – Sept.** |
|---|---|---|
| Base Energy | $65.00 | $65.00 |
| Energy Charge per kWh | $0.03350 | $0.03490 |
| PILT per kWh | $0.00466 | $0.00500 |
| Plant Investment Fee per kWh | $0.00514 | $0.00514 |
| Demand per kW | $10.49 | $11.51 |
| Buyback charge per kWh | $0.05290 | $0.06220 |
| Monthly Minimum Bill | $65.00 | $65.00 |
| System Size Range Limitation | 51-400 kW | 51-400 kW |

The Self-Generating customer must be in compliance with the technical specifications and requirements contained in the Standard for Interconnecting Distributed Resources with the City of Loveland Electric Power System as found in the City's Municipal Code, Section 13.12.240 and must enter into a contract with the City.

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## *Residential Service*
## *Schedule R*

**Availability**
Residential Service is available for single-family dwelling units and individually metered multi-family dwelling units at any location within the area served by Loveland Water and Power. Single-family dwelling units and individually metered multi-family dwelling units shall mean those buildings or units used solely as residences and not used in part for any other purpose. This rate is applicable to existing and new residential customers. Service will be delivered through a single meter per dwelling unit, at one point of delivery.

**Monthly Rate**
The rate for Residential Service shall consist of the sum of the base charge, energy charge, and PILT in accordance with the following table:

**Monthly Rate**
The rate for Residential Service shall consist of the sum of the base charge, energy charge, and PILT in accordance with the following table:

| | Jan. – June, Oct. – Dec. | July – Sept. |
|---|---|---|
| Base charge | $8.91 | $8.91 |
| Energy charge per kWh | $0.06600 | $0.07220 |
| PILT charge per kWh | $0.00593 | $0.00633 |
| Monthly minimum bill | $8.91 | $8.91 |

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## *Residential Demand Service*
## *Schedule RD*

**Availability**
Residential Demand Service is available for single-family dwelling units and individually metered multi-family dwelling units at any location within the area served by Loveland Water and Power. Single-family dwelling units and individually metered multi-family units shall mean those buildings or dwelling units used solely as residences and not used in part for any other purpose. Existing accounts may elect service under this schedule by making application to Loveland Water and Power. Service will be delivered through a single meter per dwelling unit, at one point of delivery.

**Monthly Rate**
The rate for Residential Demand Service shall consist of the sum of the base charge, energy charge, demand charge and PILT in accordance with the following table:

| | Jan. – June, Oct. – Dec. | July – Sept. |
|---|---|---|
| Base charge | $18.00 | $18.00 |
| Energy charge per kWh | $0.02800 | $0.02800 |
| PILT charge per kWh | $0.00466 | $0.00497 |
| Demand charge per kW | $8.21 | $8.75 |
| Monthly minimum bill | $18.00 | $18.00 |

**Billing Demand**
The demand shall be the highest rate of use in kilowatts during any 15 minute interval of the billing period.

**Power Factor Charge**
Power factor charge of one hundred percent of the power factor charge incurred by the City on account of and attributable to service to the customer may be billed to the customer.

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## *Small General Service*
## *Schedule SG*

**Availability**
Small General Service is required for all non-residential customers with less than or equal to 50 kW demand per month in ten months of a consecutive 12-month period. This also includes temporary power for non-permanent non-residential customers (for example: firework stands and holiday lights).

**Monthly Rate**
The rate for Small General Service shall consist of the sum of the base charge, energy charge and PILT in accordance with the following table:

| | Jan. – June, Oct. – Dec. | July – Sept. |
|---|---|---|
| Base charge | $14.20 | $14.20 |
| Energy charge per kWh | $0.06640 | $0.07100 |
| PILT charge per kWh | $0.00554 | $0.00586 |
| Plant Investment Fee per kWh | $0.00514 | $0.00514 |
| Monthly minimum bill | $14.20 | $14.20 |

**Conditions**
A. Whenever metered demand exceeds 50 kW in any three months out of a consecutive 12-month period, Loveland Water and Power will notify the customer and further service provided to such customer shall be furnished at the Large General Service Rate. The department may install such meters as it deems necessary in order to determine the metered demand.
B. For single-phase, three-wire service, the customer's equipment shall be connected so that the current carried by the neutral conductor shall be not greater than 15 percent of the maximum current in either of the two conductors. For three-phase wye or delta service, the customer's equipment shall be connected so that the current carried by any one-phase conductor shall be no greater than 115 percent of the current in either of the two-phase conductors.

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## *Large General Service*
## *Schedule LG*

**Availability**
Large General Service is required for all non-residential customers exceeding 50 kW demand in any three months out of a consecutive 12-month period.

**Continuation for Certain Customers**
Customers on the Large General Service rate on January 31, 1999, with less than three months of 50 kW demand in a consecutive 12-month period will be grandfathered into the LG rate.

**Monthly Rate**
The rate for Large General Service shall consist of the sum of the base charge, energy charge, demand charge and PILT in according with the following table:

| | Jan. – June, Oct. – Dec. | July – Sept. |
|---|---|---|
| Base charge | $65.00 | $65.00 |
| Energy charge per kWh | $0.03350 | $0.03490 |
| PILT charge per kWh | $0.00466 | $0.00499 |
| Demand charge per kW | $10.49 | $11.51 |
| Plant Investment Fee per kWh | $0.00514 | $0.00514 |
| Monthly minimum bill | $65.00 | $65.00 |

**Billing Demand**
The demand shall be the highest rate of use in kilowatts during any 15-minute interval of the billing period.

**Power Factor Charge**
Power factor charge of one hundred percent of the power factor charge incurred by the City on account of and attributable to service to the customer may be billed to the customer.

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## *Primary Service with Transformer*
## *Schedule PT*

**Availability**
Primary Service is available to all non-residential customers exceeding 50 kW demand in any three months within a 12-month period where service is delivered and metered at the available primary voltage and all serving facilities on the customer's side of the metering point are owned, operated and maintained by the customer.

**Monthly Rate**
The rate for Primary Service where the customer owns the transformers shall consist of the sum of the base charge, energy charge, demand charge and PILT in accordance with the following table:

| | Jan. – June, Oct. – Dec. | July – Sept. |
|---|---|---|
| Base charge | $81.00 | $81.00 |
| Energy charge per kWh | $0.03276 | $0.03413 |
| PILT charge per kWh | $0.00384 | $0.00412 |
| Demand charge per kW | $9.49 | $10.51 |
| Plant Investment Fee per kWh | $0.00499 | $0.00499 |
| Monthly minimum bill | $81.00 | $81.00 |

**Billing Demand**
The demand shall be the highest rate of use in kilowatts during any 15-minute interval of the billing period.

**Power Factor Charge**
A power factor charge of one hundred percent of the power factor charge incurred by the City on account of and attributable to service to the customer may be billed to the customer.

**Conditions**
Transformer ownership and maintenance is the responsibility of the customer receiving service under this rate schedule. The customer requesting this rate schedule is solely responsible for all costs associated with the installation and maintenance of the primary metering equipment and facilities. See the Water and Power Department's *Contractor Construction Standards* for equipment specifications.

## *Transmission Voltage Service*
## *Schedule TS*

**Eligibility Requirements**
Transmission Voltage Service is available to any customer: (i) whose load is of sufficient magnitude or of an unusual nature such that it cannot be served from the distribution system; and (ii) whose premises are adjacent to transmission lines that are, or by contract can become, lines that supply wholesale power to the city's system; and (iii) who meets the criteria for large user service as set forth in Platte River Power Authority's Tariff 9, or applicable successor tariff.

**Character of Service**
The power furnished under Schedule TS shall be three phase alternating current and approximately 60 hertz, and delivered at approximately 115kV, or at other voltages subject to conditions as agreed upon, metered at each delivery point.

**Charges for Service**
The charges for service under Schedule TS shall be determined based on the unique load characteristics and service requirements of the customer. The rate for service delivered under Schedule TS shall at a minimum be sufficient to recover the city's cost of service, including, without limitation, wholesale rates and the city's projected operating and maintenance costs. In addition, the customer shall be responsible for all wholesale charges and fees incurred by the city in providing service under Schedule TS to the customer, including, without limitation, power factor charges.

**Conditions of Service**
In order to receive service under Schedule TS, the customer must meet the eligibility requirements set forth above and enter into an electric service agreement with the city. All such agreements must meet the requirements of this Schedule TS, protect the integrity of the City's electric system, protect against interference with other city electric customers, and shall address, at a minimum, the following material terms:

- term of the agreement, including initial date of service;
- charges for service, including rate adjustments;
- metering, including configuration, ownership, and maintenance;
- infrastructure, including ownership and maintenance;
- load factor, including any penalties for failure to comply;
- nature and frequency of interruptions (if service is provided on an interruptible basis), including any penalties for failure to comply;
- any other terms and conditions required to be addressed pursuant to Platte River Power Authority's Tariff 9, or applicable successor tariff.

In addition, the agreement must include a waiver of all liability for the city and Platte River Power Authority for actual and consequential damages resulting from interruptions in accordance with the agreement.

The city manager shall be authorized to negotiate all such agreements, in consultation with Platte River Power Authority, and to execute such agreements on behalf of the city.

## *Area Lighting*
## *Schedule AL*

**Availability**
Area lights will be furnished to customers who request this service for the purpose of lighting private property or alleys or other areas where City street lighting would normally not be installed. Decisions for location of the lights shall be in the discretion of the City. Applications for area lights should be made at the City of Loveland Water and Power Department.

**Monthly Rate (Jan.-Dec.)**
The rate per watt for area lights shall be.....$0.04717
The PILT charge per watt for area lights shall be.....$0.00353

**Conditions**
All area lights shall be high pressure sodium vapor units.

## *Flat Rate Service*
## *Schedule FE*

**Availability**
Small devices attached to the City's electric distribution system for the purpose of amplifying cable TV and telephone signals or operating automatic sprinkler controls in remote locations after June 1, 1992, will not require metering and will be billed on a flat monthly rate. Accounts existing prior to June 1, 1992, shall continue to be metered and billed at their present rate unless the customer requests conversion to the flat rate set forth in this schedule.

**Monthly Rates (Jan.-Dec.)**

| | |
|---|---|
| Signal amplifiers | $27.80 |
| Signal amplifiers PILT charge | $2.08 |
| Automatic sprinkler controls | $4.13 |
| Automatic sprinkler controls PILT charge | $0.31 |
| Bus shelters | $17.09 |
| Bus shelters PILT charge | $1.28 |

**Conditions**
A. Signal amplifiers can be no greater than 5 amps per device.
B. Automatic sprinkler controls can be no greater than 1.0 amp per device.
C. The department may randomly install meters as it deems necessary in order to monitor the actual consumption.
D. A customer with multiple device locations existing prior to June 1, 1992, requesting a conversion of said devices to the Flat Rate Schedule, must convert all devices existing prior to June 1, 1992, to the Flat Rate Schedule.

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# II. Fees - Electric

## *Applications for Electric Service*

Every person desiring a supply of electric current from the City, or an upgrade or other change in existing service, shall make application therefore to the City upon forms furnished for that purpose.

## *Plant Investment Fee*

Plant Investment Fees provide for the additional electric transmission, substation and distribution facilities made necessary by the extension of electric service to new connections. The Plant Investment Fee provided herein shall be, in addition to, all of the rates and charges made in connection with the furnishing by the City of electric service, and shall be payable as provided for in this section.

**A. Schedule R** – Residential Service and Schedule RD – Residential Demand Service. At the time application is made for any dwelling unit to be built within the corporate boundaries of the City, or at the time of application for electric service for any dwelling unit to be built outside the corporate boundaries of the City, there shall be paid to the City a Plant Investment Fee in the amount of $1,630.00 for each electric meter to be installed in connection with the dwelling unit with a service size of greater than 150 amps and $1,270.00 for each electric meter to be installed in connection with the dwelling unit with a service size of 150 amps or less. (Each dwelling unit within a structure containing more than one dwelling unit shall be separately metered). No energization of a permanent connection to any dwelling unit served by the City shall occur unless and until the Plant Investment Fee is paid.

For the purpose of this section, “dwelling unit” means one or more rooms and a kitchen area designed for or occupied as a unit for living and cooking purposes, which is located within a single family, multiple family or mobile home, but excluding congregate care facilities, as those terms are defined in Municipal Code Chapter 18.04. A congregate care facility may receive service under Schedules R, RD, SG, LG, or PT.

Upon application, the Water and Power Department may allow a single meter to serve a multiple family dwelling if such multiple family dwelling is a federally assisted and federally supervised project and the project sponsor is required by the federal agency having jurisdiction thereof to include the provision of electric service within the rent structure for the project. Such project may receive service under Schedules R, RD, SG, LG, or PT. If any such projects should cease to be federally supervised, then the project shall revert to the requirement of individual metering, the Plant Investment Fee for residential service shall be paid and a credit shall be applied against such Plant Investment Fee in the amount of the Plant Investment Fees paid while receiving service under another class.

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## *Plant Investment Fee (cont'd)*

**B. Schedule SG** – Small General Service. The Plant Investment Fee for accounts receiving small general service shall be collected in each billing period. The amount of the Plant Investment Fee to be billed in each period shall be equal to $0.00514 per kWh used by the account during the billing period.

In establishing the Plant Investment Fees in 1979, customers served prior to May 1, 1979, are exempt from the Plant Investment Fee at the existing location only. Customers who have paid the five-year Plant Investment Fee for a particular location are exempt from the fee at the location covered.

**C. Schedule LG** – Large General Service. The amount of Plant Investment Fee to be billed in each billing period shall be equal to $0.00514 per kWh used by the account during the billing period.

**D. Schedule PT**– Primary Service with Transformer. The amount of Plant Investment Fee to be billed in each billing period shall be equal to $0.00499 per kWh used by the account during the billing period.

**E. Discontinuance of Service.** In addition to all of the remedies available to the City, electric service may be discontinued for failure to pay the Plant Investment Fee provided for in this section, and such discontinuance shall be in accordance with the notice procedures set forth in Municipal Code Section 13.02.070.

## *Service Turn-On Fee at the Meter*

During regularly scheduled work hours, there is imposed a fee in the amount of $35.00 for each service turn-on where power is energized at the meter.

After regularly scheduled work hours, there is imposed a fee in the amount of $65.00 for each service turn on where the power is energized at the meter.

After hours fees apply to all requests received after 4 p.m. Monday through Friday, anytime Saturday or Sunday, and all holidays observed by the City of Loveland.

## *Disconnect and Reconnect Services*

Water and Power will perform a typical service disconnect/reconnect where power is energized or de-energized on the line side of the meter, on a flat fee basis.

There is imposed a fee in the amount of $155.00 for each typical service disconnect/reconnect and $255.00 for each typical service disconnect/reconnect with engineering.

A typical service disconnect/reconnect is defined as one where there is no increase in wire size or length.

All other service disconnect/reconnects will be billed at Water and Power's actual cost.

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## *Permanent Disconnect and Removal of Service*

Where a request for permanent disconnection and removal of single-phase service has been requested, there is imposed a flat fee of $155.00.

Where a request for permanent termination of three-phase service has been requested, charges will be billed at Water and Power's actual cost.

## *Charges When Access Denied*

There is imposed a charge as set forth in this section, that shall be due and payable when billed, to cover the additional costs and expenses incurred by the City whenever clear access to the meter location is denied. Clear access shall be deemed to be denied whenever, because of locked gates, animals confined in the same space as the meter location, or for any other reason, and after making a reasonable attempt to locate a person upon the premises to gain access, an authorized representative of the City is unable to read the meter, change the meter, or perform such other function as such representative is lawfully authorized to perform. The amount of such charge shall be as follows:

A. When clear access is denied for two successive meter readings, and an appointment is made with the consumer or a special trip is made for reading the meter, a charge of $15.00 is imposed for such appointment or special trip occurring during regular business hours, and $25.00 for such appointment occurring during off-duty hours and weekends.
B. When clear access is denied and a special trip is made to change a meter on the department's regular maintenance program, a $55.00 charge is imposed.
C. When clear access is denied for the purpose of disconnecting service, and service is disconnected at the junction box or overhead pole, a charge of $155.00 is imposed.
D. When clear access is denied for the purpose of disconnecting service at the junction box or overhead pole, the actual costs will be billed.

## *Residential Service Installations and Upgrades for Single Family and Duplex Dwellings*

A. A typical new residential service installation will be performed by the Water and Power Department on a flat fee basis. A typical new underground service is defined as having a trench length of 100 feet or less; trenching to be performed in normal soil conditions.
    1. For a service using 1/0 triplex CIC with a panel size of 150 amps or less, the fee is $590.00 and the Plant Investment Fee, as described in the Resolution Schedule of Rates, Charges and Fees as adopted by City Council, shall also be collected.
    2. For a service using 4/0 triplex CIC with a panel size of 200 amps, the fee is $800.00 and the Plant Investment Fee, as described in the Resolution Schedule of Rates, Charges and Fees as adopted by City Council, shall also be collected.

    A typical new overhead service is defined as a service length of 80 feet of less, does not require setting a pole or transformer, is #2 triplex with a panel size of 150 amps or less, or 1/0 triplex with panel size of 200 amps. The fee for such service is $310.00.

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## *Residential Service Installations and Upgrades for Single Family and Duplex Dwellings (cont'd)*

A service not meeting the above criteria shall be billed at the Water and Power Department's actual cost of installation.

Within the city limits of the City of Loveland, the fees shall be collected by the department issuing the building permit for the residence. If outside the city limits, the fee will be collected by the Water and Power Department before work can proceed.

B. Residential service upgrades resulting in services larger than 150 amps and no larger than 200 amps shall require a deposit of $300.00 for overhead, and $800.00 for underground. This deposit will be applied to the actual costs billed by the Water and Power Department upon completion of work performed.

## *Residential Service Installations and Upgrades for Multiplex Service Installations*

A. For purposes of this Resolution, a "multiplex" is defined as a structure containing not less than three and not more than six dwellings.
B. A "typical" multiplex electric service installation will be provided by and installed by the contractor per National Electric Code. It will be energized by the Water and Power Department on a flat fee basis.

A 3-6 unit multiplex service installation will be provided by the contractor in which an electrical secondary source is already in existence. The fee for installation of an electric service in a 3-6 unit multiplex project is $700.00 for the project and the Plant Investment Fee, as described in the current Schedule of Rates, Charges and Fees as adopted by the City Council, shall also be collected for each unit.

A 7 unit or more multiplex service termination and meter set service installation requires a deposit of $855.00 to be made at the Water and Power Department. The contractor is to provide and install all materials. This deposit will be applied to the actual costs billed by the Water and Power Department upon completion of work performed.

Multiplexes requiring an underground service in an overhead service area will have an underground service provided by and installed by the contractor per National Electric Code. They will be billed the actual costs incurred by the Water and Power Department.

If there is no existing source for electric service and an extension of secondary power is necessary, the customer shall pay the actual costs incurred by the Water and Power Department to extend the secondary power source.

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Requests for overhead multiplex service installations will be evaluated for feasibility by the Water and Power Department. If overhead service is deemed appropriate, it will be installed and billed at the actual cost incurred by the Water and Power Department.

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## *Residential Service Installations and Upgrades for Multiplex Service Installations (cont'd)*

All services to multiplexes will be installed as described in the National Electric Code pertaining to commercial services. NOTE: Duplexes will be billed as outlined in the "Residential Service Installations and Upgrades for Single and Duplex Dwellings" section in the current Schedule of Rates and Charges – Electric.

C. Buildings with greater than six dwelling units:
Any complex containing more than six dwelling units shall pay the actual costs incurred by the Water and Power Department to have a contractor-installed service energized.

## *Field Engineering Deposits*

A customer requesting a new or modified electric service, relocation of facilities, or other work requiring engineering and construction, must make a deposit with the department. If the project is cancelled, the deposit will be applied to the actual charges incurred, any resulting credit or debit will be refunded or billed to the customer. Upon completion of engineering, the customer will deposit with the department the total deposit required.

ENGINEERING DEPOSITS

A. Residential and duplex single phase installations, 1-2 lots.....$800.00
B. Single commercial buildings, transformer upgrades, raising, lowering, or removing existing power.....$1,200.00
C. Residential subdivision of 3-25 lots, commercial subdivision of 2-10 lots, raising, lowering, or removing existing power.....$1,600.00
D. Residential subdivision of more than 25 lots, commercial subdivision of more than 10 lots, malls, shopping centers, hospitals .....$3,000.00

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## *Other Deposits*

The following jobs are standard in nature, and specific deposits have been established for them. In all cases actual costs will be tracked and any resulting credit or debit will be refunded or billed to the customer.

A. Install and terminate secondary riser up to 100 feet (no transformer required)
   - Residential to 200 amps ..... $1,155.00
   - Commercial (cable supplied and installed by customer) ..... $805.00

B. Open transformer to pull in secondary and terminate cable up to 130' ..... $565.00

C. Single phase padmount transformer upgrade (no other customers)
   - Upgrade one transformer size ..... $1,965.00
   - Upgrade two transformer sizes ..... $2,510.00
   - Upgrade three transformer sizes ..... $3,055.00

D. Single phase padmount transformer upgrade (other customers)
   - Upgrade one transformer size ..... $2,525.00
   - Upgrade two transformer sizes..... $3,070.00
   - Upgrade three transformer sizes ..... $3,335.00

E. Single phase overhead transformer upgrade (no other customers)
   - Upgrade one transformer size ..... $1,665.00
   - Upgrade two transformer sizes ..... $2,175.00

F. Single phase overhead transformer upgrade (other customers)
   - Upgrade one transformer size ..... $2,225.00
   - Upgrade two transformer sizes ..... $2,735.00

Note: Work tickets (not work orders) will be opened for these jobs and the actual costs will be billed. The cutoff for work tickets is $1,000.00 except for transformer upgrades.

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## *Temporary Extensions*

The following requirements apply to all temporary extensions/connections necessary to serve customers such as transient shows, carnivals, fairs, circuses, concessions, residential construction work, or others of a temporary nature, excluding commercial development construction as defined in the *Contractor Construction Standards*.

A. The customer shall pay a flat rate of $170.00 for the cost of installation and removal of the temporary extension as defined in the *Contractor Construction Standards*, under "Temporary Construction Service". Customers with extensions not meeting these standards will be billed for the actual costs.
B. The customer shall pay for electric consumption monthly under the applicable rate.
C. No temporary service shall continue beyond the time of building occupancy, or eighteen months from connection of such temporary service, whichever occurs sooner, without the consent of the City.
D. The City may refuse to connect additional customers to temporary extensions until the temporary extensions have become permanent.

## *Area Lighting*

A 100-watt high pressure sodium vapor fixture will be furnished and installed by the City at a fixed one time charge. Any fixture other than a 100-watt fixture, poles, secondary conductor and other apparatus, if required, will be provided at an additional charge based on actual costs incurred by the Water and Power Department. Decisions for location of the lights shall be at the discretion of the City. Applications for area lights should be made at the City of Loveland Water and Power Department. The fee for the installation of a 100-watt high pressure sodium vapor fixture is $325.00.

## *Energizing of Electric Service to Small Devices Qualifying for Flat Rate Service*

There will be a flat fee for the energizing of electric service to small devices attached to the City's electric distribution system for the purpose of amplifying cable TV and telephone signals or operating automatic sprinkler controls in remote locations. A fee of $285.00 shall be charged to the customer for the actual installation of the service. No outlets will be permitted, nor shall there be lighting of any kind connected to this type of service. If there is no existing source and an extension of secondary power is necessary, the customer will pay for actual costs to energize the device

## *Pole Attachment Fee*

Each attachment by a non-City utility to a City of Loveland power pole will be charged $21.64 per year.

# III.Fees - Miscellaneous

**After Hours**
After hours fees apply to all requests received after 4:00 p.m. Monday through Friday, anytime Saturday or Sunday, and all holidays observed by the City of Loveland.

**Fire Hydrant and Fire Protection Tap**
A charge of $2.50 per residence and $6.20 per business per month shall be paid by water users outside the city who are located within one thousand feet of a fire hydrant, measured along roads or streets, and $6.20 per month per tap for each fire protection tap serving premises outside the city. If fire protection tap service is the only city utility service received by the premises, an administrative fee of $1.80 per month shall also be paid.

**Hydrant Meter Guidelines**
General: Fire hydrants are installed for the main purpose of fire protection. Whenever a hydrant meter is placed on a hydrant, that hydrant is, for all practical purposes, out of service and the chances of causing damage to that hydrant are increased. For these reasons and the potential for problems involved with providing hydrant meters on a rental basis, it has become necessary to establish more clearly defined guidelines for the use of hydrant meters.

Intent: The use of fire hydrant meters is intended for only those situations when a large volume of water is needed in a short period of time. These meters shall not be used as a temporary substitute for a permanent water service connection or a permanent irrigation tap. Examples of acceptable and unacceptable uses are as follows:

Acceptable:
- Providing water for increasing moisture during earthmoving.
- Filling swimming pools.
- Filling tanks on water truck (No chemicals allowed in tank).

Unacceptable
- Masonry work
- Car washes
- Irrigation
- Water for concrete saws
- Washing streets or parking lots

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**Hydrant Meter Guidelines (cont'd)**

Guidelines & Procedures: The following guidelines shall be used for regulating the use of fire hydrant meters:

1. Requests for hydrant meters must be received a minimum of 48 hours prior to the time needed. All requests should be made by contacting the Water and Power Department at 970-962-3701. The applicant must sign the Hydrant Meter Request Form at the Water and Power Department, 200 N. Wilson Avenue, and post a deposit of $1,000.00 (money order or cashier's check) before the meter will be set. The deposit shall be held until all costs associated with the hydrant rental are paid in full and may be used to offset any such costs not paid within 30 days of issuance of the final invoice.
2. Each request will be reviewed to determine if the proposed use meets the intent of these guidelines. The use of the water from a hydrant meter for other than the stated purposes or misrepresentation of that use will result in the loss of the convenience of obtaining water in this manner.
3. The City will determine on a case-by-case basis whether or not a particular hydrant is acceptable for the installation of a meter. Not all hydrants are available for use with a meter. If the requested hydrant is not available, alternate hydrants will be suggested.
4. Water Utility personnel will install the meter, secure it to the hydrant, and operate the hydrant. Customer shall control flow of water with valve provided on meter assembly. Customer is responsible for securing this valve to prevent the unauthorized use of water by others. Removal of the handle or hand wheel from the control valve is not an acceptable method of securing the valve. ONLY trained City employees will be authorized to operate fire hydrants.
5. During the winter months, hydrant meters will be issued only on a day-to-day basis when outside temperatures are above freezing and are expected to remain above freezing for most of the day. Meters will be installed as soon after 8:00 a.m. as practical, and will be picked up at approximately 3:00 p.m. or earlier if outside temperatures drop below freezing, or if requested.
6. Meters will be issued with a male 2½" National Standard thread connection. No hoses or adapters will be provided.
7. Customer is responsible for all rental fees and other charges. A copy of the current fees is attached. These fees will include charges for all water use.
8. Customer is responsible for any and all damage to the meter and/or fire hydrant while meter is installed. If damage occurs, an invoice will be issued to cover all repair or replacement costs, and customer shall promptly pay the invoiced amount.
9. Number of hydrant meters is limited; therefore the meters are available on a first-come/first-served basis. A separate request form must be submitted for each location and/or time period requested.
10. In accordance with the City Code, it is unlawful to waste water. Every effort should be made to conserve this valuable resource. Wasteful uses will not be allowed.
11. Failure to comply with these guidelines, or illegally obtaining water from, or in any way tampering with a fire hydrant, is in violation of the City Code, and upon conviction is punishable by a fine or imprisonment.

Alternate Source of Water: For building construction projects, water is also available through permanent water taps at a construction billing rate. This source of water is handled by the Building Division, 500 E. 3rd Street, 962-2504, and typically issued along with a building permit.

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**Summary of Hydrant Meter Fees and Charges**

| | |
|---|---|
| Installation of meter | $25.00* |
| Moving meter | $25.00* |
| Removal of meter | $25.00* |
| Meter rental | $5.00/day |
| Water used | $1.00/300 gallons |

*After hour services (normal hours are Monday through Friday, 7:30 a.m. to 4:00 p.m.) will be charged for overtime labor rates in addition to the $25.00 charge

**New Account or Reactivation Fee and New Account Meter Reading Fee.** Connection fees in the following amounts are hereby imposed, to be collected with the first utility bill rendered after utility service has been established or a customer account or utility service is reactivated following voluntary or involuntary termination:

Activation or establishment of a customer account for a service address .....$11.00
Meter reading charge for service address if read by Utility Billing Division.....$10.00
Reactivation of a customer account for a service address .....$10.00
Interfering or Tampering with a Meter .....$50.00

**Automated Load Profile Metering Program (ALPS). No new ALPS customers will be accepted after 2009.** Commercial and industrial customers will be given the option of utilizing specialized metering equipment that will allow them to monitor their utility consumption on a daily basis through a web-based program. The fees to participate in this program are according to the following schedule:

Monthly Fee Per Meter

| | |
|---|---|
| First 9 meters | $67.50 |
| Meters 10 through 19 | $54.00 |
| Meters 20 and up | $50.00 |

Customers that will be enrolling to use this service will need to provide their own telephone line, preferably a line dedicated solely for this purpose. The cost of the telephone line will be borne by the customer. If a customer signs up for the program, and then decides to leave the program in less than one year, the customer will be subject to a $200 exit fee per meter.

# Appendix B
# 2008 City of Loveland Irrigation Conservation Plan

## IRRIGATION CONSERVATION PLAN:

The purpose of this plan is for the conservation of irrigation water during a supply shortage. It includes both domestic and raw water irrigation systems stemming from Parks to Public Grounds. A multi-level approach was used to determine the extent of conservation needed based on water availability, budget considerations, local mandates, and emergency situations.

## IRRIGATION SYSTEM WATER REQUIREMENTS:

1. Under normal operating conditions the Parks and Public Grounds irrigation systems are capable of applying 1.50" (inches) of water per week on average. This translates into about 40,712 gallons per acre during peak demand periods. Several factors need to be applied when calculating actual turf watering requirements: types of grasses being irrigated (Blue Grass, Buffalo Grass, Turf Type Fescue, etc.); site conditions (shady, sunny, hillside, low area, soil type, soil compaction, etc.); site impacts (low use, high use, sports turf, green belts, etc.); safety concerns regarding recreation activities (hard playing surfaces, large cracks in the soil, bare ground, etc.); current weather conditions (evapotransporation rates, temperatures, soil moisture levels, wind, sunshine, weekly rain totals); aesthetics (public buildings, sculpture parks, planned public events, etc.).

2. It would be impractical to develop a conservation plan that could take every possible environmental and site use consideration into account. The watering requirements under this plan will take an average for each area of consideration and place the highest priority on recreational safety, long-term turf damage and tree loss followed by aesthetics and special event considerations.

3. System designs and limitations will also play a key role in the ability to adjust programming and watering schedules. Several park sites lack the capacity to water the entire area in just one night. In these situations, half of the irrigation controllers will run one night and the other half of the controllers run the second night. This creates an odd/even watering schedule to accommodate at least several applications of water per week. In the event of a local mandate by the City Council to limit the watering days to specific days of the week rather than odd or even, we could lose 50% or more of our irrigation watering window. Example: a normal four-day schedule reduced to two days with the same watering window would equal a 50% reduction, on the other hand, a odd/even system reduced to two days per week would result in each controller operating only one time per week or a 75% reduction. This would exceed mandated target amounts and result in increased the losses to landscape.

## SITE PRIORITIES:

Before a conservation plan can be implemented all sites need to be first ranked according to an individual priority within the entire system. This will allow for other considerations such as budgets, special events, raw water availability, and recreational programming needs. Sites that have high levels of recreational activities and community parks/public grounds are given top priority. Within each of these sites there is often an area of lessor priority that will be given a lower ranking in the site-specific conservation plan.

## DETERMINING THE NEED FOR CONSERVATION:

The need to implement a water conservation plan may be driven by either internal or external factors. These factors may include community water shortages caused by a drought, disruption of the supply lines due to mechanical failures, water diversions to other communities experiencing shortages, or budget shortfalls. The severity and duration of such events will be a key factor as to the level of conservation that will be required. For the purposes of this plan, a four-tier approach will be used to conserve water to varying degrees. This will allow for a general systematic approach to conservation based on current conditions and restrictions. The intent of this plan is to provide a sound basis for conservation and to allow for changing variables.

## FOUR TIER APPROACH:

A four-tier approach was used to determine a target level of required water savings and an action plan to achieve these targets for each individual site. The action plan for each site is based on the primary areas of use, function, and priority ranking.

**Table 1 - Drought Stages and Impacts**

| Drought Stage | Reduction Goal | Response Options | Anticipated User Impacts | Anticipated Landscape Impacts |
|---|---|---|---|---|
| Stage I<br>**Moderate** | 10% | Reduce irrigation programs by 10% | N/A | No noticeable loss short term. |
| Stage II<br>**Serious** | 25% | Cut the equivalent of one watering day from the normal watering schedule. | 1st year -aesthetic impact.<br>Two or more years increased risk of sports injury and poor aesthetics. | 1st year 5% turf loss.<br>2nd year 15% turf loss.<br>3 plus years > 15% turf loss and increased tree mortality in younger trees. |
| Stage III<br>**Severe** | 50% | Cut the equivalent of two days from the normal watering schedule | 1st year- fields will show a significant increase in wear.<br>2nd year plus- fields may become a safety issue and might need to be closed or have restricted use | 1st year-10% turf loss.<br>2nd year 30% turf loss.<br>3 plus years > 50% turf loss and increased tree mortality including established trees |
| Stage IV<br>**Extreme** | 75% | Cut the equivalent of three days from the normal watering schedule. | 1st year- fields may become a safety issue and might need to be closed or have restricted use.<br>2nd year- Fields will be closed to all users. | 1st year-50% turf loss.<br>2nd year plus >50% turf loss. And high tree mortality including established trees |

## TIER I - MODERATE

Use Reduction Target - 10 percent

This tier is intended for a seasonal drought or a possible minor disruption in water distribution system. A 10 percent reduction in the micro managed irrigation watering window will accomplish this goal. No noticeable loss of turf or landscape would be anticipated as a result of this short term reduction

## TIER II - SERIOUS

Use Reduction Target - 25 percent

This tier is intended for a multiple year drought with imposed community watering restrictions with a target reduction rate of 25 percent. A 25 percent reduction in the micro managed watering window for sites requiring an odd/even programming schedule or the equivalent elimination of one watering day at all other locations with a normal program of four days per week will accomplish this goal. Some minor turf loss would be anticipated as a result of this reduction in the first two years. Continued reductions for more than two years at this level may result in an overall turf loss in excess of fifteen percent and a twenty percent increase in tree mortality rates. The most noticeable effects will be in high use areas

## TIER III - SERVERE

Use Reduction Target - 50 percent

This tier is intended for a multiple year drought with imposed community watering restrictions with a target reduction rate of 50 percent. For sites requiring an odd/even programming schedule a change would be made to switch these sites to specific days of the week. Odd controllers would run Sunday and Wednesday; even controllers would run Monday and Thursday. Both types of controllers would run at 80 percent of normal to achieve a 50 percent reduction. The equivalent elimination of two watering days at all other locations normally programmed for four days per week will achieve a 50 percent reduction at those locations. At community parks and public grounds additional controller modifications may include reducing watering times on low use areas within a site and adding that savings to an extra run on a third day for high use areas at the same location. A ten to thirty percent overall turf loss would be anticipated as a result of this reduction in the first two years. Continued reductions for more than two years at this level may result in an overall turf loss in excess of fifty percent and an increase in tree mortality rates above twenty percent. The most noticeable effects will be in high use areas and recently planted landscape.

## TIER IV - EXTREME

Use Reduction Target - 75 percent

This tier is intended for a long term multiple year drought with imposed community watering restrictions with a target reduction rate of 75 percent. For sites requiring an odd/even programming schedule a change would be made to switch these sites to specific days of the week. Odd controllers would run Sunday and Wednesday; even controllers would run Monday and Thursday. Both types of controllers would run at 50 percent of normal and very low use areas would be turned off as needed to achieve a 75 percent reduction. The equivalent elimination of two watering days at all other locations normally programmed for four days per week and reducing these controllers to fifty percent of normal will achieve a 75 percent reduction at these locations. At community parks and public grounds additional controller modifications may include reducing watering times on low use areas within a site and adding that savings to increased percents on high use areas at the same location. A fifty percent or more overall turf loss would be anticipated as a result of this reduction in the first two years. Continued reductions for more than two years at this level may result in a complete turf loss and an increase in tree mortality rates above fifty percent including well established trees. The effects will be noticeable at all locations.

## POTABLE WATER CONSERVATION - IRRIGATION:

This plan is broken down to specific sites that have a potable irrigation water source. These sites are listed on a priority basis. The first few sites on the list have the highest priority for irrigation and would be impacted last by any mandatory watering reductions if such mandates allow for selection. The sites listed further down the list are of lower priority for irrigation and would be subject to the initial water conservation. The second part of this plan has each site listed alphabetically. They have been divided into two sections, Parks and Public Grounds. Each site has a four-tier approach to water conservation with recommended irrigation programming schedules, zone deletions, and special considerations. The calculations show the amount of water that could potentially be saved when compared to normal operating practices. Each site is followed by a brief summary that explains the possible impacts, such as the long-term effects and recreational/aesthetic implications.

### Site Priority Ranking

**Parks:**

1. Loch Lon
2. Osborn/Winona
3. Dwayne Webster
4. South Shore Parkway
5. Woodmere
6. Eagleview
7. Seven Lakes
8. Sherri-Mar
9. Edmondson
10. Silver Glen
11. Derby Hill
12. Namaqua
13. Junior Achievement
14. Estrella
15. Westside
16. Kirkview
17. Loch Mount

**Public Grounds:**

1. McWhinney Hahn Visitor Center
2. Police and Courts
3. Glen Arbor
4. Service Center
5. Fire Station #1
6. Fire Station #2
7. Fire Station #3
8. Fire Station #4
9. Fire Station #5
10. Fire Station #6
11. South West 14th
12. Xeriscape Garden
13. Park Maintenance Shop
14. Iron Shirt
15. Museum
16. Fire Training Center
17. Detention Pond Tyler
18. Detention Pond Dotsero

Note: Sites on the top of this list have the highest priority for continued irrigation and the sites on the bottom of this list have the lowest priority.

## RAW WATER CONSERVATION - IRRIGATION:

This plan is broken down to specific sites that have a raw water irrigation source. These sites are listed on a priority basis. The first few sites on the list have the highest priority for irrigation and would be impacted last by any mandatory (political/budgetary) watering reductions if such mandates allow for selection. Most of these sites are independent of each other and rely on separate raw water sources. Conservation methods will normally be based on water availability from specific sources rather than by a site priority. When feasible the sites listed further down the list are of lower priority for irrigation and would be subject to the initial water conservation. The second part of this plan has each site listed alphabetically. They have been divided into two sections, Parks and Public Grounds. Each site has a four-tier approach to water conservation with recommended irrigation programming schedules, zone deletions, and special considerations. The calculations show the amount of water that could potentially be saved when compared to normal operating practices. Each site is followed by a brief summary that explains the possible impacts, such as the long-term effects and recreational/aesthetic implications.

### Site Priority Ranking

**Parks:**

1. Loveland Sports Park
2. Fairgrounds/Barnes
3. North Lake
4. Centennial
5. Kroh
6. Benson
7. Sunnyside
8. McKee
9. Silver Lake

**Public Grounds:**

1. Civic Center

Note: Sites on the top of this list have the highest priority for continued irrigation if water sources allow and the sites on the bottom of this list have the lowest priority.

**Park/Public Ground:** Kroh Park

**Brief Site Description:**

This is a 37.3 acre community park used primarily for soccer. This facility is irrigated with raw water from the Louden Ditch Company with supplemental domestic water in the off-season. The holding pond that is located in the center of the park and has about a 12-acre foot capacity. During the peak of the irrigation season this site requires about 3.5 to 4.0 acre-feet of water per week. A total loss of irrigation would result in excessive turf damage and unsafe playing conditions on the soccer fields.

Conservation Methods:

**Tier #1 Conservation:**

- Reduce the water budget/ times on all irrigation zones by 10% of normal based on current weather and site considerations, but not to exceed 90% of the maximum settings as determined by the micro management plan.

**Tier #2 Conservation:**

- Reduce the watering schedule to three days from the normal four day cycle and continue to water up to 100% of normal based on current weather and site considerations. Watering days will be Sunday, Wednesday, and Friday.

**Tier#3 Conservation:**

- Reduce the watering schedule to three days from the normal four day cycle on zones that impact soccer fields. Set the water budget on field zones at 75% of normal or less based on current weather and site considerations. Watering days will be Sunday, Wednesday, and Friday on the athletic field zones.

- Turn off two days on all non-athletic field area irrigation zones from the normal four day schedule. Athletic areas include soccer/ball fields only. Reduce the percent on these zones to 75% or less based on current weather and site considerations. Watering days will be Tuesday and Thursday

**Tier#4 Conservation:**

- Reduce the watering schedule to two days from the normal four-day cycle on zones that impact soccer fields. Set the water budget on athletic field zones at 75% of normal or less based on current weather and site considerations. Watering days will be Monday and Thursday.

- Turn off three days on all non-athletic field area irrigation zones from the normal four-day schedule. Athletic areas include soccer/ball fields only. Reduce the percent on these zones to 75% or less based on current weather and site considerations. Watering day will be Monday.

- Turn off all half head zones in non-recreational areas.

**Summary:**

Conservation methods in tier one would reduce the watering requirements by about 10% and would have no short term landscape impacts. Water conservation methods in tier two would reduce the watering requirements by about 25% and would result in turf loss in low use areas and increased field wear. Tier three would reduce the watering requirements by about 50% and would result in turf and tree loss in low use areas and potential field failures in high use areas. Tier three may require the closure of some or all athletic fields after one year. Tier four would reduce the watering requirements by about 75% and would result in large scale turf and tree loss in low use areas and field failures in high use areas. Tier four would require the immediate closure of all athletic fields/high use areas.

**Park/Public Ground:** North Lake Park

**Brief Site Description:**

This is a 60.2-acre community park used primarily for recreation, swimming, picnics, community events, stage productions, and high school athletics. This facility is irrigated with raw water from the Louden Ditch Company. The holding pond that is located near the amphitheater has a 18-acre foot capacity. During the peak of the irrigation season this site requires about 4.5 to 5.0 acre-feet of water per week. A total loss of irrigation would result in excessive turf damage around shelters, the swim beach, recreation areas, event locations and would contribute to unsafe playing conditions on the soccer and baseball fields. Special Note: The School District shares this raw water source with North Lake Park and Benson Park. Any conservation methods would need to be done jointly with the School District in order to achieve the desired results. Please refer to the Benson Park conservation plan for further details relating to that facility.

Conservation Methods:

**Tier #1 Conservation:**

- Reduce the water budget/ times on all irrigation zones by 10% of normal based on current weather and site considerations, but not to exceed 90% of the maximum settings as determined by the micro management plan.

**Tier #2 Conservation:**

- Reduce the watering percent on the odd/even controllers by 25%, based on current weather and site considerations, but no more than 75% of normal. Watering days will continue to be odd/even.

- Turn off all buffalo grass zones

**Tier#3 Conservation:**

- Reduce the watering schedule to three days on lower use areas (controllers Ab, B, E, F, G, H, and L) from the normal odd/even cycle and water up to 50% of normal based on current weather and site considerations. Watering days on low use areas will be Sunday, Tuesday, and Friday. On high use areas including athletic fields and shelter areas change the odd/even schedule to four days per week (controllers A, D, I, J, K, and M) and water up to 70% of normal based on current weather and site considerations. Watering days on high use areas will be Saturday, Monday, Wednesday, and Thursday.

- Turn off all buffalo grass zones

- Turn off all half-head irrigation zones in non-recreational/low use areas and add savings to high use areas as needed.

**Tier#4 Conservation:**

- Reduce the watering schedule to two days on lower use areas (controllers Ab, B, E, F, G, H, and L) from the normal odd/even cycle and water up to 50% of normal based on current weather and site considerations. Watering days on low use areas will be Sunday and Friday. On high use areas including athletic fields and shelter areas change the odd/even schedule to two days per week (controllers A, D, I, J, K, and M) and water up to 60% of normal based on current weather and site considerations. Watering days on high use areas will be Monday and Thursday.

- Turn off all half-head irrigation zones in non-recreational/ low use areas and add savings to high use areas as needed.

- Turn off all buffalo grass zones

- Turn off parking island near the swim beech lot

- Turn off irrigation on flat area north and east of the tennis courts

**Summary:**

Conservation methods in tier one would reduce the watering requirements by about 10% and would have no short term landscape impacts. Water conservation methods in tier two would reduce the watering requirements by about 25% and would result in turf loss in low use areas and increased field wear. Tier three would reduce the watering requirements by about 50% and would result in turf and tree loss in low use areas and potential field failures in athletic and shelter areas. Tier three may require the closure of some or all athletic fields after one year and potentially the cancellation of special events or shelter reservations. Tier four would reduce the watering requirements by about 75% and would result in large scale turf and tree loss in low use areas and field failures in athletic and shelter areas. Tier four would require the immediate closure of all athletic fields, and the cancellation of shelter reservations and special events.

**Park/Public Ground:** Centennial Park

**Brief Site Description:**

This is a 35-acre community park used primarily for picnics, and baseball. This facility is irrigated with raw water from the Big Thompson Ditch Company. The holding pond that is located on the south side of First Street has a 30-acre foot capacity. During the peak of the irrigation season this site requires about 1.75 to 2.0 acre feet of water per week. A total loss of irrigation would result in excessive turf damage in the ball fields and around the playground. This would contribute to unsafe playing conditions on the baseball fields.

Conservation Methods:

**Tier #1 Conservation:**

- Reduce the water budget/ times on all irrigation zones by 10% of normal based on current weather and site considerations, but not to exceed 90% of the maximum settings as determined by the micro management plan.

**Tier #2 Conservation:**

- Reduce the watering schedule to three days from the normal four day cycle and continue to water up to 100% of normal based on current weather and site considerations. Watering days will be Monday, Wednesday, and Friday.

**Tier#3 Conservation:**

- Reduce the watering schedule to three days from the normal four day cycle on zones that impact ball fields. Set the water budget on field zones at 75% of normal or less based on current weather and site considerations. Watering days will be Monday, Wednesday, and Friday on the athletic field zones.

- Turn off two days on all non-athletic field area irrigation zones from the normal four day schedule. Athletic areas include all ball fields. Reduce the percent on these zones to 75% or less based on current weather and site considerations. Watering days will be Tuesday and Thursday

**Tier#4 Conservation:**

- Reduce the watering schedule to two days from the normal four-day cycle on zones that impact ball fields. Set the water budget on athletic field zones at 75% of normal or less based on current weather and site considerations. Watering days will be Monday and Thursday.

- Turn off all half head zones in non-recreational areas.

- Turn off three days on all non-athletic field area irrigation zones from the normal four-day schedule. Athletic areas include ball fields only. Reduce the percent on these zones to 75% or less based on current weather and site considerations. Watering day will be Monday.

**Summary:**

Conservation methods in tier one would reduce the watering requirements by about 10% and would have no short term landscape impacts. Water conservation methods in tier two would reduce the watering requirements by about 25% and would result in turf loss in low use areas and increased field wear. Tier three would reduce the watering requirements by about 50% and would result in turf and tree loss in low use areas and potential field failures in high use areas. Tier three may require the closure of some or all athletic fields after one year. Tier four would reduce the watering requirements by about 75% and would result in large scale turf and tree loss in low use areas and field failures in high use areas. Tier four would require the immediate closure of all athletic fields/high use areas.

**Park/Public Ground:** Barnes Park

**Brief Site Description:**

This is a 24-acre community park used primarily for baseball. This facility is irrigated with raw water from the Farmers Ditch Company. The holding pond that is located in the southeast corner of the park has a 1-acre foot capacity. This holding pond also receives some of its water through ground water infiltration in wet years and can loses water due to groundwater outflow in dry years. During the peak of the irrigation season this site requires about 1.5 to 2.0 acre feet of water per week depending on ground water levels at the holding pond. A total loss of irrigation would result in excessive turf damage in the ball fields and around the playground. This would contribute to unsafe playing conditions on the baseball fields.

Conservation Methods:

**Tier #1 Conservation:**

- Reduce the water budget/ times on all irrigation zones by 10% of normal based on current weather and site considerations, but not to exceed 90% of the maximum settings as determined by the micro management plan

**Tier #2 Conservation:**

- Reduce the watering schedule to three days from the normal four day cycle and continue to water up to 100% of normal based on current weather and site considerations. Watering days will be Monday, Wednesday, and Friday.

**Tier#3 Conservation:**

- Reduce the watering schedule to three days from the normal four day cycle on zones that impact ball fields. Set the water budget on field zones at 75% of normal or less based on current weather and site considerations. Watering days will be Monday, Wednesday, and Friday on the athletic field zones.

- Turn off two days on all non-athletic field area irrigation zones from the normal four day schedule. Athletic areas include all ball fields. Reduce the percent on these zones to 75% or less based on current weather and site considerations. Watering days will be Monday and Thursday

- Turn off all non-recreational area half head zones. Recreational areas include ball fields only.

**Tier #4 Conservation:**

- Reduce the watering schedule to two days from the normal four-day cycle on zones that impact ball fields. Set the water budget on athletic field zones at 75% of normal or less based on current weather and site considerations. Watering days will be Monday and Thursday.

- Turn off all half head zones in non-recreational areas.

- Turn off three days on all non-athletic field area irrigation zones from the normal four-day schedule. Athletic areas include ball fields only. Reduce the percent on these zones to 75% or less based on current weather and site considerations. Watering day will be Monday.

**Summary:**

Conservation methods in tier one would reduce the watering requirements by about 10% and would have no short term landscape impacts. Water conservation methods in tier two would reduce the watering requirements by about 25% and would result in turf loss in low use areas and increased field wear. Tier three would reduce the watering requirements by about 50% and would result in turf and tree loss in low use areas and potential field failures in high use areas. Tier three may require the closure of some or all athletic fields after one year. Tier four would reduce the watering requirements by about 75% and would result in large scale turf and tree loss in low use areas and field failures in high use areas. Tier four would require the immediate closure of all athletic fields/high use areas.

**Park/Public Ground:** Loch Lon Park

**Brief Site Description:**

This is a 10.7 acre neighborhood park used for general recreation and soccer. This facility is irrigated with domestic water. During the peak of the irrigation season this site requires about 410,000 gallons of water per week depending on evapotransporation rates. A total loss of irrigation would result in excessive turf damage in the soccer fields and around the playground. This would contribute to unsafe playing conditions.

Conservation Methods:

**Tier #1 Conservation:**

- Reduce the water budget/ times on all irrigation zones by 10% of normal based on current weather and site considerations, but not to exceed 90% of the maximum settings as determined by the micro management plan

**Tier #2 Conservation:**

- Reduce the watering schedule to three days from the normal four day cycle and continue to water up to 100% of normal based on current weather and site considerations. Watering days will be Monday, Wednesday, and Friday.

**Tier#3 Conservation:**

- Reduce the watering schedule to three days from the normal four day cycle on zones that impact soccer fields. Set the water budget on field zones at 75% of normal or less based on current weather and site considerations. Watering days will be Monday, Wednesday, and Friday on the athletic field zones.

- Turn off two days on all non-athletic field area irrigation zones from the normal four day schedule. Athletic areas include all soccer fields. Reduce the percent on these zones to 75% or less based on current weather and site considerations. Watering days will be Monday and Thursday

- Turn off all non-recreational area half head zones. Recreational areas include soccer fields only.

**Tier #4 Conservation:**

- Reduce the watering schedule to two days from the normal four-day cycle on zones that impact soccer fields. Set the water budget on athletic field zones at 75% of normal or less based on current weather and site considerations. Watering days will be Monday and Thursday.

- Turn off all half head zones in non-recreational areas.

- Turn off three days on all non-athletic field area irrigation zones from the normal four-day schedule. Athletic areas include soccer fields only. Reduce the percent on these zones to 75% or less based on current weather and site considerations. Watering day will be Monday.

**Summary:**

Conservation methods in tier one would reduce the watering requirements by about 10% and would have no short term landscape impacts. Water conservation methods in tier two would reduce the watering requirements by about 25% and would result in turf loss in low use areas and increased field wear. Tier three would reduce the watering requirements by about 50% and would result in turf and tree loss in low use areas and potential field failures in high use areas. Tier three may require the closure of some or all athletic fields after one year. Tier four would reduce the watering requirements by about 75% and would result in large scale turf and tree loss in low use areas and field failures in high use areas. Tier four would require the immediate closure of all athletic fields/high use areas.

**Park/Public Ground:** Osborn Park/Pool

**Brief Site Description:**

This is a 13 acre neighborhood park and community pool complex used for soccer, softball and swimming. This facility is irrigated with domestic water. During the peak of the irrigation season this site requires about 326,000 gallons of water per week depending on evapotransporation rates. A total loss of irrigation would result in excessive turf damage in the soccer fields and around the pool area. This would contribute to unsafe playing conditions.

Conservation Methods:

**Tier #1 Conservation:**

- Reduce the water budget/ times on all irrigation zones by 10% of normal based on current weather and site considerations, but not to exceed 90% of the maximum settings as determined by the micro management plan

**Tier #2 Conservation:**

- Reduce the watering schedule to three days from the normal four day cycle and continue to water up to 100% of normal based on current weather and site considerations. Watering days will be Monday, Wednesday, and Friday.

**Tier#3 Conservation:**

- Reduce the watering schedule to three days from the normal four day cycle on zones that impact the soccer field and zones inside the pool area when the pool is open. Set the water budget on field zones at 75% and pool zones to 60% of normal or less based on current weather and site considerations. Watering days will be Monday, Wednesday, and Friday on the athletic field zones.

- Turn off two days on all non-athletic field area irrigation zones including the pool area during the months the pool is not open from the normal four day schedule. Athletic areas include all soccer fields. Reduce the percent on these zones to 65% or less based on current weather and site considerations. Watering days will be Monday and Thursday

- Turn off all non-recreational area half head zones unless the zone is sole source for a specific area. Recreational areas include soccer field and zones inside the pool fence only.

**Tier #4 Conservation:**

- Reduce the watering schedule to two days from the normal four-day cycle on zones that impact soccer fields. Set the water budget on the soccer field zones at 75% of normal or less based on current weather and site considerations. Watering days will be Monday and Thursday.

- Turn off all half head zones in non-recreational areas.

- Turn off three days on all non-athletic field area irrigation zones including the pool area from the normal four-day schedule. Athletic areas include soccer fields only. Reduce the percent on these zones to 75% or less based on current weather and site considerations. Watering day will be Monday.

**Summary:**

Conservation methods in tier one would reduce the watering requirements by about 10% and would have no short term landscape impacts. Water conservation methods in tier two would reduce the watering requirements by about 25% and would result in turf loss in low use areas and increased field wear. Tier three would reduce the watering requirements by about 50% and would result in turf and tree loss in low use areas and potential field failures in high use areas. Tier three may require the closure of some or all athletic fields after one year. Tier four would reduce the watering requirements by about 75% and would result in large scale turf and tree loss in low use areas and field failures in high use areas. Tier four would require the immediate closure of all athletic fields/high use areas including the pool.

**Park/Public Ground:** Seven Lakes Park

**Brief Site Description:**

This is a 10.2 acre neighborhood park used for soccer and picnics. This facility is irrigated with raw water from the Seven Lakes Reservoir Company. This water reservoir is used jointly by the Upper and Lower Hoffman Lake property owners, Mckee Hospital and McKee/Seven Lakes Parks. Refer to the McKee Park conservation plan for further information. In the case of a raw water shortage McKee hospital will convert to a private domestic watering source. During the peak of the irrigation season this site requires about 1.25 acre-feet of water per week depending on evapotransporation rates. A total loss of irrigation would result in excessive turf damage in the soccer fields and around the playground. This would contribute to unsafe playing conditions.

Conservation Methods:

**Tier #1 Conservation:**

- Reduce the water budget/ times on all irrigation zones by 10% of normal based on current weather and site considerations, but not to exceed 90% of the maximum settings as determined by the micro management plan

**Tier #2 Conservation:**

- Reduce the watering schedule to three days from the normal four day cycle and continue to water up to 100% of normal based on current weather and site considerations. Watering days will be Monday, Wednesday, and Friday.

**Tier#3 Conservation:**

- Reduce the watering schedule to three days from the normal four day cycle on zones that impact the soccer field. Set the water budget on field zones at 75% of normal or less based on current weather and site considerations. Watering days will be Monday, Wednesday, and Friday on the athletic field zones.

- Turn off two days on all non-athletic field area irrigation zones from the normal four day schedule. Athletic areas include the soccer field only. Reduce the percent on these zones to 75% or less based on current weather and site considerations. Watering days will be Monday and Thursday

- Turn off all non-recreational area half head zones unless a zone is sole source for a specific area. Recreational areas include soccer fields only.

**Tier #4 Conservation:**

- Reduce the watering schedule to two days from the normal four-day cycle on zones that impact the soccer field. Set the water budget on athletic field zones at 75% of normal or less based on current weather and site considerations. Watering days will be Monday and Thursday.

- Turn off all half head zones in non-recreational areas.

- Turn off three days on all non-athletic field area irrigation zones from the normal four-day schedule. Athletic areas include the soccer field only. Reduce the percent on these zones to 75% or less based on current weather and site considerations. Watering day will be Monday.

**Summary:**

Conservation methods in tier one would reduce the watering requirements by about 10% and would have no short term landscape impacts. Water conservation methods in tier two would reduce the watering requirements by about 25% and would result in turf loss in low use areas and increased field wear. Tier three would reduce the watering requirements by about 50% and would result in turf and tree loss in low use areas and potential field failures in high use areas. Tier three may require the closure of some or all athletic fields after one year. Tier four would reduce the watering requirements by about 75% and would result in large scale turf and tree loss in low use areas and field failures in high use areas. Tier four would require the immediate closure of all athletic fields/high use areas.

**Park/Public Ground:** Dwayne Webster Park

**Brief Site Description:**

This is a 5.4 acre neighborhood park used for picnics and family recreation. This facility is irrigated with domestic water. During the peak of the irrigation season this site requires about 430,000 gallons of water per week depending on evapotransporation rates. A total loss of irrigation would result in excessive turf damage in around the playground and shelter areas. This would contribute to unsafe playing conditions.

Conservation Methods:

**Tier #1 Conservation:**

- Reduce the water budget/ times on all irrigation zones by 10% of normal based on current weather and site considerations, but not to exceed 90% of the maximum settings as determined by the micro management plan.

**Tier #2 Conservation:**

- Reduce the watering percent on the odd/even controllers by 25%, based on current weather and site considerations, but no more than 75% of normal. Watering days will continue to be odd/even.

**Tier#3 Conservation:**

- Reduce the watering schedule from the normal odd/even schedule to a three day schedule. Implement the emergency micro management watering schedule to accommodate all zones watering in a single night. This will automatically cut 25% off the normal run times per zone on average. Set the water budget on this reduced schedule to 100% or less based on current weather and site considerations. Watering days will be Monday, Wednesday, and Friday.

- Turn off all non-recreational area half head zones unless a zone is sole source for a specific area. Recreational areas include shelter areas only.

**Tier #4 Conservation:**

- Reduce the watering schedule from the normal odd/even schedule to a two day schedule. Implement the emergency micro management watering schedule to accommodate all zones watering in a single night. This will automatically cut 25% off the normal run times per zone on average. Set the water budget on this reduced schedule to 75% or less based on current weather and site considerations. Watering days will be Monday and Friday.

- Turn off all non-recreational area half head zones unless a zone is sole source for a specific area. Recreational areas include shelter areas only.

**Summary:**

Conservation methods in tier one would reduce the watering requirements by about 10% and would have no short term landscape impacts. Water conservation methods in tier two would reduce the watering requirements by about 25% and would result in turf loss in low use areas and increased field wear. Tier three would reduce the watering requirements by about 50% and would result in turf and tree loss in low use areas and potential field failures in high use areas. Tier three may require the closure of some or all athletic fields after one year. Tier four would reduce the watering requirements by about 75% and would result in large scale turf and tree loss in low use areas and field failures in high use areas. Tier four would require the immediate closure of all athletic fields/high use areas.

**Park/Public Ground:** South Shore Scenic Way

**Brief Site Description:**

This is a 5.3 acre scenic walkway along Lake Loveland. This facility is irrigated with domestic water. During the peak of the irrigation season this site requires about 138,000 gallons of water per week depending on evapotransporation rates. A total loss of irrigation would result in excessive turf damage around the parking lots and poor aesthetics along highway 34.

Conservation Methods:

**Tier #1 Conservation:**

- Reduce the water budget/ times on all irrigation zones by 10% of normal based on current weather and site considerations, but not to exceed 90% of the maximum settings as determined by the micro management plan

**Tier #2 Conservation:**

- Reduce the watering schedule to three days from the normal four day cycle and continue to water up to 100% of normal based on current weather and site considerations. Watering days will be Monday, Wednesday, and Friday.

**Tier#3 Conservation:**

- Reduce the watering schedule to three days from the normal four day cycle on all zones. Set the water budget to 67% of normal or less based on current weather and site considerations. Watering days will be Monday, Wednesday, and Friday.

**Tier #4 Conservation:**

- Reduce the watering schedule to two days from the normal four-day cycle on all zones. Set the water budget to 50% of normal or less based on current weather and site considerations. Watering days will be Monday and Thursday.

**Summary:**

Conservation methods in tier one would reduce the watering requirements by about 10% and would have no short term landscape impacts. Water conservation methods in tier two would reduce the watering requirements by about 25% and would result in turf loss in low use areas and increased wear in high use areas near the parking lots. Tier three would reduce the watering requirements by about 50% and would result in turf and tree loss in all areas. Tier four would reduce the watering requirements by about 75% and would result in large scale turf and tree loss in all areas. Tier four would require a consideration to be made regarding the potential impacts of the Fourth of July celebration.

**Park/Public Ground:** Benson Park

**Brief Site Description:**

This is a 13.5 acre sculpture park. This facility is irrigated with raw water from the Louden Ditch Company. The pumping station is located on the holding pond in North Lake Park. This holding pond is used jointly by the RJ2 School District for Loveland High School and by North Lake/Benson Parks. During the peak of the irrigation season this site requires about 1.25 acre-feet of water per week depending on evapotransporation rates. A total loss of irrigation would result in poor aesthetics quality of the park and possible turf damage during major events. Please refer to the North Lake Park conservation plan for further details.

Conservation Methods:

**Tier #1 Conservation:**

- Reduce the water budget/ times on all irrigation zones by 10% of normal based on current weather and site considerations, but not to exceed 90% of the maximum settings as determined by the micro management plan.

**Tier #2 Conservation:**

- Reduce the watering percent on the odd/even controllers by 25%, based on current weather and site considerations, but no more than 75% of normal. Watering days will continue to be odd/even.

**Tier#3 Conservation:**

- Reduce the watering schedule to three days on lower use areas (controllers C and D) from the normal odd/even cycle and water up to 50% of normal based on current weather and site considerations. Watering days on low use areas will be Sunday, Tuesday, and Friday. On high use areas including the sculpture show section and the pavilion area change the odd/even schedule to four days per week (controllers A, B, and E) and water up to 60% of normal based on current weather and site considerations. Watering days on high use areas will be Saturday, Monday, Wednesday, and Thursday.

- Turn off all half-head irrigation zones in low use areas to provide water savings needed for the high use areas.

**Tier#4 Conservation:**

- Reduce the watering schedule to two days on lower use areas (controllers C and D) from the normal odd/even cycle and water up to 50% of normal based on current weather and site considerations. Watering days on low use areas will be Tuesday and Friday. On high use areas including the sculpture show area and pavilion change the odd/even schedule to two days per week (controllers A, B, and E) and water up to 60% of normal based on current weather and site considerations. Watering days on high use areas will be Monday and Thursday.

- Turn off all half-head irrigation zones in low use areas (all areas north of the pavilion and all zones along the ponds) this will provide savings for the high use areas as needed.

**Summary:**

Conservation methods in tier one would reduce the watering requirements by about 10% and would have no short term landscape impacts. Water conservation methods in tier two would reduce the watering requirements by about 25% and would result in turf loss in low use areas and increased turf loss near high traffic areas. Tier three would reduce the watering requirements by about 50% and would result in turf and tree loss in low use areas and potential turf failures in the sculpture show areas. Tier three may require the potential cancellation of special events such as the sculpture show. Tier four would reduce the watering requirements by about 75% and would result in large scale turf and tree loss in all areas. Tier four would require the immediate cancellation of the sculpture show and other special events.

**Park/Public Ground:** Sunnyside Park

**Brief Site Description:**

This is a 3.6 acre neighborhood park used for general recreation and soccer. This facility is irrigated with well water. During the peak of the irrigation season this site requires about 125,000 gallons of water per week depending on evapotransporation rates. A total loss of irrigation would result in excessive turf damage in the soccer fields. This would contribute to unsafe playing conditions.

Conservation Methods:

**Tier #1 Conservation:**

- Reduce the water budget/ times on all irrigation zones by 10% of normal based on current weather and site considerations, but not to exceed 90% of the maximum settings as determined by the micro management plan

**Tier #2 Conservation:**

- Reduce the watering schedule to three days from the normal four day cycle and continue to water up to 100% of normal based on current weather and site considerations. Watering days will be Monday, Wednesday, and Friday.

**Tier#3 Conservation:**

- Reduce the watering schedule to three days from the normal four day cycle on zones that impact the soccer field. Set the water budget on field zones at 60% of normal or less based on current weather and site considerations. Watering days will be Monday, Wednesday, and Friday on the soccer field zones.

- Turn off two days on all non-soccer field area irrigation zones from the normal four day schedule. Reduce the percent on these zones to 50% or less based on current weather and site considerations. Watering days will be Monday and Thursday

- Turn off all non-recreational area half head zones that are not sole source for a specific area. Recreational areas include soccer fields only.

**Tier #4 Conservation:**

- Reduce the watering schedule to two days from the normal four-day cycle on zones that impact soccer fields. Set the water budget on athletic field zones at 55% of normal or less based on current weather and site considerations. Watering days will be Monday and Thursday.

- Turn off all half head zones in non-recreational areas.

- Turn off three days on all non-athletic field area irrigation zones from the normal four-day schedule. Athletic areas include soccer fields only. Reduce the percent on these zones to 75% or less based on current weather and site considerations. Watering day will be Monday.

**Summary:**

Conservation methods in tier one would reduce the watering requirements by about 10% and would have no short term landscape impacts. Water conservation methods in tier two would reduce the watering requirements by about 25% and would result in turf loss in low use areas and increased field wear. Tier three would reduce the watering requirements by about 50% and would result in turf and tree loss in low use areas and potential field failures in high use areas. Tier three may require the closure of the soccer field area after one year. Tier four would reduce the watering requirements by about 75% and would result in large scale turf and tree loss in low use areas and field failures in high use areas. Tier four would require the immediate closure of all athletic fields/high use areas.

**Park/Public Ground:** Junior Achievement Park

**Brief Site Description:**

This is a 1.5 acre neighborhood park used for general recreation and skate boarding. This facility is irrigated with domestic water. During the peak of the irrigation season this site requires about 60,000 gallons of water per week depending on evapotransporation rates. A total loss of irrigation would result in excessive turf damage in the soccer/ball fields. This would contribute to unsafe playing conditions.

Conservation Methods:

**Tier #1 Conservation:**

- Reduce the water budget/ times on all irrigation zones by 10% of normal based on current weather and site considerations, but not to exceed 90% of the maximum settings as determined by the micro management plan

**Tier #2 Conservation:**

- Reduce the watering schedule to three days from the normal four day cycle and continue to water up to 100% of normal based on current weather and site considerations. Watering days will be Monday, Wednesday, and Friday.

**Tier#3 Conservation:**

- Reduce the watering schedule to three days from the normal four day cycle on zones that impact the athletic field area. Set the water budget on field zones at 60% of normal or less based on current weather and site considerations. Watering days will be Monday, Wednesday, and Friday on the field zones.

- Turn off two days on all non-athletic field area irrigation zones from the normal four day schedule. Reduce the percent on these zones to 50% or less based on current weather and site considerations. Watering days will be Monday and Thursday

- Turn off all non-recreational area half head zones that are not sole source for a specific area. Recreational areas include flat open area on the south side only.

**Tier #4 Conservation:**

- Reduce the watering schedule to two days from the normal four-day cycle on zones that impact athletic field. Set the water budget on athletic field zones at 55% of normal or less based on current weather and site considerations. Watering days will be Monday and Thursday.

- Turn off all half head zones in non-recreational areas.

- Turn off three days on all non-athletic field area irrigation zones from the normal four-day schedule. Athletic areas include soccer fields only. Reduce the percent on these zones to 65% or less based on current weather and site considerations. Watering day will be Monday.

**Summary:**

Conservation methods in tier one would reduce the watering requirements by about 10% and would have no short term landscape impacts. Water conservation methods in tier two would reduce the watering requirements by about 25% and would result in turf loss in low use areas and increased field wear. Tier three would reduce the watering requirements by about 50% and would result in turf and tree loss in low use areas and potential field failures in high use areas. Tier three may require the closure of the athletic field area after one year. Tier four would reduce the watering requirements by about 75% and would result in large scale turf and tree loss in low use areas and field failures in high use areas. Tier four would require the immediate closure of all athletic fields/high use areas.

**Park/Public Ground:** Woodmere Park

**Brief Site Description:**

This is a 4.0 acre neighborhood park used for family and general recreation. This facility is irrigated with domestic water. During the peak of the irrigation season this site requires about 140,000 gallons of water per week depending on evapotransporation rates. A total loss of irrigation would result in excessive turf damage in the soccer/ball field. This would contribute to unsafe playing conditions.

Conservation Methods:

**Tier #1 Conservation:**

- Reduce the water budget/ times on all irrigation zones by 10% of normal based on current weather and site considerations, but not to exceed 90% of the maximum settings as determined by the micro management plan

**Tier #2 Conservation:**

- Reduce the watering schedule to three days from the normal four day cycle and continue to water up to 100% of normal based on current weather and site considerations. Watering days will be Monday, Wednesday, and Friday.

**Tier#3 Conservation:**

- Reduce the watering schedule to three days from the normal four day cycle on zones that impact the ball field and playground area. Set the water budget on field zones at 70% of normal or less based on current weather and site considerations. Watering days will be Monday, Wednesday, and Friday on the field zones.

- Turn off two days on all low use area irrigation zones from the normal four day schedule. Reduce the percent on these zones to 50% or less based on current weather and site considerations. Watering days will be Monday and Thursday

- Turn off all half head zones not affecting the playground or ball field and are not sole source for a specific area.

**Tier #4 Conservation:**

- Reduce the watering schedule to two days from the normal four-day cycle on zones in areas that impact the athletic field and playground area. Set the water budget on athletic field zones at 55% of normal or less based on current weather and site considerations. Watering days will be Monday and Thursday.

- Turn off all half head zones in low use areas.

- Turn off three days on all low use area irrigation zones from the normal four-day schedule. Low use areas include the west end between the fence and the sidewalk and the entrance to the park from the south. Reduce the percent on these zones to 60% or less based on current weather and site considerations. Watering day will be Monday.

**Summary:**

Conservation methods in tier one would reduce the watering requirements by about 10% and would have no short term landscape impacts. Water conservation methods in tier two would reduce the watering requirements by about 25% and would result in turf loss in low use areas and increased field wear. Tier three would reduce the watering requirements by about 50% and would result in turf and tree loss in low use areas and potential field failures in high use areas. Tier four would reduce the watering requirements by about 75% and would result in large scale turf and tree loss in all areas. Tier four would pose potential safety concerns due to compaction and loss of turf.

**Park/Public Ground:** Eagleview Park

**Brief Site Description:**

This is a 12.0 acre neighborhood park (8.0 irrigated) used for family and general recreation. This facility is irrigated with domestic water. During the peak of the irrigation season this site requires about 280,000 gallons of water per week depending on evapotransporation rates. A total loss of irrigation would result in excessive turf damage in the soccer/ball field. This would contribute to unsafe playing conditions.

Conservation Methods:

**Tier #1 Conservation:**

- Reduce the water budget/ times on all irrigation zones by 10% of normal based on current weather and site considerations, but not to exceed 90% of the maximum settings as determined by the micro management plan

**Tier #2 Conservation:**

- Reduce the watering schedule to three days from the normal four day cycle and continue to water up to 100% of normal based on current weather and site considerations. Watering days will be Monday, Wednesday, and Friday.

**Tier#3 Conservation:**

- Reduce the watering schedule to three days from the normal four day cycle on zones that impact the ball field and playground area. Set the water budget on field zones at 70% of normal or less based on current weather and site considerations. Watering days will be Monday, Wednesday, and Friday on the field zones.

- Turn off two days on all low use area irrigation zones from the normal four day schedule. Reduce the percent on these zones to 50% or less based on current weather and site considerations. Watering days will be Monday and Thursday

- Turn off all half head zones not affecting the playground or ball field and are not sole source for a specific area.

**Tier #4 Conservation:**

- Reduce the watering schedule to two days from the normal four-day cycle on zones in areas that impact the athletic field and playground area. Set the water budget on athletic field zones at 55% of normal or less based on current weather and site considerations. Watering days will be Monday and Thursday.

- Turn off all half head zones in low use areas.

- Turn off three days on all low use area irrigation zones from the normal four-day schedule. Low use areas include the west end between the soccer field and Lincoln Ave, the area adjacent to the west fence line just north of the church parking and the sledding hill. Reduce the percent on these zones to 60% or less based on current weather and site considerations. Watering day will be Monday.

**Summary:**

Conservation methods in tier one would reduce the watering requirements by about 10% and would have no short term landscape impacts. Water conservation methods in tier two would reduce the watering requirements by about 25% and would result in turf loss in low use areas and increased field wear. Tier three would reduce the watering requirements by about 50% and would result in turf and tree loss in low use areas and potential field failures in high use areas. Tier four would reduce the watering requirements by about 75% and would result in large scale turf and tree loss in all areas. Tier four would pose potential safety concerns due to compaction and loss of turf.

**Park/Public Ground:** Sherri-Mar Park

**Brief Site Description:**

This is a 2.7 acre neighborhood park used for family and general recreation. This facility is irrigated with domestic water. During the peak of the irrigation season this site requires about 110,000 gallons of water per week depending on evapotransporation rates. A total loss of irrigation would result in excessive turf damage in the soccer/playing areas. This would contribute to unsafe playing conditions.

Conservation Methods:

**Tier #1 Conservation:**

- Reduce the water budget/ times on all irrigation zones by 10% of normal based on current weather and site considerations, but not to exceed 90% of the maximum settings as determined by the micro management plan

**Tier #2 Conservation:**

- Reduce the watering schedule to three days from the normal four day cycle and continue to water up to 100% of normal based on current weather and site considerations. Watering days will be Monday, Wednesday, and Friday.

**Tier#3 Conservation:**

- Reduce the watering schedule to three days from the normal four day cycle on zones that impact the playing field and playground area. Set the water budget on field zones at 60% of normal or less based on current weather and site considerations. Watering days will be Monday, Wednesday, and Friday on the field zones.

- Turn off two days on all low use area irrigation zones from the normal four day schedule. Reduce the percent on these zones to 50% or less based on current weather and site considerations. Watering days will be Monday and Thursday

- Turn off all half head zones not affecting the playground or playing field and are not sole source for a specific area.

**Tier #4 Conservation:**

- Reduce the watering schedule to two days from the normal four-day cycle on zones in areas that impact the playing field and playground area. Set the water budget on athletic field zones at 55% of normal or less based on current weather and site considerations. Watering days will be Monday and Thursday.

- Turn off all half head zones that are not sole source for a specific area.

- Turn off three days on all low use area irrigation zones from the normal four-day schedule. Low use areas include the north third of the park. Reduce the percent on these zones to 60% or less based on current weather and site considerations. Watering day will be Monday.

**Summary:**

Conservation methods in tier one would reduce the watering requirements by about 10% and would have no short term landscape impacts. Water conservation methods in tier two would reduce the watering requirements by about 25% and would result in turf loss in low use areas and increased field wear. Tier three would reduce the watering requirements by about 50% and would result in turf and tree loss in low use areas and potential field failures in high use areas. Tier four would reduce the watering requirements by about 75% and would result in large scale turf and tree loss in all areas. Tier four would pose potential safety concerns due to compaction and loss of turf.

**Park/Public Ground:** Edmondson Park

**Brief Site Description:**

This is a 2.61 acre neighborhood park used for family and general recreation. This facility is irrigated with domestic water. During the peak of the irrigation season this site requires about 106,000 gallons of water per week depending on evapotransporation rates. A total loss of irrigation would result in excessive turf damage around the playground and general recreational areas. This would contribute to unsafe playing conditions.

Conservation Methods:

**Tier #1 Conservation:**

- Reduce the water budget/ times on all irrigation zones by 10% of normal based on current weather and site considerations, but not to exceed 90% of the maximum settings as determined by the micro management plan

**Tier #2 Conservation:**

- Reduce the watering schedule to three days from the normal four day cycle and continue to water up to 100% of normal based on current weather and site considerations. Watering days will be Monday, Wednesday, and Friday.

**Tier#3 Conservation:**

- Reduce the watering schedule to two days from the normal four day cycle on all zones. Set the water budget on all zones at 100% of normal or less based on current weather and site considerations. Watering days will be Monday and Thursday.

**Tier #4 Conservation:**

- Reduce the watering schedule to two days from the normal four-day cycle on zones in areas that impact the playing field and playground area. Set the water budget on the field and playground zones at 55% of normal or less based on current weather and site considerations. Watering days will be Monday and Thursday.

- Turn off all half head zones that are not sole source for a specific area.

- Turn off three days on all low use area irrigation zones from the normal four-day schedule. Low use areas include the area east of the tennis court. Reduce the percent on these zones to 60% or less based on current weather and site considerations. Watering day will be Monday.

**Summary:**

Conservation methods in tier one would reduce the watering requirements by about 10% and would have no short term landscape impacts. Water conservation methods in tier two would reduce the watering requirements by about 25% and would result in turf loss in low use areas and increased field wear. Tier three would reduce the watering requirements by about 50% and would result in turf and tree loss in all areas and potential complete field failures in high use areas. Tier four would reduce the watering requirements by about 75% and would result in large scale turf and tree loss in all areas. Tier four would pose potential safety concerns due to compaction and loss of turf.

**Park/Public Ground:** Silver Glen Park

**Brief Site Description:**

This is a 3.88 acre neighborhood park used for family and general recreation. This facility is irrigated with domestic water. During the peak of the irrigation season this site requires about 157,000 gallons of water per week depending on evapotransporation rates. A total loss of irrigation would result in excessive turf damage around the playground and general recreational areas. This would contribute to unsafe playing conditions.

Conservation Methods:

**Tier #1 Conservation:**

- Reduce the water budget/ times on all irrigation zones by 10% of normal based on current weather and site considerations, but not to exceed 90% of the maximum settings as determined by the micro management plan

**Tier #2 Conservation:**

- Reduce the watering schedule to three days from the normal four day cycle and continue to water up to 100% of normal based on current weather and site considerations. Watering days will be Monday, Wednesday, and Friday.

**Tier#3 Conservation:**

- Reduce the watering schedule to two days from the normal four day cycle on all zones. Set the water budget on all zones at 100% of normal or less based on current weather and site considerations. Watering days will be Monday and Thursday.

**Tier #4 Conservation:**

- Reduce the watering schedule to two days from the normal four-day cycle on zones in areas that impact the playing field and playground area. Set the water budget on the field and playground zones at 55% of normal or less based on current weather and site considerations. Watering days will be Monday and Thursday.

- Turn off all half head zones that are not sole source for a specific area.

- Turn off three days on all low use area irrigation zones from the normal four-day schedule. Low use areas include the area east of the area between the playground sidewalk and the west fence. Reduce the percent on these zones to 60% or less based on current weather and site considerations. Watering day will be Monday.

**Summary:**

Conservation methods in tier one would reduce the watering requirements by about 10% and would have no short term landscape impacts. Water conservation methods in tier two would reduce the watering requirements by about 25% and would result in turf loss in low use areas and increased field wear. Tier three would reduce the watering requirements by about 50% and would result in turf and tree loss in all areas and potential complete field failures in high use areas. Tier four would reduce the watering requirements by about 75% and would result in large scale turf and tree loss in all areas. Tier four would pose potential safety concerns due to compaction and loss of turf.

**Park/Public Ground:** Derby Hill Park

**Brief Site Description:**

This is a 3.45 acre neighborhood park used for family and general recreation. This facility is irrigated with domestic water. During the peak of the irrigation season this site requires about 120,000 gallons of water per week depending on evapotransporation rates. A total loss of irrigation would result in excessive turf damage around the playground and general recreational areas. This would contribute to unsafe playing conditions.

Conservation Methods:

**Tier #1 Conservation:**

- Reduce the water budget/ times on all irrigation zones by 10% of normal based on current weather and site considerations, but not to exceed 90% of the maximum settings as determined by the micro management plan

**Tier #2 Conservation:**

- Reduce the watering schedule to no more than 75% of the normal odd/even based on current weather and site considerations. Watering days will continue to be odd/even.

**Tier#3 Conservation:**

- Reduce the watering schedule to two days by implementing the revised conservation micro schedule to replace the normal odd/even day cycle on all zones. Set the water budget on all zones on this revised micro schedule to 100% of normal or less based on current weather and site considerations. Watering days will be Monday and Thursday.

**Tier #4 Conservation:**

- Reduce the watering schedule to two days by implementing the revised conservation micro schedule to replace the normal odd/even day cycle on all zones. Set the water budget on all zones on this revised micro schedule to 55% of normal or less based on current weather and site considerations. Watering days will be Monday and Thursday.

- Turn off all half head zones that are not sole source for a specific area.

- Turn off three days on all low use area irrigation zones from the normal four-day schedule. Low use areas include the area south east of the playground and the entrance area off Eugene. Reduce the percent on these zones to 60% or less based on current weather and site considerations. Watering day will be Monday.

**Summary:**

Conservation methods in tier one would reduce the watering requirements by about 10% and would have no short term landscape impacts. Water conservation methods in tier two would reduce the watering requirements by about 25% and would result in turf loss in low use areas and increased field wear. Tier three would reduce the watering requirements by about 50% and would result in turf and tree loss in all areas and potential complete field failures in high use areas. Tier four would reduce the watering requirements by about 75% and would result in large scale turf and tree loss in all areas. Tier four would pose potential safety concerns due to compaction and loss of turf.

**Park/Public Ground:** Namaqua Park

**Brief Site Description:**

This is a 4.0 acre neighborhood park used for picnics and general family recreation. This facility is irrigated with domestic water. During the peak of the irrigation season this site requires about 125,000 gallons of water per week depending on evapotransporation rates. A total loss of irrigation would result in excessive turf damage around the playground and general recreational areas. This would contribute to unsafe playing conditions.

Conservation Methods:

**Tier #1 Conservation:**

- Reduce the water budget/ times on all irrigation zones by 10% of normal based on current weather and site considerations, but not to exceed 90% of the maximum settings as determined by the micro management plan

**Tier #2 Conservation:**

- Reduce the watering schedule to three days from the normal four day cycle and continue to water up to 100% of normal based on current weather and site considerations. Watering days will be Monday, Wednesday, and Friday.

**Tier#3 Conservation:**

- Reduce the watering schedule to two days from the normal four day cycle on all zones. Set the water budget on all zones at 100% of normal or less based on current weather and site considerations. Watering days will be Monday and Thursday.

**Tier #4 Conservation:**

- Reduce the watering schedule to two days from the normal four-day cycle on zones in areas that impact the playing field, shelter, and playground area. Set the water budget on the field, shelter and playground zones at 55% of normal or less based on current weather and site considerations. Watering days will be Monday and Thursday.

- Turn off all half head zones that are not sole source for a specific area.

- Turn off three days on all low use area irrigation zones from the normal four-day schedule. Low use areas include the eastern third of the park. Reduce the percent on these zones to 60% or less based on current weather and site considerations. Watering day will be Monday.

**Summary:**

Conservation methods in tier one would reduce the watering requirements by about 10% and would have no short term landscape impacts. Water conservation methods in tier two would reduce the watering requirements by about 25% and would result in turf loss in low use areas and increased field wear. Tier three would reduce the watering requirements by about 50% and would result in turf and tree loss in all areas and potential complete field failures in high use areas. Tier four would reduce the watering requirements by about 75% and would result in large scale turf and tree loss in all areas. Tier four would pose potential safety concerns due to compaction and loss of turf.

**Park/Public Ground:** Mckee Park

**Brief Site Description:**

This is a 3.8 acre neighborhood park used for general family recreation and picnics. This facility is irrigated with raw water from the Seven Lakes Reservoir Company. This is a shared reservoir with the Upper and Lower Hoffman Lake property owners and McKee Hospital. Refer to the Seven Lakes Park conservation plan for further details. During the peak of the irrigation season this site requires about 0.50 acre-feet of water per week depending on evapotransporation rates. A total loss of irrigation would result in excessive turf damage in the soccer/ ball fields and around the playground. This would contribute to unsafe playing conditions.

Conservation Methods:

**Tier #1 Conservation:**

- Reduce the water budget/ times on all irrigation zones by 10% of normal based on current weather and site considerations, but not to exceed 90% of the maximum settings as determined by the micro management plan

**Tier #2 Conservation:**

- Reduce the watering schedule to no more than 75% of the normal odd/even based on current weather and site considerations. Watering days will continue to be odd/even.

**Tier#3 Conservation:**

- Reduce the watering schedule to two days by implementing the revised conservation micro schedule to replace the normal odd/even day cycle on all zones. Set the water budget on all zones on this revised micro schedule to 100% of normal or less based on current weather and site considerations. Watering days will be Monday and Thursday.

**Tier #4 Conservation:**

- Reduce the watering schedule to two days by implementing the revised conservation micro schedule to replace the normal odd/even day cycle on all zones. Set the water budget on all zones on this revised micro schedule to 55% of normal or less based on current weather and site considerations. Watering days will be Monday and Thursday.

- Turn off all half head zones that are not sole source for a specific area or around the playground.

**Summary:**

Conservation methods in tier one would reduce the watering requirements by about 10% and would have no short term landscape impacts. Water conservation methods in tier two would reduce the watering requirements by about 25% and would result in turf loss in low use areas and increased field wear. Tier three would reduce the watering requirements by about 50% and would result in turf and tree loss in all areas and potential complete field failures in high use areas. Tier four would reduce the watering requirements by about 75% and would result in large scale turf and tree loss in all areas. Tier four would pose potential safety concerns due to compaction and loss of turf.

**Park/Public Ground:** Estrella Park

**Brief Site Description:**

This is a 1.3 acre neighborhood park used for picnics and general family recreation. This facility is irrigated with domestic water. During the peak of the irrigation season this site requires about 53,000 gallons of water per week depending on evapotransporation rates. A total loss of irrigation would result in excessive turf damage around the playground and general recreational areas. This would contribute to unsafe playing conditions.

Conservation Methods:

**Tier #1 Conservation:**

- Reduce the water budget/ times on all irrigation zones by 10% of normal based on current weather and site considerations, but not to exceed 90% of the maximum settings as determined by the micro management plan

**Tier #2 Conservation:**

- Reduce the watering schedule to three days from the normal four day cycle and continue to water up to 100% of normal based on current weather and site considerations. Watering days will be Monday, Wednesday, and Friday.

**Tier#3 Conservation:**

- Reduce the watering schedule to two days from the normal four day cycle on all zones. Set the water budget on all zones at 100% of normal or less based on current weather and site considerations. Watering days will be Monday and Thursday.

**Tier #4 Conservation:**

- Reduce the watering schedule to two days from the normal four-day cycle on zones in areas that impact the playing field, shelter, and playground area. Set the water budget on the field, shelter and playground zones at 55% of normal or less based on current weather and site considerations. Watering days will be Monday and Thursday.

- Turn off all half head zones that are not sole source for a specific area or the playground.

**Summary:**

Conservation methods in tier one would reduce the watering requirements by about 10% and would have no short term landscape impacts. Water conservation methods in tier two would reduce the watering requirements by about 25% and would result in turf loss in low use areas and increased field wear. Tier three would reduce the watering requirements by about 50% and would result in turf and tree loss in all areas and potential complete field failures in high use areas. Tier four would reduce the watering requirements by about 75% and would result in large scale turf and tree loss in all areas. Tier four would pose potential safety concerns due to compaction and loss of turf.

**Park/Public Ground:** Westside Park

**Brief Site Description:**

This is a 1.4 acre neighborhood park used for picnics and general family recreation. This facility is irrigated with domestic water. During the peak of the irrigation season this site requires about 57,000 gallons of water per week depending on evapotransporation rates. A total loss of irrigation would result in excessive turf damage around the playground and general recreational areas. This would contribute to unsafe playing conditions.

Conservation Methods:

**Tier #1 Conservation:**

- Reduce the water budget/ times on all irrigation zones by 10% of normal based on current weather and site considerations, but not to exceed 90% of the maximum settings as determined by the micro management plan

**Tier #2 Conservation:**

- Reduce the watering schedule to three days from the normal four day cycle and continue to water up to 100% of normal based on current weather and site considerations. Watering days will be Monday, Wednesday, and Friday.

**Tier#3 Conservation:**

Reduce the watering schedule to two days from the normal four day cycle on all zones. Set the water budget on all zones at 100% of normal or less based on current weather and site considerations. Watering days will be Monday and Thursday.

**Tier #4 Conservation:**

Reduce the watering schedule to two days from the normal four-day cycle on all zones. Set the water budget at 50% of normal or less based on current weather and site considerations. Watering days will be Monday and Thursday.

**Summary:**

Conservation methods in tier one would reduce the watering requirements by about 10% and would have no short term landscape impacts. Water conservation methods in tier two would reduce the watering requirements by about 25% and would result in turf loss in low use areas and increased field wear. Tier three would reduce the watering requirements by about 50% and would result in turf and tree loss in all areas and potential complete field failures in high use areas. Tier four would reduce the watering requirements by about 75% and would result in large scale turf and tree loss in all areas. Tier four would pose potential safety concerns due to compaction and loss of turf.

**Park/Public Ground:** Kirkview Park

**Brief Site Description:**

This is a 1.6 acre neighborhood park used for picnics and general family recreation. This facility is irrigated with domestic water. During the peak of the irrigation season this site requires about 66,000 gallons of water per week depending on evapotransporation rates. A total loss of irrigation would result in excessive turf damage around the playground and general recreational areas. This would contribute to unsafe playing conditions.

Conservation Methods:

**Tier #1 Conservation:**

- Reduce the water budget/ times on all irrigation zones by 10% of normal based on current weather and site considerations, but not to exceed 90% of the maximum settings as determined by the micro management plan

**Tier #2 Conservation:**

- Reduce the watering schedule to three days from the normal four day cycle and continue to water up to 100% of normal based on current weather and site considerations. Watering days will be Monday, Wednesday, and Friday.

**Tier#3 Conservation:**

Reduce the watering schedule to two days from the normal four day cycle on all zones. Set the water budget on all zones at 100% of normal or less based on current weather and site considerations. Watering days will be Monday and Thursday.

**Tier #4 Conservation:**

Reduce the watering schedule to two days from the normal four-day cycle on all zones. Set the water budget at 50% of normal or less based on current weather and site considerations. Watering days will be Monday and Thursday.

**Summary:**

Conservation methods in tier one would reduce the watering requirements by about 10% and would have no short term landscape impacts. Water conservation methods in tier two would reduce the watering requirements by about 25% and would result in turf loss in low use areas and increased field wear. Tier three would reduce the watering requirements by about 50% and would result in turf and tree loss in all areas and potential complete field failures in high use areas. Tier four would reduce the watering requirements by about 75% and would result in large scale turf and tree loss in all areas. Tier four would pose potential safety concerns due to compaction and loss of turf.

**Park/Public Ground:** Silver Lake Park

**Brief Site Description:**

This is a 5.0 acre neighborhood park used for picnics and general family recreation. This facility is irrigated with domestic water. During the peak of the irrigation season this site requires about 204,000 gallons of water per week depending on evapotransporation rates. A total loss of irrigation would result in excessive turf damage around the playground and general recreational areas. This would contribute to unsafe playing conditions.

Conservation Methods:

**Tier #1 Conservation:**

- Reduce the water budget/ times on all irrigation zones by 10% of normal based on current weather and site considerations, but not to exceed 90% of the maximum settings as determined by the micro management plan

**Tier #2 Conservation:**

- Reduce the watering schedule to three days from the normal four day cycle and continue to water up to 100% of normal based on current weather and site considerations. Watering days will be Monday, Wednesday, and Friday.

**Tier#3 Conservation:**

Reduce the watering schedule to two days from the normal four day cycle on all zones. Set the water budget on all zones at 100% of normal or less based on current weather and site considerations. Watering days will be Monday and Thursday.

**Tier #4 Conservation:**

Reduce the watering schedule to two days from the normal four-day cycle on all zones. Set the water budget at 50% of normal or less based on current weather and site considerations. Watering days will be Monday and Thursday.

**Summary:**

Conservation methods in tier one would reduce the watering requirements by about 10% and would have no short term landscape impacts. Water conservation methods in tier two would reduce the watering requirements by about 25% and would result in turf loss in low use areas and increased field wear. Tier three would reduce the watering requirements by about 50% and would result in turf and tree loss in all areas and potential complete field failures in high use areas. Tier four would reduce the watering requirements by about 75% and would result in large scale turf and tree loss in all areas. Tier four would pose potential safety concerns due to compaction and loss of turf.

**Park/Public Ground:** Loch Mount Park

**Brief Site Description:**

This is a 0.9 acre neighborhood park used for general family recreation. This facility is irrigated with domestic water. During the peak of the irrigation season this site requires about 37,000 gallons of water per week depending on evapotransporation rates. A total loss of irrigation would result in poor aesthetics.

Conservation Methods:

**Tier #1 Conservation:**

- Reduce the water budget/ times on all irrigation zones by 10% of normal based on current weather and site considerations, but not to exceed 90% of the maximum settings as determined by the micro management plan

**Tier #2 Conservation:**

- Reduce the watering schedule to three days from the normal four day cycle and continue to water up to 100% of normal based on current weather and site considerations. Watering days will be Monday, Wednesday, and Friday.

**Tier#3 Conservation:**

Reduce the watering schedule to two days from the normal four day cycle on all zones. Set the water budget on all zones at 100% of normal or less based on current weather and site considerations. Watering days will be Monday and Thursday.

**Tier #4 Conservation:**

Reduce the watering schedule to two days from the normal four-day cycle on all zones. Set the water budget at 50% of normal or less based on current weather and site considerations. Watering days will be Monday and Thursday.

**Summary:**

Conservation methods in tier one would reduce the watering requirements by about 10% and would have no short term landscape impacts. Water conservation methods in tier two would reduce the watering requirements by about 25% and would result in turf loss in low use areas and increased field wear. Tier three would reduce the watering requirements by about 50% and would result in turf and tree loss in all areas and potential complete field failures in high use areas. Tier four would reduce the watering requirements by about 75% and would result in large scale turf and tree loss in all areas. Tier four would pose potential safety concerns due to compaction and loss of turf.

**Park/Public Ground:** Civic Center

**Brief Site Description:**

This is a 7.66 acre public ground facility that is the site of the City of Loveland municipal building, library and recreation/senior center. This facility is irrigated with well water. During the peak of the irrigation season this site requires about 275,000 gallons of water per week plus varying amounts of water to refill the Foote Lagoon depending on evapotransporation rates. A total loss of irrigation would result in poor aesthetics.

Conservation Methods:

**Tier #1 Conservation:**

- Reduce the water budget/ times on all irrigation zones by 10% of normal based on current weather and site considerations, but not to exceed 90% of the maximum settings as determined by the micro management plan

**Tier #2 Conservation:**

- Reduce the watering schedule to three days from the normal four day cycle and continue to water up to 100% of normal based on current weather and site considerations. Watering days will be Monday, Wednesday, and Friday.

**Tier#3 Conservation:**

- Reduce the watering schedule to three days from the normal four day cycle on all zones. Set the water budget at 67% of normal or less based on current weather and site considerations. Watering days will be Monday, Wednesday, and Friday.

**Tier #4 Conservation:**

- Reduce the watering schedule to two days from the normal four-day cycle on zones in all areas. Set the water budget at 55% of normal or less based on current weather and site considerations. Watering days will be Monday and Thursday.

- Turn off all half head zones in low use areas that are not sole source for a specific site.

- Turn off three days on all low use area irrigation zones from the normal four-day schedule. Low use areas include the area between the Senior Housing and the Chilson Center, the area west of the Library, and the areas south of the south parking lot. Reduce the percent on these zones to 60% or less based on current weather and site considerations. Watering day will be Monday

**Summary:**

Conservation methods in tier one would reduce the watering requirements by about 10% and would have no short term landscape impacts. Water conservation methods in tier two would reduce the watering requirements by about 25% and would result in turf loss in low use areas and increased field wear. Tier three would reduce the watering requirements by about 50% and would result in turf and tree loss in all areas and potential complete field failures in high use areas. Tier four would reduce the watering requirements by about 75% and would result in large scale turf and tree loss in all areas. Tier four would pose potential safety concerns due to compaction and loss of turf and could impact special events.

**Park/Public Ground:** McWhinney Hahn Visitor Center

**Brief Site Description:**

This is a 4.2 acre public ground facility that is the site of the City of Loveland Chamber of Commerce and Visitor Center. This facility is irrigated with domestic water. During the peak of the irrigation season this site requires about 175,000 gallons of water per week plus varying amounts of water to refill the sculpture pond depending on evapotransporation rates. A total loss of irrigation would result in poor aesthetics.

Conservation Methods:

**Tier #1 Conservation:**

- Reduce the water budget/ times on all irrigation zones by 10% of normal based on current weather and site considerations, but not to exceed 90% of the maximum settings as determined by the micro management plan

**Tier #2 Conservation:**

- Reduce the watering schedule to three days from the normal four day cycle and continue to water up to 100% of normal based on current weather and site considerations. Watering days will be Monday, Wednesday, and Friday.

**Tier#3 Conservation:**

Reduce the watering schedule to two days from the normal four day cycle on all zones. Set the water budget on all zones at 100% of normal or less based on current weather and site considerations. Watering days will be Monday and Thursday.

**Tier #4 Conservation:**

Reduce the watering schedule to two days from the normal four-day cycle on all zones. Set the water budget at 50% of normal or less based on current weather and site considerations. Watering days will be Monday and Thursday.

**Summary:**

Conservation methods in tier one would reduce the watering requirements by about 10% and would have no short term landscape impacts. Water conservation methods in tier two would reduce the watering requirements by about 25% and would result in turf loss in low use areas and increased field wear. Tier three would reduce the watering requirements by about 50% and would result in turf and tree loss in all areas and potential complete field failures in high use areas. Tier four would reduce the watering requirements by about 75% and would result in large scale turf and tree loss in all areas. Tier four would pose potential safety concerns due to compaction and loss of turf.

**Park/Public Ground:** Police and Courts Center

**Brief Site Description:**

This is a 2.1 acre (irrigated) public ground facility that is the site of the City of Loveland Justice Center and Police Department. This facility is irrigated with domestic water. During the peak of the irrigation season this site requires about 72,500 gallons of water per week depending on evapotransporation rates. A total loss of irrigation would result in poor aesthetics.

Conservation Methods:

**Tier #1 Conservation:**

- Reduce the water budget/ times on all irrigation zones by 10% of normal based on current weather and site considerations, but not to exceed 90% of the maximum settings as determined by the micro management plan

**Tier #2 Conservation:**

- Reduce the watering schedule to three days from the normal four day cycle and continue to water up to 100% of normal based on current weather and site considerations. Watering days will be Monday, Wednesday, and Friday.

**Tier#3 Conservation:**

Reduce the watering schedule to two days from the normal four day cycle on all zones. Set the water budget on all zones at 100% of normal or less based on current weather and site considerations. Watering days will be Monday and Thursday.

**Tier #4 Conservation:**

Reduce the watering schedule to two days from the normal four-day cycle on all zones. Set the water budget at 50% of normal or less based on current weather and site considerations. Watering days will be Monday and Thursday.

**Summary:**

Conservation methods in tier one would reduce the watering requirements by about 10% and would have no short term landscape impacts. Water conservation methods in tier two would reduce the watering requirements by about 25% and would result in turf loss in low use areas and increased field wear. Tier three would reduce the watering requirements by about 50% and would result in turf and tree loss in all areas and potential complete field failures in high use areas. Tier four would reduce the watering requirements by about 75% and would result in large scale turf and tree loss in all areas. Tier four would pose potential safety concerns due to compaction and loss of turf.

**Park/Public Ground:** Glen Arbor Parkway

**Brief Site Description:**

This is a 1.85 acre public ground facility that is primarily a green belt along highway 287. This facility is irrigated with domestic water. During the peak of the irrigation season this site requires about 70,000 gallons of water per week depending on evapotransporation rates. A total loss of irrigation would result in poor aesthetics.

Conservation Methods:

**Tier #1 Conservation:**

- Reduce the water budget/ times on all irrigation zones by 10% of normal based on current weather and site considerations, but not to exceed 90% of the maximum settings as determined by the micro management plan

**Tier #2 Conservation:**

- Reduce the watering schedule to three days from the normal four day cycle and continue to water up to 100% of normal based on current weather and site considerations. Watering days will be Monday, Wednesday, and Friday.

**Tier#3 Conservation:**

Reduce the watering schedule to two days from the normal four day cycle on all zones. Set the water budget on all zones at 100% of normal or less based on current weather and site considerations. Watering days will be Monday and Thursday.

**Tier #4 Conservation:**

Reduce the watering schedule to two days from the normal four-day cycle on all zones. Set the water budget at 50% of normal or less based on current weather and site considerations. Watering days will be Monday and Thursday.

**Summary:**

Conservation methods in tier one would reduce the watering requirements by about 10% and would have no short term landscape impacts. Water conservation methods in tier two would reduce the watering requirements by about 25% and would result in turf loss in low use areas and increased field wear. Tier three would reduce the watering requirements by about 50% and would result in turf and tree loss in all areas and potential complete field failures in high use areas. Tier four would reduce the watering requirements by about 75% and would result in large scale turf and tree loss in all areas. Tier four would pose potential safety concerns due to compaction and loss of turf.

**Park/Public Ground:** Service Center

**Brief Site Description:**

This is a 4.52 acre public ground maintenance facility for public works, water and power, traffic, vehicle maintenance and school district busses. This facility is irrigated with domestic water from two separate taps. One of these water taps also supplies potable water to the warehouse. During the peak of the irrigation season this site requires about 185,000 gallons of water per week depending on evapotransporation rates. A total loss of irrigation would result in poor aesthetics.

Conservation Methods:

**Tier #1 Conservation:**

- Reduce the water budget/ times on all irrigation zones by 10% of normal based on current weather and site considerations, but not to exceed 90% of the maximum settings as determined by the micro management plan

**Tier #2 Conservation:**

- Reduce the watering schedule to three days from the normal four day cycle and continue to water up to 100% of normal based on current weather and site considerations. Watering days will be Monday, Wednesday, and Friday.

**Tier#3 Conservation:**

Reduce the watering schedule to two days from the normal four day cycle on all zones. Set the water budget on all zones at 100% of normal or less based on current weather and site considerations. Watering days will be Monday and Thursday.

**Tier #4 Conservation:**

Reduce the watering schedule to two days from the normal four-day cycle on all zones. Set the water budget at 55% of normal or less based on current weather and site considerations. Turn off all zones south of the administration building in the flat area (golf course). Watering days will be Monday and Thursday.

**Summary:**

Conservation methods in tier one would reduce the watering requirements by about 10% and would have no short term landscape impacts. Water conservation methods in tier two would reduce the watering requirements by about 25% and would result in turf loss in low use areas and increased field wear. Tier three would reduce the watering requirements by about 50% and would result in turf and tree loss in all areas and potential complete field failures in high use areas. Tier four would reduce the watering requirements by about 75% and would result in large scale turf and tree loss in all areas. Tier four would pose erosion concerns due to compaction and loss of turf.

**Park/Public Ground:** Fire Station #1

**Brief Site Description:**

This is a 0.2 acre fire station. This facility is irrigated with domestic water from the service tap for the entire building including potable water for the station. During the peak of the irrigation season this site requires about 6,000 gallons of water per week depending on evapotransporation rates. A total loss of irrigation would result in poor aesthetics.

Conservation Methods:

**Tier #1 Conservation:**

- Reduce the water budget/ times on all irrigation zones by 10% of normal based on current weather and site considerations, but not to exceed 90% of the maximum settings as determined by the micro management plan

**Tier #2 Conservation:**

- Reduce the watering schedule to three days from the normal four day cycle and continue to water up to 100% of normal based on current weather and site considerations. Watering days will be Monday, Wednesday, and Friday.

**Tier#3 Conservation:**

Reduce the watering schedule to two days from the normal four day cycle on all zones. Set the water budget on all zones at 100% of normal or less based on current weather and site considerations. Watering days will be Monday and Thursday.

**Tier #4 Conservation:**

Reduce the watering schedule to two days from the normal four-day cycle on all zones. Set the water budget at 50% of normal or less based on current weather and site considerations. Watering days will be Monday and Thursday.

**Summary:**

Conservation methods in tier one would reduce the watering requirements by about 10% and would have no short term landscape impacts. Water conservation methods in tier two would reduce the watering requirements by about 25% and would result in turf loss in low use areas and increased field wear. Tier three would reduce the watering requirements by about 50% and would result in turf and tree loss in all areas and potential complete field failures in high use areas. Tier four would reduce the watering requirements by about 75% and would result in large scale turf and tree loss in all areas. Tier four would pose erosion concerns due to compaction and loss of turf.

**Park/Public Ground:** Fire Station #2

**Brief Site Description:**

This is a 0.60 acre fire station. This facility is irrigated with domestic water from the service tap for the entire building including potable water for the station. During the peak of the irrigation season this site requires about 24,000 gallons of water per week depending on evapotransporation rates. A total loss of irrigation would result in poor aesthetics.

Conservation Methods:

**Tier #1 Conservation:**

- Reduce the water budget/ times on all irrigation zones by 10% of normal based on current weather and site considerations, but not to exceed 90% of the maximum settings as determined by the micro management plan

**Tier #2 Conservation:**

- Reduce the watering schedule to three days from the normal four day cycle and continue to water up to 100% of normal based on current weather and site considerations. Watering days will be Monday, Wednesday, and Friday.

**Tier#3 Conservation:**

Reduce the watering schedule to two days from the normal four day cycle on all zones. Set the water budget on all zones at 100% of normal or less based on current weather and site considerations. Watering days will be Monday and Thursday.

**Tier #4 Conservation:**

Reduce the watering schedule to two days from the normal four-day cycle on all zones. Set the water budget at 50% of normal or less based on current weather and site considerations. Watering days will be Monday and Thursday.

**Summary:**

Conservation methods in tier one would reduce the watering requirements by about 10% and would have no short term landscape impacts. Water conservation methods in tier two would reduce the watering requirements by about 25% and would result in turf loss in low use areas and increased field wear. Tier three would reduce the watering requirements by about 50% and would result in turf and tree loss in all areas and potential complete field failures in high use areas. Tier four would reduce the watering requirements by about 75% and would result in large scale turf and tree loss in all areas. Tier four would pose erosion concerns due to compaction and loss of turf.

**Park/Public Ground:** Fire Station #3

**Brief Site Description:**

This is a 0.67 acre fire station. This facility is irrigated with domestic water from the service tap for the entire building including potable water for the station. During the peak of the irrigation season this site requires about 25,000 gallons of water per week depending on evapotransporation rates. A total loss of irrigation would result in poor aesthetics.

Conservation Methods:

**Tier #1 Conservation:**

- Reduce the water budget/ times on all irrigation zones by 10% of normal based on current weather and site considerations, but not to exceed 90% of the maximum settings as determined by the micro management plan

**Tier #2 Conservation:**

- Reduce the watering schedule to three days from the normal four day cycle and continue to water up to 100% of normal based on current weather and site considerations. Watering days will be Monday, Wednesday, and Friday.

**Tier#3 Conservation:**

Reduce the watering schedule to two days from the normal four day cycle on all zones. Set the water budget on all zones at 100% of normal or less based on current weather and site considerations. Watering days will be Monday and Thursday.

**Tier #4 Conservation:**

Reduce the watering schedule to two days from the normal four-day cycle on all zones. Set the water budget at 50% of normal or less based on current weather and site considerations. Watering days will be Monday and Thursday.

**Summary:**

Conservation methods in tier one would reduce the watering requirements by about 10% and would have no short term landscape impacts. Water conservation methods in tier two would reduce the watering requirements by about 25% and would result in turf loss in low use areas and increased field wear. Tier three would reduce the watering requirements by about 50% and would result in turf and tree loss in all areas and potential complete field failures in high use areas. Tier four would reduce the watering requirements by about 75% and would result in large scale turf and tree loss in all areas. Tier four would pose erosion concerns due to compaction and loss of turf.

**Park/Public Ground:** Fire Station #4

**Brief Site Description:**

This is a 0.65 acre fire station. This facility is irrigated with domestic water from the service tap for the entire building including potable water for the station. During the peak of the irrigation season this site requires about 25,000 gallons of water per week depending on evapotransporation rates. A total loss of irrigation would result in poor aesthetics.

Conservation Methods:

**Tier #1 Conservation:**

- Reduce the water budget/ times on all irrigation zones by 10% of normal based on current weather and site considerations, but not to exceed 90% of the maximum settings as determined by the micro management plan

**Tier #2 Conservation:**

- Reduce the watering schedule to three days from the normal four day cycle and continue to water up to 100% of normal based on current weather and site considerations. Watering days will be Monday, Wednesday, and Friday.

**Tier#3 Conservation:**

Reduce the watering schedule to two days from the normal four day cycle on all zones. Set the water budget on all zones at 100% of normal or less based on current weather and site considerations. Watering days will be Monday and Thursday.

**Tier #4 Conservation:**

Reduce the watering schedule to two days from the normal four-day cycle on all zones. Set the water budget at 50% of normal or less based on current weather and site considerations. Watering days will be Monday and Thursday.

**Summary:**

Conservation methods in tier one would reduce the watering requirements by about 10% and would have no short term landscape impacts. Water conservation methods in tier two would reduce the watering requirements by about 25% and would result in turf loss in low use areas and increased field wear. Tier three would reduce the watering requirements by about 50% and would result in turf and tree loss in all areas and potential complete field failures in high use areas. Tier four would reduce the watering requirements by about 75% and would result in large scale turf and tree loss in all areas. Tier four would pose erosion concerns due to compaction and loss of turf.

**Park/Public Ground:** Fire Station #5

**Brief Site Description:**

This is a 0.75 acre fire station. This facility is irrigated with domestic water from the service tap for the entire building including potable water for the station. During the peak of the irrigation season this site requires about 30,000 gallons of water per week depending on evapotransporation rates. A total loss of irrigation would result in poor aesthetics.

Conservation Methods:

**Tier #1 Conservation:**

- Reduce the water budget/ times on all irrigation zones by 10% of normal based on current weather and site considerations, but not to exceed 90% of the maximum settings as determined by the micro management plan

**Tier #2 Conservation:**

- Reduce the watering schedule to three days from the normal four day cycle and continue to water up to 100% of normal based on current weather and site considerations. Watering days will be Monday, Wednesday, and Friday.

**Tier#3 Conservation:**

Reduce the watering schedule to two days from the normal four day cycle on all zones. Set the water budget on all zones at 100% of normal or less based on current weather and site considerations. Watering days will be Monday and Thursday.

**Tier #4 Conservation:**

Reduce the watering schedule to two days from the normal four-day cycle on all zones. Set the water budget at 50% of normal or less based on current weather and site considerations. Watering days will be Monday and Thursday.

**Summary:**

Conservation methods in tier one would reduce the watering requirements by about 10% and would have no short term landscape impacts. Water conservation methods in tier two would reduce the watering requirements by about 25% and would result in turf loss in low use areas and increased field wear. Tier three would reduce the watering requirements by about 50% and would result in turf and tree loss in all areas and potential complete field failures in high use areas. Tier four would reduce the watering requirements by about 75% and would result in large scale turf and tree loss in all areas. Tier four would pose erosion concerns due to compaction and loss of turf.

**Park/Public Ground:** Fire Station #6

**Brief Site Description:**

This is a 1.0 acre (irrigated) fire station. This facility is irrigated with domestic water from the service tap for the entire building including potable water for the station. During the peak of the irrigation season this site requires about 35,000 gallons of water per week depending on evapotransporation rates. A total loss of irrigation would result in poor aesthetics.

Conservation Methods:

**Tier #1 Conservation:**

- Reduce the water budget/ times on all irrigation zones by 10% of normal based on current weather and site considerations, but not to exceed 90% of the maximum settings as determined by the micro management plan

**Tier #2 Conservation:**

- Reduce the watering schedule to three days from the normal four day cycle and continue to water up to 100% of normal based on current weather and site considerations. Watering days will be Monday, Wednesday, and Friday.

**Tier#3 Conservation:**

Reduce the watering schedule to two days from the normal four day cycle on all zones. Set the water budget on all zones at 100% of normal or less based on current weather and site considerations. Watering days will be Monday and Thursday.

**Tier #4 Conservation:**

Reduce the watering schedule to two days from the normal four-day cycle on all zones. Set the water budget at 50% of normal or less based on current weather and site considerations. Watering days will be Monday and Thursday.

**Summary:**

Conservation methods in tier one would reduce the watering requirements by about 10% and would have no short term landscape impacts. Water conservation methods in tier two would reduce the watering requirements by about 25% and would result in turf loss in low use areas and increased field wear. Tier three would reduce the watering requirements by about 50% and would result in turf and tree loss in all areas and potential complete field failures in high use areas. Tier four would reduce the watering requirements by about 75% and would result in large scale turf and tree loss in all areas. Tier four would pose erosion concerns due to compaction and loss of turf.

**Park/Public Ground:** S.W. 14th

**Brief Site Description:**

This is a 1.06 acre highway median with buffalo grass and junipers. This site is irrigated with domestic water. During the peak of the irrigation season this site requires about 30,000 gallons of water per week depending on evapotransporation rates. A total loss of irrigation would result in poor aesthetics.

Conservation Methods:

**Tier #1 Conservation:**

- Reduce the water budget/ times on all irrigation zones by 10% of normal based on current weather and site considerations, but not to exceed 90% of the maximum settings as determined by the micro management plan

**Tier #2 Conservation:**

- Reduce the watering schedule to three days from the normal four day cycle and continue to water up to 100% of normal based on current weather and site considerations. Watering days will be Monday, Wednesday, and Friday.

**Tier#3 Conservation:**

Reduce the watering schedule to two days from the normal four day cycle on all zones. Set the water budget on all zones at 100% of normal or less based on current weather and site considerations. Watering days will be Monday and Thursday.

**Tier #4 Conservation:**

Reduce the watering schedule to two days from the normal four-day cycle on all zones. Set the water budget at 50% of normal or less based on current weather and site considerations. Watering days will be Monday and Thursday.

**Summary:**

Conservation methods in tier one would reduce the watering requirements by about 10% and would have no short term landscape impacts. Water conservation methods in tier two would reduce the watering requirements by about 25% and would result in turf loss in low use areas and increased field wear. Tier three would reduce the watering requirements by about 50% and would result in turf and tree loss in all areas and potential complete field failures in high use areas. Tier four would reduce the watering requirements by about 75% and would result in large scale turf and tree loss in all areas. Tier four would pose erosion concerns due to compaction and loss of turf.

**Park/Public Ground:** Xeriscape Garden

**Brief Site Description:**

This is a 0.75 acre xeriscape demonstration garden with turf and shrub plots. This site is irrigated with domestic water. During the peak of the irrigation season this site requires about 18,000 gallons of water per week depending on evapotransporation rates. A total loss of irrigation would result in poor aesthetics.

Conservation Methods:

**Tier #1 Conservation:**

- Reduce the water budget/ times on all irrigation zones by 10% of normal based on current weather and site considerations, but not to exceed 90% of the maximum settings as determined by the micro management plan

**Tier #2 Conservation:**

- Reduce the watering schedule to three days from the normal four day cycle and continue to water up to 100% of normal based on current weather and site considerations. Watering days will be Monday, Wednesday, and Friday.

- Reduce the watering schedule on normal three day zones to 75% or less based on current weather and site conditions. Watering days will be set as normal

**Tier#3 Conservation:**

Reduce the watering schedule to two days from the normal four day cycle on all zones. Set the water budget on all zones at 100% of normal or less based on current weather and site considerations. Watering days will be Monday and Thursday.

- Reduce the watering schedule to two days on normal three day zones and reduce the run time to 75% of normal or less based on current weather and site conditions. Watering days will be Monday and Thursday

**Tier #4 Conservation:**

Reduce the watering schedule to two days from the normal four-day cycle on all zones. Set the water budget at 50% of normal or less based on current weather and site considerations. Watering days will be Monday and Thursday.

- Reduce the watering schedule to one day on normal three day zones and set the run time to 100% of normal or less based on current weather and site conditions. Watering days will be Monday and Thursday

**Summary:**

Conservation methods in tier one would reduce the watering requirements by about 10% and would have no short term landscape impacts. Water conservation methods in tier two would reduce the watering requirements by about 25% and would result in turf loss in low use areas and increased field wear. Tier three would reduce the watering requirements by about 50% and would result in turf and tree loss in all areas and potential complete field failures in high use areas. Tier four would reduce the watering requirements by about 75% and would result in large scale turf and tree loss in all areas. Tier four would pose erosion concerns due to compaction and loss of turf.

**Park/Public Ground:** Park Maintenance Shop

**Brief Site Description:**

This is a 0.5 acre (landscaped area only) maintenance facility. This site is irrigated with domestic water. During the peak of the irrigation season this site requires about 20,000 gallons of water per week depending on evapotransporation rates. A total loss of irrigation would result in poor aesthetics.

Conservation Methods:

**Tier #1 Conservation:**

- Reduce the water budget/ times on all irrigation zones to a range between zero and 80% of the maximum settings as determined by the micro management plan and weather conditions**.**

**Tier #2 Conservation:**

- Reduce the water budget/ times on all irrigation zones to a range between zero and 60% of the maximum settings as determined by the micro management plan and weather conditions**.**
- Turn off all drip irrigation.

**Tier#3 Conservation:**

- Turn off all drip irrigation zones.
- Reduce the water budget/ times on all remaining irrigation zones to a range between zero and 45% of the maximum settings as determined by the micro management plan and weather conditions**.**

**Summary:**

Conservation methods in tier one would reduce the watering requirements by about 20%. Water conservation methods in tier two would reduce the watering requirements by about 40%. Tier three would reduce the watering requirements by about 60%.

**Park/Public Ground:** Iron Shirt

**Brief Site Description:**

This is a 0.2 acre highway median. This site is irrigated with domestic water. During the peak of the irrigation season this site requires about 4,000 gallons of water per week depending on evapotransporation rates. A total loss of irrigation would result in poor aesthetics.

Conservation Methods:

**Tier #1 Conservation:**

- Reduce the water budget/ times on all irrigation zones to a range between zero and 75% of the maximum settings as determined by the micro management plan and weather conditions**.**

**Tier #2 Conservation:**

- Reduce the water budget/ times on all irrigation zones to a range between zero and 60% of the maximum settings as determined by the micro management plan and weather conditions**.**
- Turn off all drip irrigation.

**Tier#3 Conservation:**

- Turn off all drip irrigation zones.
- Reduce the water budget/ times on all remaining irrigation zones to a range between zero and 40% of the maximum settings as determined by the micro management plan and weather conditions**.**

**Summary:**

Conservation methods in tier one would reduce the watering requirements by about 25%. Water conservation methods in tier two would reduce the watering requirements by about 40%. Tier three would reduce the watering requirements by about 60%.

**Park/Public Ground:** Museum

**Brief Site Description:**

This is a 0.03 acre facility with shrub beds only. This site is irrigated with domestic water from the museum building water supply. During the peak of the irrigation season this site requires about 750 gallons of water per week depending on evapotransporation rates. A total loss of irrigation would result in poor aesthetics.

Conservation Methods:

**Tier #1 Conservation:**

- Reduce the water budget/ times on all irrigation zones to a range between zero and 75% of the maximum settings as determined by the micro management plan and weather conditions**.**

**Tier #2 Conservation:**

- Reduce the water budget/ times on all irrigation zones to a range between zero and 50% of the maximum settings as determined by the micro management plan and weather conditions**.**

**Tier#3 Conservation:**

- Reduce the water budget/ times on all remaining irrigation zones to a range between zero and 40% of the maximum settings as determined by the micro management plan and weather conditions**.**

**Summary:**

Conservation methods in tier one would reduce the watering requirements by about 25%. Water conservation methods in tier two would reduce the watering requirements by about 50%. Tier three would reduce the watering requirements by about 60%.

**Park/Public Ground:** Fire Training Center

**Brief Site Description:**

This is a 0.3 acre facility with one turf area. This site is irrigated with domestic water. During the peak of the irrigation season this site requires about 12,000 gallons of water per week depending on evapotransporation rates. A total loss of irrigation would result in poor aesthetics.

Conservation Methods:

**Tier #1 Conservation:**

- Reduce the water budget/ times on all irrigation zones to a range between zero and 75% of the maximum settings as determined by the micro management plan and weather conditions**.**

**Tier #2 Conservation:**

- Reduce the water budget/ times on all irrigation zones to a range between zero and 50% of the maximum settings as determined by the micro management plan and weather conditions**.**

**Tier#3 Conservation:**

- Reduce the water budget/ times on all remaining irrigation zones to a range between zero and 40% of the maximum settings as determined by the micro management plan and weather conditions**.**

**Summary:**

Conservation methods in tier one would reduce the watering requirements by about 25%. Water conservation methods in tier two would reduce the watering requirements by about 50%. Tier three would reduce the watering requirements by about 60%.

**Park/Public Ground:** Detention Pond at 1st and Tyler

**Brief Site Description:**

This is a 1.28 acre storm water detention facility. This site is irrigated with domestic water. During the peak of the irrigation season this site requires about 46,000 gallons of water per week depending on evapotransporation rates. A total loss of irrigation would result in poor aesthetics.

Conservation Methods:

**Tier #1 Conservation:**

- Reduce the water budget/ times on all irrigation zones to a range between zero and 75% of the maximum settings as determined by the micro management plan and weather conditions**.**

**Tier #2 Conservation:**

- Reduce the water budget/ times on all irrigation zones to a range between zero and 50% of the maximum settings as determined by the micro management plan and weather conditions**.**

**Tier#3 Conservation:**

- Reduce the water budget/ times on all remaining irrigation zones to a range between zero and 40% of the maximum settings as determined by the micro management plan and weather conditions**.**

**Summary:**

Conservation methods in tier one would reduce the watering requirements by about 25%. Water conservation methods in tier two would reduce the watering requirements by about 50%. Tier three would reduce the watering requirements by about 60%.

**Park/Public Ground:** Detention Pond at 1st and Dotsero

**Brief Site Description:**

This is a 1.04 acre storm water detention facility. This site is irrigated with domestic water. During the peak of the irrigation season this site requires about 32,000 gallons of water per week depending on evapotransporation rates. A total loss of irrigation would result in poor aesthetics.

Conservation Methods:

**Tier #1 Conservation:**

- Reduce the water budget/ times on all irrigation zones to a range between zero and 75% of the maximum settings as determined by the micro management plan and weather conditions**.**

**Tier #2 Conservation:**

- Reduce the water budget/ times on all irrigation zones to a range between zero and 50% of the maximum settings as determined by the micro management plan and weather conditions**.**

**Tier#3 Conservation:**

- Reduce the water budget/ times on all remaining irrigation zones to a range between zero and 40% of the maximum settings as determined by the micro management plan and weather conditions**.**

**Summary:**

Conservation methods in tier one would reduce the watering requirements by about 25%. Water conservation methods in tier two would reduce the watering requirements by about 50%. Tier three would reduce the watering requirements by about 60%.

# Appendix C
# Colorado Revised Statute 37-60-126

**37-60-126. Water conservation and drought mitigation planning - programs - relationship to state assistance for water facilities - guidelines - water efficiency grant program - repeal.**

(1) As used in this section and section 37-60-126.5, unless the context otherwise requires:

(a) "Agency" means a public or private entity whose primary purpose includes the promotion of water resource conservation.

(b) "Covered entity" means each municipality, agency, utility, including any privately owned utility, or other publicly owned entity with a legal obligation to supply, distribute, or otherwise provide water at retail to domestic, commercial, industrial, or public facility customers, and that has a total demand for such customers of two thousand acre-feet or more.

(c) "Grant program" means the water efficiency grant program established pursuant to subsection (12) of this section.

(d) "Office" means the office of water conservation and drought planning created in section 37-60-124.

(e) "Plan elements" means those components of water conservation plans that address water-saving measures and programs, implementation review, water-saving goals, and the actions a covered entity shall take to develop, implement, monitor, review, and revise its water conservation plan.

(f) "Public facility" means any facility operated by an instrument of government for the benefit of the public, including, but not limited to, a government building; park or other recreational facility; school, college, university, or other educational institution; highway; hospital; or stadium.

(g) "Water conservation" means water use efficiency, wise water use, water transmission and distribution system efficiency, and supply substitution. The objective of water conservation is a long-term increase in the productive use of water supply in order to satisfy water supply needs without compromising desired water services.

(h) "Water conservation plan", "water use efficiency plan", or "plan" means a plan adopted in accordance with this section.

(i) "Water-saving measures and programs" includes a device, a practice, hardware, or equipment that reduces water demands and a program that uses a combination of measures and incentives that allow for an increase in the productive use of a local water supply.

(2) (a) Each covered entity shall, subject to section 37-60-127, develop, adopt, make publicly available, and implement a plan pursuant to which such covered entity shall encourage its domestic, commercial, industrial, and public facility customers to use water more efficiently. Any state or local governmental entity that is not a covered entity may develop, adopt, make publicly available, and implement such a plan.

(b) The office shall review previously submitted conservation plans to evaluate their consistency with the provisions of this section and the guidelines established pursuant to paragraph (a) of

subsection (7) of this section.

(c) On and after July 1, 2006, a covered entity that seeks financial assistance from either the board or the Colorado water resources and power development authority shall submit to the board a new or revised plan to meet water conservation goals adopted by the covered entity, in accordance with this section, for the board's approval prior to the release of new loan proceeds.

(3) The manner in which the covered entity develops, adopts, makes publicly available, and implements a plan established pursuant to subsection (2) of this section shall be determined by the covered entity in accordance with this section. The plan shall be accompanied by a schedule for its implementation. The plans and schedules shall be provided to the office within ninety days after their adoption. For those entities seeking financial assistance, the office shall then notify the covered entity and the appropriate financing authority that the plan has been reviewed and whether the plan has been approved in accordance with this section.

(4) A plan developed by a covered entity pursuant to subsection (2) of this section shall, at a minimum, include a full evaluation of the following plan elements:

(a) The water-saving measures and programs to be used by the covered entity for water conservation. In developing these measures and programs, each covered entity shall, at a minimum, consider the following:

(I) Water-efficient fixtures and appliances, including toilets, urinals, clothes washers, showerheads, and faucet aerators;

(II) Low water use landscapes, drought-resistant vegetation, removal of phreatophytes, and efficient irrigation;

(III) Water-efficient industrial and commercial water-using processes;

(IV) Water reuse systems;

(V) Distribution system leak identification and repair;

(VI) Dissemination of information regarding water use efficiency measures, including by public education, customer water use audits, and water-saving demonstrations;

(VII) (A) Water rate structures and billing systems designed to encourage water use efficiency in a fiscally responsible manner.

(B) The department of local affairs may provide technical assistance to covered entities that are local governments to implement water billing systems that show customer water usage and that implement tiered billing systems.

(VIII) Regulatory measures designed to encourage water conservation;

(IX) Incentives to implement water conservation techniques, including rebates to customers to encourage the installation of water conservation measures;

(b) A section stating the covered entity's best judgment of the role of water conservation plans in the covered entity's water supply planning;

(c) The steps the covered entity used to develop, and will use to implement, monitor, review, and revise, its water conservation plan;

(d) The time period, not to exceed seven years, after which the covered entity will review and update its adopted plan; and

(e) Either as a percentage or in acre-foot increments, an estimate of the amount of water that has been saved through a previously implemented conservation plan and an estimate of the amount of water that will be saved through conservation when the plan is implemented.

(4.5) (a) On an annual basis starting no later than June 30, 2014, covered entities shall report water use and conservation data, to be used for statewide water supply planning, following board guidelines pursuant to paragraph (b) of this subsection (4.5), to the board by the end of the second quarter of each year for the previous calendar year.

(b) No later than February 1, 2012, the board shall adopt guidelines regarding the reporting of water use and conservation data by covered entities and shall provide a report to the senate agriculture and natural resources committee and the house of representatives agriculture, livestock, and natural resources committee, or their successor committees, regarding the guidelines. These guidelines shall:

(I) Be adopted pursuant to the board's public participation process and shall include outreach to stakeholders from water providers with geographic and demographic diversity, nongovernmental organizations, and water conservation professionals; and

(II) Include clear descriptions of: Categories of customers, uses, and measurements; how guidelines will be implemented; and how data will be reported to the board.

(c) (I) No later than February 1, 2019, the board shall report to the senate agriculture and natural resources committee and the house of representatives agriculture, livestock, and natural resources committee, or their successor committees, on the guidelines and data collected by the board under the guidelines.

(II) This paragraph (c) is repealed, effective July 1, 2020.

(5) Each covered entity and other state or local governmental entity that adopts a plan shall follow the entity's rules, codes, or ordinances to make the draft plan available for public review and comment. If there are no rules, codes, or ordinances governing the entity's public planning process, then each entity shall publish a draft plan, give public notice of the plan, make such plan publicly available, and solicit comments from the public for a period of not less than sixty days after the date on which the draft plan is made publicly available. Reference shall be made in the public notice to the elements of a plan that have already been implemented.

(6) The board is hereby authorized to recommend the appropriation and expenditure of such revenues as are necessary from the unobligated balance of the five percent share of the operational account of the severance tax trust fund designated for use by the board for the purpose of the office providing assistance to covered entities to develop water conservation plans that meet the provisions of this section.

(7) (a) The board shall adopt guidelines for the office to review water conservation plans submitted by covered entities and other state or local governmental entities. The guidelines shall define the method for submitting plans to the office, the methods for office review and approval of the plans, and the interest rate surcharge provided for in paragraph (a) of subsection (9) of this section.

(b) If no other applicable guidelines exist as of June 1, 2007, the board shall adopt guidelines by July 31, 2007, for the office to use in reviewing applications submitted by covered entities, other state or local governmental entities, and agencies for grants from the grant program and from the grant program established in section 37-60-126.5 (3). The guidelines shall establish deadlines and procedures for covered entities, other state or local governmental entities, and agencies to follow in applying for grants and the criteria to be used by the office and the board in prioritizing and awarding grants.

(8) A covered entity may at any time adopt changes to an approved plan in accordance with this section after notifying and receiving concurrence from the office. If the proposed changes are major, the covered entity shall give public notice of the changes, make the changes available in draft form, and provide the public an opportunity to comment on such changes before adopting them in accordance with subsection (5) of this section.

(9) (a) Neither the board nor the Colorado water resources and power development authority shall release grant or loan proceeds to a covered entity unless the covered entity provides a copy of the water conservation plan adopted pursuant to this section; except that the board or the authority may release the grant or loan proceeds notwithstanding a covered entity's failure to comply with the reporting requirements of subsection (4.5) of this section or if the board or the authority, as applicable, determines that an unforseen emergency exists in relation to the covered entity's loan application, in which case the board or the authority, as applicable, may impose a grant or loan surcharge upon the covered entity that may be rebated or reduced if the covered entity submits and adopts a plan in compliance with this section in a timely manner as determined by the board or the authority, as applicable.

(b) The board and the Colorado water resources and power development authority, to which any covered entity has applied for financial assistance for the construction of a water diversion, storage, conveyance, water treatment, or wastewater treatment facility, shall consider any water conservation plan filed pursuant to this section in determining whether to render financial assistance to such entity. Such consideration shall be carried out within the discretion accorded the board and the Colorado water resources and power development authority pursuant to which such board and authority render such financial assistance to such covered entity.

(c) The board and the Colorado water resources and power development authority may enter into a memorandum of understanding with each other for the purposes of avoiding delay in the processing of applications for financial assistance covered by this section and avoiding duplication in the consideration required by this subsection (9).

(10) Repealed.

(11) (a) Any section of a restrictive covenant that prohibits or limits xeriscape, prohibits or limits the installation or use of drought-tolerant vegetative landscapes, or requires cultivated vegetation to consist exclusively or primarily of turf grass is hereby declared contrary to public policy and,

on that basis, that section of the covenant shall be unenforceable.

(b) As used in this subsection (11):

(I) "Executive board policy or practice" includes any additional procedural step or burden, financial or otherwise, placed on a unit owner who seeks approval for a landscaping change by the executive board of a unit owners' association, as defined in section 38-33.3-103, C.R.S., and not included in the existing declaration or bylaws of the association. An "executive board policy or practice" includes, without limitation, the requirement of:

(A) An architect's stamp;

(B) Preapproval by an architect or landscape architect retained by the executive board;

(C) An analysis of water usage under the proposed new landscape plan or a history of water usage under the unit owner's existing landscape plan; and

(D) The adoption of a landscaping change fee.

(II) "Restrictive covenant" means any covenant, restriction, bylaw, executive board policy or practice, or condition applicable to real property for the purpose of controlling land use, but does not include any covenant, restriction, or condition imposed on such real property by any governmental entity.

(III) "Turf grass" means continuous plant coverage consisting of hybridized grasses that, when regularly mowed, form a dense growth of leaf blades and roots.

(IV) "Xeriscape" means the application of the principles of landscape planning and design, soil analysis and improvement, appropriate plant selection, limitation of turf area, use of mulches, irrigation efficiency, and appropriate maintenance that results in water use efficiency and water-saving practices.

(c) Nothing in this subsection (11) shall preclude the executive board of a common interest community from taking enforcement action against a unit owner who allows his or her existing landscaping to die; except that:

(I) Such enforcement action shall be suspended during a period of water use restrictions declared by the jurisdiction in which the common interest community is located, in which case the unit owner shall comply with any watering restrictions imposed by the water provider for the common interest community;

(II) Enforcement shall be consistent within the community and not arbitrary or capricious; and

(III) Once the drought emergency is lifted, the unit owner shall be allowed a reasonable and practical opportunity, as defined by the association's executive board, with consideration of applicable local growing seasons or practical limitations, to reseed and revive turf grass before being required to replace it with new sod.

(12) (a) (I) There is hereby created the water efficiency grant program for purposes of providing state funding to aid in the planning and implementation of water conservation plans developed in accordance with the requirements of this section and to promote the benefits of water efficiency.

The board is authorized to distribute grants to covered entities, other state or local governmental entities, and agencies in accordance with its guidelines from the moneys transferred to and appropriated from the water efficiency grant program cash fund, which is hereby created in the state treasury.

(II) Moneys in the water efficiency grant program cash fund are hereby continuously appropriated to the board for the purposes of this subsection (12) and shall be available for use until the programs and projects financed using the grants have been completed.

(III) For each fiscal year beginning on or after July 1, 2010, the general assembly shall appropriate from the fund to the board up to five hundred thousand dollars annually for the purpose of providing grants to covered entities, other state and local governmental entities, and agencies in accordance with this subsection (12). Commencing July 1, 2008, the general assembly shall also appropriate from the fund to the board fifty thousand dollars each fiscal year to cover the costs associated with the administration of the grant program and the requirements of section 37-60-124. Moneys appropriated pursuant to this subparagraph (III) shall remain available until expended or until June 30, 2020, whichever occurs first.

(IV) Any moneys remaining in the fund on June 30, 2020, shall be transferred to the operational account of the severance tax trust fund described in section 39-29-109 (2) (b), C.R.S.

(b) Any covered entity or state or local governmental entity that has adopted a water conservation plan and that supplies, distributes, or otherwise provides water at retail to customers may apply for a grant to aid in the implementation of the water efficiency goals of the plan. Any agency may apply for a grant to fund outreach or education programs aimed at demonstrating the benefits of water efficiency. The office shall review the applications and make recommendations to the board regarding the awarding and distribution of grants to applicants who satisfy the criteria outlined in this subsection (12) and the guidelines developed pursuant to subsection (7) of this section.

(c) This subsection (12) is repealed, effective July 1, 2020.

**Source: L. 91:** Entire section added, p. 2023, § 4, effective June 4. **L. 99:** (10) repealed, p. 25, § 3, effective March 5. **L. 2003:** (4)(g) amended and (11) added, p. 1368, § 4, effective April 25. **L. 2004:** Entire section amended, p. 1779, § 3, effective August 4. **L. 2005:** (11) amended, p. 1372, § 1, effective June 6; (1), (2)(b), and (7) amended and (12) added, p. 1481, § 1, effective June 7. **L. 2007:** (1)(a), (2)(a), (5), (7), and (12) amended, p. 1890, § 1, effective June 1. **L. 2008:** IP(4) amended, p. 1575, § 30, effective May 29; (12)(a) amended, p. 1873, § 14, effective June 2. **L. 2009:** (12)(a) amended, (HB 09-1017), ch. 297, p. 1593, § 1, effective May 21; (9)(a) amended, (SB 09-106), ch. 386, p. 2091, § 3, effective July 1. **L. 2010:** (4)(a)(I) and (9)(a) amended and (4.5) added, (HB 10-1051), ch. 378, p. 1772, § 1, effective June 7; (12)(a)(III), (12)(a)(IV), and (12)(c) amended, (SB 10-025), ch. 379, p. 1774, § 1, effective June 7.

**Editor's note:** (1) Subsection (12) was originally enacted as subsection (13) in House Bill 05-1254 but was renumbered on revision for ease of location.

(2) Section 2 of chapter 378, Session Laws of Colorado 2010, provides that the act amending subsections (4)(a)(I) and (9)(a) and adding subsection (4.5) applies to conduct occurring on or after June 7, 2010.

**Cross references:** (1) In 1991, this entire section was added by the "Water Conservation Act of 1991". For the short title and the legislative declaration, see sections 1 and 2 of chapter 328, Session Laws of Colorado 1991.

(2) For the legislative declaration contained in the 2004 act amending this section, see section 1 of chapter 373, Session Laws of Colorado 2004.

# Appendix D
# Colorado Water Wise Best Practice: Water Waste Ordinance

## *BEST PRACTICE 5: Water Waste Ordinance*

- Foundational and Operations best practice
- Utility operations - implemented by water utilities on their own customers
- Customer participation – avoiding waste is the responsibility of customers

### Overview

A water waste ordinance is a local regulation that explicitly prohibits the waste of water from a variety of sources including (but not limited to) excess irrigation runoff or from irrigation that occurs at a prohibited day and/or time, excessive pavement washing, failure to repair leaks, utilizing single-pass water cooling, or even improper maintenance of cooling towers at an unnecessarily low conductivity level.

Conservation through ordinance can have limitations. Enforcement is a key piece of making an ordinance effective and enforcement requires staff resources. Additionally, some entities such as special districts may lack proper jurisdiction to enact a water waste prohibition ordinance.

#### *Why a Best Practice?*

A water waste ordinance is an important regulatory tool for water utilities that serves several useful purposes.

- A water waste ordinance establishes the importance of wise water stewardship in a community and establishes a utility's intent to put its water resources to maximum beneficial use.
- A water waste ordinance establishes penalties for the blatant waste of water. Such an ordinance empowers local officials to target hands-on assistance and education as well as issue warnings and fines.
- A water waste ordinance provides an important regulatory "stick" during a drought when agency-wide restrictions are put in place and enforcement is required to ensure water supplies are adequate.
- Without a water waste ordinance, a utility may be powerless to act against egregious and profligate waste of water.

#### *State Planning Requirements*

Colorado statute requires that all covered entities (water providers that deliver more than 2,000 acre-feet per year) file a water conservation plan with the Colorado Water Conservation Board (CWCB). Entities that do not have an approved plan on file are not eligible to receive grant funding from the State. Under this statute, one of the water saving measures and programs that must be considered in a conservation plan is, "Regulatory measures designed to encourage water conservation." [CRS 37-60-126 (4)(a)(IX)].

#### *Applicability*

This best practice applies to all water agencies and all water customers. Water waste usually targets excessive irrigation and drought restriction violations, but other sources of waste could also be the subject of a water waste ordinance. For example, water waste violations could be levied for excessive pavement washing, failure to repair leaks, utilizing single-pass water

cooling, or even improper maintenance of cooling towers at an unnecessarily low conductivity level. Utilities with individualized water budgets could utilize a water waste ordinance to enforce mandatory drought limitations requiring all customers not to exceed their water budget.

### *Implementation*

A water waste ordinance is usually enacted by the municipality or local government, not the water utility itself. Typically water waste ordinances are passed by the city council and entered into municipal code, often at the request of the water utility. Several examples of code language for water waste ordinances are provided in this section.

## Water Savings and Other Benefits

### *Range of Likely Water Savings: Varies*

A waste-prohibition ordinance cannot just be a rule that exists only on the books – it must be actively enforced. The water savings achieved through a water waste ordinance depend largely upon the level of publicity and enforcement given to the rules. A water waste ordinance is similar to a new traffic law – without some measure of enforcement the public is unlikely to pay much attention. With a water waste ordinance, savings are only likely to be achieved if there is some level of active enforcement to keep people "on their toes".

### *How to Determine Savings*

Initially, water savings from a water waste ordinance can be estimated from the number of warnings and tickets issued. Utilities with advanced data tracking capabilities can identify customers who received a citation for water waste and examine billed consumption records before and after the citation was issued.

Once a water waste ordinance has been in place and actively enforced for a year or more it may be possible to measure the impacts on a community-wide level, but much depends upon the implementation effort.

### *Savings Assumptions and Caveats*

Water savings from a water waste ordinance cannot be assumed since it is possible that no savings will be achieved, because it relies heavily on behavior change.

### *Goals and Benchmarks*

The goal of a water waste ordinance should be to eliminate all obvious water waste in a community. Of course this goal is much like the goal of eliminating all speeding from local roads. The water waste ordinance represents an effort to move a community toward a goal, but it does not ensure success and in fact complete success is a virtual impossibility.

### *Other Benefits*

A water waste ordinance on the books, even if it is not actively enforced in normal water years, can be extremely important during a drought. When demand reductions are required to ensure minimum supply levels during a drought, a water waste ordinance is an essential tool for water providers and gives the necessary enforcement power to cite, and if necessary fine, those who do

not obey drought restrictions. As an additional possible benefit, a waste prohibition ordinance can help create a culture change where wasting water is unacceptable.

## Costs

### *Utility Costs*

Implementing a water waste ordinance is inexpensive and usually only requires that an ordinance be prepared by staff and then approved by the City Council or other leadership body.

Enforcing a water waste ordinance requires staff time from the water utility and possibly from other city service workers. To enforce their water waste ordinance, Denver Water hires temporary workers, provides them with vehicles (and bikes) and uniforms, and literature. They also incur expenses related to tracking violations and integrating them into their computerized customer information system. During a drought, some municipalities empower all city workers, including law enforcement, meter readers, and road crews, to watch for watering violations and to issue citations.

Depending upon how the ordinance is constructed, citizens who receive a citation may have the option to appear in court to contest the violation and fine. This can increase implementation costs.

### *Customer Costs*

A water waste ordinance does not place costs on the customer *unless* they are caught in violation of the rules at which point they may be subject to a penalty, much like a traffic ticket.

## Resources and Examples

### *Resources*

The published literature on water waste ordinances is virtually non-existent. The best resources for water waste ordinances are rules on the books in communities in Colorado and across the US and the experience of water providers in implementing their water waste ordinance.

### *Examples*

Several examples of water waste ordinances with varying levels of detail and specificity are presented below.

#### *Denver Water*

Denver Water prohibits water waste, carefully defines what waste is, and enforces the ordinance with seasonal staff.

From ***Chapter 14 Water Conservation***

14.01 Water Waste Prohibited. Water shall be used only for beneficial purposes and shall not be wasted.

14.01.1 Water Waste Defined. Prohibited water waste includes, but is not limited to:

a. Applying more water than is reasonably necessary to establish and maintain a healthy landscape. Routine watering of turf shall be limited to three days per week, except for watering for up to 21 days to establish new turf from sod or seed; and except for syringing golf course greens when necessitated by weather conditions.

b. Watering with spray irrigation between the hours of 10.00 a.m. and 6.00 p.m. during the period from May 1 to October 1, except for the following uses:

(1) Watering for up to 21 days to establish turf from seed or sod.

(2) Watering new plant material such as flowers, trees and shrubs on the day of planting.

(3) Watering essential to preserve turf subject to heavy public use.

(4) Operating an irrigation system for installation, repair or reasonable maintenance, so long as the system is attended throughout the period of operation.

c. Watering landscaped areas during rain or high wind.

d. Applying water intended for irrigation to an impervious surface, such as a street, parking lot, alley, sidewalk or driveway.

e. Using water instead of a broom or mop to clean outdoor impervious surfaces such as sidewalks, driveways and patios, except when cleaning with water is necessary for public health or safety reasons or when other cleaning methods are impractical.

f. Allowing water to pool or flow across the ground or into any drainage way, such as gutters, streets, alleys or storm drains.

g. Failing to repair, for a period of more than ten business days after notice, leaking or damaged irrigation components, service lines or other plumbing fixtures.

h. Washing vehicles with a hose that lacks an automatic shut-off valve.

14.01.2 "Water Use Restriction" Distinguished. These prohibitions on water waste are not related to drought response, insufficient water supply or system emergency and therefore do not constitute water use restrictions within the meaning of Denver Water's various water supply agreements and environmental permits.

### *City of Aurora*

The City of Aurora Waste of Water ordinance prohibits water from pooling on or running across impervious surfaces and into the street gutter. This ordinance can also be applied during times of drought restrictions to enforce wrong day watering or watering between 10 a.m. and 6 p.m.

**Sec. 138-190. Waste of water**.

(a) *Waste of water prohibited.* Waste of water shall be defined as noncompliance with the city's water management plan as defined in section 138-223(b). Notwithstanding the enforcement provisions set forth in subsection (b) of this section, the director may order the installation of a flow restrictor or the shut off of water service to a property if the director reasonably finds that an extreme waste of water is occurring on the premises.

(b) *Enforcement.* The director is hereby authorized to enforce this section. The person billed for water service to a property, whether owner or occupant, shall be responsible for compliance with subsection (a) of this section and shall be subject to the following actions and penalties:

(1) Upon a first violation, the person billed will be issued a warning.

(2) Upon any further violations at the same property within a 12-month period, from the date of the warning notice, the person billed will be issued a written violation and the following penalty (see Table 4-12) will be added to the water bill for the property as a civil penalty.

(3) Any penalty imposed pursuant to this section may be appealed to the director of water pursuant to the appeal procedure set forth in section 138-226.

(4) Upon any notice(s) of violation of this section, a copy of such notice(s) shall also be mailed to the owner(s) of the real property served, if the owner(s) address differs from the subject property address.

(Code 1979, § 39-78; Ord. No. 2000-132, § 3, 12-11-2000; Ord. No. 2002-29, § 1, 6-3-2002; Ord. No. 2003-08, § 1, 3-24-2003; Ord. No. 2005-74, § 1, 10-10-2005)

**Table 4-12: Aurora water waste violation penalties**

| Customer Category and Meter Size | 2nd Violation | All Additional Violations |
|---|---|---|
| Single-Family | | |
| All ( 5/8" - 1") | $250.00 | $500.00 |
| Non Single-Family | | |
| 5/8" | 250.00 | 500.00 |
| 3/4" | 300.00 | 600.00 |
| 1" | 400.00 | 800.00 |
| 1 1/2" | 600.00 | 1,200.00 |
| Large Commercial | | |
| 2" | 800.00 | 1,600.00 |
| 3" | 1,200.00 | 2,400.00 |
| 4" | 1,600.00 | 3,200.00 |
| 6" | 2,400.00 | 4,800.00 |
| 8" | 3,200.00 | 6,400.00 |
| Irrigation Only | | |
| 2" | 1,000.00 | 2,000.00 |
| 3" | 1,500.00 | 3,000.00 |
| 4" | 2,000.00 | 4,000.00 |
| 6" | 3,000.00 | 6,000.00 |
| 8" | 4,000.00 | 8,000.00 |

### *City of Durango*

*Water waste.* The intentional or unintentional use of water for a non-beneficial use. Non-beneficial uses include, but are not restricted to:

(1) Landscape water applied in such a manner, rate and/or quantity that it overflows the landscaped area being watered and runs onto adjacent property, public rights-of-way or into drainage ways, including gutters and storm sewers.

(2) Landscape water which leaves a sprinkler, sprinkler system, or other application device in such a manner or direction as to spray onto adjacent property or public rights-of-way.

(3) Failing to repair any irrigation system that is broken or leaking.

(4) Applying water to hard surfaces such as parking lots, aprons, pads, driveways, or other surfaced areas, such as wood or gravel, when water is supplied in sufficient quantity to flow from that surface onto adjacent property or public rights-of-way.
(Ord. No. O-2007-30, § 1, 9-4-07)

### *City of Longmont*

*Waste of water prohibited.* Customers shall not cause or permit water furnished by the city to run to waste in any gutter or other impervious surface, or other application. Waste, for purposes of this section, shall constitute the use of water serving no beneficial use, and not constituting an unavoidable consequence of the beneficial usage of water. Waste of water does not include incidental and occasional over spraying. For the purposes of this section, the term customer shall include homeowners associations or other entities obligated to maintain irrigation systems along city streets.

# Appendix E
# Forecasting Future Water Demands

This appendix presents the water demand forecasting used to estimate future water demand in the City assuming current trends in water use continued over the coming 8 years – including the effects on past and ongoing water conservation programs, and excluding the effects of new water conservation efforts that will be identified and implemented as a result of this Plan. The forecasting presented herein also characterized the impact of passive savings which are expected to occur over the planning period (i.e., from 2012 to 2020) as a result of customers replacing toilets, dishwashers and clothes washers with more water efficient models independent of any programs that the City implements.

Forecasting was initiated by segregating past monthly water demands for each major customer category:

- Residential – both for inside and outside the City limits – with separate categories for
    - single family,
    - multi-family, and
    - irrigation only accounts.
- Commercial – both for inside and outside the City Limits
- City facility water use including indoor and outdoor uses
- Wholesale water sales
- Other water sales (which relate specifically to pre-paid water sales at City hydrants and the City's stand pipe (AKA – Ranch water))

Forecasting was developed for each customer category individually to develop predictions of monthly and annual water demand for the planning period. The results of the individual predictions by customer category were summed to estimate total water delivery (i.e., billed water). Total treated water demand was calculated by estimating average monthly non-revenue water (based on the period 2005 to 2011) as a percentage of total treated water. Total treated water was finally estimated by dividing total billed water by one less the percentage of non-revenue for each month.

Three separate estimates of monthly total treated water demands were developed to support water conservation planning. The three separate estimates include:

- Estimates for average conditions based on current trends.
- Estimates for above average conditions (i.e., one standard deviation above average) based on current trends.
- Adjusted estimates for average and above average conditions including the impacts of passive water savings.

Average conditions (i.e., demands which will occur no more than 5 out of every 10 years) and above average conditions (i.e., demand which will occur no more than 8 out of 10 years) were forecasted to provide insight into the variability of future demands and the relative impact of proposed water conservation programs on variable future water use.

## Assumptions

Specific assumptions used to estimate average future water demands without passive savings (passive savings were added into the forecasted demands under a separate step) are as follows:

- Residential water use inside the City limits will increase at a rate equivalent to the City's predicted growth of housing units (see Table C-1). The housing unit growth rate was used to adjust single family, multi-family and irrigation only water use based on average monthly water use observed over the last 4 years (i.e., 2008 through 2011[1]) for each year from 2012 to 2020, compounded annually.
- Residential water use outside the City limits will not increase over the planning period, since the City does not currently plan to increase its service area. Therefore, future monthly water demand for each residential customer category outside the City limits (including single family, multi-family and special based use) was maintained at a demand equal to the average monthly water use observed over the last 4 years (i.e., 2008 through 2011[2]).

**Table C-1**

| Year | Population | Housing Units |
|---|---|---|
| 2010 | 66,572 | 27,773 |
| 2011 | 67,455 | 28,120 |
| 2012 | 68,495 | 28,300 |
| 2013 | 69,690 | 29,037 |
| 2014 | 70,991 | 29,579 |
| 2015 | 72,403 | 30,167 |
| 2016 | 73,926 | 30,803 |
| 2017 | 75,449 | 31,437 |
| 2018 | 76,975 | 32,073 |
| 2019 | 78,502 | 32,709 |
| 2020 | 80,086 | 33,369 |

- Commercial water use, both inside and outside the City limits will increase at a rate equivalent to the City's predicted growth of housing units. The housing unit growth rate was used to adjust commercial water use for customers inside and outside the City limits, as well as commercial special base accounts, based on average monthly water use observed over the last 4 years (i.e., 2008 through 2011[3]) for each year from 2012 to 2020, compounded annually.
- City water use, at its various facilities and parks, will be maintained at current demands, based on average monthly demand for the period 2009 through 2011, since City indoor

[1] 2008 through 2011 were included in the analysis since it was only during this period that these customer categories were tracked by the City. Prior to 2008, the City lumped these accounts into one customer category.
[2] 2008 through 2011 were included in the analysis since it was only during this period that these customer categories were tracked by the City. Prior to 2008, the City lumped these accounts into one customer category.
[3] 2008 through 2011 were included in the analysis since it was only during this period that these customer categories were tracked by the City. Prior to 2008, the City lumped these accounts into one customer category.

water use dropped substantially during this period of time, and the City is not currently planning on expanding its facilities over the planning period.

- Wholesale water use, which represents that interconnection between Little Thompson Water District and the City, is not expected to change over the planning period. Monthly averages for the years 2010 and 2011 were used to estimate future water demand for this account given that prior to 2010 water use tracked by this account was negligible.
- Pre-paid water sold through fire hydrants across the City is not expected to change over the planning period. Monthly averages for the years 2010 and 2011 were used to estimate future water demand for this account given that prior to 2010 water use tracked by this account was negligible.
- Per-paid water sold through the City's stand pipe (i.e., Ranch water), will increase in accordance with future population growth. Analyses presented in Appendix C indicate that both a linear and logarithmic relationship exists between Ranch water use and a three-year rolling average[4] of population growth (which accounts for construction of infrastructure and residences/businesses over time). The logarithmic relationship between population growth and expected water use presented in Figure C-1 was used to estimate future monthly water demands for the planning period based on average monthly demands for the period 2005 to 2011.

Total water billings were estimated by summing the predicted monthly water use for each of these categories of customer water use. Non-revenue was added to total billed water to calculate total treated water demand throughout the planning period.

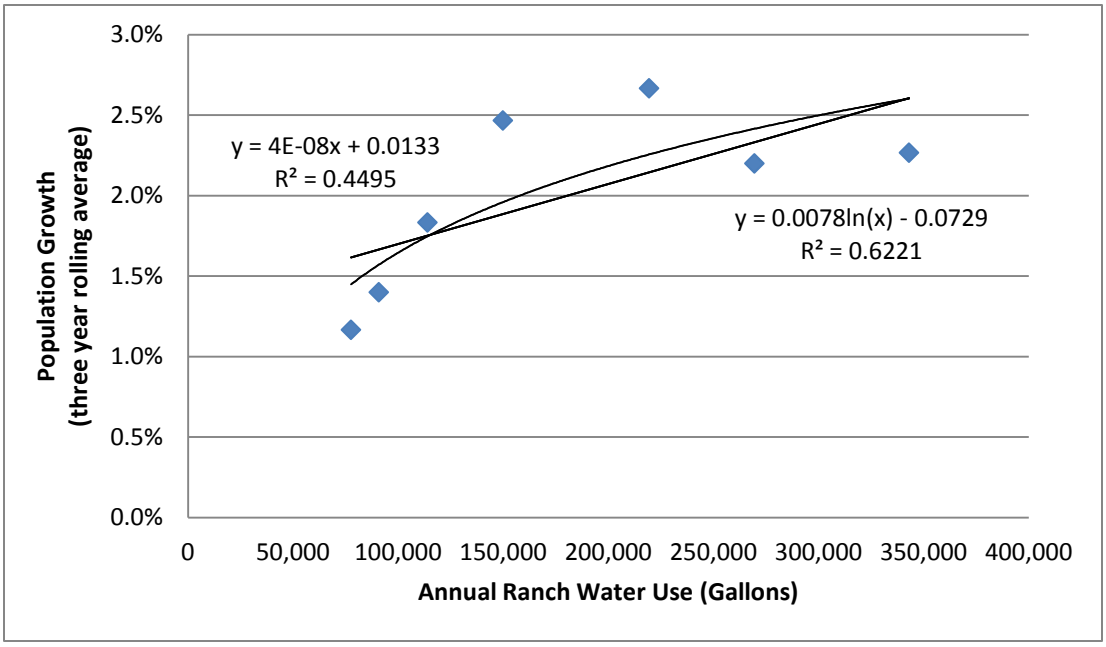
Note that past average monthly water use was not normalized to "per connection use" for the purposes of this analysis, given the expected combined influence of population growth and passive savings over the period 2008 to 2011. Growth in the City was estimated to be about 7% during this period; and passive saving reductions estimated from observed indoor residential water use over this same period of time were also about 7%. Therefore, these two factors were assumed to offset one another. The total treated water delivery in the City is presented in Figure C-2 to illustrate this point since there has not been a demand increase since 2008.

## Above Average Conditions

To understand the potential variability on the City's future water demands, a statistical analysis was performed using the last four years of monthly water use data. For purposes of this analysis, it is assumed that the variability in water use relates to the natural variability of weather and behavioral impacts on water use in the City.

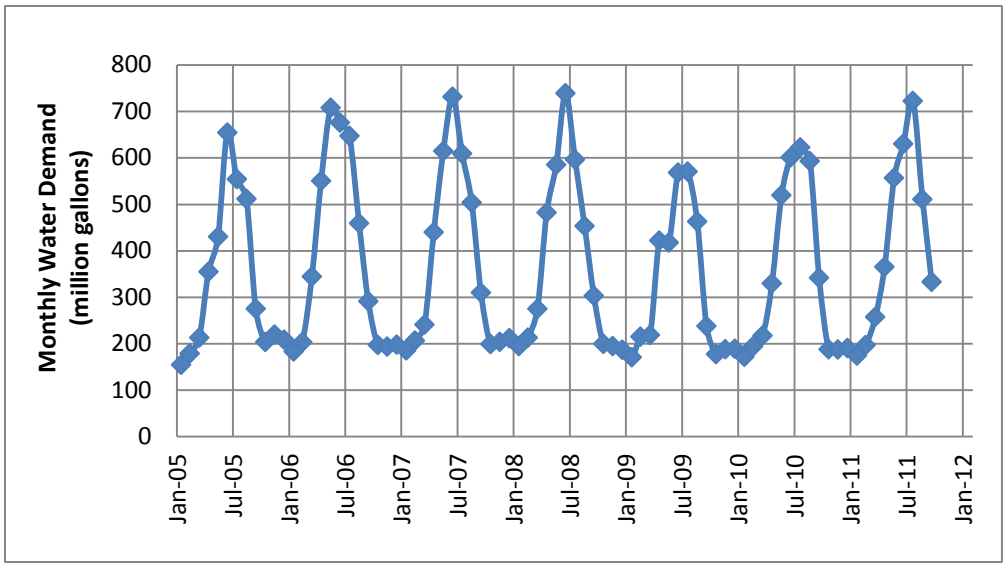
[4] A three-year rolling average was used to smooth the natural variation in the data, and allow for incorporating the multi-year impact of grow on the community (given that build a subdivision typically requires more than one year of construction to allow for building water, sewer and storm sewer systems, as well as individual residences.

**Figure C-1 – Correlation of Ranch Water Use to Percent Growth[5]**




The importance of developing an above average water demand is as follows: there is a 16% probability that total water demand will be greater than above average conditions (based on estimating water demands one standard deviation greater than average conditions); whereas there is a 50% probability that total water demand will be greater than average conditions. Therefore, above average conditions allows for planning to meet estimated water demands for 8 out of 10 years, as opposed to 5 out of ten years (which is what average conditions represent).

**Figure C-2 Total Treated Water Delivery**




[5] This figure illustrates a better correlation of Ranch Water use to percent growth using a logarithmic function (R~0.62) versus a linear approximation (R~0.45).

## Passive Savings

To incorporate impacts of "passive savings," per capita residential water use (for treated water only) was estimated to decrease over the planning period by between 7.3 to 10.1 gallons per person per day (gpcd) in conjunction with those water demand reductions that are expected to occur as residential customers replace outmoded and broken toilets, dishwashers and clothes washers with new, high efficiency models without the influence of the City's water conservation efforts. Passive conservation only impacted future demands for single family and multi-family residential demands. Passive savings were developed based on recent analyses conducted by the CWCB (Great Western Institute, 2010).[6] For purposes of this plan, the total passive savings demand reductions of 8.7 gpcd (the average of the high and the low estimates) were applied to the annual residential uses for both inside and outside of the City limits, resulting in a reduced annual demand of about 254 million gallons in 2020, or about 700,000 gallons of treated water a day.

**Table C-2**
**Peaking Factors**

| (MGD/Million Gals) | |
|---|---|
| Jan | 3.85% |
| Feb | 4.50% |
| Mar | 4.22% |
| Apr | 4.81% |
| May | 4.86% |
| Jun | 4.46% |
| Jul | 3.92% |
| Aug | 3.94% |
| Sep | 4.34% |
| Oct | 5.08% |
| Nov | 4.20% |
| Dec | 3.82% |

## Peak Day Water Demands

Peak daily water demands are of concern to any City that operates a water treatment plant. Loveland is no different. Past peak daily demands in the summer have approached the capacity of the treatment facility. To evaluate future peak daily demands, peaking factors were developed for each month of the year based on the ratio of highest peak daily demand in the month to total monthly demand – as an average over the period from January 2000 through October 2011.

The resulting peaking factors are provided in Table C-2. These peaking factors were multiplied by the average and above average monthly total treated water demands developed through the forecasting effort, to estimate future peak day demands for each month between January 2012 and December 2020.

## List of Other Assumptions

In addition to those assumptions presented above, the following assumptions were used to develop the forecasted water demands.

- No substantial changes to current residential water use practices have been included to represent existing or future single and multi-family water use such as:

[6] Passive savings calculations were developed by estimating the reduction to per capita water use for those populations that existed or will exist at key dates during the development of high-efficiency products for consumer use (i.e., 1996 for low-flow toilets (1.6 gallons per flush (gpf)); 2005 for high-efficiency clothes washers and dishwashers; and 2015 for high-efficiency toilets (0.9 to 1.28 gpf)).

  - Residential outdoor watering will not occur using grey-water or non-potable water systems; and
  - Indoor water use will occur for the same basic configuration of bathroom, laundry and kitchen uses as exist today (noting that passive savings account for the use of new, more efficiency appliances and fixtures without changing the way that the appliance and fixtures are used).

- The City will maintain the current level of non-revenue water and water treatment plant efficiencies into the future.

- No large industrial, commercial and/or manufacturing facilities will be constructed within the City's service area over the next eight years requiring substantial new water supply.

- No substantial change from past measured conditions in current weather and precipitation patterns will occur over the planning period.

## Results

The tables that are contained in this appendix provide the results of the forecasting, as described above. These tables are as follows:

- **Table C-3 –** Presentation of monthly water use data including past water use and forecasted monthly water use for average conditions.

- **Table C-4 –** Presentation of monthly water use data including past water use and forecasted monthly water use for above average conditions.

- **Table C-5 –** Presentation of Passive Savings estimates in the form of per capita water use adjusts to future estimated water demands

- **Table C-6 –** Summary of past and predicted annual water use for average and above average conditions without passive savings

- **Table C-7 –** Summary of past and predicted annual water use for average and above average conditions with passive savings

A graphic presentation of the results of the forecasting is provided in the main body of the text.

# Table C-3 - Monthly Water Demands Past and Future for Average Conditions
## City of Loveland

| Date | Inside Residential | Inside Multi-Family | Inside Irrigation | Inside Residential Total SF+ MF | Outside Residential | Outside Multi-Family | Outside Irrigation | Outside Res - Special Base | Outside Residential Total SF+ MF |
|---|---|---|---|---|---|---|---|---|---|
| Jan-05 | 109,547,839 | - | - | 109,547,839 | 8,390,000 | | - | - | 8,390,000 |
| Feb-05 | 91,946,900 | - | - | 91,946,900 | 6,731,000 | | - | - | 6,731,000 |
| Mar-05 | 95,470,039 | - | - | 95,470,039 | 7,029,100 | | - | - | 7,029,100 |
| Apr-05 | 121,536,723 | - | - | 121,536,723 | 7,677,600 | | - | - | 7,677,600 |
| May-05 | 160,891,579 | - | - | 160,891,579 | 9,462,300 | | - | - | 9,462,300 |
| Jun-05 | 279,120,014 | - | - | 279,120,014 | 13,130,000 | | - | - | 13,130,000 |
| Jul-05 | 424,146,200 | - | - | 424,146,200 | 18,902,000 | | - | - | 18,902,000 |
| Aug-05 | 425,802,200 | - | - | 425,802,200 | 18,743,000 | | - | - | 18,743,000 |
| Sep-05 | 394,132,748 | - | - | 394,132,748 | 17,333,000 | | - | - | 17,333,000 |
| Oct-05 | 279,788,600 | - | - | 279,788,600 | 11,851,800 | | - | - | 11,851,800 |
| Nov-05 | 128,564,600 | - | - | 128,564,600 | 6,710,200 | | - | - | 6,710,200 |
| Dec-05 | 112,596,900 | - | - | 112,596,900 | 7,637,100 | | - | - | 7,637,100 |
| Jan-06 | 117,025,547 | - | - | 117,025,547 | 8,404,900 | | - | - | 8,404,900 |
| Feb-06 | 103,678,953 | - | - | 103,678,953 | 7,021,000 | | - | - | 7,021,000 |
| Mar-06 | 102,035,487 | - | - | 102,035,487 | 7,009,000 | | - | - | 7,009,000 |
| Apr-06 | 138,511,159 | - | - | 138,511,159 | 8,567,000 | | - | - | 8,567,000 |
| May-06 | 293,578,622 | - | - | 293,578,622 | 13,179,800 | | - | - | 13,179,800 |
| Jun-06 | 496,795,889 | - | - | 496,795,889 | 21,564,200 | | - | - | 21,564,200 |
| Jul-06 | 525,171,479 | - | - | 525,171,479 | 23,378,000 | | - | - | 23,378,000 |
| Aug-06 | 477,540,475 | - | - | 477,540,475 | 19,200,600 | | - | - | 19,200,600 |
| Sep-06 | 404,186,500 | - | - | 404,186,500 | 16,057,400 | | - | - | 16,057,400 |
| Oct-06 | 279,511,911 | - | - | 279,511,911 | 11,850,000 | | - | - | 11,850,000 |
| Nov-06 | 123,457,000 | - | - | 123,457,000 | 6,932,914 | | - | - | 6,932,914 |
| Dec-06 | 125,055,758 | - | - | 125,055,758 | 6,958,428 | | - | - | 6,958,428 |
| Jan-07 | 103,665,559 | - | - | 103,665,559 | 7,801,189 | | - | 16,000 | 7,817,189 |
| Feb-07 | 100,225,253 | - | - | 100,225,253 | 6,533,383 | | - | 10,000 | 6,543,383 |
| Mar-07 | 99,508,230 | - | - | 99,508,230 | 6,596,000 | | - | 43,000 | 6,639,000 |
| Apr-07 | 115,275,789 | - | - | 115,275,789 | 7,256,000 | | - | 16,000 | 7,272,000 |
| May-07 | 178,867,000 | - | - | 178,867,000 | 9,201,800 | | - | 58,000 | 9,259,800 |
| Jun-07 | 363,240,631 | - | - | 363,240,631 | 15,624,200 | | - | 59,000 | 15,683,200 |
| Jul-07 | 550,764,689 | - | - | 550,764,689 | 22,827,000 | | - | 171,000 | 22,998,000 |
| Aug-07 | 493,982,153 | - | - | 493,982,153 | 18,844,000 | | - | 223,000 | 19,067,000 |
| Sep-07 | 432,263,247 | - | - | 432,263,247 | 16,830,000 | | - | 443,000 | 17,273,000 |
| Oct-07 | 293,196,700 | - | - | 293,196,700 | 11,589,000 | | - | 261,000 | 11,850,000 |
| Nov-07 | 142,514,904 | - | - | 142,514,904 | 7,512,000 | | - | 118,000 | 7,630,000 |
| Dec-07 | 116,274,289 | - | - | 116,274,289 | 7,198,000 | | - | 11,000 | 7,209,000 |
| Jan-08 | 90,773,689 | 22,654,400 | 93,000 | 113,521,089 | 6,864,000 | 244,000 | 1,000 | 19,000 | 7,128,000 |
| Feb-08 | 80,380,636 | 21,288,000 | 35,000 | 101,703,636 | 6,330,000 | 230,000 | 1,000 | 12,000 | 6,573,000 |
| Mar-08 | 83,119,897 | 21,065,000 | 49,000 | 104,233,897 | 6,354,000 | 231,000 | 58,000 | 21,000 | 6,664,000 |
| Apr-08 | 91,141,367 | 21,638,200 | 1,363,000 | 114,142,567 | 7,106,700 | 244,000 | 118,000 | 33,000 | 7,501,700 |
| May-08 | 194,438,100 | 28,272,300 | 31,814,000 | 254,524,400 | 10,956,300 | 355,000 | 588,000 | 94,000 | 11,993,300 |
| Jun-08 | 245,541,100 | 34,400,000 | 74,413,000 | 354,354,100 | 13,763,000 | 444,000 | 1,157,000 | 95,000 | 15,459,000 |
| Jul-08 | 335,981,000 | 39,914,000 | 96,411,500 | 472,306,500 | 18,422,000 | 530,000 | 1,668,000 | 227,000 | 20,847,000 |
| Aug-08 | 373,924,800 | 49,564,000 | 131,737,000 | 555,225,800 | 20,187,000 | 662,000 | 1,470,000 | 181,000 | 22,500,000 |
| Sep-08 | 242,903,000 | 38,169,000 | 89,143,485 | 370,215,485 | 14,858,000 | 400,700 | 860,000 | 78,000 | 16,196,700 |
| Oct-08 | 186,940,500 | 32,226,000 | 61,023,827 | 280,190,327 | 10,003,000 | 311,000 | 934,000 | 180,000 | 11,428,000 |
| Nov-08 | 100,178,000 | 22,921,000 | 11,371,809 | 134,470,809 | 6,895,000 | 220,000 | 51,000 | 48,000 | 7,214,000 |
| Dec-08 | 90,803,000 | 21,571,000 | 439,343 | 112,813,343 | 7,074,000 | 239,000 | 1,000 | 12,000 | 7,326,000 |
| Jan-09 | 91,414,696 | 22,682,000 | (38,000) | 114,058,696 | 7,097,000 | 234,000 | 2,000 | 19,000 | 7,352,000 |
| Feb-09 | 79,107,256 | 20,625,000 | 1,000 | 99,733,256 | 6,145,000 | 198,000 | 7,000 | 14,000 | 6,364,000 |
| Mar-09 | 87,262,000 | 20,671,000 | 77,505 | 108,010,505 | 7,074,000 | 206,000 | 103,000 | 17,000 | 7,400,000 |
| Apr-09 | 98,029,000 | 22,648,440 | 1,149,554 | 121,826,994 | 7,138,000 | 246,000 | 26,000 | 16,000 | 7,426,000 |
| May-09 | 134,661,000 | 25,045,000 | 20,549,518 | 180,255,518 | 9,038,000 | 231,000 | 138,000 | 87,000 | 9,494,000 |
| Jun-09 | 196,335,000 | 31,328,000 | 57,576,486 | 285,239,486 | 11,347,000 | 281,000 | 556,000 | 224,000 | 12,408,000 |
| Jul-09 | 241,904,000 | 34,540,000 | 73,796,899 | 350,240,899 | 13,360,026 | 290,000 | 820,000 | 117,000 | 14,587,026 |
| Aug-09 | 256,740,000 | 40,609,000 | 94,380,799 | 391,729,799 | 14,110,000 | 389,000 | 975,000 | 87,000 | 15,561,000 |
| Sep-09 | 257,340,000 | 38,203,000 | 88,816,521 | 384,359,521 | 13,858,000 | 443,000 | 998,000 | 86,000 | 15,385,000 |

# Table C-3 - Monthly Water Demands Past and Future for Average Conditions
## City of Loveland

| Date | Inside Residential | Inside Multi-Family | Inside Irrigation | Inside Residential Total SF+ MF | Outside Residential | Outside Multi-Family | Outside Irrigation | Outside Res - Special Base | Outside Residential Total SF+ MF |
|---|---|---|---|---|---|---|---|---|---|
| Oct-09 | 165,580,000 | 32,517,000 | 57,633,397 | 255,730,397 | 9,455,000 | 327,000 | 486,000 | 36,000 | 10,304,000 |
| Nov-09 | 84,864,000 | 21,626,000 | 8,109,374 | 114,599,374 | 6,412,000 | 181,000 | 4,000 | 9,000 | 6,606,000 |
| Dec-09 | 87,938,000 | 22,192,000 | 93,420 | 110,223,420 | 7,190,000 | 203,000 | 4,000 | 16,000 | 7,413,000 |
| Jan-10 | 89,909,000 | 24,246,207 | 1,000 | 114,156,207 | 6,886,000 | 197,000 | 3,000 | 19,000 | 7,105,000 |
| Feb-10 | 79,070,000 | 20,040,415 | 1,000 | 99,111,415 | 5,748,000 | 848,000 | 3,000 | 58,000 | 6,657,000 |
| Mar-10 | 79,753,000 | 20,994,000 | 1,000 | 100,748,000 | 5,812,000 | 981,000 | 2,000 | 20,000 | 6,815,000 |
| Apr-10 | 91,306,741 | 21,891,000 | 1,972,756 | 115,170,497 | 6,476,000 | 931,000 | 9,000 | 27,000 | 7,443,000 |
| May-10 | 111,989,000 | 23,348,066 | 14,585,668 | 149,922,734 | 6,948,000 | 1,018,000 | 7,000 | 61,000 | 8,034,000 |
| Jun-10 | 197,113,000 | 30,122,000 | 46,640,249 | 273,875,249 | 10,789,000 | 1,496,500 | 583,000 | 110,000 | 12,978,500 |
| Jul-10 | 291,034,000 | 40,181,000 | 91,094,682 | 422,309,682 | 14,434,000 | 1,496,500 | 603,000 | 118,000 | 16,651,500 |
| Aug-10 | 290,154,456 | 42,380,000 | 102,858,870 | 435,393,326 | 15,188,708 | 2,171,000 | 730,000 | 135,000 | 18,224,708 |
| Sep-10 | 322,030,059 | 44,587,606 | 109,023,407 | 475,641,072 | 15,901,000 | 2,259,000 | 817,000 | 87,000 | 19,064,000 |
| Oct-10 | 242,319,538 | 40,218,092 | 92,436,758 | 374,974,388 | 12,435,000 | 1,749,000 | 1,076,000 | 252,000 | 15,512,000 |
| Nov-10 | 106,406,559 | 23,847,000 | 15,873,137 | 146,126,696 | 6,543,000 | 976,000 | 30,000 | 3,000 | 7,552,000 |
| Dec-10 | 86,848,200 | 21,987,500 | 40,123 | 108,875,823 | 6,565,000 | 951,000 | 6,000 | 92,000 | 7,614,000 |
| Jan-11 | 88,431,400 | 23,179,806 | 2,000 | 111,613,206 | 6,290,000 | 1,121,000 | 3,000 | 40,000 | 7,454,000 |
| Feb-11 | 76,327,935 | 21,297,182 | - | 97,625,117 | 5,915,000 | 1,147,000 | 2,000 | 81,000 | 7,145,000 |
| Mar-11 | 77,550,044 | 21,559,143 | 3,700 | 99,112,887 | 4,387,851 | 2,315,000 | 3,000 | 34,000 | 6,739,851 |
| Apr-11 | 98,181,392 | 22,716,268 | 3,415,776 | 124,313,436 | 5,373,123 | 2,458,000 | 7,000 | 45,000 | 7,883,123 |
| May-11 | 143,207,466 | 27,613,892 | 29,770,595 | 200,591,953 | 6,672,553 | 2,517,000 | 81,000 | 98,000 | 9,368,553 |
| Jun-11 | 199,577,996 | 34,673,193 | 54,373,825 | 288,625,014 | 8,976,000 | 3,418,000 | 405,000 | 131,000 | 12,930,000 |
| Jul-11 | 284,351,642 | 43,333,408 | 84,674,358 | 412,359,408 | 12,417,255 | 3,821,000 | 577,000 | 154,000 | 16,969,255 |
| Aug-11 | 310,674,227 | 47,265,797 | 105,545,898 | 463,485,922 | 13,653,000 | 4,540,000 | 781,000 | 173,000 | 19,147,000 |
| Sep-11 | 324,823,276 | 48,787,417 | 112,669,890 | 486,280,583 | 12,825,221 | 4,829,000 | 778,000 | 171,000 | 18,603,221 |
| Oct-11 | 217,096,857 | 39,565,686 | 78,098,138 | 334,760,681 | 9,033,270 | 3,580,000 | 564,000 | 115,000 | 13,292,270 |
| Nov-11 | 101,741,384 | 24,849,245 | 16,782,581 | 143,373,210 | 4,887,588 | 2,144,000 | 17,000 | 21,000 | 7,069,588 |
| Dec-11 | 88,035,135 | 24,819,734 | 158,510 | 113,013,379 | 4,822,685 | 2,760,436 | 11,000 | 28,000 | 7,622,121 |
| Jan-12 | 90,672,989 | 23,329,747 | 14,587 | 114,017,323 | 6,784,250 | 449,000 | 2,250 | 24,250 | 7,259,750 |
| Feb-12 | 79,193,785 | 20,937,525 | 9,306 | 100,140,616 | 6,034,500 | 605,750 | 3,250 | 41,250 | 6,684,750 |
| Mar-12 | 82,412,763 | 21,198,719 | 32,998 | 103,644,480 | 5,906,963 | 933,250 | 41,500 | 23,000 | 6,904,713 |
| Apr-12 | 95,232,613 | 22,356,818 | 1,987,123 | 119,576,554 | 6,523,456 | 969,750 | 40,000 | 30,250 | 7,563,456 |
| May-12 | 146,950,335 | 26,226,233 | 24,325,025 | 197,501,593 | 8,403,713 | 1,030,250 | 203,500 | 85,000 | 9,722,463 |
| Jun-12 | 210,899,625 | 32,826,583 | 58,600,395 | 302,326,603 | 11,218,750 | 1,409,875 | 675,250 | 140,000 | 13,443,875 |
| Jul-12 | 290,047,566 | 39,729,055 | 87,013,326 | 416,789,947 | 14,658,320 | 1,534,375 | 917,000 | 154,000 | 17,263,695 |
| Aug-12 | 309,720,611 | 45,224,427 | 109,282,426 | 464,227,464 | 15,784,677 | 1,940,500 | 989,000 | 144,000 | 18,858,177 |
| Sep-12 | 288,494,728 | 42,691,376 | 100,512,806 | 431,698,910 | 14,360,555 | 1,982,925 | 863,250 | 105,500 | 17,312,230 |
| Oct-12 | 204,202,129 | 36,348,485 | 72,731,818 | 313,282,432 | 10,231,568 | 1,491,750 | 765,000 | 145,750 | 12,634,068 |
| Nov-12 | 98,887,271 | 23,450,676 | 13,112,431 | 135,450,377 | 6,184,397 | 880,250 | 25,500 | 20,250 | 7,110,397 |
| Dec-12 | 88,936,520 | 22,778,414 | 183,946 | 111,898,880 | 6,412,921 | 1,038,359 | 5,500 | 37,000 | 7,493,780 |
| Jan-13 | 93,121,160 | 23,959,650 | 14,981 | 117,095,791 | 6,784,250 | 449,000 | 2,250 | 24,250 | 7,259,750 |
| Feb-13 | 81,332,018 | 21,502,838 | 9,557 | 102,844,413 | 6,034,500 | 605,750 | 3,250 | 41,250 | 6,684,750 |
| Mar-13 | 84,637,907 | 21,771,085 | 33,889 | 106,442,881 | 5,906,963 | 933,250 | 41,500 | 23,000 | 6,904,713 |
| Apr-13 | 97,803,893 | 22,960,452 | 2,040,775 | 122,805,121 | 6,523,456 | 969,750 | 40,000 | 30,250 | 7,563,456 |
| May-13 | 150,917,994 | 26,934,342 | 24,981,801 | 202,834,136 | 8,403,713 | 1,030,250 | 203,500 | 85,000 | 9,722,463 |
| Jun-13 | 216,593,915 | 33,712,901 | 60,182,606 | 310,489,421 | 11,218,750 | 1,409,875 | 675,250 | 140,000 | 13,443,875 |
| Jul-13 | 297,878,851 | 40,801,739 | 89,362,686 | 428,043,276 | 14,658,320 | 1,534,375 | 917,000 | 154,000 | 17,263,695 |
| Aug-13 | 318,083,067 | 46,445,487 | 112,233,051 | 476,761,606 | 15,784,677 | 1,940,500 | 989,000 | 144,000 | 18,858,177 |
| Sep-13 | 296,284,086 | 43,844,043 | 103,226,651 | 443,354,781 | 14,360,555 | 1,982,925 | 863,250 | 105,500 | 17,312,230 |
| Oct-13 | 209,715,587 | 37,329,894 | 74,695,577 | 321,741,058 | 10,231,568 | 1,491,750 | 765,000 | 145,750 | 12,634,068 |
| Nov-13 | 101,557,227 | 24,083,844 | 13,466,466 | 139,107,538 | 6,184,397 | 880,250 | 25,500 | 20,250 | 7,110,397 |
| Dec-13 | 91,337,806 | 23,393,431 | 188,913 | 114,920,150 | 6,412,921 | 1,038,359 | 5,500 | 37,000 | 7,493,780 |
| Jan-14 | 94,890,462 | 24,414,883 | 15,265 | 119,320,611 | 6,784,250 | 449,000 | 2,250 | 24,250 | 7,259,750 |
| Feb-14 | 82,877,326 | 21,911,392 | 9,738 | 104,798,457 | 6,034,500 | 605,750 | 3,250 | 41,250 | 6,684,750 |
| Mar-14 | 86,246,027 | 22,184,736 | 34,533 | 108,465,296 | 5,906,963 | 933,250 | 41,500 | 23,000 | 6,904,713 |
| Apr-14 | 99,662,167 | 23,396,701 | 2,079,550 | 125,138,418 | 6,523,456 | 969,750 | 40,000 | 30,250 | 7,563,456 |
| May-14 | 153,785,436 | 27,446,094 | 25,456,455 | 206,687,985 | 8,403,713 | 1,030,250 | 203,500 | 85,000 | 9,722,463 |
| Jun-14 | 220,709,199 | 34,353,446 | 61,326,076 | 316,388,720 | 11,218,750 | 1,409,875 | 675,250 | 140,000 | 13,443,875 |

# Table C-3 - Monthly Water Demands Past and Future for Average Conditions
## City of Loveland

| Date | Inside Residential | Inside Multi-Family | Inside Irrigation | Inside Residential Total SF+ MF | Outside Residential | Outside Multi-Family | Outside Irrigation | Outside Res - Special Base | Outside Residential Total SF+ MF |
|---|---|---|---|---|---|---|---|---|---|
| Jul-14 | 303,538,549 | 41,576,972 | 91,060,577 | 436,176,098 | 14,658,320 | 1,534,375 | 917,000 | 154,000 | 17,263,695 |
| Aug-14 | 324,126,646 | 47,327,951 | 114,365,479 | 485,820,076 | 15,784,677 | 1,940,500 | 989,000 | 144,000 | 18,858,177 |
| Sep-14 | 301,913,484 | 44,677,080 | 105,187,958 | 451,778,522 | 14,360,555 | 1,982,925 | 863,250 | 105,500 | 17,312,230 |
| Oct-14 | 213,700,183 | 38,039,162 | 76,114,793 | 327,854,138 | 10,231,568 | 1,491,750 | 765,000 | 145,750 | 12,634,068 |
| Nov-14 | 103,486,814 | 24,541,437 | 13,722,329 | 141,750,581 | 6,184,397 | 880,250 | 25,500 | 20,250 | 7,110,397 |
| Dec-14 | 93,073,225 | 23,837,906 | 192,502 | 117,103,633 | 6,412,921 | 1,038,359 | 5,500 | 37,000 | 7,493,780 |
| Jan-15 | 96,788,271 | 24,903,181 | 15,571 | 121,707,023 | 6,784,250 | 449,000 | 2,250 | 24,250 | 7,259,750 |
| Feb-15 | 84,534,873 | 22,349,620 | 9,933 | 106,894,426 | 6,034,500 | 605,750 | 3,250 | 41,250 | 6,684,750 |
| Mar-15 | 87,970,948 | 22,628,430 | 35,224 | 110,634,602 | 5,906,963 | 933,250 | 41,500 | 23,000 | 6,904,713 |
| Apr-15 | 101,655,411 | 23,864,635 | 2,121,141 | 127,641,186 | 6,523,456 | 969,750 | 40,000 | 30,250 | 7,563,456 |
| May-15 | 156,861,144 | 27,995,016 | 25,965,584 | 210,821,744 | 8,403,713 | 1,030,250 | 203,500 | 85,000 | 9,722,463 |
| Jun-15 | 225,123,383 | 35,040,515 | 62,552,597 | 322,716,495 | 11,218,750 | 1,409,875 | 675,250 | 140,000 | 13,443,875 |
| Jul-15 | 309,609,320 | 42,408,512 | 92,881,788 | 444,899,620 | 14,658,320 | 1,534,375 | 917,000 | 154,000 | 17,263,695 |
| Aug-15 | 330,609,179 | 48,274,510 | 116,652,789 | 495,536,478 | 15,784,677 | 1,940,500 | 989,000 | 144,000 | 18,858,177 |
| Sep-15 | 307,951,753 | 45,570,622 | 107,291,717 | 460,814,092 | 14,360,555 | 1,982,925 | 863,250 | 105,500 | 17,312,230 |
| Oct-15 | 217,974,186 | 38,799,945 | 77,637,089 | 334,411,220 | 10,231,568 | 1,491,750 | 765,000 | 145,750 | 12,634,068 |
| Nov-15 | 105,556,551 | 25,032,266 | 13,996,776 | 144,585,592 | 6,184,397 | 880,250 | 25,500 | 20,250 | 7,110,397 |
| Dec-15 | 94,934,689 | 24,314,664 | 196,352 | 119,445,705 | 6,412,921 | 1,038,359 | 5,500 | 37,000 | 7,493,780 |
| Jan-16 | 98,820,825 | 25,426,148 | 15,898 | 124,262,871 | 6,784,250 | 449,000 | 2,250 | 24,250 | 7,259,750 |
| Feb-16 | 86,310,105 | 22,818,962 | 10,142 | 109,139,209 | 6,034,500 | 605,750 | 3,250 | 41,250 | 6,684,750 |
| Mar-16 | 89,818,338 | 23,103,627 | 35,963 | 112,957,928 | 5,906,963 | 933,250 | 41,500 | 23,000 | 6,904,713 |
| Apr-16 | 103,790,174 | 24,365,792 | 2,165,685 | 130,321,651 | 6,523,456 | 969,750 | 40,000 | 30,250 | 7,563,456 |
| May-16 | 160,155,229 | 28,582,911 | 26,510,861 | 215,249,001 | 8,403,713 | 1,030,250 | 203,500 | 85,000 | 9,722,463 |
| Jun-16 | 229,850,974 | 35,776,366 | 63,866,202 | 329,493,541 | 11,218,750 | 1,409,875 | 675,250 | 140,000 | 13,443,875 |
| Jul-16 | 316,111,116 | 43,299,090 | 94,832,306 | 454,242,512 | 14,658,320 | 1,534,375 | 917,000 | 154,000 | 17,263,695 |
| Aug-16 | 337,551,971 | 49,288,275 | 119,102,497 | 505,942,744 | 15,784,677 | 1,940,500 | 989,000 | 144,000 | 18,858,177 |
| Sep-16 | 314,418,740 | 46,527,605 | 109,544,843 | 470,491,188 | 14,360,555 | 1,982,925 | 863,250 | 105,500 | 17,312,230 |
| Oct-16 | 222,551,644 | 39,614,744 | 79,267,468 | 341,433,856 | 10,231,568 | 1,491,750 | 765,000 | 145,750 | 12,634,068 |
| Nov-16 | 107,773,238 | 25,557,944 | 14,290,708 | 147,621,890 | 6,184,397 | 880,250 | 25,500 | 20,250 | 7,110,397 |
| Dec-16 | 96,928,318 | 24,825,272 | 200,475 | 121,954,065 | 6,412,921 | 1,038,359 | 5,500 | 37,000 | 7,493,780 |
| Jan-17 | 100,896,062 | 25,960,097 | 16,232 | 126,872,391 | 6,784,250 | 449,000 | 2,250 | 24,250 | 7,259,750 |
| Feb-17 | 88,122,617 | 23,298,160 | 10,355 | 111,431,132 | 6,034,500 | 605,750 | 3,250 | 41,250 | 6,684,750 |
| Mar-17 | 91,704,523 | 23,588,803 | 36,718 | 115,330,045 | 5,906,963 | 933,250 | 41,500 | 23,000 | 6,904,713 |
| Apr-17 | 105,969,768 | 24,877,473 | 2,211,165 | 133,058,406 | 6,523,456 | 969,750 | 40,000 | 30,250 | 7,563,456 |
| May-17 | 163,518,488 | 29,183,153 | 27,067,589 | 219,769,230 | 8,403,713 | 1,030,250 | 203,500 | 85,000 | 9,722,463 |
| Jun-17 | 234,677,844 | 36,527,669 | 65,207,392 | 336,412,905 | 11,218,750 | 1,409,875 | 675,250 | 140,000 | 13,443,875 |
| Jul-17 | 322,749,449 | 44,208,371 | 96,823,784 | 463,781,605 | 14,658,320 | 1,534,375 | 917,000 | 154,000 | 17,263,695 |
| Aug-17 | 344,640,563 | 50,323,329 | 121,603,650 | 516,567,541 | 15,784,677 | 1,940,500 | 989,000 | 144,000 | 18,858,177 |
| Sep-17 | 321,021,534 | 47,504,685 | 111,845,285 | 480,371,503 | 14,360,555 | 1,982,925 | 863,250 | 105,500 | 17,312,230 |
| Oct-17 | 227,225,229 | 40,446,653 | 80,932,085 | 348,603,967 | 10,231,568 | 1,491,750 | 765,000 | 145,750 | 12,634,068 |
| Nov-17 | 110,036,476 | 26,094,661 | 14,590,813 | 150,721,950 | 6,184,397 | 880,250 | 25,500 | 20,250 | 7,110,397 |
| Dec-17 | 98,963,812 | 25,346,603 | 204,685 | 124,515,101 | 6,412,921 | 1,038,359 | 5,500 | 37,000 | 7,493,780 |
| Jan-18 | 102,913,984 | 26,479,299 | 16,556 | 129,409,839 | 6,784,250 | 449,000 | 2,250 | 24,250 | 7,259,750 |
| Feb-18 | 89,885,069 | 23,764,124 | 10,562 | 113,659,755 | 6,034,500 | 605,750 | 3,250 | 41,250 | 6,684,750 |
| Mar-18 | 93,538,614 | 24,060,579 | 37,453 | 117,636,646 | 5,906,963 | 933,250 | 41,500 | 23,000 | 6,904,713 |
| Apr-18 | 108,089,163 | 25,375,023 | 2,255,388 | 135,719,574 | 6,523,456 | 969,750 | 40,000 | 30,250 | 7,563,456 |
| May-18 | 166,788,858 | 29,766,816 | 27,608,941 | 224,164,615 | 8,403,713 | 1,030,250 | 203,500 | 85,000 | 9,722,463 |
| Jun-18 | 239,371,401 | 37,258,223 | 66,511,540 | 343,141,164 | 11,218,750 | 1,409,875 | 675,250 | 140,000 | 13,443,875 |
| Jul-18 | 329,204,438 | 45,092,539 | 98,760,260 | 473,057,237 | 14,658,320 | 1,534,375 | 917,000 | 154,000 | 17,263,695 |
| Aug-18 | 351,533,374 | 51,329,795 | 124,035,723 | 526,898,892 | 15,784,677 | 1,940,500 | 989,000 | 144,000 | 18,858,177 |
| Sep-18 | 327,441,964 | 48,454,778 | 114,082,190 | 489,978,933 | 14,360,555 | 1,982,925 | 863,250 | 105,500 | 17,312,230 |
| Oct-18 | 231,769,733 | 41,255,587 | 82,550,726 | 355,576,046 | 10,231,568 | 1,491,750 | 765,000 | 145,750 | 12,634,068 |
| Nov-18 | 112,237,206 | 26,616,554 | 14,882,629 | 153,736,389 | 6,184,397 | 880,250 | 25,500 | 20,250 | 7,110,397 |
| Dec-18 | 100,943,088 | 25,853,535 | 208,779 | 127,005,403 | 6,412,921 | 1,038,359 | 5,500 | 37,000 | 7,493,780 |
| Jan-19 | 104,972,263 | 27,008,885 | 16,887 | 131,998,036 | 6,784,250 | 449,000 | 2,250 | 24,250 | 7,259,750 |
| Feb-19 | 91,682,771 | 24,239,406 | 10,773 | 115,932,950 | 6,034,500 | 605,750 | 3,250 | 41,250 | 6,684,750 |
| Mar-19 | 95,409,386 | 24,541,791 | 38,202 | 119,989,379 | 5,906,963 | 933,250 | 41,500 | 23,000 | 6,904,713 |

## Table C-3 - Monthly Water Demands Past and Future for Average Conditions
## City of Loveland

| Date | Inside Residential | Inside Multi-Family | Inside Irrigation | Inside Residential Total SF+ MF | Outside Residential | Outside Multi-Family | Outside Irrigation | Outside Res - Special Base | Outside Residential Total SF+ MF |
|---|---|---|---|---|---|---|---|---|---|
| Apr-19 | 110,250,947 | 25,882,523 | 2,300,496 | 138,433,966 | 6,523,456 | 969,750 | 40,000 | 30,250 | 7,563,456 |
| May-19 | 170,124,635 | 30,362,152 | 28,161,120 | 228,647,907 | 8,403,713 | 1,030,250 | 203,500 | 85,000 | 9,722,463 |
| Jun-19 | 244,158,829 | 38,003,387 | 67,841,770 | 350,003,987 | 11,218,750 | 1,409,875 | 675,250 | 140,000 | 13,443,875 |
| Jul-19 | 335,788,527 | 45,994,389 | 100,735,465 | 482,518,381 | 14,658,320 | 1,534,375 | 917,000 | 154,000 | 17,263,695 |
| Aug-19 | 358,564,042 | 52,356,391 | 126,516,437 | 537,436,870 | 15,784,677 | 1,940,500 | 989,000 | 144,000 | 18,858,177 |
| Sep-19 | 333,990,804 | 49,423,874 | 116,363,834 | 499,778,512 | 14,360,555 | 1,982,925 | 863,250 | 105,500 | 17,312,230 |
| Oct-19 | 236,405,128 | 42,080,698 | 84,201,741 | 362,687,567 | 10,231,568 | 1,491,750 | 765,000 | 145,750 | 12,634,068 |
| Nov-19 | 114,481,950 | 27,148,885 | 15,180,282 | 156,811,116 | 6,184,397 | 880,250 | 25,500 | 20,250 | 7,110,397 |
| Dec-19 | 102,961,950 | 26,370,606 | 212,955 | 129,545,511 | 6,412,921 | 1,038,359 | 5,500 | 37,000 | 7,493,780 |
| Jan-20 | 107,071,709 | 27,549,063 | 17,225 | 134,637,996 | 6,784,250 | 449,000 | 2,250 | 24,250 | 7,259,750 |
| Feb-20 | 93,516,426 | 24,724,194 | 10,988 | 118,251,609 | 6,034,500 | 605,750 | 3,250 | 41,250 | 6,684,750 |
| Mar-20 | 97,317,573 | 25,032,627 | 38,966 | 122,389,166 | 5,906,963 | 933,250 | 41,500 | 23,000 | 6,904,713 |
| Apr-20 | 112,455,965 | 26,400,174 | 2,346,506 | 141,202,645 | 6,523,456 | 969,750 | 40,000 | 30,250 | 7,563,456 |
| May-20 | 173,527,128 | 30,969,395 | 28,724,342 | 233,220,865 | 8,403,713 | 1,030,250 | 203,500 | 85,000 | 9,722,463 |
| Jun-20 | 249,042,006 | 38,763,455 | 69,198,606 | 357,004,067 | 11,218,750 | 1,409,875 | 675,250 | 140,000 | 13,443,875 |
| Jul-20 | 342,504,297 | 46,914,277 | 102,750,174 | 492,168,749 | 14,658,320 | 1,534,375 | 917,000 | 154,000 | 17,263,695 |
| Aug-20 | 365,735,322 | 53,403,519 | 129,046,766 | 548,185,607 | 15,784,677 | 1,940,500 | 989,000 | 144,000 | 18,858,177 |
| Sep-20 | 340,670,620 | 50,412,351 | 118,691,111 | 509,774,082 | 14,360,555 | 1,982,925 | 863,250 | 105,500 | 17,312,230 |
| Oct-20 | 241,133,231 | 42,922,312 | 85,885,776 | 369,941,319 | 10,231,568 | 1,491,750 | 765,000 | 145,750 | 12,634,068 |
| Nov-20 | 116,771,589 | 27,691,863 | 15,483,887 | 159,947,339 | 6,184,397 | 880,250 | 25,500 | 20,250 | 7,110,397 |
| Dec-20 | 105,021,189 | 26,898,018 | 217,214 | 132,136,421 | 6,412,921 | 1,038,359 | 5,500 | 37,000 | 7,493,780 |

# Table C-3 - Monthly Water Demands Past and Future for Average Conditions
## City of Loveland

| Date | Inside Commercial | Outside Commercial | Outside Com - Special Base | Outside Com Total | Total Commercial | Inside - City | Outside - City | City Uses | Industrial |
|---|---|---|---|---|---|---|---|---|---|
| Jan-05 | 23,395,700 | 1,428,340 | - | 1,428,340 | 24,824,040 | 860,000 | - | 860,000 | 3,921,000 |
| Feb-05 | 20,140,400 | 1,267,960 | - | 1,267,960 | 21,408,360 | 970,000 | - | 970,000 | 3,509,000 |
| Mar-05 | 20,826,600 | 1,208,110 | - | 1,208,110 | 22,034,710 | 729,000 | - | 729,000 | 3,624,000 |
| Apr-05 | 22,561,800 | 1,247,040 | - | 1,247,040 | 23,808,840 | 960,000 | - | 960,000 | 4,156,000 |
| May-05 | 28,669,600 | 1,367,240 | - | 1,367,240 | 30,036,840 | 1,993,800 | - | 1,993,800 | 4,649,000 |
| Jun-05 | 45,763,111 | 2,041,240 | - | 2,041,240 | 47,804,351 | 6,301,000 | - | 6,301,000 | 4,767,000 |
| Jul-05 | 62,686,089 | 2,544,070 | - | 2,544,070 | 65,230,159 | 11,993,000 | - | 11,993,000 | 4,983,000 |
| Aug-05 | 71,919,800 | 2,607,370 | - | 2,607,370 | 74,527,170 | 13,023,000 | - | 13,023,000 | 6,783,000 |
| Sep-05 | 63,051,800 | 2,722,200 | - | 2,722,200 | 65,774,000 | 9,609,000 | - | 9,609,000 | 5,039,000 |
| Oct-05 | 54,501,022 | 2,053,160 | - | 2,053,160 | 56,554,182 | 5,632,000 | - | 5,632,000 | 5,458,000 |
| Nov-05 | 26,677,000 | 995,579 | - | 995,579 | 27,672,579 | 969,000 | - | 969,000 | 3,876,000 |
| Dec-05 | 26,098,600 | 1,538,120 | - | 1,538,120 | 27,636,720 | 588,000 | - | 588,000 | 3,977,000 |
| Jan-06 | 22,410,600 | 1,287,070 | - | 1,287,070 | 23,697,670 | 739,000 | - | 739,000 | 4,044,000 |
| Feb-06 | 21,364,400 | 1,154,330 | - | 1,154,330 | 22,518,730 | 615,000 | - | 615,000 | 2,872,000 |
| Mar-06 | 22,057,400 | 1,197,530 | - | 1,197,530 | 23,254,930 | 802,000 | - | 802,000 | 3,244,000 |
| Apr-06 | 24,236,000 | 1,307,580 | - | 1,307,580 | 25,543,580 | 1,042,000 | - | 1,042,000 | 3,558,000 |
| May-06 | 41,726,310 | 1,797,860 | - | 1,797,860 | 43,524,170 | 4,705,000 | - | 4,705,000 | 4,599,000 |
| Jun-06 | 62,753,890 | 2,553,730 | - | 2,553,730 | 65,307,620 | 11,930,000 | - | 11,930,000 | 4,636,000 |
| Jul-06 | 77,074,800 | 2,720,570 | - | 2,720,570 | 79,795,370 | 15,421,000 | - | 15,421,000 | 6,684,000 |
| Aug-06 | 69,554,800 | 3,326,800 | - | 3,326,800 | 72,881,600 | 14,329,000 | - | 14,329,000 | 6,764,900 |
| Sep-06 | 66,675,900 | 2,673,210 | - | 2,673,210 | 69,349,110 | 12,624,000 | - | 12,624,000 | 5,296,000 |
| Oct-06 | 54,335,000 | 1,967,490 | - | 1,967,490 | 56,302,490 | 5,054,000 | - | 5,054,000 | 5,408,000 |
| Nov-06 | 29,062,700 | 1,313,140 | - | 1,313,140 | 30,375,840 | 913,000 | - | 913,000 | 3,982,000 |
| Dec-06 | 26,172,152 | 989,063 | - | 989,063 | 27,161,215 | 694,029 | - | 694,029 | 4,320,000 |
| Jan-07 | 23,625,302 | 1,128,697 | - | 1,128,697 | 24,753,999 | 702,971 | - | 702,971 | 3,564,500 |
| Feb-07 | 23,183,881 | 1,451,000 | - | 1,451,000 | 24,634,881 | 936,000 | - | 936,000 | 3,123,500 |
| Mar-07 | 23,530,900 | 1,724,000 | - | 1,724,000 | 25,254,900 | 814,000 | - | 814,000 | 4,048,000 |
| Apr-07 | 26,258,200 | 1,129,000 | - | 1,129,000 | 27,387,200 | 1,233,000 | - | 1,233,000 | 4,737,000 |
| May-07 | 32,112,400 | 1,261,330 | - | 1,261,330 | 33,373,730 | 2,136,000 | - | 2,136,000 | 4,487,000 |
| Jun-07 | 54,923,600 | 2,012,670 | - | 2,012,670 | 56,936,270 | 10,475,000 | - | 10,475,000 | 4,605,000 |
| Jul-07 | 79,127,000 | 2,934,720 | - | 2,934,720 | 82,061,720 | 15,282,000 | - | 15,282,000 | 5,507,000 |
| Aug-07 | 71,769,200 | 2,536,280 | - | 2,536,280 | 74,305,480 | 14,333,000 | - | 14,333,000 | 5,951,000 |
| Sep-07 | 69,579,511 | 2,215,620 | - | 2,215,620 | 71,795,131 | 11,958,000 | - | 11,958,000 | 5,433,000 |
| Oct-07 | 53,442,909 | 2,082,380 | - | 2,082,380 | 55,525,289 | 8,122,000 | - | 8,122,000 | 4,834,000 |
| Nov-07 | 31,443,400 | 1,408,000 | - | 1,408,000 | 32,851,400 | 1,489,000 | - | 1,489,000 | 4,233,000 |
| Dec-07 | 26,277,800 | 1,097,000 | - | 1,097,000 | 27,374,800 | 781,000 | - | 781,000 | 4,285,000 |
| Jan-08 | 28,092,400 | 1,168,610 | - | 1,168,610 | 29,261,010 | 673,000 | - | 673,000 | - |
| Feb-08 | 28,521,000 | 1,002,390 | - | 1,002,390 | 29,523,390 | 698,000 | - | 698,000 | - |
| Mar-08 | 29,168,800 | 994,000 | - | 994,000 | 30,162,800 | 870,000 | - | 870,000 | - |
| Apr-08 | 30,038,848 | 1,034,860 | - | 1,034,860 | 31,073,708 | 1,214,000 | - | 1,214,000 | - |
| May-08 | 44,420,500 | 1,443,140 | - | 1,443,140 | 45,863,640 | 4,640,000 | - | 4,640,000 | - |
| Jun-08 | 65,379,000 | 1,849,000 | - | 1,849,000 | 67,228,000 | 9,119,000 | - | 9,119,000 | - |
| Jul-08 | 70,981,400 | 2,214,000 | - | 2,214,000 | 73,195,400 | 13,867,000 | - | 13,867,000 | - |
| Aug-08 | 91,172,600 | 2,521,000 | - | 2,521,000 | 93,693,600 | 17,030,000 | - | 17,030,000 | - |
| Sep-08 | 72,669,000 | 2,367,000 | - | 2,367,000 | 75,036,000 | 10,177,000 | - | 10,177,000 | - |
| Oct-08 | 61,045,000 | 1,502,000 | - | 1,502,000 | 62,547,000 | 7,867,000 | - | 7,867,000 | - |
| Nov-08 | 38,410,475 | 1,137,000 | - | 1,137,000 | 39,547,475 | 2,063,000 | - | 2,063,000 | - |
| Dec-08 | 30,395,643 | 1,033,000 | - | 1,033,000 | 31,428,643 | 976,000 | - | 976,000 | - |
| Jan-09 | 29,544,816 | 1,016,000 | - | 1,016,000 | 30,560,816 | 940,000 | - | 940,000 | - |
| Feb-09 | 25,419,725 | 846,000 | - | 846,000 | 26,265,725 | 973,000 | - | 973,000 | - |
| Mar-09 | 26,154,072 | 1,008,000 | - | 1,008,000 | 27,162,072 | 682,000 | - | 682,000 | - |
| Apr-09 | 26,958,000 | 1,004,000 | - | 1,004,000 | 27,962,000 | 1,079,110 | - | 1,079,110 | - |
| May-09 | 34,835,965 | 1,222,000 | - | 1,222,000 | 36,057,965 | 2,852,000 | - | 2,852,000 | - |
| Jun-09 | 55,948,018 | 1,561,000 | - | 1,561,000 | 57,509,018 | 5,757,000 | - | 5,757,000 | - |
| Jul-09 | 57,512,324 | 1,669,000 | - | 1,669,000 | 59,181,324 | 12,163,000 | - | 12,163,000 | - |
| Aug-09 | 73,564,946 | 1,676,000 | - | 1,676,000 | 75,240,946 | 13,419,000 | - | 13,419,000 | - |
| Sep-09 | 68,559,627 | 1,597,000 | - | 1,597,000 | 70,156,627 | 10,164,000 | - | 10,164,000 | - |

# Table C-3 - Monthly Water Demands Past and Future for Average Conditions
## City of Loveland

| Date | Inside Commercial | Outside Commercial | Outside Com - Special Base | Outside Com Total | Total Commercial | Inside - City | Outside - City | City Uses | Industrial |
|---|---|---|---|---|---|---|---|---|---|
| Oct-09 | 53,388,518 | 1,206,000 | 38,000 | 1,244,000 | 54,632,518 | 6,295,000 | - | 6,295,000 | - |
| Nov-09 | 31,353,956 | 893,000 | - | 893,000 | 32,246,956 | 1,279,000 | - | 1,279,000 | - |
| Dec-09 | 27,189,282 | 1,050,000 | - | 1,050,000 | 28,239,282 | 524,000 | - | 524,000 | - |
| Jan-10 | 28,833,065 | 977,000 | - | 977,000 | 29,810,065 | 837,000 | - | 837,000 | - |
| Feb-10 | 25,974,413 | 952,000 | - | 952,000 | 26,926,413 | 513,000 | - | 513,000 | - |
| Mar-10 | 26,591,375 | 972,000 | - | 972,000 | 27,563,375 | 820,000 | - | 820,000 | - |
| Apr-10 | 28,133,184 | 1,100,000 | 8,000 | 1,108,000 | 29,241,184 | 765,000 | - | 765,000 | - |
| May-10 | 32,743,064 | 1,268,000 | 46,000 | 1,314,000 | 34,057,064 | 4,986,000 | - | 4,986,000 | - |
| Jun-10 | 45,771,921 | 1,741,000 | 95,000 | 1,836,000 | 47,607,921 | 7,579,000 | - | 7,579,000 | - |
| Jul-10 | 64,731,690 | 1,692,000 | 84,000 | 1,776,000 | 66,507,690 | 12,388,000 | - | 12,388,000 | - |
| Aug-10 | 75,019,013 | 1,598,000 | 99,000 | 1,697,000 | 76,716,013 | 12,450,143 | - | 12,450,143 | - |
| Sep-10 | 73,554,892 | 1,996,000 | 96,000 | 2,092,000 | 75,646,892 | 15,011,000 | - | 15,011,000 | - |
| Oct-10 | 69,488,929 | 1,563,260 | 70,000 | 1,633,260 | 71,122,189 | 10,946,024 | - | 10,946,024 | - |
| Nov-10 | 38,957,819 | 1,098,000 | - | 1,098,000 | 40,055,819 | 1,334,000 | - | 1,334,000 | - |
| Dec-10 | 28,654,267 | 974,000 | - | 974,000 | 29,628,267 | 527,000 | - | 527,000 | - |
| Jan-11 | 28,616,074 | 922,000 | - | 922,000 | 29,538,074 | 676,405 | - | 676,405 | - |
| Feb-11 | 26,258,447 | 943,000 | - | 943,000 | 27,201,447 | 684,202 | - | 684,202 | - |
| Mar-11 | 26,337,929 | 2,591,000 | - | 2,591,000 | 28,928,929 | 706,000 | - | 706,000 | - |
| Apr-11 | 27,296,680 | 905,106 | 9,000 | 914,106 | 28,210,786 | 789,268 | - | 789,268 | - |
| May-11 | 37,715,753 | 1,185,000 | 21,000 | 1,206,000 | 38,921,753 | 1,663,300 | - | 1,663,300 | - |
| Jun-11 | 53,502,633 | 1,356,000 | 62,000 | 1,418,000 | 54,920,633 | 7,482,579 | - | 7,482,579 | - |
| Jul-11 | 67,285,653 | 1,714,000 | 97,000 | 1,811,000 | 69,096,653 | 13,535,000 | - | 13,535,000 | - |
| Aug-11 | 82,418,628 | 1,823,000 | 88,000 | 1,911,000 | 84,329,628 | 16,657,000 | - | 16,657,000 | - |
| Sep-11 | 83,086,966 | 1,769,642 | 93,000 | 1,862,642 | 84,949,608 | 16,346,000 | - | 16,346,000 | - |
| Oct-11 | 71,814,787 | 1,350,000 | 72,000 | 1,422,000 | 73,236,787 | 10,505,000 | 1,000 | 10,506,000 | - |
| Nov-11 | 38,270,720 | 870,000 | - | 870,000 | 39,140,720 | 1,610,000 | - | 1,610,000 | - |
| Dec-11 | 30,078,664 | 809,000 | - | 809,000 | 30,887,664 | 660,000 | - | 660,000 | - |
| Jan-12 | 28,944,218 | 1,027,028 | - | 1,027,028 | 29,971,246 | 817,802 | | 817,802 | |
| Feb-12 | 26,702,657 | 941,463 | - | 941,463 | 27,644,119 | 723,401 | | 723,401 | |
| Mar-12 | 27,225,422 | 1,399,598 | - | 1,399,598 | 28,625,020 | 736,000 | | 736,000 | |
| Apr-12 | 28,275,318 | 1,017,057 | 4,276 | 1,021,333 | 29,296,651 | 961,845 | | 961,845 | |
| May-12 | 37,653,393 | 1,287,212 | 16,851 | 1,304,063 | 38,957,456 | 3,535,325 | | 3,535,325 | |
| Jun-12 | 55,481,295 | 1,636,511 | 39,486 | 1,675,996 | 57,157,291 | 7,484,395 | | 7,484,395 | |
| Jul-12 | 65,518,533 | 1,833,184 | 45,522 | 1,878,705 | 67,397,238 | 12,988,250 | | 12,988,250 | |
| Aug-12 | 81,027,060 | 1,915,927 | 47,031 | 1,962,958 | 82,990,017 | 14,889,036 | | 14,889,036 | |
| Sep-12 | 74,914,427 | 1,944,005 | 47,534 | 1,991,538 | 76,905,965 | 12,924,500 | | 12,924,500 | |
| Oct-12 | 64,317,914 | 1,413,747 | 45,270 | 1,459,017 | 65,776,931 | 8,903,256 | | 8,903,256 | |
| Nov-12 | 36,968,732 | 1,005,497 | - | 1,005,497 | 37,974,229 | 1,407,667 | | 1,407,667 | |
| Dec-12 | 29,253,941 | 972,299 | - | 972,299 | 30,226,240 | 570,333 | | 570,333 | |
| Jan-13 | 29,725,712 | 1,054,758 | - | 1,054,758 | 30,780,470 | 817,802 | | 817,802 | |
| Feb-13 | 27,423,628 | 966,882 | - | 966,882 | 28,390,510 | 723,401 | | 723,401 | |
| Mar-13 | 27,960,509 | 1,437,387 | - | 1,437,387 | 29,397,895 | 736,000 | | 736,000 | |
| Apr-13 | 29,038,752 | 1,044,518 | 4,391 | 1,048,909 | 30,087,661 | 961,845 | | 961,845 | |
| May-13 | 38,670,035 | 1,321,967 | 17,305 | 1,339,272 | 40,009,307 | 3,535,325 | | 3,535,325 | |
| Jun-13 | 56,979,290 | 1,680,696 | 40,552 | 1,721,248 | 58,700,538 | 7,484,395 | | 7,484,395 | |
| Jul-13 | 67,287,534 | 1,882,679 | 46,751 | 1,929,430 | 69,216,964 | 12,988,250 | | 12,988,250 | |
| Aug-13 | 83,214,790 | 1,967,657 | 48,300 | 2,015,957 | 85,230,747 | 14,889,036 | | 14,889,036 | |
| Sep-13 | 76,937,117 | 1,996,493 | 48,817 | 2,045,310 | 78,982,427 | 12,924,500 | | 12,924,500 | |
| Oct-13 | 66,054,498 | 1,451,918 | 46,492 | 1,498,410 | 67,552,908 | 8,903,256 | | 8,903,256 | |
| Nov-13 | 37,966,888 | 1,032,645 | - | 1,032,645 | 38,999,533 | 1,407,667 | | 1,407,667 | |
| Dec-13 | 30,043,797 | 998,551 | - | 998,551 | 31,042,348 | 570,333 | | 570,333 | |
| Jan-14 | 30,290,501 | 1,074,798 | - | 1,074,798 | 31,365,299 | 817,802 | | 817,802 | |
| Feb-14 | 27,944,677 | 985,253 | - | 985,253 | 28,929,930 | 723,401 | | 723,401 | |
| Mar-14 | 28,491,758 | 1,464,697 | - | 1,464,697 | 29,956,455 | 736,000 | | 736,000 | |
| Apr-14 | 29,590,488 | 1,064,364 | 4,474 | 1,068,838 | 30,659,326 | 961,845 | | 961,845 | |
| May-14 | 39,404,766 | 1,347,084 | 17,634 | 1,364,719 | 40,769,484 | 3,535,325 | | 3,535,325 | |
| Jun-14 | 58,061,897 | 1,712,630 | 41,322 | 1,753,952 | 59,815,848 | 7,484,395 | | 7,484,395 | |

# Table C-3 - Monthly Water Demands Past and Future for Average Conditions
## City of Loveland

| Date | Inside Commercial | Outside Commercial | Outside Com - Special Base | Outside Com Total | Total Commercial | Inside - City | Outside - City | City Uses | Industrial |
|---|---|---|---|---|---|---|---|---|---|
| Jul-14 | 68,565,997 | 1,918,450 | 47,639 | 1,966,089 | 70,532,086 | 12,988,250 | | 12,988,250 | |
| Aug-14 | 84,795,871 | 2,005,043 | 49,218 | 2,054,261 | 86,850,132 | 14,889,036 | | 14,889,036 | |
| Sep-14 | 78,398,922 | 2,034,426 | 49,744 | 2,084,171 | 80,483,093 | 12,924,500 | | 12,924,500 | |
| Oct-14 | 67,309,534 | 1,479,504 | 47,376 | 1,526,880 | 68,836,414 | 8,903,256 | | 8,903,256 | |
| Nov-14 | 38,688,259 | 1,052,266 | - | 1,052,266 | 39,740,524 | 1,407,667 | | 1,407,667 | |
| Dec-14 | 30,614,629 | 1,017,524 | - | 1,017,524 | 31,632,153 | 570,333 | | 570,333 | |
| Jan-15 | 30,896,311 | 1,096,294 | - | 1,096,294 | 31,992,605 | 817,802 | | 817,802 | |
| Feb-15 | 28,503,571 | 1,004,958 | - | 1,004,958 | 29,508,529 | 723,401 | | 723,401 | |
| Mar-15 | 29,061,593 | 1,493,991 | - | 1,493,991 | 30,555,584 | 736,000 | | 736,000 | |
| Apr-15 | 30,182,298 | 1,085,651 | 4,564 | 1,090,215 | 31,272,513 | 961,845 | | 961,845 | |
| May-15 | 40,192,861 | 1,374,026 | 17,987 | 1,392,013 | 41,584,874 | 3,535,325 | | 3,535,325 | |
| Jun-15 | 59,223,135 | 1,746,882 | 42,149 | 1,789,031 | 61,012,165 | 7,484,395 | | 7,484,395 | |
| Jul-15 | 69,937,317 | 1,956,819 | 48,592 | 2,005,411 | 71,942,728 | 12,988,250 | | 12,988,250 | |
| Aug-15 | 86,491,789 | 2,045,143 | 50,202 | 2,095,346 | 88,587,134 | 14,889,036 | | 14,889,036 | |
| Sep-15 | 79,966,900 | 2,075,115 | 50,739 | 2,125,854 | 82,092,754 | 12,924,500 | | 12,924,500 | |
| Oct-15 | 68,655,724 | 1,509,095 | 48,323 | 1,557,418 | 70,213,142 | 8,903,256 | | 8,903,256 | |
| Nov-15 | 39,462,024 | 1,073,311 | - | 1,073,311 | 40,535,335 | 1,407,667 | | 1,407,667 | |
| Dec-15 | 31,226,922 | 1,037,874 | - | 1,037,874 | 32,264,796 | 570,333 | | 570,333 | |
| Jan-16 | 31,545,133 | 1,119,316 | - | 1,119,316 | 32,664,449 | 817,802 | | 817,802 | |
| Feb-16 | 29,102,146 | 1,026,062 | - | 1,026,062 | 30,128,208 | 723,401 | | 723,401 | |
| Mar-16 | 29,671,887 | 1,525,365 | - | 1,525,365 | 31,197,252 | 736,000 | | 736,000 | |
| Apr-16 | 30,816,126 | 1,108,450 | 4,660 | 1,113,109 | 31,929,235 | 961,845 | | 961,845 | |
| May-16 | 41,036,911 | 1,402,881 | 18,365 | 1,421,245 | 42,458,156 | 3,535,325 | | 3,535,325 | |
| Jun-16 | 60,466,821 | 1,783,567 | 43,034 | 1,826,600 | 62,293,421 | 7,484,395 | | 7,484,395 | |
| Jul-16 | 71,406,000 | 1,997,913 | 49,612 | 2,047,525 | 73,453,525 | 12,988,250 | | 12,988,250 | |
| Aug-16 | 88,308,116 | 2,088,091 | 51,257 | 2,139,348 | 90,447,464 | 14,889,036 | | 14,889,036 | |
| Sep-16 | 81,646,205 | 2,118,692 | 51,805 | 2,170,497 | 83,816,702 | 12,924,500 | | 12,924,500 | |
| Oct-16 | 70,097,494 | 1,540,786 | 49,338 | 1,590,124 | 71,687,618 | 8,903,256 | | 8,903,256 | |
| Nov-16 | 40,290,726 | 1,095,851 | - | 1,095,851 | 41,386,577 | 1,407,667 | | 1,407,667 | |
| Dec-16 | 31,882,687 | 1,059,669 | - | 1,059,669 | 32,942,357 | 570,333 | | 570,333 | |
| Jan-17 | 32,207,581 | 1,142,822 | - | 1,142,822 | 33,350,403 | 817,802 | | 817,802 | |
| Feb-17 | 29,713,291 | 1,047,609 | - | 1,047,609 | 30,760,900 | 723,401 | | 723,401 | |
| Mar-17 | 30,294,997 | 1,557,397 | - | 1,557,397 | 31,852,394 | 736,000 | | 736,000 | |
| Apr-17 | 31,463,265 | 1,131,727 | 4,758 | 1,136,485 | 32,599,749 | 961,845 | | 961,845 | |
| May-17 | 41,898,686 | 1,432,341 | 18,750 | 1,451,091 | 43,349,778 | 3,535,325 | | 3,535,325 | |
| Jun-17 | 61,736,624 | 1,821,022 | 43,937 | 1,864,959 | 63,601,583 | 7,484,395 | | 7,484,395 | |
| Jul-17 | 72,905,526 | 2,039,869 | 50,654 | 2,090,523 | 74,996,049 | 12,988,250 | | 12,988,250 | |
| Aug-17 | 90,162,587 | 2,131,941 | 52,333 | 2,184,274 | 92,346,861 | 14,889,036 | | 14,889,036 | |
| Sep-17 | 83,360,775 | 2,163,185 | 52,893 | 2,216,078 | 85,576,853 | 12,924,500 | | 12,924,500 | |
| Oct-17 | 71,569,542 | 1,573,142 | 50,374 | 1,623,516 | 73,193,058 | 8,903,256 | | 8,903,256 | |
| Nov-17 | 41,136,832 | 1,118,863 | - | 1,118,863 | 42,255,695 | 1,407,667 | | 1,407,667 | |
| Dec-17 | 32,552,224 | 1,081,922 | - | 1,081,922 | 33,634,146 | 570,333 | | 570,333 | |
| Jan-18 | 32,851,733 | 1,165,678 | - | 1,165,678 | 34,017,411 | 817,802 | | 817,802 | |
| Feb-18 | 30,307,557 | 1,068,561 | - | 1,068,561 | 31,376,118 | 723,401 | | 723,401 | |
| Mar-18 | 30,900,897 | 1,588,545 | - | 1,588,545 | 32,489,442 | 736,000 | | 736,000 | |
| Apr-18 | 32,092,530 | 1,154,362 | 4,853 | 1,159,214 | 33,251,744 | 961,845 | | 961,845 | |
| May-18 | 42,736,660 | 1,460,988 | 19,125 | 1,480,113 | 44,216,773 | 3,535,325 | | 3,535,325 | |
| Jun-18 | 62,971,356 | 1,857,442 | 44,816 | 1,902,258 | 64,873,614 | 7,484,395 | | 7,484,395 | |
| Jul-18 | 74,363,637 | 2,080,666 | 51,667 | 2,132,333 | 76,495,970 | 12,988,250 | | 12,988,250 | |
| Aug-18 | 91,965,838 | 2,174,580 | 53,380 | 2,227,960 | 94,193,798 | 14,889,036 | | 14,889,036 | |
| Sep-18 | 85,027,991 | 2,206,449 | 53,951 | 2,260,399 | 87,288,390 | 12,924,500 | | 12,924,500 | |
| Oct-18 | 73,000,933 | 1,604,605 | 51,382 | 1,655,986 | 74,656,919 | 8,903,256 | | 8,903,256 | |
| Nov-18 | 41,959,568 | 1,141,241 | - | 1,141,241 | 43,100,809 | 1,407,667 | | 1,407,667 | |
| Dec-18 | 33,203,268 | 1,103,561 | - | 1,103,561 | 34,306,829 | 570,333 | | 570,333 | |
| Jan-19 | 33,508,767 | 1,188,992 | - | 1,188,992 | 34,697,759 | 817,802 | | 817,802 | |
| Feb-19 | 30,913,708 | 1,089,933 | - | 1,089,933 | 32,003,641 | 723,401 | | 723,401 | |
| Mar-19 | 31,518,914 | 1,620,316 | - | 1,620,316 | 33,139,231 | 736,000 | | 736,000 | |

## Table C-3 - Monthly Water Demands Past and Future for Average Conditions
## City of Loveland

| Date | Inside Commercial | Outside Commercial | Outside Com - Special Base | Outside Com Total | Total Commercial | Inside - City | Outside - City | City Uses | Industrial |
|---|---|---|---|---|---|---|---|---|---|
| Apr-19 | 32,734,380 | 1,177,449 | 4,950 | 1,182,399 | 33,916,779 | 961,845 | | 961,845 | |
| May-19 | 43,591,393 | 1,490,208 | 19,508 | 1,509,715 | 45,101,109 | 3,535,325 | | 3,535,325 | |
| Jun-19 | 64,230,783 | 1,894,591 | 45,712 | 1,940,303 | 66,171,087 | 7,484,395 | | 7,484,395 | |
| Jul-19 | 75,850,910 | 2,122,279 | 52,700 | 2,174,980 | 78,025,890 | 12,988,250 | | 12,988,250 | |
| Aug-19 | 93,805,155 | 2,218,072 | 54,447 | 2,272,519 | 96,077,674 | 14,889,036 | | 14,889,036 | |
| Sep-19 | 86,728,551 | 2,250,578 | 55,030 | 2,305,607 | 89,034,158 | 12,924,500 | | 12,924,500 | |
| Oct-19 | 74,460,951 | 1,636,697 | 52,409 | 1,689,106 | 76,150,057 | 8,903,256 | | 8,903,256 | |
| Nov-19 | 42,798,759 | 1,164,065 | - | 1,164,065 | 43,962,825 | 1,407,667 | | 1,407,667 | |
| Dec-19 | 33,867,334 | 1,125,632 | - | 1,125,632 | 34,992,966 | 570,333 | | 570,333 | |
| Jan-20 | 34,178,943 | 1,212,772 | - | 1,212,772 | 35,391,714 | 817,802 | | 817,802 | |
| Feb-20 | 31,531,982 | 1,111,731 | - | 1,111,731 | 32,643,713 | 723,401 | | 723,401 | |
| Mar-20 | 32,149,293 | 1,652,723 | - | 1,652,723 | 33,802,015 | 736,000 | | 736,000 | |
| Apr-20 | 33,389,068 | 1,200,998 | 5,049 | 1,206,047 | 34,595,115 | 961,845 | | 961,845 | |
| May-20 | 44,463,221 | 1,520,012 | 19,898 | 1,539,910 | 46,003,131 | 3,535,325 | | 3,535,325 | |
| Jun-20 | 65,515,399 | 1,932,483 | 46,627 | 1,979,109 | 67,494,508 | 7,484,395 | | 7,484,395 | |
| Jul-20 | 77,367,928 | 2,164,725 | 53,754 | 2,218,479 | 79,586,407 | 12,988,250 | | 12,988,250 | |
| Aug-20 | 95,681,258 | 2,262,433 | 55,536 | 2,317,969 | 97,999,228 | 14,889,036 | | 14,889,036 | |
| Sep-20 | 88,463,122 | 2,295,589 | 56,130 | 2,351,719 | 90,814,841 | 12,924,500 | | 12,924,500 | |
| Oct-20 | 75,950,170 | 1,669,431 | 53,457 | 1,722,888 | 77,673,059 | 8,903,256 | | 8,903,256 | |
| Nov-20 | 43,654,735 | 1,187,347 | - | 1,187,347 | 44,842,081 | 1,407,667 | | 1,407,667 | |
| Dec-20 | 34,544,680 | 1,148,145 | - | 1,148,145 | 35,692,825 | 570,333 | | 570,333 | |

# Table C-3 - Monthly Water Demands Past and Future for Average Conditions
## City of Loveland

| Date | Inside - Wholesale | Outside - Wholesale | Total Other | Hydrant | Ranch | Total Consupmtion | % Non-Revenue | Treated Water Demand |
|---|---|---|---|---|---|---|---|---|
| Jan-05 | 1,384,500 | - | 5,305,500 | 1,069,100 | 4,377,700 | 154,374,179 | 10.7% | 172,900,000 |
| Feb-05 | 1,478,000 | - | 4,987,000 | | 4,536,200 | 130,579,460 | 15.5% | 154,500,000 |
| Mar-05 | 1,480,000 | - | 5,104,000 | - | 4,026,700 | 134,393,549 | 24.8% | 178,800,000 |
| Apr-05 | 1,610,100 | - | 5,766,100 | 207,000 | 7,768,900 | 167,725,163 | 21.3% | 213,000,000 |
| May-05 | 1,743,900 | - | 6,392,900 | 428,000 | 8,017,000 | 217,222,419 | 38.8% | 355,000,000 |
| Jun-05 | 3,547,500 | - | 8,314,500 | 362,000 | 10,162,300 | 365,194,165 | 15.1% | 430,300,000 |
| Jul-05 | 4,003,500 | - | 8,986,500 | 555,000 | 11,601,800 | 541,414,659 | 17.3% | 654,400,000 |
| Aug-05 | 7,250,407 | - | 14,033,407 | 463,000 | 13,149,200 | 559,740,977 | -1.0% | 554,200,000 |
| Sep-05 | 6,325,000 | - | 11,364,000 | 453,000 | 10,567,200 | 509,232,948 | 0.5% | 511,700,000 |
| Oct-05 | 5,655,000 | - | 11,113,000 | 434,000 | 8,990,400 | 374,363,982 | -36.0% | 275,200,000 |
| Nov-05 | 2,865,000 | - | 6,741,000 | 303,300 | 10,628,300 | 181,588,979 | 10.9% | 203,700,000 |
| Dec-05 | 1,163,000 | - | 5,140,000 | 335,700 | 3,174,832 | 157,109,252 | 28.5% | 219,600,000 |
| Jan-06 | 1,281,400 | - | 5,325,400 | 332,000 | 12,375,350 | 167,899,867 | 19.5% | 208,700,000 |
| Feb-06 | 1,593,600 | - | 4,465,600 | 330,000 | 7,982,600 | 146,611,883 | 20.0% | 183,200,000 |
| Mar-06 | 1,603,000 | - | 4,847,000 | 323,000 | 9,696,090 | 147,967,507 | 27.2% | 203,200,000 |
| Apr-06 | 2,162,000 | - | 5,720,000 | 384,000 | 8,455,200 | 188,222,939 | 45.4% | 344,500,000 |
| May-06 | 3,374,000 | - | 7,973,000 | 502,000 | 9,015,700 | 372,478,292 | 32.3% | 550,500,000 |
| Jun-06 | 7,503,000 | - | 12,139,000 | 625,000 | 13,238,400 | 621,600,109 | 12.2% | 707,900,000 |
| Jul-06 | 7,842,000 | - | 14,526,000 | 579,000 | 8,827,300 | 667,698,149 | 1.2% | 675,900,000 |
| Aug-06 | 6,605,000 | - | 13,369,900 | 621,000 | 12,736,595 | 610,679,170 | 5.7% | 647,300,000 |
| Sep-06 | 6,262,000 | - | 11,558,000 | 468,000 | 10,225,300 | 524,468,310 | -14.2% | 459,300,000 |
| Oct-06 | 4,115,000 | - | 9,523,000 | 373,000 | 12,306,530 | 374,920,931 | -28.7% | 291,300,000 |
| Nov-06 | 2,369,000 | - | 6,351,000 | 299,000 | 10,742,100 | 179,070,854 | 9.2% | 197,200,000 |
| Dec-06 | 1,108,700 | - | 5,428,700 | 266,000 | 7,871,800 | 173,435,930 | 10.5% | 193,700,000 |
| Jan-07 | - | - | 3,564,500 | 230,000 | 3,512,600 | 144,246,818 | 27.1% | 197,900,000 |
| Feb-07 | - | - | 3,123,500 | 206,000 | 3,240,100 | 138,909,117 | 25.1% | 185,500,000 |
| Mar-07 | - | - | 4,048,000 | 299,000 | 6,089,900 | 142,653,030 | 31.0% | 206,600,000 |
| Apr-07 | - | - | 4,737,000 | 275,000 | 3,618,000 | 159,797,989 | 33.7% | 241,000,000 |
| May-07 | - | - | 4,487,000 | 297,000 | 3,671,400 | 232,091,930 | 47.3% | 440,000,000 |
| Jun-07 | - | - | 4,605,000 | 339,000 | 2,668,484 | 453,947,585 | 26.2% | 614,700,000 |
| Jul-07 | - | - | 5,507,000 | 709,000 | 3,477,700 | 680,800,109 | 6.9% | 731,600,000 |
| Aug-07 | 1,838 | - | 5,952,838 | 334,000 | 2,911,657 | 610,886,128 | -0.3% | 609,300,000 |
| Sep-07 | - | - | 5,433,000 | 282,000 | 5,501,700 | 544,506,078 | -8.1% | 503,700,000 |
| Oct-07 | - | - | 4,834,000 | 277,000 | 7,319,834 | 381,124,823 | -23.0% | 309,900,000 |
| Nov-07 | - | - | 4,233,000 | 242,000 | 6,950,000 | 195,910,304 | 1.6% | 199,100,000 |
| Dec-07 | - | - | 4,285,000 | 193,000 | 4,959,300 | 161,076,389 | 21.0% | 203,900,000 |
| Jan-08 | - | - | - | 227,000 | 1,890,000 | 152,700,099 | 27.9% | 211,900,000 |
| Feb-08 | - | - | - | 251,000 | 3,873,400 | 142,622,426 | 26.8% | 194,800,000 |
| Mar-08 | - | - | - | 308,000 | 7,891,900 | 150,130,597 | 29.5% | 212,900,000 |
| Apr-08 | - | - | - | 285,000 | 9,582,200 | 163,799,175 | 40.4% | 275,000,000 |
| May-08 | - | - | - | 343,000 | 7,898,300 | 325,262,640 | 32.5% | 482,200,000 |
| Jun-08 | - | - | - | 450,000 | 6,113,100 | 452,723,200 | 22.7% | 585,300,000 |
| Jul-08 | - | - | - | 451,000 | 5,792,200 | 586,459,100 | 20.7% | 739,100,000 |
| Aug-08 | - | - | - | 354,000 | 6,936,800 | 695,740,200 | -16.7% | 596,400,000 |
| Sep-08 | 5,078 | - | 5,078 | 406,000 | 7,112,500 | 479,148,763 | -5.7% | 453,300,000 |
| Oct-08 | - | - | - | 329,000 | 8,689,000 | 371,050,327 | -22.3% | 303,300,000 |
| Nov-08 | - | - | - | 334,000 | 4,418,600 | 188,047,884 | 5.8% | 199,600,000 |
| Dec-08 | - | - | - | 295,000 | 8,759,300 | 161,598,286 | 17.0% | 194,800,000 |
| Jan-09 | - | - | - | 277,000 | 4,552,700 | 157,741,212 | 15.6% | 187,000,000 |
| Feb-09 | - | - | - | 295,000 | 2,568,300 | 136,199,281 | 20.2% | 170,700,000 |
| Mar-09 | - | - | - | 361,000 | 5,615,800 | 149,231,377 | 30.6% | 215,100,000 |
| Apr-09 | - | - | - | 203,000 | 3,143,100 | 161,640,204 | 26.1% | 218,700,000 |
| May-09 | - | - | - | 228,000 | 2,748,300 | 231,635,783 | 45.1% | 422,000,000 |
| Jun-09 | - | - | - | 319,000 | 2,776,578 | 364,009,082 | 12.9% | 417,700,000 |
| Jul-09 | 179 | - | 179 | 268,000 | 3,548,147 | 439,988,575 | 22.6% | 568,300,000 |
| Aug-09 | - | - | - | 311,000 | 1,535,051 | 497,796,796 | 12.7% | 570,500,000 |
| Sep-09 | - | - | - | 262,000 | 3,482,027 | 483,809,175 | -4.5% | 463,000,000 |

# Table C-3 - Monthly Water Demands Past and Future for Average Conditions
## City of Loveland

| Date | Inside - Wholesale | Outside - Wholesale | Total Other | Hydrant | Ranch | Total Consupmtion | % Non-Revenue | Treated Water Demand |
|---|---|---|---|---|---|---|---|---|
| Oct-09 | - | - | - | 233,000 | 3,891,639 | 331,086,554 | -39.2% | 237,900,000 |
| Nov-09 | - | - | - | 239,000 | 5,155,060 | 160,125,390 | 9.8% | 177,500,000 |
| Dec-09 | - | - | - | 170,000 | 1,986,800 | 148,556,502 | 21.0% | 188,000,000 |
| Jan-10 | - | - | - | 188,000 | 2,680,860 | 154,777,132 | 18.1% | 189,000,000 |
| Feb-10 | 6,830 | - | 6,830 | 202,000 | 3,377,500 | 136,794,158 | 20.3% | 171,700,000 |
| Mar-10 | - | - | - | 289,000 | 4,325,250 | 140,560,625 | 27.5% | 193,900,000 |
| Apr-10 | - | - | - | 253,000 | 2,314,500 | 155,187,181 | 28.6% | 217,400,000 |
| May-10 | - | - | - | 227,000 | 2,155,900 | 199,382,698 | 39.5% | 329,700,000 |
| Jun-10 | 47,000 | 28,000 | 75,000 | 422,000 | 2,794,500 | 345,332,170 | 33.5% | 519,600,000 |
| Jul-10 | 214,000 | - | 214,000 | 379,000 | 2,555,465 | 521,005,337 | 13.3% | 601,200,000 |
| Aug-10 | 377,000 | 1,000 | 378,000 | 435,000 | 2,683,100 | 546,280,290 | 12.2% | 622,500,000 |
| Sep-10 | 319,000 | 40,000 | 359,000 | 363,000 | 1,476,600 | 587,561,564 | 0.9% | 593,100,000 |
| Oct-10 | 246,000 | - | 246,000 | 322,000 | 3,338,100 | 476,460,701 | -39.4% | 341,900,000 |
| Nov-10 | 14,000 | - | 14,000 | 305,000 | 3,794,200 | 199,181,715 | -6.0% | 187,900,000 |
| Dec-10 | 1,000 | 1,000 | 2,000 | 322,000 | 1,173,000 | 148,142,090 | 21.0% | 187,500,000 |
| Jan-11 | 1,000 | (1,000) | - | 362,000 | 3,704,300 | 153,347,985 | 19.5% | 190,600,000 |
| Feb-11 | 1,000 | - | 1,000 | 233,000 | 3,265,300 | 136,155,066 | 21.9% | 174,400,000 |
| Mar-11 | - | - | - | 273,000 | 1,705,845 | 137,466,512 | 30.2% | 196,900,000 |
| Apr-11 | 1,000 | - | 1,000 | 235,000 | 1,191,700 | 162,624,313 | 36.8% | 257,500,000 |
| May-11 | 10,000 | - | 10,000 | 316,000 | 301,200 | 251,172,759 | 31.2% | 365,300,000 |
| Jun-11 | 10,000 | - | 10,000 | 310,000 | 3,221,500 | 367,499,726 | 34.0% | 556,800,000 |
| Jul-11 | 224,000 | 15,675 | 239,675 | 343,000 | 3,634,000 | 516,176,991 | 18.1% | 630,200,000 |
| Aug-11 | 267,000 | 29,000 | 296,000 | 495,000 | 2,514,300 | 586,924,850 | 18.8% | 722,500,000 |
| Sep-11 | 447,000 | - | 447,000 | 298,000 | 3,250,300 | 610,174,712 | -19.5% | 510,800,000 |
| Oct-11 | 200,000 | 125 | 200,125 | 326,000 | 2,284,700 | 434,606,563 | -30.4% | 333,200,000 |
| Nov-11 | 13,000 | - | 13,000 | 198,000 | 1,847,200 | 193,251,718 | 2.8% | 198,805,395 |
| Dec-11 | 3,000 | - | 3,000 | 195,000 | 984,714 | 153,365,878 | 20.0% | 191,717,971 |
| Jan-12 | | | - | 275,000 | 1,992,953 | 154,334,074 | 21.7% | 197,029,234 |
| Feb-12 | | | 3,915 | 217,500 | 1,737,004 | 137,151,305 | 22.9% | 177,828,457 |
| Mar-12 | | | - | 281,000 | 2,369,820 | 142,561,033 | 29.8% | 202,934,286 |
| Apr-12 | | | 500 | 244,000 | 2,172,420 | 159,815,425 | 33.1% | 239,017,485 |
| May-12 | | | 5,000 | 271,500 | 2,035,969 | 252,029,307 | 39.1% | 414,080,611 |
| Jun-12 | | | 42,500 | 366,000 | 2,467,583 | 383,288,247 | 25.8% | 516,830,018 |
| Jul-12 | | | 226,838 | 361,000 | 2,374,947 | 517,401,915 | 16.3% | 618,319,433 |
| Aug-12 | | | 337,000 | 465,000 | 2,557,424 | 584,324,118 | 5.4% | 617,464,248 |
| Sep-12 | | | 403,000 | 330,500 | 2,506,171 | 542,081,277 | -7.4% | 504,901,399 |
| Oct-12 | | | 223,063 | 324,000 | 2,819,600 | 403,963,350 | -30.9% | 308,707,252 |
| Nov-12 | | | 13,500 | 251,500 | 2,621,787 | 184,829,457 | 2.8% | 190,141,095 |
| Dec-12 | | | 2,500 | 258,500 | 1,740,999 | 152,191,233 | 20.0% | 190,249,583 |
| Jan-13 | | | - | 275,000 | 2,575,459 | 158,804,272 | 21.7% | 202,736,072 |
| Feb-13 | | | 3,915 | 217,500 | 2,244,700 | 141,109,189 | 22.9% | 182,960,194 |
| Mar-13 | | | - | 281,000 | 3,062,478 | 146,824,967 | 29.8% | 209,003,956 |
| Apr-13 | | | 500 | 244,000 | 2,807,381 | 164,469,962 | 33.1% | 245,978,739 |
| May-13 | | | 5,000 | 271,500 | 2,631,048 | 259,008,780 | 39.1% | 425,547,787 |
| Jun-13 | | | 42,500 | 366,000 | 3,188,815 | 393,715,544 | 25.8% | 530,890,298 |
| Jul-13 | | | 226,838 | 361,000 | 3,069,103 | 531,169,125 | 16.3% | 634,771,891 |
| Aug-13 | | | 337,000 | 465,000 | 3,304,916 | 599,846,481 | 5.4% | 633,866,966 |
| Sep-13 | | | 403,000 | 330,500 | 3,238,682 | 556,546,119 | -7.4% | 518,374,137 |
| Oct-13 | | | 223,063 | 324,000 | 3,643,721 | 415,022,073 | -30.9% | 317,158,286 |
| Nov-13 | | | 13,500 | 251,500 | 3,388,090 | 190,278,225 | 2.8% | 195,746,449 |
| Dec-13 | | | 2,500 | 258,500 | 2,249,863 | 156,537,475 | 20.0% | 195,682,687 |
| Jan-14 | | | - | 275,000 | 3,188,986 | 162,227,448 | 21.7% | 207,106,239 |
| Feb-14 | | | 3,915 | 217,500 | 2,779,433 | 144,137,386 | 22.9% | 186,886,511 |
| Mar-14 | | | - | 281,000 | 3,792,023 | 150,135,487 | 29.8% | 213,716,449 |
| Apr-14 | | | 500 | 244,000 | 3,476,156 | 168,043,700 | 33.1% | 251,323,567 |
| May-14 | | | 5,000 | 271,500 | 3,257,817 | 264,249,574 | 39.1% | 434,158,339 |
| Jun-14 | | | 42,500 | 366,000 | 3,948,456 | 401,489,794 | 25.8% | 541,373,181 |

# Table C-3 - Monthly Water Demands Past and Future for Average Conditions
## City of Loveland

| Date | Inside - Wholesale | Outside - Wholesale | Total Other | Hydrant | Ranch | Total Consupmtion | % Non-Revenue | Treated Water Demand |
|---|---|---|---|---|---|---|---|---|
| Jul-14 | | | 226,838 | 361,000 | 3,800,226 | 541,348,192 | 16.3% | 646,936,352 |
| Aug-14 | | | 337,000 | 465,000 | 4,092,214 | 611,311,634 | 5.4% | 645,982,369 |
| Sep-14 | | | 403,000 | 330,500 | 4,010,202 | 567,242,046 | -7.4% | 528,336,459 |
| Oct-14 | | | 223,063 | 324,000 | 4,511,730 | 423,286,667 | -30.9% | 323,474,058 |
| Nov-14 | | | 13,500 | 251,500 | 4,195,202 | 194,469,371 | 2.8% | 200,058,041 |
| Dec-14 | | | 2,500 | 258,500 | 2,785,826 | 159,846,726 | 20.0% | 199,819,480 |
| Jan-15 | | | - | 275,000 | 3,783,476 | 165,835,656 | 21.7% | 211,712,626 |
| Feb-15 | | | 3,915 | 217,500 | 3,297,574 | 147,330,095 | 22.9% | 191,026,133 |
| Mar-15 | | | - | 281,000 | 4,498,931 | 153,610,829 | 29.8% | 218,663,567 |
| Apr-15 | | | 500 | 244,000 | 4,124,180 | 171,807,680 | 33.1% | 256,952,916 |
| May-15 | | | 5,000 | 271,500 | 3,865,139 | 269,806,045 | 39.1% | 443,287,543 |
| Jun-15 | | | 42,500 | 366,000 | 4,684,526 | 409,749,956 | 25.8% | 552,511,272 |
| Jul-15 | | | 226,838 | 361,000 | 4,508,663 | 552,190,793 | 16.3% | 659,893,766 |
| Aug-15 | | | 337,000 | 465,000 | 4,855,084 | 623,527,908 | 5.4% | 658,891,493 |
| Sep-15 | | | 403,000 | 330,500 | 4,757,783 | 578,634,859 | -7.4% | 538,947,870 |
| Oct-15 | | | 223,063 | 324,000 | 5,352,805 | 432,061,554 | -30.9% | 330,179,793 |
| Nov-15 | | | 13,500 | 251,500 | 4,977,271 | 198,881,262 | 2.8% | 204,596,721 |
| Dec-15 | | | 2,500 | 258,500 | 3,305,160 | 163,340,775 | 20.0% | 204,187,283 |
| Jan-16 | | | - | 275,000 | 4,121,072 | 169,400,944 | 21.7% | 216,264,220 |
| Feb-16 | | | 3,915 | 217,500 | 3,591,814 | 150,488,796 | 22.9% | 195,121,661 |
| Mar-16 | | | - | 281,000 | 4,900,365 | 156,977,258 | 29.8% | 223,455,647 |
| Apr-16 | | | 500 | 244,000 | 4,492,177 | 175,512,864 | 33.1% | 262,494,332 |
| May-16 | | | 5,000 | 271,500 | 4,210,021 | 275,451,467 | 39.1% | 452,562,891 |
| Jun-16 | | | 42,500 | 366,000 | 5,102,522 | 418,226,253 | 25.8% | 563,940,803 |
| Jul-16 | | | 226,838 | 361,000 | 4,910,966 | 563,446,786 | 16.3% | 673,345,202 |
| Aug-16 | | | 337,000 | 465,000 | 5,288,298 | 636,227,718 | 5.4% | 672,311,577 |
| Sep-16 | | | 403,000 | 330,500 | 5,182,315 | 590,460,435 | -7.4% | 549,962,362 |
| Oct-16 | | | 223,063 | 324,000 | 5,830,431 | 441,036,291 | -30.9% | 337,038,252 |
| Nov-16 | | | 13,500 | 251,500 | 5,421,388 | 203,212,918 | 2.8% | 209,052,861 |
| Dec-16 | | | 2,500 | 258,500 | 3,600,076 | 166,821,611 | 20.0% | 208,538,569 |
| Jan-17 | | | - | 275,000 | 4,121,072 | 172,696,417 | 21.7% | 220,471,357 |
| Feb-17 | | | 3,915 | 217,500 | 3,591,814 | 153,413,412 | 22.9% | 198,913,676 |
| Mar-17 | | | - | 281,000 | 4,900,365 | 160,004,517 | 29.8% | 227,764,921 |
| Apr-17 | | | 500 | 244,000 | 4,492,177 | 178,920,132 | 33.1% | 267,590,190 |
| May-17 | | | 5,000 | 271,500 | 4,210,021 | 280,863,317 | 39.1% | 461,454,485 |
| Jun-17 | | | 42,500 | 366,000 | 5,102,522 | 426,453,779 | 25.8% | 575,034,889 |
| Jul-17 | | | 226,838 | 361,000 | 4,910,966 | 574,528,403 | 16.3% | 686,588,251 |
| Aug-17 | | | 337,000 | 465,000 | 5,288,298 | 648,751,913 | 5.4% | 685,546,085 |
| Sep-17 | | | 403,000 | 330,500 | 5,182,315 | 602,100,901 | -7.4% | 560,804,440 |
| Oct-17 | | | 223,063 | 324,000 | 5,830,431 | 449,711,842 | -30.9% | 343,668,075 |
| Nov-17 | | | 13,500 | 251,500 | 5,421,388 | 207,182,096 | 2.8% | 213,136,105 |
| Dec-17 | | | 2,500 | 258,500 | 3,600,076 | 170,074,436 | 20.0% | 212,604,826 |
| Jan-18 | | | - | 275,000 | 3,948,668 | 175,728,469 | 21.7% | 224,342,199 |
| Feb-18 | | | 3,915 | 217,500 | 3,441,551 | 156,106,990 | 22.9% | 202,406,132 |
| Mar-18 | | | - | 281,000 | 4,695,360 | 162,743,160 | 29.8% | 231,663,354 |
| Apr-18 | | | 500 | 244,000 | 4,304,248 | 182,045,366 | 33.1% | 272,264,242 |
| May-18 | | | 5,000 | 271,500 | 4,033,896 | 285,949,572 | 39.1% | 469,811,130 |
| Jun-18 | | | 42,500 | 366,000 | 4,889,059 | 434,240,606 | 25.8% | 585,534,730 |
| Jul-18 | | | 226,838 | 361,000 | 4,705,517 | 585,098,507 | 16.3% | 699,220,019 |
| Aug-18 | | | 337,000 | 465,000 | 5,067,063 | 660,708,966 | 5.4% | 698,181,286 |
| Sep-18 | | | 403,000 | 330,500 | 4,965,514 | 613,203,067 | -7.4% | 571,145,139 |
| Oct-18 | | | 223,063 | 324,000 | 5,586,516 | 457,903,867 | -30.9% | 349,928,390 |
| Nov-18 | | | 13,500 | 251,500 | 5,194,585 | 210,814,846 | 2.8% | 216,873,253 |
| Dec-18 | | | 2,500 | 258,500 | 3,449,467 | 173,086,813 | 20.0% | 216,370,505 |
| Jan-19 | | | - | 275,000 | 3,783,476 | 178,831,823 | 21.7% | 228,304,068 |
| Feb-19 | | | 3,915 | 217,500 | 3,297,574 | 158,863,731 | 22.9% | 205,980,483 |
| Mar-19 | | | - | 281,000 | 4,498,931 | 165,549,253 | 29.8% | 235,657,800 |

## Table C-3 - Monthly Water Demands Past and Future for Average Conditions
## City of Loveland

| Date | Inside - Wholesale | Outside - Wholesale | Total Other | Hydrant | Ranch | Total Consupmtion | % Non-Revenue | Treated Water Demand |
|---|---|---|---|---|---|---|---|---|
| Apr-19 | | | 500 | 244,000 | 4,124,180 | 185,244,725 | 33.1% | 277,049,154 |
| May-19 | | | 5,000 | 271,500 | 3,865,139 | 291,148,442 | 39.1% | 478,352,801 |
| Jun-19 | | | 42,500 | 366,000 | 4,684,526 | 442,196,369 | 25.8% | 596,262,367 |
| Jul-19 | | | 226,838 | 361,000 | 4,508,663 | 595,892,716 | 16.3% | 712,119,603 |
| Aug-19 | | | 337,000 | 465,000 | 4,855,084 | 672,918,840 | 5.4% | 711,083,648 |
| Sep-19 | | | 403,000 | 330,500 | 4,757,783 | 624,540,683 | -7.4% | 581,705,138 |
| Oct-19 | | | 223,063 | 324,000 | 5,352,805 | 466,274,816 | -30.9% | 356,325,437 |
| Nov-19 | | | 13,500 | 251,500 | 4,977,271 | 214,534,276 | 2.8% | 220,699,572 |
| Dec-19 | | | 2,500 | 258,500 | 3,305,160 | 176,168,750 | 20.0% | 220,223,140 |
| Jan-20 | | | - | 275,000 | 3,948,668 | 182,330,930 | 21.7% | 232,771,173 |
| Feb-20 | | | 3,915 | 217,500 | 3,441,551 | 161,966,439 | 22.9% | 210,003,411 |
| Mar-20 | | | - | 281,000 | 4,695,360 | 168,808,254 | 29.8% | 240,296,958 |
| Apr-20 | | | 500 | 244,000 | 4,304,248 | 188,871,807 | 33.1% | 282,473,762 |
| May-20 | | | 5,000 | 271,500 | 4,033,896 | 296,792,180 | 39.1% | 487,625,383 |
| Jun-20 | | | 42,500 | 366,000 | 4,889,059 | 450,724,403 | 25.8% | 607,761,661 |
| Jul-20 | | | 226,838 | 361,000 | 4,705,517 | 607,300,456 | 16.3% | 725,752,384 |
| Aug-20 | | | 337,000 | 465,000 | 5,067,063 | 685,801,111 | 5.4% | 724,696,540 |
| Sep-20 | | | 403,000 | 330,500 | 4,965,514 | 636,524,667 | -7.4% | 592,867,174 |
| Oct-20 | | | 223,063 | 324,000 | 5,586,516 | 475,285,279 | -30.9% | 363,211,199 |
| Nov-20 | | | 13,500 | 251,500 | 5,194,585 | 218,767,069 | 2.8% | 225,054,008 |
| Dec-20 | | | 2,500 | 258,500 | 3,449,467 | 179,603,827 | 20.0% | 224,517,224 |

# Table C-4 - Monthly Water Demands Past and Future for Above Average Conditions
## City of Loveland

| Date | Inside Residential | Inside Multi-Family | Inside Irrigation | Inside Residential Total SF+ MF | Outside Residential | Outside Multi-Family | Outside Irrigation | Outside Res - Special Base | Outside Residential Total SF+ MF |
|---|---|---|---|---|---|---|---|---|---|
| Jan-05 | 109,547,839 | - | - | 109,547,839 | 8,390,000 | | - | - | 8,390,000 |
| Feb-05 | 91,946,900 | - | - | 91,946,900 | 6,731,000 | | - | - | 6,731,000 |
| Mar-05 | 95,470,039 | - | - | 95,470,039 | 7,029,100 | | - | - | 7,029,100 |
| Apr-05 | 121,536,723 | - | - | 121,536,723 | 7,677,600 | | - | - | 7,677,600 |
| May-05 | 160,891,579 | - | - | 160,891,579 | 9,462,300 | | - | - | 9,462,300 |
| Jun-05 | 279,120,014 | - | - | 279,120,014 | 13,130,000 | | - | - | 13,130,000 |
| Jul-05 | 424,146,200 | - | - | 424,146,200 | 18,902,000 | | - | - | 18,902,000 |
| Aug-05 | 425,802,200 | - | - | 425,802,200 | 18,743,000 | | - | - | 18,743,000 |
| Sep-05 | 394,132,748 | - | - | 394,132,748 | 17,333,000 | | - | - | 17,333,000 |
| Oct-05 | 279,788,600 | - | - | 279,788,600 | 11,851,800 | | - | - | 11,851,800 |
| Nov-05 | 128,564,600 | - | - | 128,564,600 | 6,710,200 | | - | - | 6,710,200 |
| Dec-05 | 112,596,900 | - | - | 112,596,900 | 7,637,100 | | - | - | 7,637,100 |
| Jan-06 | 117,025,547 | - | - | 117,025,547 | 8,404,900 | | - | - | 8,404,900 |
| Feb-06 | 103,678,953 | - | - | 103,678,953 | 7,021,000 | | - | - | 7,021,000 |
| Mar-06 | 102,035,487 | - | - | 102,035,487 | 7,009,000 | | - | - | 7,009,000 |
| Apr-06 | 138,511,159 | - | - | 138,511,159 | 8,567,000 | | - | - | 8,567,000 |
| May-06 | 293,578,622 | - | - | 293,578,622 | 13,179,800 | | - | - | 13,179,800 |
| Jun-06 | 496,795,889 | - | - | 496,795,889 | 21,564,200 | | - | - | 21,564,200 |
| Jul-06 | 525,171,479 | - | - | 525,171,479 | 23,378,000 | | - | - | 23,378,000 |
| Aug-06 | 477,540,475 | - | - | 477,540,475 | 19,200,600 | | - | - | 19,200,600 |
| Sep-06 | 404,186,500 | - | - | 404,186,500 | 16,057,400 | | - | - | 16,057,400 |
| Oct-06 | 279,511,911 | - | - | 279,511,911 | 11,850,000 | | - | - | 11,850,000 |
| Nov-06 | 123,457,000 | - | - | 123,457,000 | 6,932,914 | | - | - | 6,932,914 |
| Dec-06 | 125,055,758 | - | - | 125,055,758 | 6,958,428 | | - | - | 6,958,428 |
| Jan-07 | 103,665,559 | - | - | 103,665,559 | 7,801,189 | | - | 16,000 | 7,817,189 |
| Feb-07 | 100,225,253 | - | - | 100,225,253 | 6,533,383 | | - | 10,000 | 6,543,383 |
| Mar-07 | 99,508,230 | - | - | 99,508,230 | 6,596,000 | | - | 43,000 | 6,639,000 |
| Apr-07 | 115,275,789 | - | - | 115,275,789 | 7,256,000 | | - | 16,000 | 7,272,000 |
| May-07 | 178,867,000 | - | - | 178,867,000 | 9,201,800 | | - | 58,000 | 9,259,800 |
| Jun-07 | 363,240,631 | - | - | 363,240,631 | 15,624,200 | | - | 59,000 | 15,683,200 |
| Jul-07 | 550,764,689 | - | - | 550,764,689 | 22,827,000 | | - | 171,000 | 22,998,000 |
| Aug-07 | 493,982,153 | - | - | 493,982,153 | 18,844,000 | | - | 223,000 | 19,067,000 |
| Sep-07 | 432,263,247 | - | - | 432,263,247 | 16,830,000 | | - | 443,000 | 17,273,000 |
| Oct-07 | 293,196,700 | - | - | 293,196,700 | 11,589,000 | | - | 261,000 | 11,850,000 |
| Nov-07 | 142,514,904 | - | - | 142,514,904 | 7,512,000 | | - | 118,000 | 7,630,000 |
| Dec-07 | 116,274,289 | - | - | 116,274,289 | 7,198,000 | | - | 11,000 | 7,209,000 |
| Jan-08 | 90,773,689 | 22,654,400 | 93,000 | 113,521,089 | 6,864,000 | 244,000 | 1,000 | 19,000 | 7,128,000 |
| Feb-08 | 80,380,636 | 21,288,000 | 35,000 | 101,703,636 | 6,330,000 | 230,000 | 1,000 | 12,000 | 6,573,000 |
| Mar-08 | 83,119,897 | 21,065,000 | 49,000 | 104,233,897 | 6,354,000 | 231,000 | 58,000 | 21,000 | 6,664,000 |
| Apr-08 | 91,141,367 | 21,638,200 | 1,363,000 | 114,142,567 | 7,106,700 | 244,000 | 118,000 | 33,000 | 7,501,700 |
| May-08 | 194,438,100 | 28,272,300 | 31,814,000 | 254,524,400 | 10,956,300 | 355,000 | 588,000 | 94,000 | 11,993,300 |
| Jun-08 | 245,541,100 | 34,400,000 | 74,413,000 | 354,354,100 | 13,763,000 | 444,000 | 1,157,000 | 95,000 | 15,459,000 |
| Jul-08 | 335,981,000 | 39,914,000 | 96,411,500 | 472,306,500 | 18,422,000 | 530,000 | 1,668,000 | 227,000 | 20,847,000 |
| Aug-08 | 373,924,800 | 49,564,000 | 131,737,000 | 555,225,800 | 20,187,000 | 662,000 | 1,470,000 | 181,000 | 22,500,000 |
| Sep-08 | 242,903,000 | 38,169,000 | 89,143,485 | 370,215,485 | 14,858,000 | 400,700 | 860,000 | 78,000 | 16,196,700 |
| Oct-08 | 186,940,500 | 32,226,000 | 61,023,827 | 280,190,327 | 10,003,000 | 311,000 | 934,000 | 180,000 | 11,428,000 |
| Nov-08 | 100,178,000 | 22,921,000 | 11,371,809 | 134,470,809 | 6,895,000 | 220,000 | 51,000 | 48,000 | 7,214,000 |
| Dec-08 | 90,803,000 | 21,571,000 | 439,343 | 112,813,343 | 7,074,000 | 239,000 | 1,000 | 12,000 | 7,326,000 |
| Jan-09 | 91,414,696 | 22,682,000 | (38,000) | 114,058,696 | 7,097,000 | 234,000 | 2,000 | 19,000 | 7,352,000 |
| Feb-09 | 79,107,256 | 20,625,000 | 1,000 | 99,733,256 | 6,145,000 | 198,000 | 7,000 | 14,000 | 6,364,000 |
| Mar-09 | 87,262,000 | 20,671,000 | 77,505 | 108,010,505 | 7,074,000 | 206,000 | 103,000 | 17,000 | 7,400,000 |
| Apr-09 | 98,029,000 | 22,648,440 | 1,149,554 | 121,826,994 | 7,138,000 | 246,000 | 26,000 | 16,000 | 7,426,000 |
| May-09 | 134,661,000 | 25,045,000 | 20,549,518 | 180,255,518 | 9,038,000 | 231,000 | 138,000 | 87,000 | 9,494,000 |
| Jun-09 | 196,335,000 | 31,328,000 | 57,576,486 | 285,239,486 | 11,347,000 | 281,000 | 556,000 | 224,000 | 12,408,000 |
| Jul-09 | 241,904,000 | 34,540,000 | 73,796,899 | 350,240,899 | 13,360,026 | 290,000 | 820,000 | 117,000 | 14,587,026 |
| Aug-09 | 256,740,000 | 40,609,000 | 94,380,799 | 391,729,799 | 14,110,000 | 389,000 | 975,000 | 87,000 | 15,561,000 |
| Sep-09 | 257,340,000 | 38,203,000 | 88,816,521 | 384,359,521 | 13,858,000 | 443,000 | 998,000 | 86,000 | 15,385,000 |

# Table C-4 - Monthly Water Demands Past and Future for Above Average Conditions
## City of Loveland

| Date | Inside Residential | Inside Multi-Family | Inside Irrigation | Inside Residential Total SF+ MF | Outside Residential | Outside Multi-Family | Outside Irrigation | Outside Res - Special Base | Outside Residential Total SF+ MF |
|---|---|---|---|---|---|---|---|---|---|
| Oct-09 | 165,580,000 | 32,517,000 | 57,633,397 | 255,730,397 | 9,455,000 | 327,000 | 486,000 | 36,000 | 10,304,000 |
| Nov-09 | 84,864,000 | 21,626,000 | 8,109,374 | 114,599,374 | 6,412,000 | 181,000 | 4,000 | 9,000 | 6,606,000 |
| Dec-09 | 87,938,000 | 22,192,000 | 93,420 | 110,223,420 | 7,190,000 | 203,000 | 4,000 | 16,000 | 7,413,000 |
| Jan-10 | 89,909,000 | 24,246,207 | 1,000 | 114,156,207 | 6,886,000 | 197,000 | 3,000 | 19,000 | 7,105,000 |
| Feb-10 | 79,070,000 | 20,040,415 | 1,000 | 99,111,415 | 5,748,000 | 848,000 | 3,000 | 58,000 | 6,657,000 |
| Mar-10 | 79,753,000 | 20,994,000 | 1,000 | 100,748,000 | 5,812,000 | 981,000 | 2,000 | 20,000 | 6,815,000 |
| Apr-10 | 91,306,741 | 21,891,000 | 1,972,756 | 115,170,497 | 6,476,000 | 931,000 | 9,000 | 27,000 | 7,443,000 |
| May-10 | 111,989,000 | 23,348,066 | 14,585,668 | 149,922,734 | 6,948,000 | 1,018,000 | 7,000 | 61,000 | 8,034,000 |
| Jun-10 | 197,113,000 | 30,122,000 | 46,640,249 | 273,875,249 | 10,789,000 | 1,496,500 | 583,000 | 110,000 | 12,978,500 |
| Jul-10 | 291,034,000 | 40,181,000 | 91,094,682 | 422,309,682 | 14,434,000 | 1,496,500 | 603,000 | 118,000 | 16,651,500 |
| Aug-10 | 290,154,456 | 42,380,000 | 102,858,870 | 435,393,326 | 15,188,708 | 2,171,000 | 730,000 | 135,000 | 18,224,708 |
| Sep-10 | 322,030,059 | 44,587,606 | 109,023,407 | 475,641,072 | 15,901,000 | 2,259,000 | 817,000 | 87,000 | 19,064,000 |
| Oct-10 | 242,319,538 | 40,218,092 | 92,436,758 | 374,974,388 | 12,435,000 | 1,749,000 | 1,076,000 | 252,000 | 15,512,000 |
| Nov-10 | 106,406,559 | 23,847,000 | 15,873,137 | 146,126,696 | 6,543,000 | 976,000 | 30,000 | 3,000 | 7,552,000 |
| Dec-10 | 86,848,200 | 21,987,500 | 40,123 | 108,875,823 | 6,565,000 | 951,000 | 6,000 | 92,000 | 7,614,000 |
| Jan-11 | 88,431,400 | 23,179,806 | 2,000 | 111,613,206 | 6,290,000 | 1,121,000 | 3,000 | 40,000 | 7,454,000 |
| Feb-11 | 76,327,935 | 21,297,182 | - | 97,625,117 | 5,915,000 | 1,147,000 | 2,000 | 81,000 | 7,145,000 |
| Mar-11 | 77,550,044 | 21,559,143 | 3,700 | 99,112,887 | 4,387,851 | 2,315,000 | 3,000 | 34,000 | 6,739,851 |
| Apr-11 | 98,181,392 | 22,716,268 | 3,415,776 | 124,313,436 | 5,373,123 | 2,458,000 | 7,000 | 45,000 | 7,883,123 |
| May-11 | 143,207,466 | 27,613,892 | 29,770,595 | 200,591,953 | 6,672,553 | 2,517,000 | 81,000 | 98,000 | 9,368,553 |
| Jun-11 | 199,577,996 | 34,673,193 | 54,373,825 | 288,625,014 | 8,976,000 | 3,418,000 | 405,000 | 131,000 | 12,930,000 |
| Jul-11 | 284,351,642 | 43,333,408 | 84,674,358 | 412,359,408 | 12,417,255 | 3,821,000 | 577,000 | 154,000 | 16,969,255 |
| Aug-11 | 310,674,227 | 47,265,797 | 105,545,898 | 463,485,922 | 13,653,000 | 4,540,000 | 781,000 | 173,000 | 19,147,000 |
| Sep-11 | 324,823,276 | 48,787,417 | 112,669,890 | 486,280,583 | 12,825,221 | 4,829,000 | 778,000 | 171,000 | 18,603,221 |
| Oct-11 | 217,096,857 | 39,565,686 | 78,098,138 | 334,760,681 | 9,033,270 | 3,580,000 | 564,000 | 115,000 | 13,292,270 |
| Nov-11 | 101,741,384 | 24,849,245 | 16,782,581 | 143,373,210 | 4,887,588 | 2,144,000 | 17,000 | 21,000 | 7,069,588 |
| Dec-11 | 88,035,135 | 24,819,734 | 158,510 | 113,013,379 | 4,822,685 | 2,760,436 | 11,000 | 28,000 | 7,622,121 |
| Jan-12 | 91,971,580 | 24,078,211 | 70,469 | 116,120,259 | 7,130,087 | 897,456 | 3,207 | 34,750 | 8,065,500 |
| Feb-12 | 80,912,068 | 21,544,549 | 26,582 | 102,483,199 | 6,290,034 | 1,074,466 | 5,880 | 75,205 | 7,445,585 |
| Mar-12 | 86,671,725 | 21,568,001 | 70,275 | 108,310,001 | 7,043,996 | 1,922,115 | 90,138 | 30,528 | 9,086,777 |
| Apr-12 | 99,230,346 | 22,900,594 | 3,014,975 | 125,145,915 | 7,348,755 | 2,013,288 | 92,694 | 42,343 | 9,497,081 |
| May-12 | 181,989,124 | 28,527,114 | 32,430,753 | 242,946,991 | 10,406,548 | 2,079,907 | 465,384 | 101,633 | 13,053,471 |
| Jun-12 | 235,016,235 | 35,097,917 | 70,382,587 | 340,496,739 | 13,193,952 | 2,852,944 | 1,005,830 | 197,914 | 17,250,639 |
| Jul-12 | 328,788,928 | 43,399,302 | 96,802,255 | 468,990,485 | 17,299,251 | 3,145,516 | 1,429,382 | 205,620 | 22,079,770 |
| Aug-12 | 359,342,753 | 49,416,805 | 125,501,513 | 534,261,071 | 18,789,352 | 3,842,450 | 1,326,590 | 186,973 | 24,145,366 |
| Sep-12 | 331,497,599 | 47,921,786 | 113,301,964 | 492,721,349 | 15,680,938 | 4,068,683 | 959,123 | 149,352 | 20,858,097 |
| Oct-12 | 238,083,628 | 40,726,277 | 88,967,307 | 367,777,211 | 11,753,226 | 3,038,551 | 1,049,912 | 237,860 | 16,079,548 |
| Nov-12 | 108,281,615 | 24,830,623 | 17,183,412 | 150,295,651 | 7,072,667 | 1,798,784 | 45,542 | 40,206 | 8,957,198 |
| Dec-12 | 90,632,748 | 24,261,532 | 362,729 | 115,257,009 | 7,507,279 | 2,236,967 | 9,703 | 74,292 | 9,828,240 |
| Jan-13 | 94,454,812 | 24,728,322 | 72,372 | 119,255,506 | 7,130,087 | 897,456 | 3,207 | 34,750 | 8,065,500 |
| Feb-13 | 83,096,694 | 22,126,252 | 27,299 | 105,250,246 | 6,290,034 | 1,074,466 | 5,880 | 75,205 | 7,445,585 |
| Mar-13 | 89,011,862 | 22,150,337 | 72,172 | 111,234,371 | 7,043,996 | 1,922,115 | 90,138 | 30,528 | 9,086,777 |
| Apr-13 | 101,909,565 | 23,518,910 | 3,096,379 | 128,524,854 | 7,348,755 | 2,013,288 | 92,694 | 42,343 | 9,497,081 |
| May-13 | 186,902,830 | 29,297,347 | 33,306,384 | 249,506,560 | 10,406,548 | 2,079,907 | 465,384 | 101,633 | 13,053,471 |
| Jun-13 | 241,361,673 | 36,045,560 | 72,282,917 | 349,690,151 | 13,193,952 | 2,852,944 | 1,005,830 | 197,914 | 17,250,639 |
| Jul-13 | 337,666,229 | 44,571,083 | 99,415,916 | 481,653,228 | 17,299,251 | 3,145,516 | 1,429,382 | 205,620 | 22,079,770 |
| Aug-13 | 369,045,008 | 50,751,059 | 128,890,054 | 548,686,120 | 18,789,352 | 3,842,450 | 1,326,590 | 186,973 | 24,145,366 |
| Sep-13 | 340,448,034 | 49,215,674 | 116,361,117 | 506,024,825 | 15,680,938 | 4,068,683 | 959,123 | 149,352 | 20,858,097 |
| Oct-13 | 244,511,886 | 41,825,886 | 91,369,424 | 377,707,196 | 11,753,226 | 3,038,551 | 1,049,912 | 237,860 | 16,079,548 |
| Nov-13 | 111,205,219 | 25,501,050 | 17,647,364 | 154,353,633 | 7,072,667 | 1,798,784 | 45,542 | 40,206 | 8,957,198 |
| Dec-13 | 93,079,832 | 24,916,593 | 372,523 | 118,368,948 | 7,507,279 | 2,236,967 | 9,703 | 74,292 | 9,828,240 |
| Jan-14 | 96,249,454 | 25,198,160 | 73,747 | 121,521,361 | 7,130,087 | 897,456 | 3,207 | 34,750 | 8,065,500 |
| Feb-14 | 84,675,531 | 22,546,651 | 27,818 | 107,250,000 | 6,290,034 | 1,074,466 | 5,880 | 75,205 | 7,445,585 |
| Mar-14 | 90,703,087 | 22,571,194 | 73,543 | 113,347,824 | 7,043,996 | 1,922,115 | 90,138 | 30,528 | 9,086,777 |
| Apr-14 | 103,845,847 | 23,965,769 | 3,155,211 | 130,966,827 | 7,348,755 | 2,013,288 | 92,694 | 42,343 | 9,497,081 |
| May-14 | 190,453,984 | 29,853,996 | 33,939,205 | 254,247,185 | 10,406,548 | 2,079,907 | 465,384 | 101,633 | 13,053,471 |
| Jun-14 | 245,947,545 | 36,730,426 | 73,656,293 | 356,334,264 | 13,193,952 | 2,852,944 | 1,005,830 | 197,914 | 17,250,639 |

# Table C-4 - Monthly Water Demands Past and Future for Above Average Conditions
## City of Loveland

| Date | Inside Residential | Inside Multi-Family | Inside Irrigation | Inside Residential Total SF+ MF | Outside Residential | Outside Multi-Family | Outside Irrigation | Outside Res - Special Base | Outside Residential Total SF+ MF |
|---|---|---|---|---|---|---|---|---|---|
| Jul-14 | 344,081,888 | 45,417,933 | 101,304,818 | 490,804,639 | 17,299,251 | 3,145,516 | 1,429,382 | 205,620 | 22,079,770 |
| Aug-14 | 376,056,863 | 51,715,329 | 131,338,965 | 559,111,156 | 18,789,352 | 3,842,450 | 1,326,590 | 186,973 | 24,145,366 |
| Sep-14 | 346,916,546 | 50,150,772 | 118,571,979 | 515,639,297 | 15,680,938 | 4,068,683 | 959,123 | 149,352 | 20,858,097 |
| Oct-14 | 249,157,611 | 42,620,578 | 93,105,443 | 384,883,633 | 11,753,226 | 3,038,551 | 1,049,912 | 237,860 | 16,079,548 |
| Nov-14 | 113,318,118 | 25,985,570 | 17,982,664 | 157,286,352 | 7,072,667 | 1,798,784 | 45,542 | 40,206 | 8,957,198 |
| Dec-14 | 94,848,349 | 25,390,008 | 379,601 | 120,617,958 | 7,507,279 | 2,236,967 | 9,703 | 74,292 | 9,828,240 |
| Jan-15 | 98,174,443 | 25,702,124 | 75,222 | 123,951,788 | 7,130,087 | 897,456 | 3,207 | 34,750 | 8,065,500 |
| Feb-15 | 86,369,042 | 22,997,584 | 28,374 | 109,395,000 | 6,290,034 | 1,074,466 | 5,880 | 75,205 | 7,445,585 |
| Mar-15 | 92,517,149 | 23,022,618 | 75,014 | 115,614,780 | 7,043,996 | 1,922,115 | 90,138 | 30,528 | 9,086,777 |
| Apr-15 | 105,922,764 | 24,445,084 | 3,218,315 | 133,586,163 | 7,348,755 | 2,013,288 | 92,694 | 42,343 | 9,497,081 |
| May-15 | 194,263,063 | 30,451,076 | 34,617,989 | 259,332,129 | 10,406,548 | 2,079,907 | 465,384 | 101,633 | 13,053,471 |
| Jun-15 | 250,866,496 | 37,465,034 | 75,129,418 | 363,460,949 | 13,193,952 | 2,852,944 | 1,005,830 | 197,914 | 17,250,639 |
| Jul-15 | 350,963,525 | 46,326,292 | 103,330,914 | 500,620,732 | 17,299,251 | 3,145,516 | 1,429,382 | 205,620 | 22,079,770 |
| Aug-15 | 383,578,000 | 52,749,636 | 133,965,744 | 570,293,380 | 18,789,352 | 3,842,450 | 1,326,590 | 186,973 | 24,145,366 |
| Sep-15 | 353,854,877 | 51,153,787 | 120,943,418 | 525,952,083 | 15,680,938 | 4,068,683 | 959,123 | 149,352 | 20,858,097 |
| Oct-15 | 254,140,764 | 43,472,990 | 94,967,552 | 392,581,305 | 11,753,226 | 3,038,551 | 1,049,912 | 237,860 | 16,079,548 |
| Nov-15 | 115,584,481 | 26,505,281 | 18,342,318 | 160,432,079 | 7,072,667 | 1,798,784 | 45,542 | 40,206 | 8,957,198 |
| Dec-15 | 96,745,316 | 25,897,808 | 387,193 | 123,030,318 | 7,507,279 | 2,236,967 | 9,703 | 74,292 | 9,828,240 |
| Jan-16 | 100,236,106 | 26,241,868 | 76,801 | 126,554,776 | 7,130,087 | 897,456 | 3,207 | 34,750 | 8,065,500 |
| Feb-16 | 88,182,792 | 23,480,533 | 28,970 | 111,692,295 | 6,290,034 | 1,074,466 | 5,880 | 75,205 | 7,445,585 |
| Mar-16 | 94,460,009 | 23,506,093 | 76,589 | 118,042,691 | 7,043,996 | 1,922,115 | 90,138 | 30,528 | 9,086,777 |
| Apr-16 | 108,147,142 | 24,958,431 | 3,285,899 | 136,391,473 | 7,348,755 | 2,013,288 | 92,694 | 42,343 | 9,497,081 |
| May-16 | 198,342,588 | 31,090,549 | 35,344,967 | 264,778,103 | 10,406,548 | 2,079,907 | 465,384 | 101,633 | 13,053,471 |
| Jun-16 | 256,134,693 | 38,251,800 | 76,707,136 | 371,093,629 | 13,193,952 | 2,852,944 | 1,005,830 | 197,914 | 17,250,639 |
| Jul-16 | 358,333,759 | 47,299,144 | 105,500,864 | 511,133,767 | 17,299,251 | 3,145,516 | 1,429,382 | 205,620 | 22,079,770 |
| Aug-16 | 391,633,138 | 53,857,378 | 136,779,025 | 582,269,541 | 18,789,352 | 3,842,450 | 1,326,590 | 186,973 | 24,145,366 |
| Sep-16 | 361,285,830 | 52,228,017 | 123,483,230 | 536,997,076 | 15,680,938 | 4,068,683 | 959,123 | 149,352 | 20,858,097 |
| Oct-16 | 259,477,720 | 44,385,922 | 96,961,871 | 400,825,513 | 11,753,226 | 3,038,551 | 1,049,912 | 237,860 | 16,079,548 |
| Nov-16 | 118,011,755 | 27,061,892 | 18,727,506 | 163,801,153 | 7,072,667 | 1,798,784 | 45,542 | 40,206 | 8,957,198 |
| Dec-16 | 98,776,968 | 26,441,662 | 395,324 | 125,613,954 | 7,507,279 | 2,236,967 | 9,703 | 74,292 | 9,828,240 |
| Jan-17 | 102,341,064 | 26,792,948 | 78,414 | 129,212,426 | 7,130,087 | 897,456 | 3,207 | 34,750 | 8,065,500 |
| Feb-17 | 90,034,630 | 23,973,624 | 29,579 | 114,037,833 | 6,290,034 | 1,074,466 | 5,880 | 75,205 | 7,445,585 |
| Mar-17 | 96,443,669 | 23,999,721 | 78,198 | 120,521,587 | 7,043,996 | 1,922,115 | 90,138 | 30,528 | 9,086,777 |
| Apr-17 | 110,418,232 | 25,482,558 | 3,354,903 | 139,255,694 | 7,348,755 | 2,013,288 | 92,694 | 42,343 | 9,497,081 |
| May-17 | 202,507,782 | 31,743,450 | 36,087,211 | 270,338,443 | 10,406,548 | 2,079,907 | 465,384 | 101,633 | 13,053,471 |
| Jun-17 | 261,513,521 | 39,055,088 | 78,317,986 | 378,886,595 | 13,193,952 | 2,852,944 | 1,005,830 | 197,914 | 17,250,639 |
| Jul-17 | 365,858,768 | 48,292,426 | 107,716,382 | 521,867,576 | 17,299,251 | 3,145,516 | 1,429,382 | 205,620 | 22,079,770 |
| Aug-17 | 399,857,434 | 54,988,383 | 139,651,384 | 594,497,201 | 18,789,352 | 3,842,450 | 1,326,590 | 186,973 | 24,145,366 |
| Sep-17 | 368,872,832 | 53,324,805 | 126,076,378 | 548,274,015 | 15,680,938 | 4,068,683 | 959,123 | 149,352 | 20,858,097 |
| Oct-17 | 264,926,752 | 45,318,027 | 98,998,070 | 409,242,849 | 11,753,226 | 3,038,551 | 1,049,912 | 237,860 | 16,079,548 |
| Nov-17 | 120,490,002 | 27,630,192 | 19,120,784 | 167,240,977 | 7,072,667 | 1,798,784 | 45,542 | 40,206 | 8,957,198 |
| Dec-17 | 100,851,284 | 26,996,937 | 403,626 | 128,251,847 | 7,507,279 | 2,236,967 | 9,703 | 74,292 | 9,828,240 |
| Jan-18 | 104,387,886 | 27,328,806 | 79,983 | 131,796,674 | 7,130,087 | 897,456 | 3,207 | 34,750 | 8,065,500 |
| Feb-18 | 91,835,323 | 24,453,097 | 30,170 | 116,318,590 | 6,290,034 | 1,074,466 | 5,880 | 75,205 | 7,445,585 |
| Mar-18 | 98,372,542 | 24,479,715 | 79,762 | 122,932,019 | 7,043,996 | 1,922,115 | 90,138 | 30,528 | 9,086,777 |
| Apr-18 | 112,626,597 | 25,992,209 | 3,422,001 | 142,040,807 | 7,348,755 | 2,013,288 | 92,694 | 42,343 | 9,497,081 |
| May-18 | 206,557,938 | 32,378,319 | 36,808,955 | 275,745,212 | 10,406,548 | 2,079,907 | 465,384 | 101,633 | 13,053,471 |
| Jun-18 | 266,743,791 | 39,836,190 | 79,884,346 | 386,464,327 | 13,193,952 | 2,852,944 | 1,005,830 | 197,914 | 17,250,639 |
| Jul-18 | 373,175,944 | 49,258,275 | 109,870,709 | 532,304,928 | 17,299,251 | 3,145,516 | 1,429,382 | 205,620 | 22,079,770 |
| Aug-18 | 407,854,583 | 56,088,151 | 142,444,412 | 606,387,145 | 18,789,352 | 3,842,450 | 1,326,590 | 186,973 | 24,145,366 |
| Sep-18 | 376,250,289 | 54,391,301 | 128,597,905 | 559,239,495 | 15,680,938 | 4,068,683 | 959,123 | 149,352 | 20,858,097 |
| Oct-18 | 270,225,287 | 46,224,387 | 100,978,031 | 417,427,705 | 11,753,226 | 3,038,551 | 1,049,912 | 237,860 | 16,079,548 |
| Nov-18 | 122,899,802 | 28,182,796 | 19,503,200 | 170,585,797 | 7,072,667 | 1,798,784 | 45,542 | 40,206 | 8,957,198 |
| Dec-18 | 102,868,310 | 27,536,876 | 411,698 | 130,816,884 | 7,507,279 | 2,236,967 | 9,703 | 74,292 | 9,828,240 |
| Jan-19 | 106,475,643 | 27,875,383 | 81,582 | 134,432,608 | 7,130,087 | 897,456 | 3,207 | 34,750 | 8,065,500 |
| Feb-19 | 93,672,029 | 24,942,159 | 30,774 | 118,644,962 | 6,290,034 | 1,074,466 | 5,880 | 75,205 | 7,445,585 |
| Mar-19 | 100,339,993 | 24,969,309 | 81,357 | 125,390,659 | 7,043,996 | 1,922,115 | 90,138 | 30,528 | 9,086,777 |

## Table C-4 - Monthly Water Demands Past and Future for Above Average Conditions
## City of Loveland

| Date | Inside Residential | Inside Multi-Family | Inside Irrigation | Inside Residential Total SF+ MF | Outside Residential | Outside Multi-Family | Outside Irrigation | Outside Res - Special Base | Outside Residential Total SF+ MF |
|---|---|---|---|---|---|---|---|---|---|
| Apr-19 | 114,879,129 | 26,512,054 | 3,490,441 | 144,881,624 | 7,348,755 | 2,013,288 | 92,694 | 42,343 | 9,497,081 |
| May-19 | 210,689,096 | 33,025,886 | 37,545,134 | 281,260,117 | 10,406,548 | 2,079,907 | 465,384 | 101,633 | 13,053,471 |
| Jun-19 | 272,078,667 | 40,632,914 | 81,482,033 | 394,193,613 | 13,193,952 | 2,852,944 | 1,005,830 | 197,914 | 17,250,639 |
| Jul-19 | 380,639,463 | 50,243,440 | 112,068,124 | 542,951,026 | 17,299,251 | 3,145,516 | 1,429,382 | 205,620 | 22,079,770 |
| Aug-19 | 416,011,674 | 57,209,914 | 145,293,300 | 618,514,888 | 18,789,352 | 3,842,450 | 1,326,590 | 186,973 | 24,145,366 |
| Sep-19 | 383,775,295 | 55,479,127 | 131,169,863 | 570,424,285 | 15,680,938 | 4,068,683 | 959,123 | 149,352 | 20,858,097 |
| Oct-19 | 275,629,792 | 47,148,875 | 102,997,592 | 425,776,260 | 11,753,226 | 3,038,551 | 1,049,912 | 237,860 | 16,079,548 |
| Nov-19 | 125,357,798 | 28,746,451 | 19,893,264 | 173,997,513 | 7,072,667 | 1,798,784 | 45,542 | 40,206 | 8,957,198 |
| Dec-19 | 104,925,676 | 28,087,614 | 419,932 | 133,433,222 | 7,507,279 | 2,236,967 | 9,703 | 74,292 | 9,828,240 |
| Jan-20 | 108,605,156 | 28,432,890 | 83,214 | 137,121,260 | 7,130,087 | 897,456 | 3,207 | 34,750 | 8,065,500 |
| Feb-20 | 95,545,470 | 25,441,002 | 31,389 | 121,017,861 | 6,290,034 | 1,074,466 | 5,880 | 75,205 | 7,445,585 |
| Mar-20 | 102,346,793 | 25,468,696 | 82,984 | 127,898,473 | 7,043,996 | 1,922,115 | 90,138 | 30,528 | 9,086,777 |
| Apr-20 | 117,176,711 | 27,042,295 | 3,560,250 | 147,779,256 | 7,348,755 | 2,013,288 | 92,694 | 42,343 | 9,497,081 |
| May-20 | 214,902,878 | 33,686,403 | 38,296,037 | 286,885,319 | 10,406,548 | 2,079,907 | 465,384 | 101,633 | 13,053,471 |
| Jun-20 | 277,520,241 | 41,445,572 | 83,111,673 | 402,077,486 | 13,193,952 | 2,852,944 | 1,005,830 | 197,914 | 17,250,639 |
| Jul-20 | 388,252,252 | 51,248,309 | 114,309,486 | 553,810,047 | 17,299,251 | 3,145,516 | 1,429,382 | 205,620 | 22,079,770 |
| Aug-20 | 424,331,908 | 58,354,112 | 148,199,166 | 630,885,186 | 18,789,352 | 3,842,450 | 1,326,590 | 186,973 | 24,145,366 |
| Sep-20 | 391,450,801 | 56,588,710 | 133,793,261 | 581,832,771 | 15,680,938 | 4,068,683 | 959,123 | 149,352 | 20,858,097 |
| Oct-20 | 281,142,388 | 48,091,853 | 105,057,544 | 434,291,785 | 11,753,226 | 3,038,551 | 1,049,912 | 237,860 | 16,079,548 |
| Nov-20 | 127,864,954 | 29,321,380 | 20,291,129 | 177,477,463 | 7,072,667 | 1,798,784 | 45,542 | 40,206 | 8,957,198 |
| Dec-20 | 107,024,190 | 28,649,366 | 428,331 | 136,101,886 | 7,507,279 | 2,236,967 | 9,703 | 74,292 | 9,828,240 |

# Table C-4 - Monthly Water Demands Past and Future for Above Average Conditions
## City of Loveland

| Date | Total Residential | Inside Commercial | Outside Commercial | Outside Com - Special Base | Outside Com Total | Total Commercial | Inside - City | Outside - City | City Uses |
|---|---|---|---|---|---|---|---|---|---|
| Jan-05 | | 23,395,700 | 1,428,340 | - | 1,428,340 | 24,824,040 | 860,000 | - | 860,000 |
| Feb-05 | | 20,140,400 | 1,267,960 | - | 1,267,960 | 21,408,360 | 970,000 | - | 970,000 |
| Mar-05 | | 20,826,600 | 1,208,110 | - | 1,208,110 | 22,034,710 | 729,000 | - | 729,000 |
| Apr-05 | | 22,561,800 | 1,247,040 | - | 1,247,040 | 23,808,840 | 960,000 | - | 960,000 |
| May-05 | | 28,669,600 | 1,367,240 | - | 1,367,240 | 30,036,840 | 1,993,800 | - | 1,993,800 |
| Jun-05 | | 45,763,111 | 2,041,240 | - | 2,041,240 | 47,804,351 | 6,301,000 | - | 6,301,000 |
| Jul-05 | | 62,686,089 | 2,544,070 | - | 2,544,070 | 65,230,159 | 11,993,000 | - | 11,993,000 |
| Aug-05 | | 71,919,800 | 2,607,370 | - | 2,607,370 | 74,527,170 | 13,023,000 | - | 13,023,000 |
| Sep-05 | | 63,051,800 | 2,722,200 | - | 2,722,200 | 65,774,000 | 9,609,000 | - | 9,609,000 |
| Oct-05 | | 54,501,022 | 2,053,160 | - | 2,053,160 | 56,554,182 | 5,632,000 | - | 5,632,000 |
| Nov-05 | | 26,677,000 | 995,579 | - | 995,579 | 27,672,579 | 969,000 | - | 969,000 |
| Dec-05 | | 26,098,600 | 1,538,120 | - | 1,538,120 | 27,636,720 | 588,000 | - | 588,000 |
| Jan-06 | | 22,410,600 | 1,287,070 | - | 1,287,070 | 23,697,670 | 739,000 | - | 739,000 |
| Feb-06 | | 21,364,400 | 1,154,330 | - | 1,154,330 | 22,518,730 | 615,000 | - | 615,000 |
| Mar-06 | | 22,057,400 | 1,197,530 | - | 1,197,530 | 23,254,930 | 802,000 | - | 802,000 |
| Apr-06 | | 24,236,000 | 1,307,580 | - | 1,307,580 | 25,543,580 | 1,042,000 | - | 1,042,000 |
| May-06 | | 41,726,310 | 1,797,860 | - | 1,797,860 | 43,524,170 | 4,705,000 | - | 4,705,000 |
| Jun-06 | | 62,753,890 | 2,553,730 | - | 2,553,730 | 65,307,620 | 11,930,000 | - | 11,930,000 |
| Jul-06 | | 77,074,800 | 2,720,570 | - | 2,720,570 | 79,795,370 | 15,421,000 | - | 15,421,000 |
| Aug-06 | | 69,554,800 | 3,326,800 | - | 3,326,800 | 72,881,600 | 14,329,000 | - | 14,329,000 |
| Sep-06 | | 66,675,900 | 2,673,210 | - | 2,673,210 | 69,349,110 | 12,624,000 | - | 12,624,000 |
| Oct-06 | | 54,335,000 | 1,967,490 | - | 1,967,490 | 56,302,490 | 5,054,000 | - | 5,054,000 |
| Nov-06 | | 29,062,700 | 1,313,140 | - | 1,313,140 | 30,375,840 | 913,000 | - | 913,000 |
| Dec-06 | | 26,172,152 | 989,063 | - | 989,063 | 27,161,215 | 694,029 | - | 694,029 |
| Jan-07 | | 23,625,302 | 1,128,697 | - | 1,128,697 | 24,753,999 | 702,971 | - | 702,971 |
| Feb-07 | | 23,183,881 | 1,451,000 | - | 1,451,000 | 24,634,881 | 936,000 | - | 936,000 |
| Mar-07 | | 23,530,900 | 1,724,000 | - | 1,724,000 | 25,254,900 | 814,000 | - | 814,000 |
| Apr-07 | | 26,258,200 | 1,129,000 | - | 1,129,000 | 27,387,200 | 1,233,000 | - | 1,233,000 |
| May-07 | | 32,112,400 | 1,261,330 | - | 1,261,330 | 33,373,730 | 2,136,000 | - | 2,136,000 |
| Jun-07 | | 54,923,600 | 2,012,670 | - | 2,012,670 | 56,936,270 | 10,475,000 | - | 10,475,000 |
| Jul-07 | | 79,127,000 | 2,934,720 | - | 2,934,720 | 82,061,720 | 15,282,000 | - | 15,282,000 |
| Aug-07 | | 71,769,200 | 2,536,280 | - | 2,536,280 | 74,305,480 | 14,333,000 | - | 14,333,000 |
| Sep-07 | | 69,579,511 | 2,215,620 | - | 2,215,620 | 71,795,131 | 11,958,000 | - | 11,958,000 |
| Oct-07 | | 53,442,909 | 2,082,380 | - | 2,082,380 | 55,525,289 | 8,122,000 | - | 8,122,000 |
| Nov-07 | | 31,443,400 | 1,408,000 | - | 1,408,000 | 32,851,400 | 1,489,000 | - | 1,489,000 |
| Dec-07 | | 26,277,800 | 1,097,000 | - | 1,097,000 | 27,374,800 | 781,000 | - | 781,000 |
| Jan-08 | | 28,092,400 | 1,168,610 | - | 1,168,610 | 29,261,010 | 673,000 | - | 673,000 |
| Feb-08 | | 28,521,000 | 1,002,390 | - | 1,002,390 | 29,523,390 | 698,000 | - | 698,000 |
| Mar-08 | | 29,168,800 | 994,000 | - | 994,000 | 30,162,800 | 870,000 | - | 870,000 |
| Apr-08 | | 30,038,848 | 1,034,860 | - | 1,034,860 | 31,073,708 | 1,214,000 | - | 1,214,000 |
| May-08 | | 44,420,500 | 1,443,140 | - | 1,443,140 | 45,863,640 | 4,640,000 | - | 4,640,000 |
| Jun-08 | | 65,379,000 | 1,849,000 | - | 1,849,000 | 67,228,000 | 9,119,000 | - | 9,119,000 |
| Jul-08 | | 70,981,400 | 2,214,000 | - | 2,214,000 | 73,195,400 | 13,867,000 | - | 13,867,000 |
| Aug-08 | | 91,172,600 | 2,521,000 | - | 2,521,000 | 93,693,600 | 17,030,000 | - | 17,030,000 |
| Sep-08 | | 72,669,000 | 2,367,000 | - | 2,367,000 | 75,036,000 | 10,177,000 | - | 10,177,000 |
| Oct-08 | | 61,045,000 | 1,502,000 | - | 1,502,000 | 62,547,000 | 7,867,000 | - | 7,867,000 |
| Nov-08 | | 38,410,475 | 1,137,000 | - | 1,137,000 | 39,547,475 | 2,063,000 | - | 2,063,000 |
| Dec-08 | | 30,395,643 | 1,033,000 | - | 1,033,000 | 31,428,643 | 976,000 | - | 976,000 |
| Jan-09 | | 29,544,816 | 1,016,000 | - | 1,016,000 | 30,560,816 | 940,000 | - | 940,000 |
| Feb-09 | | 25,419,725 | 846,000 | - | 846,000 | 26,265,725 | 973,000 | - | 973,000 |
| Mar-09 | | 26,154,072 | 1,008,000 | - | 1,008,000 | 27,162,072 | 682,000 | - | 682,000 |
| Apr-09 | | 26,958,000 | 1,004,000 | - | 1,004,000 | 27,962,000 | 1,079,110 | - | 1,079,110 |
| May-09 | | 34,835,965 | 1,222,000 | - | 1,222,000 | 36,057,965 | 2,852,000 | - | 2,852,000 |
| Jun-09 | | 55,948,018 | 1,561,000 | - | 1,561,000 | 57,509,018 | 5,757,000 | - | 5,757,000 |
| Jul-09 | | 57,512,324 | 1,669,000 | - | 1,669,000 | 59,181,324 | 12,163,000 | - | 12,163,000 |
| Aug-09 | | 73,564,946 | 1,676,000 | - | 1,676,000 | 75,240,946 | 13,419,000 | - | 13,419,000 |
| Sep-09 | | 68,559,627 | 1,597,000 | - | 1,597,000 | 70,156,627 | 10,164,000 | - | 10,164,000 |

# Table C-4 - Monthly Water Demands Past and Future for Above Average Conditions
## City of Loveland

| Date | Total Residential | Inside Commercial | Outside Commercial | Outside Com - Special Base | Outside Com Total | Total Commercial | Inside - City | Outside - City | City Uses |
|---|---|---|---|---|---|---|---|---|---|
| Oct-09 | | 53,388,518 | 1,206,000 | 38,000 | 1,244,000 | 54,632,518 | 6,295,000 | - | 6,295,000 |
| Nov-09 | | 31,353,956 | 893,000 | - | 893,000 | 32,246,956 | 1,279,000 | - | 1,279,000 |
| Dec-09 | | 27,189,282 | 1,050,000 | - | 1,050,000 | 28,239,282 | 524,000 | - | 524,000 |
| Jan-10 | | 28,833,065 | 977,000 | - | 977,000 | 29,810,065 | 837,000 | - | 837,000 |
| Feb-10 | | 25,974,413 | 952,000 | - | 952,000 | 26,926,413 | 513,000 | - | 513,000 |
| Mar-10 | | 26,591,375 | 972,000 | - | 972,000 | 27,563,375 | 820,000 | - | 820,000 |
| Apr-10 | | 28,133,184 | 1,100,000 | 8,000 | 1,108,000 | 29,241,184 | 765,000 | - | 765,000 |
| May-10 | | 32,743,064 | 1,268,000 | 46,000 | 1,314,000 | 34,057,064 | 4,986,000 | - | 4,986,000 |
| Jun-10 | | 45,771,921 | 1,741,000 | 95,000 | 1,836,000 | 47,607,921 | 7,579,000 | - | 7,579,000 |
| Jul-10 | | 64,731,690 | 1,692,000 | 84,000 | 1,776,000 | 66,507,690 | 12,388,000 | - | 12,388,000 |
| Aug-10 | | 75,019,013 | 1,598,000 | 99,000 | 1,697,000 | 76,716,013 | 12,450,143 | - | 12,450,143 |
| Sep-10 | | 73,554,892 | 1,996,000 | 96,000 | 2,092,000 | 75,646,892 | 15,011,000 | - | 15,011,000 |
| Oct-10 | | 69,488,929 | 1,563,260 | 70,000 | 1,633,260 | 71,122,189 | 10,946,024 | - | 10,946,024 |
| Nov-10 | | 38,957,819 | 1,098,000 | - | 1,098,000 | 40,055,819 | 1,334,000 | - | 1,334,000 |
| Dec-10 | | 28,654,267 | 974,000 | - | 974,000 | 29,628,267 | 527,000 | - | 527,000 |
| Jan-11 | | 28,616,074 | 922,000 | - | 922,000 | 29,538,074 | 676,405 | - | 676,405 |
| Feb-11 | | 26,258,447 | 943,000 | - | 943,000 | 27,201,447 | 684,202 | - | 684,202 |
| Mar-11 | | 26,337,929 | 2,591,000 | - | 2,591,000 | 28,928,929 | 706,000 | - | 706,000 |
| Apr-11 | | 27,296,680 | 905,106 | 9,000 | 914,106 | 28,210,786 | 789,268 | - | 789,268 |
| May-11 | | 37,715,753 | 1,185,000 | 21,000 | 1,206,000 | 38,921,753 | 1,663,300 | - | 1,663,300 |
| Jun-11 | | 53,502,633 | 1,356,000 | 62,000 | 1,418,000 | 54,920,633 | 7,482,579 | - | 7,482,579 |
| Jul-11 | | 67,285,653 | 1,714,000 | 97,000 | 1,811,000 | 69,096,653 | 13,535,000 | - | 13,535,000 |
| Aug-11 | | 82,418,628 | 1,823,000 | 88,000 | 1,911,000 | 84,329,628 | 16,657,000 | - | 16,657,000 |
| Sep-11 | | 83,086,966 | 1,769,642 | 93,000 | 1,862,642 | 84,949,608 | 16,346,000 | - | 16,346,000 |
| Oct-11 | | 71,814,787 | 1,350,000 | 72,000 | 1,422,000 | 73,236,787 | 10,505,000 | 1,000 | 10,506,000 |
| Nov-11 | | 38,270,720 | 870,000 | - | 870,000 | 39,140,720 | 1,610,000 | - | 1,610,000 |
| Dec-11 | | 30,078,664 | 809,000 | - | 809,000 | 30,887,664 | 660,000 | - | 660,000 |
| Jan-12 | | 29,549,811 | 1,133,415 | - | 1,133,415 | 30,683,226 | 950,644 | | 950,644 |
| Feb-12 | | 28,074,472 | 1,007,206 | - | 1,007,206 | 29,081,679 | 955,892 | | 955,892 |
| Mar-12 | | 28,649,152 | 2,204,368 | - | 2,204,368 | 30,853,520 | 809,729 | | 809,729 |
| Apr-12 | | 29,663,153 | 1,098,688 | 9,229 | 1,107,917 | 30,771,071 | 1,182,347 | | 1,182,347 |
| May-12 | | 42,771,325 | 1,402,130 | 38,851 | 1,440,980 | 44,212,305 | 5,094,831 | | 5,094,831 |
| Jun-12 | | 63,611,275 | 1,853,891 | 87,051 | 1,940,942 | 65,552,217 | 8,858,535 | | 8,858,535 |
| Jul-12 | | 71,241,054 | 2,096,566 | 98,356 | 2,194,922 | 73,435,976 | 13,827,391 | | 13,827,391 |
| Aug-12 | | 89,152,527 | 2,339,909 | 101,524 | 2,441,433 | 91,593,960 | 17,185,310 | | 17,185,310 |
| Sep-12 | | 81,095,821 | 2,278,619 | 102,434 | 2,381,054 | 83,476,874 | 16,150,915 | | 16,150,915 |
| Oct-12 | | 72,785,016 | 1,575,001 | 79,276 | 1,654,277 | 74,439,293 | 11,110,465 | | 11,110,465 |
| Nov-12 | | 40,598,776 | 1,143,825 | - | 1,143,825 | 41,742,601 | 1,585,037 | | 1,585,037 |
| Dec-12 | | 30,732,944 | 1,082,893 | - | 1,082,893 | 31,815,838 | 648,001 | | 648,001 |
| Jan-13 | | 30,347,656 | 1,164,017 | - | 1,164,017 | 31,511,673 | 950,644 | | 950,644 |
| Feb-13 | | 28,832,483 | 1,034,401 | - | 1,034,401 | 29,866,884 | 955,892 | | 955,892 |
| Mar-13 | | 29,422,680 | 2,263,886 | - | 2,263,886 | 31,686,565 | 809,729 | | 809,729 |
| Apr-13 | | 30,464,059 | 1,128,352 | 9,479 | 1,137,831 | 31,601,890 | 1,182,347 | | 1,182,347 |
| May-13 | | 43,926,151 | 1,439,987 | 39,900 | 1,479,887 | 45,406,037 | 5,094,831 | | 5,094,831 |
| Jun-13 | | 65,328,779 | 1,903,946 | 89,402 | 1,993,347 | 67,322,127 | 8,858,535 | | 8,858,535 |
| Jul-13 | | 73,164,562 | 2,153,174 | 101,011 | 2,254,185 | 75,418,747 | 13,827,391 | | 13,827,391 |
| Aug-13 | | 91,559,645 | 2,403,087 | 104,265 | 2,507,352 | 94,066,997 | 17,185,310 | | 17,185,310 |
| Sep-13 | | 83,285,408 | 2,340,142 | 105,200 | 2,445,342 | 85,730,750 | 16,150,915 | | 16,150,915 |
| Oct-13 | | 74,750,211 | 1,617,526 | 81,417 | 1,698,943 | 76,449,154 | 11,110,465 | | 11,110,465 |
| Nov-13 | | 41,694,943 | 1,174,708 | - | 1,174,708 | 42,869,651 | 1,585,037 | | 1,585,037 |
| Dec-13 | | 31,562,734 | 1,112,132 | - | 1,112,132 | 32,674,865 | 648,001 | | 648,001 |
| Jan-14 | | 30,924,261 | 1,186,133 | - | 1,186,133 | 32,110,394 | 950,644 | | 950,644 |
| Feb-14 | | 29,380,300 | 1,054,055 | - | 1,054,055 | 30,434,355 | 955,892 | | 955,892 |
| Mar-14 | | 29,981,710 | 2,306,900 | - | 2,306,900 | 32,288,610 | 809,729 | | 809,729 |
| Apr-14 | | 31,042,876 | 1,149,791 | 9,659 | 1,159,450 | 32,202,326 | 1,182,347 | | 1,182,347 |
| May-14 | | 44,760,747 | 1,467,347 | 40,658 | 1,508,004 | 46,268,752 | 5,094,831 | | 5,094,831 |
| Jun-14 | | 66,570,026 | 1,940,121 | 91,100 | 2,031,221 | 68,601,247 | 8,858,535 | | 8,858,535 |

# Table C-4 - Monthly Water Demands Past and Future for Above Average Conditions
## City of Loveland

| Date | Total Residential | Inside Commercial | Outside Commercial | Outside Com - Special Base | Outside Com Total | Total Commercial | Inside - City | Outside - City | City Uses |
|---|---|---|---|---|---|---|---|---|---|
| Jul-14 | | 74,554,689 | 2,194,084 | 102,930 | 2,297,015 | 76,851,703 | 13,827,391 | | 13,827,391 |
| Aug-14 | | 93,299,278 | 2,448,745 | 106,246 | 2,554,992 | 95,854,270 | 17,185,310 | | 17,185,310 |
| Sep-14 | | 84,867,830 | 2,384,605 | 107,199 | 2,491,804 | 87,359,634 | 16,150,915 | | 16,150,915 |
| Oct-14 | | 76,170,465 | 1,648,259 | 82,964 | 1,731,222 | 77,901,688 | 11,110,465 | | 11,110,465 |
| Nov-14 | | 42,487,147 | 1,197,027 | - | 1,197,027 | 43,684,174 | 1,585,037 | | 1,585,037 |
| Dec-14 | | 32,162,426 | 1,133,262 | - | 1,133,262 | 33,295,688 | 648,001 | | 648,001 |
| Jan-15 | | 31,542,746 | 1,209,856 | - | 1,209,856 | 32,752,602 | 950,644 | | 950,644 |
| Feb-15 | | 29,967,906 | 1,075,136 | - | 1,075,136 | 31,043,042 | 955,892 | | 955,892 |
| Mar-15 | | 30,581,345 | 2,353,038 | - | 2,353,038 | 32,934,382 | 809,729 | | 809,729 |
| Apr-15 | | 31,663,733 | 1,172,787 | 9,852 | 1,182,639 | 32,846,372 | 1,182,347 | | 1,182,347 |
| May-15 | | 45,655,962 | 1,496,694 | 41,471 | 1,538,165 | 47,194,127 | 5,094,831 | | 5,094,831 |
| Jun-15 | | 67,901,426 | 1,978,923 | 92,922 | 2,071,846 | 69,973,272 | 8,858,535 | | 8,858,535 |
| Jul-15 | | 76,045,783 | 2,237,966 | 104,989 | 2,342,955 | 78,388,737 | 13,827,391 | | 13,827,391 |
| Aug-15 | | 95,165,264 | 2,497,720 | 108,371 | 2,606,092 | 97,771,356 | 17,185,310 | | 17,185,310 |
| Sep-15 | | 86,565,187 | 2,432,297 | 109,343 | 2,541,640 | 89,106,827 | 16,150,915 | | 16,150,915 |
| Oct-15 | | 77,693,874 | 1,681,224 | 84,623 | 1,765,847 | 79,459,721 | 11,110,465 | | 11,110,465 |
| Nov-15 | | 43,336,890 | 1,220,968 | - | 1,220,968 | 44,557,858 | 1,585,037 | | 1,585,037 |
| Dec-15 | | 32,805,674 | 1,155,927 | - | 1,155,927 | 33,961,601 | 648,001 | | 648,001 |
| Jan-16 | | 32,205,144 | 1,235,263 | - | 1,235,263 | 33,440,407 | 950,644 | | 950,644 |
| Feb-16 | | 30,597,232 | 1,097,714 | - | 1,097,714 | 31,694,946 | 955,892 | | 955,892 |
| Mar-16 | | 31,223,553 | 2,402,451 | - | 2,402,451 | 33,626,004 | 809,729 | | 809,729 |
| Apr-16 | | 32,328,672 | 1,197,416 | 10,059 | 1,207,474 | 33,536,146 | 1,182,347 | | 1,182,347 |
| May-16 | | 46,614,738 | 1,528,124 | 42,342 | 1,570,466 | 48,185,204 | 5,094,831 | | 5,094,831 |
| Jun-16 | | 69,327,356 | 2,020,481 | 94,874 | 2,115,354 | 71,442,711 | 8,858,535 | | 8,858,535 |
| Jul-16 | | 77,642,744 | 2,284,963 | 107,194 | 2,392,157 | 80,034,901 | 13,827,391 | | 13,827,391 |
| Aug-16 | | 97,163,734 | 2,550,172 | 110,647 | 2,660,820 | 99,824,554 | 17,185,310 | | 17,185,310 |
| Sep-16 | | 88,383,056 | 2,483,375 | 111,639 | 2,595,014 | 90,978,070 | 16,150,915 | | 16,150,915 |
| Oct-16 | | 79,325,446 | 1,716,530 | 86,400 | 1,802,930 | 81,128,375 | 11,110,465 | | 11,110,465 |
| Nov-16 | | 44,246,964 | 1,246,608 | - | 1,246,608 | 45,493,573 | 1,585,037 | | 1,585,037 |
| Dec-16 | | 33,494,593 | 1,180,202 | - | 1,180,202 | 34,674,795 | 648,001 | | 648,001 |
| Jan-17 | | 32,881,452 | 1,261,203 | - | 1,261,203 | 34,142,655 | 950,644 | | 950,644 |
| Feb-17 | | 31,239,774 | 1,120,766 | - | 1,120,766 | 32,360,540 | 955,892 | | 955,892 |
| Mar-17 | | 31,879,247 | 2,452,903 | - | 2,452,903 | 34,332,150 | 809,729 | | 809,729 |
| Apr-17 | | 33,007,574 | 1,222,561 | 10,270 | 1,232,831 | 34,240,405 | 1,182,347 | | 1,182,347 |
| May-17 | | 47,593,647 | 1,560,215 | 43,231 | 1,603,446 | 49,197,093 | 5,094,831 | | 5,094,831 |
| Jun-17 | | 70,783,231 | 2,062,911 | 96,866 | 2,159,777 | 72,943,007 | 8,858,535 | | 8,858,535 |
| Jul-17 | | 79,273,242 | 2,332,947 | 109,445 | 2,442,392 | 81,715,634 | 13,827,391 | | 13,827,391 |
| Aug-17 | | 99,204,173 | 2,603,726 | 112,971 | 2,716,697 | 101,920,870 | 17,185,310 | | 17,185,310 |
| Sep-17 | | 90,239,100 | 2,535,526 | 113,983 | 2,649,509 | 92,888,609 | 16,150,915 | | 16,150,915 |
| Oct-17 | | 80,991,280 | 1,752,577 | 88,214 | 1,840,791 | 82,832,071 | 11,110,465 | | 11,110,465 |
| Nov-17 | | 45,176,150 | 1,272,787 | - | 1,272,787 | 46,448,938 | 1,585,037 | | 1,585,037 |
| Dec-17 | | 34,197,980 | 1,204,986 | - | 1,204,986 | 35,402,966 | 648,001 | | 648,001 |
| Jan-18 | | 33,539,081 | 1,286,428 | - | 1,286,428 | 34,825,509 | 950,644 | | 950,644 |
| Feb-18 | | 31,864,570 | 1,143,181 | - | 1,143,181 | 33,007,750 | 955,892 | | 955,892 |
| Mar-18 | | 32,516,832 | 2,501,961 | - | 2,501,961 | 35,018,793 | 809,729 | | 809,729 |
| Apr-18 | | 33,667,725 | 1,247,012 | 10,475 | 1,257,488 | 34,925,213 | 1,182,347 | | 1,182,347 |
| May-18 | | 48,545,520 | 1,591,419 | 44,096 | 1,635,515 | 50,181,035 | 5,094,831 | | 5,094,831 |
| Jun-18 | | 72,198,895 | 2,104,169 | 98,803 | 2,202,972 | 74,401,868 | 8,858,535 | | 8,858,535 |
| Jul-18 | | 80,858,706 | 2,379,606 | 111,634 | 2,491,240 | 83,349,946 | 13,827,391 | | 13,827,391 |
| Aug-18 | | 101,188,256 | 2,655,801 | 115,230 | 2,771,031 | 103,959,287 | 17,185,310 | | 17,185,310 |
| Sep-18 | | 92,043,882 | 2,586,236 | 116,263 | 2,702,500 | 94,746,382 | 16,150,915 | | 16,150,915 |
| Oct-18 | | 82,611,106 | 1,787,628 | 89,979 | 1,877,607 | 84,488,713 | 11,110,465 | | 11,110,465 |
| Nov-18 | | 46,079,673 | 1,298,243 | - | 1,298,243 | 47,377,916 | 1,585,037 | | 1,585,037 |
| Dec-18 | | 34,881,939 | 1,229,086 | - | 1,229,086 | 36,111,025 | 648,001 | | 648,001 |
| Jan-19 | | 34,209,863 | 1,312,156 | - | 1,312,156 | 35,522,019 | 950,644 | | 950,644 |
| Feb-19 | | 32,501,861 | 1,166,044 | - | 1,166,044 | 33,667,905 | 955,892 | | 955,892 |
| Mar-19 | | 33,167,169 | 2,552,000 | - | 2,552,000 | 35,719,169 | 809,729 | | 809,729 |

## Table C-4 - Monthly Water Demands Past and Future for Above Average Conditions
## City of Loveland

| Date | Total Residential | Inside Commercial | Outside Commercial | Outside Com - Special Base | Outside Com Total | Total Commercial | Inside - City | Outside - City | City Uses |
|---|---|---|---|---|---|---|---|---|---|
| Apr-19 | | 34,341,080 | 1,271,953 | 10,685 | 1,282,638 | 35,623,717 | 1,182,347 | | 1,182,347 |
| May-19 | | 49,516,430 | 1,623,248 | 44,977 | 1,668,225 | 51,184,655 | 5,094,831 | | 5,094,831 |
| Jun-19 | | 73,642,873 | 2,146,252 | 100,779 | 2,247,032 | 75,889,905 | 8,858,535 | | 8,858,535 |
| Jul-19 | | 82,475,881 | 2,427,198 | 113,867 | 2,541,065 | 85,016,945 | 13,827,391 | | 13,827,391 |
| Aug-19 | | 103,212,021 | 2,708,917 | 117,535 | 2,826,451 | 106,038,473 | 17,185,310 | | 17,185,310 |
| Sep-19 | | 93,884,760 | 2,637,961 | 118,588 | 2,756,550 | 96,641,309 | 16,150,915 | | 16,150,915 |
| Oct-19 | | 84,263,328 | 1,823,381 | 91,778 | 1,915,159 | 86,178,487 | 11,110,465 | | 11,110,465 |
| Nov-19 | | 47,001,267 | 1,324,208 | - | 1,324,208 | 48,325,475 | 1,585,037 | | 1,585,037 |
| Dec-19 | | 35,579,578 | 1,253,667 | - | 1,253,667 | 36,833,246 | 648,001 | | 648,001 |
| Jan-20 | | 34,894,060 | 1,338,399 | - | 1,338,399 | 36,232,459 | 950,644 | | 950,644 |
| Feb-20 | | 33,151,898 | 1,189,365 | - | 1,189,365 | 34,341,264 | 955,892 | | 955,892 |
| Mar-20 | | 33,830,512 | 2,603,040 | - | 2,603,040 | 36,433,553 | 809,729 | | 809,729 |
| Apr-20 | | 35,027,901 | 1,297,392 | 10,899 | 1,308,290 | 36,336,192 | 1,182,347 | | 1,182,347 |
| May-20 | | 50,506,759 | 1,655,713 | 45,877 | 1,701,590 | 52,208,348 | 5,094,831 | | 5,094,831 |
| Jun-20 | | 75,115,731 | 2,189,177 | 102,795 | 2,291,972 | 77,407,703 | 8,858,535 | | 8,858,535 |
| Jul-20 | | 84,125,398 | 2,475,742 | 116,144 | 2,591,886 | 86,717,284 | 13,827,391 | | 13,827,391 |
| Aug-20 | | 105,276,262 | 2,763,095 | 119,885 | 2,882,980 | 108,159,242 | 17,185,310 | | 17,185,310 |
| Sep-20 | | 95,762,455 | 2,690,720 | 120,960 | 2,811,680 | 98,574,135 | 16,150,915 | | 16,150,915 |
| Oct-20 | | 85,948,594 | 1,859,849 | 93,614 | 1,953,462 | 87,902,057 | 11,110,465 | | 11,110,465 |
| Nov-20 | | 47,941,292 | 1,350,692 | - | 1,350,692 | 49,291,984 | 1,585,037 | | 1,585,037 |
| Dec-20 | | 36,291,170 | 1,278,741 | - | 1,278,741 | 37,569,911 | 648,001 | | 648,001 |

# Table C-4 - Monthly Water Demands Past and Future for Above Average Conditions
## City of Loveland

| Date | Industrial | Inside - Wholesale | Outside - Wholesale | Total Other | Hydrant | Ranch | Total Consupmtion | % Non-Revenue | Treated Water Demand |
|---|---|---|---|---|---|---|---|---|---|
| Jan-05 | 3,921,000 | 1,384,500 | - | 5,305,500 | 1,069,100 | 4,377,700 | 154,374,179 | 10.7% | 172,900,000 |
| Feb-05 | 3,509,000 | 1,478,000 | - | 4,987,000 | | 4,536,200 | 130,579,460 | 15.5% | 154,500,000 |
| Mar-05 | 3,624,000 | 1,480,000 | - | 5,104,000 | - | 4,026,700 | 134,393,549 | 24.8% | 178,800,000 |
| Apr-05 | 4,156,000 | 1,610,100 | - | 5,766,100 | 207,000 | 7,768,900 | 167,725,163 | 21.3% | 213,000,000 |
| May-05 | 4,649,000 | 1,743,900 | - | 6,392,900 | 428,000 | 8,017,000 | 217,222,419 | 38.8% | 355,000,000 |
| Jun-05 | 4,767,000 | 3,547,500 | - | 8,314,500 | 362,000 | 10,162,300 | 365,194,165 | 15.1% | 430,300,000 |
| Jul-05 | 4,983,000 | 4,003,500 | - | 8,986,500 | 555,000 | 11,601,800 | 541,414,659 | 17.3% | 654,400,000 |
| Aug-05 | 6,783,000 | 7,250,407 | - | 14,033,407 | 463,000 | 13,149,200 | 559,740,977 | -1.0% | 554,200,000 |
| Sep-05 | 5,039,000 | 6,325,000 | - | 11,364,000 | 453,000 | 10,567,200 | 509,232,948 | 0.5% | 511,700,000 |
| Oct-05 | 5,458,000 | 5,655,000 | - | 11,113,000 | 434,000 | 8,990,400 | 374,363,982 | -36.0% | 275,200,000 |
| Nov-05 | 3,876,000 | 2,865,000 | - | 6,741,000 | 303,300 | 10,628,300 | 181,588,979 | 10.9% | 203,700,000 |
| Dec-05 | 3,977,000 | 1,163,000 | - | 5,140,000 | 335,700 | 3,174,832 | 157,109,252 | 28.5% | 219,600,000 |
| Jan-06 | 4,044,000 | 1,281,400 | - | 5,325,400 | 332,000 | 12,375,350 | 167,899,867 | 19.5% | 208,700,000 |
| Feb-06 | 2,872,000 | 1,593,600 | - | 4,465,600 | 330,000 | 7,982,600 | 146,611,883 | 20.0% | 183,200,000 |
| Mar-06 | 3,244,000 | 1,603,000 | - | 4,847,000 | 323,000 | 9,696,090 | 147,967,507 | 27.2% | 203,200,000 |
| Apr-06 | 3,558,000 | 2,162,000 | - | 5,720,000 | 384,000 | 8,455,200 | 188,222,939 | 45.4% | 344,500,000 |
| May-06 | 4,599,000 | 3,374,000 | - | 7,973,000 | 502,000 | 9,015,700 | 372,478,292 | 32.3% | 550,500,000 |
| Jun-06 | 4,636,000 | 7,503,000 | - | 12,139,000 | 625,000 | 13,238,400 | 621,600,109 | 12.2% | 707,900,000 |
| Jul-06 | 6,684,000 | 7,842,000 | - | 14,526,000 | 579,000 | 8,827,300 | 667,698,149 | 1.2% | 675,900,000 |
| Aug-06 | 6,764,900 | 6,605,000 | - | 13,369,900 | 621,000 | 12,736,595 | 610,679,170 | 5.7% | 647,300,000 |
| Sep-06 | 5,296,000 | 6,262,000 | - | 11,558,000 | 468,000 | 10,225,300 | 524,468,310 | -14.2% | 459,300,000 |
| Oct-06 | 5,408,000 | 4,115,000 | - | 9,523,000 | 373,000 | 12,306,530 | 374,920,931 | -28.7% | 291,300,000 |
| Nov-06 | 3,982,000 | 2,369,000 | - | 6,351,000 | 299,000 | 10,742,100 | 179,070,854 | 9.2% | 197,200,000 |
| Dec-06 | 4,320,000 | 1,108,700 | - | 5,428,700 | 266,000 | 7,871,800 | 173,435,930 | 10.5% | 193,700,000 |
| Jan-07 | 3,564,500 | - | - | 3,564,500 | 230,000 | 3,512,600 | 144,246,818 | 27.1% | 197,900,000 |
| Feb-07 | 3,123,500 | - | - | 3,123,500 | 206,000 | 3,240,100 | 138,909,117 | 25.1% | 185,500,000 |
| Mar-07 | 4,048,000 | - | - | 4,048,000 | 299,000 | 6,089,900 | 142,653,030 | 31.0% | 206,600,000 |
| Apr-07 | 4,737,000 | - | - | 4,737,000 | 275,000 | 3,618,000 | 159,797,989 | 33.7% | 241,000,000 |
| May-07 | 4,487,000 | - | - | 4,487,000 | 297,000 | 3,671,400 | 232,091,930 | 47.3% | 440,000,000 |
| Jun-07 | 4,605,000 | - | - | 4,605,000 | 339,000 | 2,668,484 | 453,947,585 | 26.2% | 614,700,000 |
| Jul-07 | 5,507,000 | - | - | 5,507,000 | 709,000 | 3,477,700 | 680,800,109 | 6.9% | 731,600,000 |
| Aug-07 | 5,951,000 | 1,838 | - | 5,952,838 | 334,000 | 2,911,657 | 610,886,128 | -0.3% | 609,300,000 |
| Sep-07 | 5,433,000 | - | - | 5,433,000 | 282,000 | 5,501,700 | 544,506,078 | -8.1% | 503,700,000 |
| Oct-07 | 4,834,000 | - | - | 4,834,000 | 277,000 | 7,319,834 | 381,124,823 | -23.0% | 309,900,000 |
| Nov-07 | 4,233,000 | - | - | 4,233,000 | 242,000 | 6,950,000 | 195,910,304 | 1.6% | 199,100,000 |
| Dec-07 | 4,285,000 | - | - | 4,285,000 | 193,000 | 4,959,300 | 161,076,389 | 21.0% | 203,900,000 |
| Jan-08 | - | - | - | - | 227,000 | 1,890,000 | 152,700,099 | 27.9% | 211,900,000 |
| Feb-08 | - | - | - | - | 251,000 | 3,873,400 | 142,622,426 | 26.8% | 194,800,000 |
| Mar-08 | - | - | - | - | 308,000 | 7,891,900 | 150,130,597 | 29.5% | 212,900,000 |
| Apr-08 | - | - | - | - | 285,000 | 9,582,200 | 163,799,175 | 40.4% | 275,000,000 |
| May-08 | - | - | - | - | 343,000 | 7,898,300 | 325,262,640 | 32.5% | 482,200,000 |
| Jun-08 | - | - | - | - | 450,000 | 6,113,100 | 452,723,200 | 22.7% | 585,300,000 |
| Jul-08 | - | - | - | - | 451,000 | 5,792,200 | 586,459,100 | 20.7% | 739,100,000 |
| Aug-08 | - | - | - | - | 354,000 | 6,936,800 | 695,740,200 | -16.7% | 596,400,000 |
| Sep-08 | - | 5,078 | - | 5,078 | 406,000 | 7,112,500 | 479,148,763 | -5.7% | 453,300,000 |
| Oct-08 | - | - | - | - | 329,000 | 8,689,000 | 371,050,327 | -22.3% | 303,300,000 |
| Nov-08 | - | - | - | - | 334,000 | 4,418,600 | 188,047,884 | 5.8% | 199,600,000 |
| Dec-08 | - | - | - | - | 295,000 | 8,759,300 | 161,598,286 | 17.0% | 194,800,000 |
| Jan-09 | - | - | - | - | 277,000 | 4,552,700 | 157,741,212 | 15.6% | 187,000,000 |
| Feb-09 | - | - | - | - | 295,000 | 2,568,300 | 136,199,281 | 20.2% | 170,700,000 |
| Mar-09 | - | - | - | - | 361,000 | 5,615,800 | 149,231,377 | 30.6% | 215,100,000 |
| Apr-09 | - | - | - | - | 203,000 | 3,143,100 | 161,640,204 | 26.1% | 218,700,000 |
| May-09 | - | - | - | - | 228,000 | 2,748,300 | 231,635,783 | 45.1% | 422,000,000 |
| Jun-09 | - | - | - | - | 319,000 | 2,776,578 | 364,009,082 | 12.9% | 417,700,000 |
| Jul-09 | - | 179 | - | 179 | 268,000 | 3,548,147 | 439,988,575 | 22.6% | 568,300,000 |
| Aug-09 | - | - | - | - | 311,000 | 1,535,051 | 497,796,796 | 12.7% | 570,500,000 |
| Sep-09 | - | - | - | - | 262,000 | 3,482,027 | 483,809,175 | -4.5% | 463,000,000 |

## Table C-4 - Monthly Water Demands Past and Future for Above Average Conditions
## City of Loveland

| Date | Industrial | Inside - Wholesale | Outside - Wholesale | Total Other | Hydrant | Ranch | Total Consupmtion | % Non-Revenue | Treated Water Demand |
|---|---|---|---|---|---|---|---|---|---|
| Oct-09 | - | - | - | - | 233,000 | 3,891,639 | 331,086,554 | -39.2% | 237,900,000 |
| Nov-09 | - | - | - | - | 239,000 | 5,155,060 | 160,125,390 | 9.8% | 177,500,000 |
| Dec-09 | - | - | - | - | 170,000 | 1,986,800 | 148,556,502 | 21.0% | 188,000,000 |
| Jan-10 | - | - | - | - | 188,000 | 2,680,860 | 154,777,132 | 18.1% | 189,000,000 |
| Feb-10 | - | 6,830 | - | 6,830 | 202,000 | 3,377,500 | 136,794,158 | 20.3% | 171,700,000 |
| Mar-10 | - | - | - | - | 289,000 | 4,325,250 | 140,560,625 | 27.5% | 193,900,000 |
| Apr-10 | - | - | - | - | 253,000 | 2,314,500 | 155,187,181 | 28.6% | 217,400,000 |
| May-10 | - | - | - | - | 227,000 | 2,155,900 | 199,382,698 | 39.5% | 329,700,000 |
| Jun-10 | - | 47,000 | 28,000 | 75,000 | 422,000 | 2,794,500 | 345,332,170 | 33.5% | 519,600,000 |
| Jul-10 | - | 214,000 | - | 214,000 | 379,000 | 2,555,465 | 521,005,337 | 13.3% | 601,200,000 |
| Aug-10 | - | 377,000 | 1,000 | 378,000 | 435,000 | 2,683,100 | 546,280,290 | 12.2% | 622,500,000 |
| Sep-10 | - | 319,000 | 40,000 | 359,000 | 363,000 | 1,476,600 | 587,561,564 | 0.9% | 593,100,000 |
| Oct-10 | - | 246,000 | - | 246,000 | 322,000 | 3,338,100 | 476,460,701 | -39.4% | 341,900,000 |
| Nov-10 | - | 14,000 | - | 14,000 | 305,000 | 3,794,200 | 199,181,715 | -6.0% | 187,900,000 |
| Dec-10 | - | 1,000 | 1,000 | 2,000 | 322,000 | 1,173,000 | 148,142,090 | 21.0% | 187,500,000 |
| Jan-11 | - | 1,000 | (1,000) | - | 362,000 | 3,704,300 | 153,347,985 | 19.5% | 190,600,000 |
| Feb-11 | - | 1,000 | - | 1,000 | 233,000 | 3,265,300 | 136,155,066 | 21.9% | 174,400,000 |
| Mar-11 | - | - | - | - | 273,000 | 1,705,845 | 137,466,512 | 30.2% | 196,900,000 |
| Apr-11 | - | 1,000 | - | 1,000 | 235,000 | 1,191,700 | 162,624,313 | 36.8% | 257,500,000 |
| May-11 | - | 10,000 | - | 10,000 | 316,000 | 301,200 | 251,172,759 | 31.2% | 365,300,000 |
| Jun-11 | - | 10,000 | - | 10,000 | 310,000 | 3,221,500 | 367,499,726 | 34.0% | 556,800,000 |
| Jul-11 | - | 224,000 | 15,675 | 239,675 | 343,000 | 3,634,000 | 516,176,991 | 18.1% | 630,200,000 |
| Aug-11 | - | 267,000 | 29,000 | 296,000 | 495,000 | 2,514,300 | 586,924,850 | 18.8% | 722,500,000 |
| Sep-11 | - | 447,000 | - | 447,000 | 298,000 | 3,250,300 | 610,174,712 | -19.5% | 510,800,000 |
| Oct-11 | - | 200,000 | 125 | 200,125 | 326,000 | 2,284,700 | 434,606,563 | -30.4% | 333,200,000 |
| Nov-11 | - | 13,000 | - | 13,000 | 198,000 | 1,847,200 | 193,251,718 | 2.8% | 198,805,395 |
| Dec-11 | - | 3,000 | - | 3,000 | 195,000 | 984,714 | 153,365,878 | 20.0% | 191,717,971 |
| Jan-12 | | | | - | 398,037 | 4,858,120 | 161,075,785 | 21.7% | 205,635,979 |
| Feb-12 | | | | 8,037 | 239,420 | 4,602,170 | 144,815,983 | 22.9% | 187,766,371 |
| Mar-12 | | | | - | 292,314 | 5,234,987 | 154,587,328 | 29.8% | 220,053,603 |
| Apr-12 | | | | 1,207 | 256,728 | 5,037,586 | 171,891,935 | 33.1% | 257,078,927 |
| May-12 | | | | 12,071 | 334,433 | 4,901,136 | 310,555,238 | 39.1% | 510,237,893 |
| Jun-12 | | | | 88,462 | 445,196 | 5,332,750 | 438,024,537 | 25.8% | 590,637,023 |
| Jul-12 | | | | 244,992 | 386,456 | 5,240,113 | 584,205,183 | 16.3% | 698,152,455 |
| Aug-12 | | | | 394,983 | 507,426 | 5,422,591 | 673,510,708 | 5.4% | 711,709,083 |
| Sep-12 | | | | 465,225 | 376,462 | 5,371,338 | 619,420,259 | -7.4% | 576,935,911 |
| Oct-12 | | | | 255,501 | 326,828 | 5,684,767 | 475,673,613 | -30.9% | 363,507,962 |
| Nov-12 | | | | 14,207 | 327,160 | 5,486,954 | 208,408,808 | 2.8% | 214,398,070 |
| Dec-12 | | | | 3,207 | 348,303 | 4,606,166 | 162,506,764 | 20.0% | 203,144,712 |
| Jan-13 | | | | - | 398,037 | 5,440,626 | 165,621,985 | 21.7% | 211,439,845 |
| Feb-13 | | | | 8,037 | 239,420 | 5,109,867 | 148,875,931 | 22.9% | 193,030,443 |
| Mar-13 | | | | - | 292,314 | 5,927,644 | 159,037,401 | 29.8% | 226,388,240 |
| Apr-13 | | | | 1,207 | 256,728 | 5,672,547 | 176,736,654 | 33.1% | 264,324,614 |
| May-13 | | | | 12,071 | 334,433 | 5,496,214 | 318,903,618 | 39.1% | 523,954,164 |
| Jun-13 | | | | 88,462 | 445,196 | 6,053,982 | 449,709,091 | 25.8% | 606,392,602 |
| Jul-13 | | | | 244,992 | 386,456 | 5,934,269 | 599,544,853 | 16.3% | 716,484,077 |
| Aug-13 | | | | 394,983 | 507,426 | 6,170,082 | 691,156,285 | 5.4% | 730,355,434 |
| Sep-13 | | | | 465,225 | 376,462 | 6,103,848 | 635,710,122 | -7.4% | 592,108,496 |
| Oct-13 | | | | 255,501 | 326,828 | 6,508,888 | 488,437,580 | -30.9% | 373,262,137 |
| Nov-13 | | | | 14,207 | 327,160 | 6,253,257 | 214,360,144 | 2.8% | 220,520,436 |
| Dec-13 | | | | 3,207 | 348,303 | 5,115,030 | 166,986,595 | 20.0% | 208,744,810 |
| Jan-14 | | | | - | 398,037 | 6,054,153 | 169,100,088 | 21.7% | 215,880,135 |
| Feb-14 | | | | 8,037 | 239,420 | 5,644,600 | 151,977,890 | 22.9% | 197,052,399 |
| Mar-14 | | | | - | 292,314 | 6,657,189 | 162,482,443 | 29.8% | 231,292,226 |
| Apr-14 | | | | 1,207 | 256,728 | 6,341,323 | 180,447,838 | 33.1% | 269,875,003 |
| May-14 | | | | 12,071 | 334,433 | 6,122,984 | 325,133,726 | 39.1% | 534,190,145 |
| Jun-14 | | | | 88,462 | 445,196 | 6,813,623 | 458,391,965 | 25.8% | 618,100,683 |

## Table C-4 - Monthly Water Demands Past and Future for Above Average Conditions
## City of Loveland

| Date | Industrial | Inside - Wholesale | Outside - Wholesale | Total Other | Hydrant | Ranch | Total Consupmtion | % Non-Revenue | Treated Water Demand |
|---|---|---|---|---|---|---|---|---|---|
| Jul-14 | | | | 244,992 | 386,456 | 6,665,392 | 610,860,344 | 16.3% | 730,006,617 |
| Aug-14 | | | | 394,983 | 507,426 | 6,957,381 | 704,155,892 | 5.4% | 744,092,319 |
| Sep-14 | | | | 465,225 | 376,462 | 6,875,368 | 647,724,998 | -7.4% | 603,299,305 |
| Oct-14 | | | | 255,501 | 326,828 | 7,376,896 | 497,934,559 | -30.9% | 380,519,692 |
| Nov-14 | | | | 14,207 | 327,160 | 7,060,369 | 218,914,499 | 2.8% | 225,205,674 |
| Dec-14 | | | | 3,207 | 348,303 | 5,650,993 | 170,392,391 | 20.0% | 213,002,291 |
| Jan-15 | | | | - | 398,037 | 6,648,643 | 172,767,213 | 21.7% | 220,561,738 |
| Feb-15 | | | | 8,037 | 239,420 | 6,162,741 | 155,249,718 | 22.9% | 201,294,606 |
| Mar-15 | | | | - | 292,314 | 7,364,097 | 166,102,080 | 29.8% | 236,444,744 |
| Apr-15 | | | | 1,207 | 256,728 | 6,989,347 | 184,359,245 | 33.1% | 275,724,844 |
| May-15 | | | | 12,071 | 334,433 | 6,730,305 | 331,751,366 | 39.1% | 545,062,835 |
| Jun-15 | | | | 88,462 | 445,196 | 7,549,693 | 467,626,745 | 25.8% | 630,552,961 |
| Jul-15 | | | | 244,992 | 386,456 | 7,373,829 | 622,921,908 | 16.3% | 744,420,749 |
| Aug-15 | | | | 394,983 | 507,426 | 7,720,250 | 718,018,070 | 5.4% | 758,740,695 |
| Sep-15 | | | | 465,225 | 376,462 | 7,622,949 | 660,532,558 | -7.4% | 615,228,428 |
| Oct-15 | | | | 255,501 | 326,828 | 8,217,972 | 508,031,341 | -30.9% | 388,235,615 |
| Nov-15 | | | | 14,207 | 327,160 | 7,842,438 | 223,715,978 | 2.8% | 230,145,138 |
| Dec-15 | | | | 3,207 | 348,303 | 6,170,326 | 173,989,997 | 20.0% | 217,499,548 |
| Jan-16 | | | | - | 398,037 | 6,986,238 | 176,395,601 | 21.7% | 225,193,888 |
| Feb-16 | | | | 8,037 | 239,420 | 6,456,980 | 158,493,156 | 22.9% | 205,500,002 |
| Mar-16 | | | | - | 292,314 | 7,765,532 | 169,623,047 | 29.8% | 241,456,808 |
| Apr-16 | | | | 1,207 | 256,728 | 7,357,343 | 188,222,325 | 33.1% | 281,502,406 |
| May-16 | | | | 12,071 | 334,433 | 7,075,188 | 338,533,300 | 39.1% | 556,205,457 |
| Jun-16 | | | | 88,462 | 445,196 | 7,967,688 | 477,146,859 | 25.8% | 643,389,986 |
| Jul-16 | | | | 244,992 | 386,456 | 7,776,133 | 635,483,410 | 16.3% | 759,432,330 |
| Aug-16 | | | | 394,983 | 507,426 | 8,153,464 | 732,480,644 | 5.4% | 774,023,518 |
| Sep-16 | | | | 465,225 | 376,462 | 8,047,481 | 673,873,327 | -7.4% | 627,654,191 |
| Oct-16 | | | | 255,501 | 326,828 | 8,695,597 | 518,421,828 | -30.9% | 396,175,985 |
| Nov-16 | | | | 14,207 | 327,160 | 8,286,555 | 228,464,883 | 2.8% | 235,030,518 |
| Dec-16 | | | | 3,207 | 348,303 | 6,465,242 | 177,581,743 | 20.0% | 221,989,480 |
| Jan-17 | | | | - | 398,037 | 6,986,238 | 179,755,500 | 21.7% | 229,483,273 |
| Feb-17 | | | | 8,037 | 239,420 | 6,456,980 | 161,504,288 | 22.9% | 209,404,194 |
| Mar-17 | | | | - | 292,314 | 7,765,532 | 172,808,090 | 29.8% | 245,990,686 |
| Apr-17 | | | | 1,207 | 256,728 | 7,357,343 | 191,790,805 | 33.1% | 286,839,370 |
| May-17 | | | | 12,071 | 334,433 | 7,075,188 | 345,105,530 | 39.1% | 567,003,538 |
| Jun-17 | | | | 88,462 | 445,196 | 7,967,688 | 486,440,122 | 25.8% | 655,921,122 |
| Jul-17 | | | | 244,992 | 386,456 | 7,776,133 | 647,897,952 | 16.3% | 774,268,287 |
| Aug-17 | | | | 394,983 | 507,426 | 8,153,464 | 746,804,620 | 5.4% | 789,159,883 |
| Sep-17 | | | | 465,225 | 376,462 | 8,047,481 | 687,060,805 | -7.4% | 639,937,175 |
| Oct-17 | | | | 255,501 | 326,828 | 8,695,597 | 528,542,860 | -30.9% | 403,910,439 |
| Nov-17 | | | | 14,207 | 327,160 | 8,286,555 | 232,860,073 | 2.8% | 239,552,016 |
| Dec-17 | | | | 3,207 | 348,303 | 6,465,242 | 180,947,807 | 20.0% | 226,197,292 |
| Jan-18 | | | | - | 398,037 | 6,813,834 | 182,850,198 | 21.7% | 233,434,091 |
| Feb-18 | | | | 8,037 | 239,420 | 6,306,718 | 164,281,993 | 22.9% | 213,005,727 |
| Mar-18 | | | | - | 292,314 | 7,560,527 | 175,700,159 | 29.8% | 250,107,519 |
| Apr-18 | | | | 1,207 | 256,728 | 7,169,414 | 195,072,797 | 33.1% | 291,747,867 |
| May-18 | | | | 12,071 | 334,433 | 6,899,062 | 351,320,115 | 39.1% | 577,214,014 |
| Jun-18 | | | | 88,462 | 445,196 | 7,754,225 | 495,263,252 | 25.8% | 667,818,325 |
| Jul-18 | | | | 244,992 | 386,456 | 7,570,684 | 659,764,167 | 16.3% | 788,448,968 |
| Aug-18 | | | | 394,983 | 507,426 | 7,932,230 | 760,511,747 | 5.4% | 803,644,414 |
| Sep-18 | | | | 465,225 | 376,462 | 7,830,681 | 699,667,256 | -7.4% | 651,678,985 |
| Oct-18 | | | | 255,501 | 326,828 | 8,451,683 | 538,140,443 | -30.9% | 411,244,876 |
| Nov-18 | | | | 14,207 | 327,160 | 8,059,752 | 236,907,068 | 2.8% | 243,715,315 |
| Dec-18 | | | | 3,207 | 348,303 | 6,314,634 | 184,070,295 | 20.0% | 230,100,619 |
| Jan-19 | | | | - | 398,037 | 6,648,643 | 186,017,450 | 21.7% | 237,477,535 |
| Feb-19 | | | | 8,037 | 239,420 | 6,162,741 | 167,124,544 | 22.9% | 216,691,338 |
| Mar-19 | | | | - | 292,314 | 7,364,097 | 178,662,746 | 29.8% | 254,324,734 |

## Table C-4 - Monthly Water Demands Past and Future for Above Average Conditions
## City of Loveland

| Date | Industrial | Inside - Wholesale | Outside - Wholesale | Total Other | Hydrant | Ranch | Total Consupmtion | % Non-Revenue | Treated Water Demand |
|---|---|---|---|---|---|---|---|---|---|
| Apr-19 | | | | 1,207 | 256,728 | 6,989,347 | 198,432,051 | 33.1% | 296,771,915 |
| May-19 | | | | 12,071 | 334,433 | 6,730,305 | 357,669,883 | 39.1% | 587,646,594 |
| Jun-19 | | | | 88,462 | 445,196 | 7,549,693 | 504,276,043 | 25.8% | 679,971,270 |
| Jul-19 | | | | 244,992 | 386,456 | 7,373,829 | 671,880,411 | 16.3% | 802,928,444 |
| Aug-19 | | | | 394,983 | 507,426 | 7,720,250 | 774,506,696 | 5.4% | 818,433,091 |
| Sep-19 | | | | 465,225 | 376,462 | 7,622,949 | 712,539,243 | -7.4% | 663,668,117 |
| Oct-19 | | | | 255,501 | 326,828 | 8,217,972 | 547,945,061 | -30.9% | 418,737,527 |
| Nov-19 | | | | 14,207 | 327,160 | 7,842,438 | 241,049,028 | 2.8% | 247,976,307 |
| Dec-19 | | | | 3,207 | 348,303 | 6,170,326 | 187,264,545 | 20.0% | 234,093,653 |
| Jan-20 | | | | - | 398,037 | 6,813,834 | 189,581,734 | 21.7% | 242,027,847 |
| Feb-20 | | | | 8,037 | 239,420 | 6,306,718 | 170,314,777 | 22.9% | 220,827,750 |
| Mar-20 | | | | - | 292,314 | 7,560,527 | 182,081,372 | 29.8% | 259,191,115 |
| Apr-20 | | | | 1,207 | 256,728 | 7,169,414 | 202,222,225 | 33.1% | 302,440,441 |
| May-20 | | | | 12,071 | 334,433 | 6,899,062 | 364,487,535 | 39.1% | 598,847,901 |
| Jun-20 | | | | 88,462 | 445,196 | 7,754,225 | 513,882,246 | 25.8% | 692,924,379 |
| Jul-20 | | | | 244,992 | 386,456 | 7,570,684 | 684,636,624 | 16.3% | 818,172,714 |
| Aug-20 | | | | 394,983 | 507,426 | 7,932,230 | 789,209,742 | 5.4% | 833,970,025 |
| Sep-20 | | | | 465,225 | 376,462 | 7,830,681 | 726,088,286 | -7.4% | 676,287,868 |
| Oct-20 | | | | 255,501 | 326,828 | 8,451,683 | 558,417,867 | -30.9% | 426,740,805 |
| Nov-20 | | | | 14,207 | 327,160 | 8,059,752 | 245,712,802 | 2.8% | 252,774,109 |
| Dec-20 | | | | 3,207 | 348,303 | 6,314,634 | 190,814,182 | 20.0% | 238,530,945 |

# Table C-5 - Estimates of Passive Savings - Past and Future
# City of Loveland

| | | Passive Savings (in gpcd) | | | | | | Reduced Demand (1000s of gallons/day) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Toilet | | D/W + Clothes Washers* | | Total | | | | |
| Year | Population | High | Low | High | Low | High | Low | High | Low | |
| 2005 | | | | | | | | | | |
| 2006 | | 6.61 | 1.98 | 0.95 | 0.62 | | | | | |
| 2007 | | 7.27 | 2.18 | 1.91 | 1.25 | | | | | |
| 2008 | | 7.93 | 2.38 | 2.86 | 1.87 | | | | | |
| 2009 | | 8.59 | 2.58 | 3.82 | 2.49 | | | | | |
| 2010 | | 9.25 | 2.78 | 4.77 | 3.12 | | | | | |
| 2011 | 67455 | 9.91 | 2.97 | 5.73 | 3.74 | 4.84 | 2.46 | 326.81 | 166.19 | Estimate of Past Water Demand Reductions from Passive Savings |
| 2012 | 68495 | 10.57 | 3.17 | 6.68 | 4.36 | 1.61 | 0.82 | 110.62 | 56.25 | |
| 2013 | 69690 | 11.23 | 3.37 | 7.63 | 4.98 | 3.23 | 1.64 | 225.09 | 114.46 | |
| 2014 | 70991 | 11.89 | 3.57 | 8.59 | 5.61 | 4.84 | 2.46 | 343.94 | 174.90 | |
| 2015 | 72403 | 12.56 | 3.77 | 9.54 | 6.23 | 6.46 | 3.28 | 467.71 | 237.84 | |
| 2016 | 73926 | 12.91 | 3.95 | 10.50 | 6.85 | 7.77 | 4.09 | 574.30 | 302.25 | |
| 2017 | 75449 | 13.26 | 4.13 | 11.45 | 7.48 | 9.08 | 4.89 | 684.88 | 369.12 | |
| 2018 | 76975 | 13.62 | 4.31 | 11.45 | 8.10 | 9.43 | 5.70 | 726.03 | 438.44 | |
| 2019 | 78502 | 13.97 | 4.49 | 11.45 | 8.72 | 9.79 | 6.50 | 768.27 | 510.23 | |
| 2020 | 80086 | 14.33 | 4.67 | 11.45 | 9.35 | 10.14 | 7.30 | 812.16 | 584.88 | Estimate of Future Passive Savings Demand Reductions in 2020 |

* dish washers plus clothes washers

# Table C-6 - Past and Forecasted Annual Water Demands without Passive Savings
## City of Loveland
### Average Conditions

| | Billed Water (in 1000s of gallons) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Residential | | Commercial | | | | | |
| Year | Inside City | Outside City | Inside City | Outside City | City Use | Other Uses | Hydrant | Ranch |
| 2005 | 2,623,544 | 133,597 | 466,292 | 21,020 | 53,628 | 93,248 | 4,610 | 97,001 |
| 2006 | 3,186,549 | 150,123 | 517,424 | 22,288 | 68,868 | 101,227 | 5,102 | 123,473 |
| 2007 | 2,989,778 | 139,242 | 515,274 | 20,981 | 68,262 | 54,810 | 3,683 | 53,921 |
| 2008 | 2,967,702 | 140,831 | 590,295 | 18,266 | 69,194 | 5 | 4,033 | 78,957 |
| 2009 | 2,516,008 | 120,300 | 510,429 | 14,786 | 56,127 | 0 | 3,166 | 41,004 |
| 2010 | 2,816,305 | 133,651 | 538,454 | 16,429 | 68,156 | 1,295 | 3,707 | 32,669 |
| 2011 | 2,875,155 | 134,224 | 572,683 | 16,680 | 71,316 | 1,221 | 3,584 | 27,905 |
| 2012 | 2,810,555 | 132,251 | 556,283 | 16,639 | 65,942 | 1,258 | 3,646 | 27,397 |
| 2013 | 2,886,440 | 132,251 | 571,303 | 17,089 | 65,942 | 1,258 | 3,646 | 35,404 |
| 2014 | 2,941,283 | 132,251 | 582,157 | 17,413 | 65,942 | 1,258 | 3,646 | 43,838 |
| 2015 | 3,000,108 | 132,251 | 593,800 | 17,762 | 65,942 | 1,258 | 3,646 | 52,011 |
| 2016 | 3,063,110 | 132,251 | 606,270 | 18,135 | 65,942 | 1,258 | 3,646 | 56,651 |
| 2017 | 3,127,436 | 132,251 | 619,002 | 18,516 | 65,942 | 1,258 | 3,646 | 56,651 |
| 2018 | 3,189,984 | 132,251 | 631,382 | 18,886 | 65,942 | 1,258 | 3,646 | 54,281 |
| 2019 | 3,253,784 | 132,251 | 644,010 | 19,264 | 65,942 | 1,258 | 3,646 | 52,011 |
| 2020 | 3,318,860 | 132,251 | 656,890 | 19,649 | 65,942 | 1,258 | 3,646 | 54,281 |
| | 47,566,602 | 2,142,230 | | | | | | |
| | 96% | 4% | | | | | | |

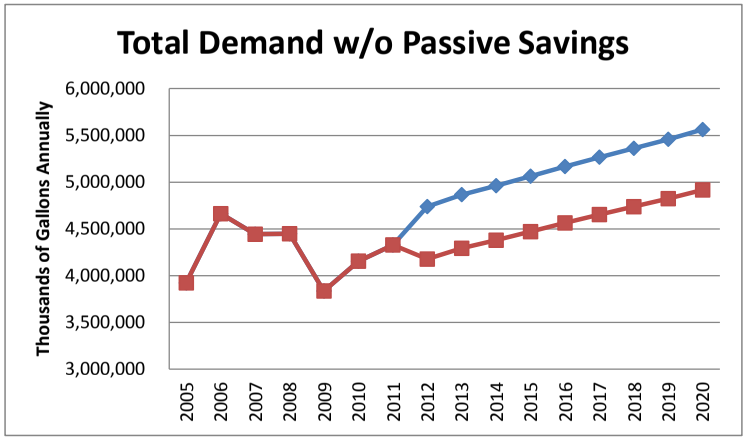
### Above Average Conditions

| | Billed Water (in 1000s of gallons) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Residential | | Commercial | | | | | |
| Year | Inside City | Outside City | Inside City | Outside City | City Use | Other Uses | Hydrant | Ranch |
| 2005 | 2,623,544 | 133,597 | 466,292 | 21,020 | 53,628 | 93,248 | 4,610 | 97,001 |
| 2006 | 3,186,549 | 150,123 | 517,424 | 22,288 | 68,868 | 101,227 | 5,102 | 123,473 |
| 2007 | 2,989,778 | 139,242 | 515,274 | 20,981 | 68,262 | 54,810 | 3,683 | 53,921 |
| 2008 | 2,967,702 | 140,831 | 590,295 | 18,266 | 69,194 | 5 | 4,033 | 78,957 |
| 2009 | 2,516,008 | 120,300 | 510,429 | 14,786 | 56,127 | 0 | 3,166 | 41,004 |
| 2010 | 2,816,305 | 133,651 | 538,454 | 16,429 | 68,156 | 1,295 | 3,707 | 32,669 |
| 2011 | 2,875,155 | 134,224 | 572,683 | 16,680 | 71,316 | 1,221 | 3,584 | 27,905 |
| 2012 | 3,164,806 | 166,347 | 607,925 | 19,733 | 78,359 | 1,488 | 4,239 | 61,779 |
| 2013 | 3,250,256 | 166,347 | 624,339 | 20,266 | 78,359 | 1,488 | 4,239 | 69,786 |
| 2014 | 3,312,010 | 166,347 | 636,202 | 20,651 | 78,359 | 1,488 | 4,239 | 78,220 |
| 2015 | 3,378,251 | 166,347 | 648,926 | 21,064 | 78,359 | 1,488 | 4,239 | 86,393 |
| 2016 | 3,449,194 | 166,347 | 662,553 | 21,506 | 78,359 | 1,488 | 4,239 | 91,033 |
| 2017 | 3,521,627 | 166,347 | 676,467 | 21,958 | 78,359 | 1,488 | 4,239 | 91,033 |
| 2018 | 3,592,060 | 166,347 | 689,996 | 22,397 | 78,359 | 1,488 | 4,239 | 88,663 |
| 2019 | 3,663,901 | 166,347 | 703,796 | 22,845 | 78,359 | 1,488 | 4,239 | 86,393 |
| 2020 | 3,737,179 | 166,347 | 717,872 | 23,302 | 78,359 | 1,488 | 4,239 | 88,663 |

# Table C-6 - Past and Forecasted Annual Water Demands without Passive Savings
# City of Loveland

## Average Conditions

| Year | Total Billed | Total Non-Revenue | Total Demand (1000 gallons) | Acre-Feet of Demand |
|---|---|---|---|---|
| 2005 | 3,492,940 | 430,360 | 3,923,300 | 12,040 |
| 2006 | 4,175,054 | 487,646 | 4,662,700 | 14,309 |
| 2007 | 3,845,950 | 597,250 | 4,443,200 | 13,636 |
| 2008 | 3,869,283 | 579,317 | 4,448,600 | 13,652 |
| 2009 | 3,261,820 | 574,580 | 3,836,400 | 11,773 |
| 2010 | 3,610,666 | 544,734 | 4,155,400 | 12,752 |
| 2011 | 3,702,767 | 625,956 | 4,328,723 | 13,284 |
| 2012 | 3,613,971 | 563,532 | 4,177,503 | 12,820 |
| 2013 | 3,713,332 | 579,385 | 4,292,717 | 13,174 |
| 2014 | 3,787,788 | 591,383 | 4,379,171 | 13,439 |
| 2015 | 3,866,777 | 604,074 | 4,470,851 | 13,721 |
| 2016 | 3,947,263 | 616,825 | 4,564,088 | 14,007 |
| 2017 | 4,024,701 | 628,876 | 4,653,577 | 14,281 |
| 2018 | 4,097,630 | 640,110 | 4,737,740 | 14,540 |
| 2019 | 4,172,164 | 651,599 | 4,823,763 | 14,804 |
| 2020 | 4,252,776 | 664,254 | 4,917,031 | 15,090 |
| | | 13.5% | | |




## Above Average Conditions

| Year | Total Billed | Total Non-Revenue | Total Demand (1000 gallons) | Acre-Feet of Demand |
|---|---|---|---|---|
| 2005 | 3,492,940 | 430,360 | 3,923,300 | 12,040 |
| 2006 | 4,175,054 | 487,646 | 4,662,700 | 14,309 |
| 2007 | 3,845,950 | 597,250 | 4,443,200 | 13,636 |
| 2008 | 3,869,283 | 579,317 | 4,448,600 | 13,652 |
| 2009 | 3,261,820 | 574,580 | 3,836,400 | 11,773 |
| 2010 | 3,610,666 | 544,734 | 4,155,400 | 12,752 |
| 2011 | 3,702,767 | 625,956 | 4,328,723 | 13,284 |
| 2012 | 4,104,676 | 634,582 | 4,739,258 | 14,544 |
| 2013 | 4,215,080 | 651,925 | 4,867,005 | 14,936 |
| 2014 | 4,297,517 | 665,000 | 4,962,516 | 15,229 |
| 2015 | 4,385,066 | 678,846 | 5,063,912 | 15,541 |
| 2016 | 4,474,720 | 692,834 | 5,167,555 | 15,859 |
| 2017 | 4,561,518 | 706,149 | 5,267,667 | 16,166 |
| 2018 | 4,643,549 | 718,611 | 5,362,161 | 16,456 |
| 2019 | 4,727,368 | 731,353 | 5,458,721 | 16,752 |
| 2020 | 4,817,449 | 745,287 | 5,562,736 | 17,071 |
| | | 13.4% | | |

# Table C-7 - Past and Forecasted Annual Water Demand with Passive Savings
# City of Loveland

## Average Conditions

| | Billed Water (in 1000s of gallons) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Residential | | Commercial | | | | | |
| Year | Inside City | Outside City | Inside City | Outside City | City Use | Other Uses | Hydrant | Ranch |
| 2005 | 2,623,544 | 133,597 | 466,292 | 21,020 | 53,628 | 93,248 | 4,610 | 97,001 |
| 2006 | 3,186,549 | 150,123 | 517,424 | 22,288 | 68,868 | 101,227 | 5,102 | 123,473 |
| 2007 | 2,989,778 | 139,242 | 515,274 | 20,981 | 68,262 | 54,810 | 3,683 | 53,921 |
| 2008 | 2,967,702 | 140,831 | 590,295 | 18,266 | 69,194 | 5 | 4,033 | 78,957 |
| 2009 | 2,516,008 | 120,300 | 510,429 | 14,786 | 56,127 | 0 | 3,166 | 41,004 |
| 2010 | 2,816,305 | 133,651 | 538,454 | 16,429 | 68,156 | 1,295 | 3,707 | 32,669 |
| 2011 | 2,875,155 | 134,224 | 572,683 | 16,680 | 71,316 | 1,221 | 3,584 | 27,905 |
| 2012 | 2,781,414 | 130,939 | 556,283 | 16,639 | 65,942 | 1,258 | 3,646 | 27,397 |
| 2013 | 2,827,141 | 129,581 | 571,303 | 17,089 | 65,942 | 1,258 | 3,646 | 35,404 |
| 2014 | 2,850,674 | 128,171 | 582,157 | 17,413 | 65,942 | 1,258 | 3,646 | 43,838 |
| 2015 | 2,876,894 | 126,702 | 593,800 | 17,762 | 65,942 | 1,258 | 3,646 | 52,011 |
| 2016 | 2,910,033 | 125,357 | 606,270 | 18,135 | 65,942 | 1,258 | 3,646 | 56,651 |
| 2017 | 2,943,371 | 123,962 | 619,002 | 18,516 | 65,942 | 1,258 | 3,646 | 56,651 |
| 2018 | 2,986,628 | 123,093 | 631,382 | 18,886 | 65,942 | 1,258 | 3,646 | 54,281 |
| 2019 | 3,030,515 | 122,196 | 644,010 | 19,264 | 65,942 | 1,258 | 3,646 | 52,011 |
| 2020 | 3,074,886 | 121,264 | 656,890 | 19,649 | 65,942 | 1,258 | 3,646 | 54,281 |

## Above Average Conditions

| | Billed Water (in 1000s of gallons) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Residential | | Commercial | | | | | |
| Year | Inside City | Outside City | Inside City | Outside City | City Use | Other Uses | Hydrant | Ranch |
| 2005 | 2,623,544 | 133,597 | 466,292 | 21,020 | 53,628 | 93,248 | 4,610 | 97,001 |
| 2006 | 3,186,549 | 150,123 | 517,424 | 22,288 | 68,868 | 101,227 | 5,102 | 123,473 |
| 2007 | 2,989,778 | 139,242 | 515,274 | 20,981 | 68,262 | 54,810 | 3,683 | 53,921 |
| 2008 | 2,967,702 | 140,831 | 590,295 | 18,266 | 69,194 | 5 | 4,033 | 78,957 |
| 2009 | 2,516,008 | 120,300 | 510,429 | 14,786 | 56,127 | 0 | 3,166 | 41,004 |
| 2010 | 2,816,305 | 133,651 | 538,454 | 16,429 | 68,156 | 1,295 | 3,707 | 32,669 |
| 2011 | 2,875,155 | 134,224 | 572,683 | 16,680 | 71,316 | 1,221 | 3,584 | 27,905 |
| 2012 | 3,135,665 | 165,035 | 607,925 | 19,733 | 78,359 | 1,488 | 4,239 | 61,779 |
| 2013 | 3,190,957 | 163,677 | 624,339 | 20,266 | 78,359 | 1,488 | 4,239 | 69,786 |
| 2014 | 3,221,402 | 162,267 | 636,202 | 20,651 | 78,359 | 1,488 | 4,239 | 78,220 |
| 2015 | 3,255,036 | 160,798 | 648,926 | 21,064 | 78,359 | 1,488 | 4,239 | 86,393 |
| 2016 | 3,296,116 | 159,453 | 662,553 | 21,506 | 78,359 | 1,488 | 4,239 | 91,033 |
| 2017 | 3,337,563 | 158,058 | 676,467 | 21,958 | 78,359 | 1,488 | 4,239 | 91,033 |
| 2018 | 3,388,703 | 157,189 | 689,996 | 22,397 | 78,359 | 1,488 | 4,239 | 88,663 |
| 2019 | 3,440,631 | 156,292 | 703,796 | 22,845 | 78,359 | 1,488 | 4,239 | 86,393 |
| 2020 | 3,493,205 | 155,360 | 717,872 | 23,302 | 78,359 | 1,488 | 4,239 | 88,663 |

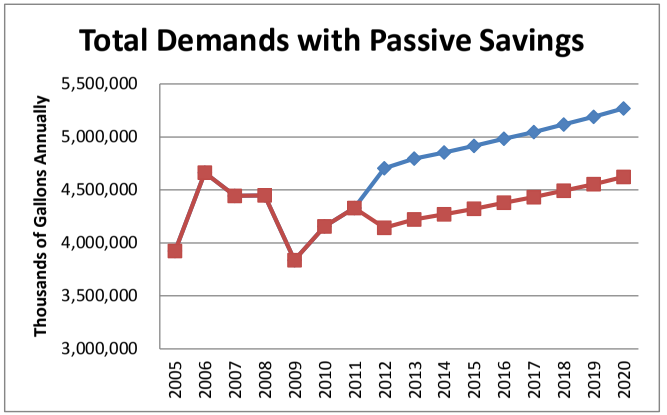
# Table C-7 - Past and Forecasted Annual Water Demand with Passive Savings
# City of Loveland

## Average Conditions

| Year | Total Billed | Total Non-Revenue | Total Demand (1000 gallons) | Acre-Feet of Demand |
|---|---|---|---|---|
| 2005 | 3,492,940 | 430,360 | 3,923,300 | 12,040 |
| 2006 | 4,175,054 | 487,646 | 4,662,700 | 14,309 |
| 2007 | 3,845,950 | 597,250 | 4,443,200 | 13,636 |
| 2008 | 3,869,283 | 579,317 | 4,448,600 | 13,652 |
| 2009 | 3,261,820 | 574,580 | 3,836,400 | 11,773 |
| 2010 | 3,610,666 | 544,734 | 4,155,400 | 12,752 |
| 2011 | 3,702,767 | 625,956 | 4,328,723 | 13,284 |
| 2012 | 3,583,517 | 558,784 | 4,142,301 | 12,712 |
| 2013 | 3,651,363 | 569,716 | 4,221,079 | 12,954 |
| 2014 | 3,693,099 | 576,599 | 4,269,698 | 13,103 |
| 2015 | 3,738,014 | 583,958 | 4,321,972 | 13,264 |
| 2016 | 3,787,292 | 591,827 | 4,379,118 | 13,439 |
| 2017 | 3,832,347 | 598,820 | 4,431,167 | 13,599 |
| 2018 | 3,885,115 | 606,912 | 4,492,027 | 13,786 |
| 2019 | 3,938,840 | 615,159 | 4,553,998 | 13,976 |
| 2020 | 3,997,815 | 624,431 | 4,622,247 | 14,185 |
| | | 13.5% | | |

## Above Average Conditions

| Year | Total Billed | Total Non-Revenue | Total Demand (1000 gallons) | Acre-Feet of Demand |
|---|---|---|---|---|
| 2005 | 3,492,940 | 430,360 | 3,923,300 | 12,040 |
| 2006 | 4,175,054 | 487,646 | 4,662,700 | 14,309 |
| 2007 | 3,845,950 | 597,250 | 4,443,200 | 13,636 |
| 2008 | 3,869,283 | 579,317 | 4,448,600 | 13,652 |
| 2009 | 3,261,820 | 574,580 | 3,836,400 | 11,773 |
| 2010 | 3,610,666 | 544,734 | 4,155,400 | 12,752 |
| 2011 | 3,702,767 | 625,956 | 4,328,723 | 13,284 |
| 2012 | 4,074,223 | 629,874 | 4,704,096 | 14,436 |
| 2013 | 4,153,111 | 642,341 | 4,795,451 | 14,717 |
| 2014 | 4,202,827 | 650,348 | 4,853,175 | 14,894 |
| 2015 | 4,256,302 | 658,912 | 4,915,214 | 15,084 |
| 2016 | 4,314,748 | 668,066 | 4,982,814 | 15,292 |
| 2017 | 4,369,164 | 676,371 | 5,045,536 | 15,484 |
| 2018 | 4,431,034 | 685,723 | 5,116,758 | 15,703 |
| 2019 | 4,494,043 | 695,256 | 5,189,299 | 15,925 |
| 2020 | 4,562,488 | 705,843 | 5,268,331 | 16,168 |
| | | 13.4% | | |



# Appendix F
# Public Comment Notice and Public Comments

# *AFFIDAVIT OF PUBLICATION*

# REPORTER-HERALD

State of Colorado
County of Larimer

I, the undersigned agent, do solemnly swear that the LOVELAND REPORTER-HERALD is a daily newspaper printed, in whole or in part, and published in the City of Loveland, County of Larimer, State of Colorado, and which has general circulation therein and in parts of Larimer and Weld counties; that said newspaper has been continuously and uninterruptedly published for a period of more than six months next prior to the first publication of the annexed legal notice of advertisement, that said newspaper has been admitted to the United States mails as second-class matter under the provisions of the Act of March 3, 1879, or any, amendments thereof, and that said newspaper is a daily newspaper duly qualified for publishing legal notices and advertisements within the meaning of the laws of the State of Colorado; that a copy of each number of said newspaper, in which said notice of advertisement was published, was transmitted by mail or carrier to each of the subscribers of said newspaper, according to the accustomed mode of business in this office.

The annexed legal notice or advertisement was published in the regular and entire edition of said daily newspaper once; and that one publication of said notice was in the issue of said newspaper dated **February 23, 2013**.

Agent

Subscribed and sworn to before me this **25th** day of **February**, 2013 in the County of Larimer, State of Colorado.

Notary Public

DEBRA K RYSAVY
NOTARY PUBLIC
STATE OF COLORADO
NOTARY ID # 19934006283
MY COMMISSION EXPIRES APRIL 30, 2017

Account # 222255
Ad #5580546
Fee $22.31

**PUBLIC NOTICE OF WATER CONSERVATION PLAN**
**CITY OF LOVELAND**
**PUBLIC COMMENT PERIOD: FEBRUARY 21 - APRIL 21, 2013**
**PUBLIC HEARING: CITY COUNCIL MEETING, MAY 14, 2013**

Notice is hereby given that the City of Loveland is updating its Water Conservation Plan, pursuant to State Law. The City is seeking public comment over the next 60-days, and will conduct a Public Hearing on the Plan during the City Council Meeting on Tuesday, May 14, 2013. The City Council Meeting will be called to order at 6:30 p.m. in the City Council Chambers, 500 East Third Street, Loveland. Comments on the Water Conservation Plan will be received during the time designated in the meeting's agenda.

The City's Water Conservation Plan is designed to promote the efficient consumption of all water usage by residents, businesses, and local governments to more beneficially use our water resources, and insure a future adequate water supply.

The Water Conservation Plan is available for review and comment by the public at the City Service Center, 200 North Wilson Avenue, and at the Loveland Public Library, 300 North Adams, during regular business hours or online at www.cityofloveland.org/WCP.

The point of contact for the Water Conservation Plan is Lindsey Bashline, Customer Relations Specialist, who can be reached at 970-962-3727.

City of Loveland
Teresa G. Andrews, City Clerk
Published: Loveland Reporter-Herald on Feb. 23, 2013. Ad #5580546

# WATER CONSERVATION PLAN

**PUBLIC NOTICE OF WATER CONSERVATION PLAN**

**CITY OF LOVELAND**

PUBLIC COMMENT PERIOD: FEBRUARY 21 – APRIL 21, 2013

PUBLIC HEARING: CITY COUNCIL MEETING, MAY 14, 2013

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The City's Water Conservation Plan is designed to promote the efficient consumption of all water usage by residents, businesses, and local governments to more beneficially use our water resources, and insure a future adequate water supply.

The Water Conservation Plan is available for review and comment by the public at the City Service Center, 200 North Wilson Avenue, and at the Loveland Public Library, 300 North Adams, during regular business hours or online by viewing a copy of the updated Water Conervation Plan here and submitting comments to SustainLoveland@cityofloveland.org.

The point of contact for the Water Conservation Plan is Lindsey Bashline, Customer Relations Specialist, who can be reached at 970-962-3727.

**Comments:** Inquiries were made as to how we track the Colorado Big Thompson sales price. Staff responded that we use Stratecon, Inc. to track the price. Inquiries were made as to how often we adjust the market price of C-BT and staff responded that it has varied over the years. At times we have changed the price monthly and at other times the price has remained steady for years. Staff informed LUC that we purchased 282 units of C-BT in 2012.

The City of Loveland cash-in-lieu fee is calculated as 1.05 times the recognized C-BT market price. Using the new recognized C-BT market price results in a cash-in-lieu fee of $11,200 per acre-foot.

**Item #3: Change of Installation of Services – Brieana Reed-Harmel** The power division has been piloting a change to the way that residential service installations are installed.

**Recommendation:** Staff recommends that this new installation procedure be incorporated into the Requirements for Electric Services book.

**Motion:** John Matis made the motion.
**Second:** CJ McKinney seconded the motion. The motion was approved unanimously.

**Comments:** Board members inquired over who inspects the service installations, who owns the service installation and what to do if the marking stakes are knocked out. Staff responded that the City inspects them and that they are required to meet the National Electric Code. Once energized, the City owns the service. If the stakes are knocked down, we have exact measurements to be able to locate the underground structures. Power staff also presented these changes to CAB who approved the change barring any negative comments from a survey of Developers and Contractors involved in the pilot program. Dave Schneider provided some suggestions on how to avoid too much leverage or damages made to the box and Brieana Reed-Harmel thanked him for his suggestions and said she would look into it.

**Item #4: Draft Updated Water Conservation Plan – Lindsey Bashline & Tracy Bouvette** Unfortunately, Tracy Bouvette was ill and unable to make the meeting. In his stead, Lindsey Bashline and Greg Dewey gave verbal presentation. he purpose of this item is to provide LUC with an overview of the Draft Water Conservation Plan. To comply with the State's Water Conservation Act of 2004, staff has updated the 1996 Loveland Water Conservation Plan.

**Recommendation:** Information item only. No action required.

**Comments:**
Darell Zimbelman inquired what this plan was needed for. Staff responded that it is required for the Windy Gap Firming Project and for compliance to Colorado's Water Conservation Act of 2004. Board members inquired over how public comments would be handled and how board members would be kept informed of these public comments. Staff responded that we could send the comments to board members or summaries of the commentary to board members. Some board members expressed interest in having the innovative and non-standard comments passed on to them.

Gene Packer inquired about whether we have a way of measuring upstream usage verses downstream usage to help discover where leaks are occurring. Steve Adams responded that there are some large water distribution systems that do use in-stream measurements to determine where losses are occurring. However, these are very expensive and would be cost prohibitive for the City of Loveland to incorporate at this time. If we were to incorporate AMI, we could do instantaneous measurements to see where there are variations in consumption to find leaks. The City has purchase lead detection equipment and last year used the equipment to inspect 26 miles of waterlines. We are focusing first on using this equipment in areas with older pipes or in areas where we suspect leaks.

Board member asked for examples of unbilled usages. Staff responded that there are small parks or areas where we water just a few trees or plants and do not meter the usage or bill parks for the water.

A larger use would be at the fire training ground where there are 6 fire hydrants. We are coordinating with fire so that their training occurs in off peak periods. John Rust Jr. expressed that it may be good for us to communicate to the public the benefits of these authorized unmetered uses of water.

Steve Adams explained how we are looking to use Water Services of America who has proprietary software that can analyze information such as billing rates, readings, and volumetric measurements, and help find under billed errors and close the gap between water is metered and what is billed. They have saved companies millions of dollars and are paid based on the losses they find – 45% of the first 3 years of savings. We will be able to not only fix the problems, but also make more money.

Board members made inquiries as to what is normal for real losses of non-revenue water. Staff commented than anything under 5% is very good and that even under 15% is not bad. Board members inquired and made comments in regards to our efforts to educate not only schools, but also landscapers and working with Planning and HOA's to change landscaping requirements to conserve water through using more Xeriscape.

## STAFF REPORTS

**Item #5: Oil & Gas Aquifers as Potential Raw Water Supply – Larry Howard** In the November LUC meeting, local attorney John Chilson spoke to the LUC and addressed the need for continued water management and the importance of completing the Windy Gap Firming Project. He expressed his concerns about climate change and about how drought and politics on the Colorado River could negatively affect future water supplies in this state. John proposed the possibility of using groundwater from aquifers in which oil and gas wells are being drilled in the vicinity as a future source of raw water for the city, or from springs in the vicinity of Chimney Hollow west of Carter Lake. This item provides information about the feasibility of using these sources, based on information from the Colorado Oil & Gas Conservation Commission website at http://cogcc.state.co.us/, other web sources, and discussion with staff member Greg Deranleau, Oil & Gas Location Assessment Supervisor.

Staff Report only. No action required.

**Comments:** Inquiry was made if we could send John Chilson this information, and staff responded that John Chilson did receive a copy of this item and he has been added to the monthly email list that provides a link to the most current LUC packet.

**Item #6: Financial Report Update – Jim Lees** This item summarizes the monthly and year-to-date financials for December 2012.

Staff Report only. No action required.

## COMMISSION/COUNCIL REPORTS

**Item #7: Commission/Council Reports**

- Colorado Water Congress – January 31, 2013 to February 1, 2013
- City Council Meeting on Water Financing – February 19, 2013

**John Rust Jr:** At the Water Congress everyone present expressed that they are dealing with the same problems as us in replacing lines, burned out equipment, increase rates. These are state wide issues. In time, we will see tremendous rate increases across the state as utilities work through these problems. He said that we are fortunate that Loveland already has plans and is working on obtaining funding to deal with these problems unlike some other utilities that are still trying to figure out what they will do. He particularly enjoyed the presentation on age differences and generation differences and the importance of getting the younger generation involved in conferences like these because they will become our future leaders.

1

# CITY OF LOVELAND
# WATER AND POWER

# UPDATED WATER CONSERVATION PLAN

MAY 14, 2013

GREAT WESTERN INSTITUTE

2

Colorado's Water Conservation Act of 2004, all covered entities, must have a water efficiency plan on file with the state that has been approved by the Colorado Water Conservation Board (CWCB).

- Approved Plan for CWCB grants and loans
- State compliance for future projects
- Community expectation

# Water Conservation

3

- Colorado Water Conservation Board defines Water Conservation as:

Water use efficiency, wise water use, water transmission and distribution system efficiency, and supply substitution. The objective of water conservation is a long-term increase in the productive use of water supply in order to satisfy water supply needs without compromising desired water service.

# Loveland's Conservation History

4

- Lawn Watering Restrictions – 1893
  - Town divided into two sections, one watered from 5am-1pm and the other from 1pm-9pm.
- 1970-1981 watering restrictions allowing watering only every two or three days.
- June 1980, City Council passed an ordinance requiring all water services to be metered.
- 1982 restrictions lifted after the installation of water meters and expansion of the water treatment plant.

| | 1981 | 1982 | Percent change |
|---|---|---|---|
| Peak Day | 19.5 | 15.0 | -23.1 |
| Average day | 7.2 | 6.0 | -16.7 |
| Total production | 2620.4 | 2203.8 | -15.9 |

# Loveland's Conservation History

5

- 1994 Water Conservation Specialist Position
- May1996 Water Conservation Plan (City Council Approved June 4, 1996)
  - Promote the wise use of water among citizens
  - Reduce peak day demand
  - Reduce wastewater flows
- 1996 Jeff Peterson Xeriscape Demonstration Garden
  - 2004 Service Center Demonstration Garden
- 2006 Irrigation Task Force
- 2006 Hydrozone Program (Water Efficient Landscape Program)

# Overview

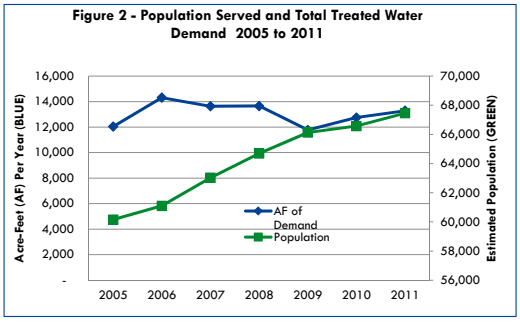
6

- Culture of Stewardship
- A Water Supply that is:

  **Reliable**

  **Secure**

  **Sustainable**

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## Specifics/Guiding Principles

7

- First Community Metered in Colorado
- Uniform Water Rates
- No Rebates

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## Conservation Plan Update

8

- Overview of Project Parts
  - Data Mining and Assessment
  - Goal Setting
  - Evaluations and Assessments
  - Program Selection
  - Implementation

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## Background

9

- Funding Summary
  - Governor's Energy Office funding to Recharge Colorado
    - Seed Money for Data Mining from Billing Data
    - Symbiotic/Great Western Institute
  - Supplemental Funding by Water and Power
  - Meetings
    - Data
    - Forecasting
    - Goal Setting
    - Selection and Implementation

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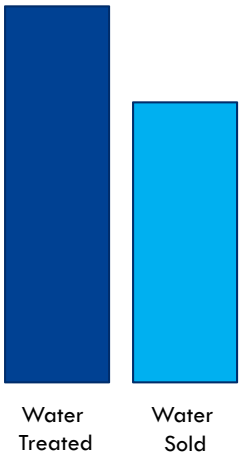
## Specifics/Guiding Principles

10

- Loveland's water conservation plan focuses on assisting future water use efficiency within the utility's service area by:
  - Managing City water use both indoor and outdoor;
  - Identifying and implementing measures and programs that are expected to reduce summertime peak day water demand; and
  - Assisting customers that wish to improve their water efficiency.

# Non-Revenue Water

11

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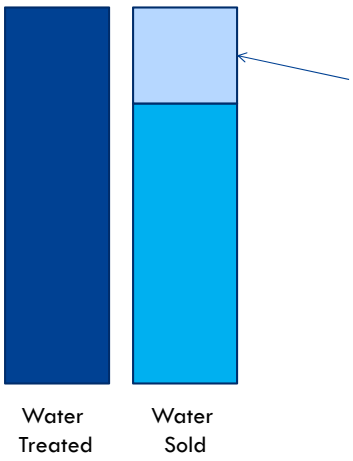
# Non-Revenue Water

12




Non-Revenue Water –
Water that has a cost to produce (e.g., energy, treatment, distribution) which does not produce revenue.

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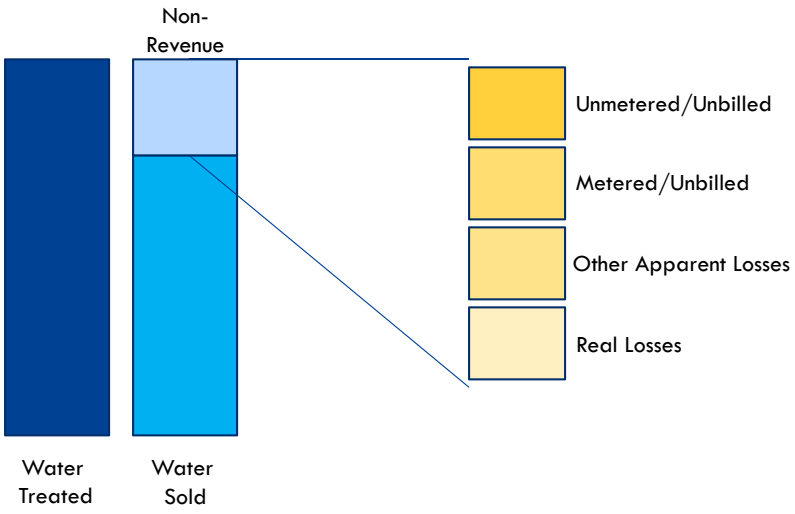
# Non-Revenue Water

13

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# Unbilled Authorized Uses

14

- Isolated locations in City Facilities
- Line Flushing
- Inactive accounts that may be using water
- Can Be 1 – 3% of Water Production

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## Unbilled Unauthorized/ Unmetered Uses

15

- Theft
- Is Typically less than 1% of Water Production

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## Apparent Losses

16

- Key Types
  - Customer Metering Inaccuracies
  - Systematic Data Handling Errors
- Can Be 3-6% of Water Production

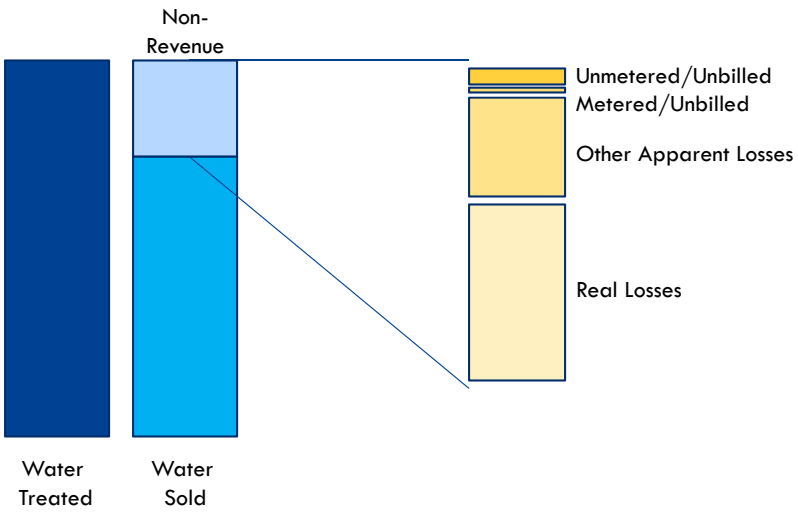
# Real Losses

17

- Key Types
  - Leaks on the Supply Side of the Meter
    - Detected
    - Undetected
  - Dependent on Pipe Material/Age/Location

# Non-Revenue Water

18

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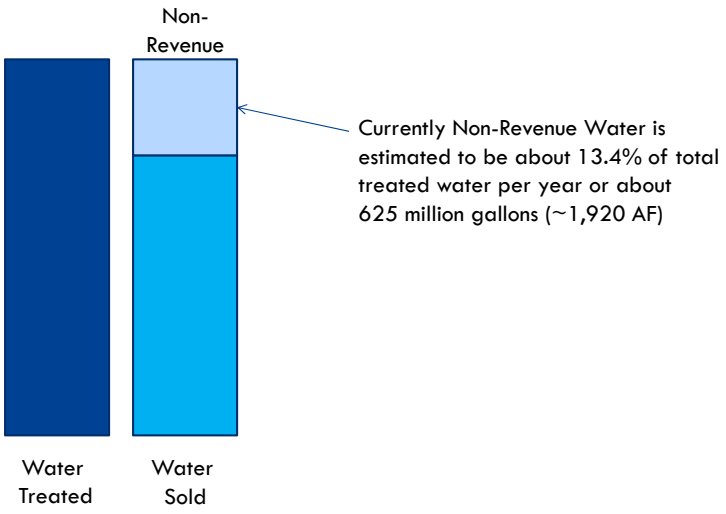
# Non-Revenue Water

19




# Metering Issues

20

- Meters are aging
- Meter reading consistency (e.g., access issues, staff availability, timing of master meter reading and customer meter reading)

| Size (inches) | 5/8 – 3/4 | 1 | 1.5 | 2 | 3 | 4 | 6+ |
|---|---|---|---|---|---|---|---|
| Quantity | 23,616 | 729 | 375 | 274 | 56 | 27 | 8 |
| **Total** | | | | | | | **25,086*** |

* Includes 1-1.25 inch meter

# Improving Metering

21

- Key Actions
  - Best Management Practices
    - Tracking of Meter Age and Use
    - Testing and/or Replacement of Large Meters
    - Consistent Meter Replacement Programs
  - Infrastructure
    - New Meters
    - Low Flow Meter Batching Devices
    - Electronic Meter Reading Data Management
    - Automatic Meter Reading (AMR)/Advanced Metering Infrastructure (AMI)

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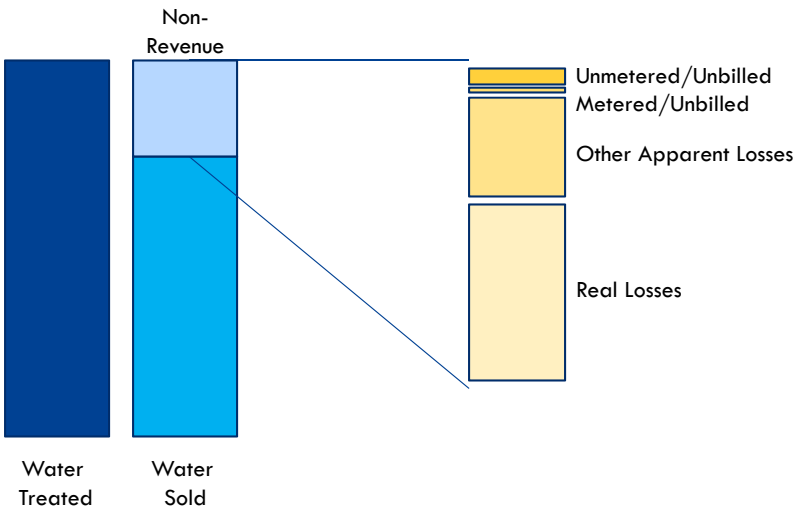
# Non-Revenue Water

22

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# Real Losses – Leaks and Breaks

23

- Key Factors
  - Pipe Materials
  - Corrosive Soils
  - System Pressure
  - Age

| | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|
| Number | 62 | 61 | 62 | 100 | 76 |
| Estimated Losses (million gallons) | 6 | 3 | 9 | 23 | 28 |

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# Real Losses

24

- Key Actions
  - Best Management Practices
    - Improve Meter Accuracy (to identify find leaks)
    - Automatic Meter Reading (AMR)/Advanced Metering Infrastructure (AMI)
    - Submetering
    - Reduction of Unbilled Uses
    - Improved Tracking
    - Replace Lines

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## Water Conservation Customer Survey

25

- Survey to evaluate various customer class interest in water conservation
  - Programs
  - Willingness to fund
  - Current perception of water
  - Preferences of ways to receive information

## Other Key Conservation Programs

26

- System Wide Water Audit
- Water Rate Increases
- Messaging to Community
- Water Waste Ordinance
- City Facilities - Parks Irrigation Improvements
- Customer Assistance/Promotions
  - Slow the Flow
  - Garden in a Box
  - Commercial Audits
  - Water and Energy Assessments/Audits (LCCC)
  - Efficiency Express
- K-12 Education
- Additional Water Rate Studies

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# Goals to Achieve

27

- Reduce Non-Revenue Water
- Reduce Summertime Peak Demand
- Maintain Appropriate Water Rates
- Support City sustainability efforts
- Support Largest Commercial and Irrigation Customers

Estimated savings are about 11% or 1,750 AF reduction by 2020

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# Proposed Budget

28

| | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|
| | | | | | |
| Park Irrigation Retrofits | $ 14,000 | $ 14,000 | $ 14,000 | $ 14,000 | $ 14,000 |
| Water Waste Ordinance | 1,500 | | | | |
| Slow the Flow | 13,200 | 13,200 | 13,200 | 13,200 | 13,200 |
| Garden-in–a-Box | 4,000 | 4,000 | 4,000 | 4,000 | 4,000 |
| Wise Water Use Messaging | 25,000 | 8,000 | 8,000 | 8,000 | 8,000 |
| Commercial Water Audits | | | 15,000 | 15,000 | |
| System Wide Water Audits | 40,000 | 15,000 | 15,000 | 15,000 | 15,000 |
| Meter and Water Line Replacement | 260,000 | 260,000 | 260,000 | 260,000 | 260,000 |
| Water Rate Study | | 25,000 | | | 25,000 |
| K-12 Education | 5,000 | 5,000 | 5,000 | 5,000 | 5,000 |
| Larimer County Conservation Corps, Energy and Water Program and the Home Energy Audit Program | 8,000 | 8,000 | 8,000 | 8,000 | 8,000 |
| Efficiency Express | 2,500 | 2,500 | 2,500 | 2,500 | 2,500 |
| **Total** | **373,200** | **354,700** | **354,700** | **354,700** | **354,700** |

# 2013-2017 Capital Improvement Plan

29

| Table 6 – Summary of City's 5-Year (2013-2017) Detailed Capital Plan for Water Projects | | |
|---|---|---|
| | | 5-Year Total |
| **Transmission and Distribution** | | |
| | Water Line Replacements | $7,834,020 |
| | Water Storage Tanks | $240,140 |
| | Meter Replacements | $440,930 |
| **Water Treatment Plant (general)** | | $9,978,360 |
| **Water Resources** | | |
| **SIF Projects** | | |
| | Water Lines | $860,130 |
| | Water Storage | $240,140 |
| | Water Treatment | $11,566,810 |
| **General Plant** | | $971,200 |
| **O&M Projects** | | $3,907,780 |
| | **5-Year Total** | $36,039,510 |

# Next Steps

30

- Presented to LUC February 20, 2013
- 60-day public comment period (Feb. 21 – April 21)
- M-Team – April 9, 2013
- Construction Advisory Board – April 24, 2013
- LUC for approval – April 24, 2013
- City Council study session – May 14, 2013
- Bring to City Council for approval – June 4, 2013
- Submit for CWCB for approval
- Implementation

# Questions?

31

**CITY OF LOVELAND**
WATER & POWER DEPARTMENT
200 North Wilson • Loveland, Colorado 80537
(970) 962-3000 • FAX (970) 962-3400 • TDD (970) 962-2620

**AGENDA ITEM:** **3**
**MEETING DATE:** 5/14/2013
**TO:** City Council
**FROM:** Steve Adams, Water & Power Department
**PRESENTERS:** Chris Matkins, Water Utilities Manager
Greg Dewey, Civil Engineer – Water Resources

**TITLE:**
Drought Management Plan

**DESCRIPTION:**
The study session will provide City Council with a DRAFT Drought Management Plan, as proposed by Staff and the Loveland Utilities Commission (LUC). Also provided will be information about the City's water supply status for 2013 and a recommendation as to the drought response level.

**SUMMARY:**
The City of Loveland has developed a robust water supply over many decades. The City has a sizable portfolio of water rights including: senior water rights for the Big Thompson River; west slope water rights including C-BT and Windy Gap; and a 6,835 ac-ft reservoir (Green Ridge Glade) with enough storage when full to provide nearly half of the City's annual average water demand. This water supply offers a very high degree of stability during periods of uncertain drought. The system has been designed to satisfy average (unrestricted) water demands during very infrequent periods of dryness.

Loveland is fortunate and has not endured any recent extraordinary challenges to our watershed, such as a forest fire, that could impact our water supply. Should additional impacts to our water supply occur, the Drought Management Plan allows for a quick response.

While the duration of the current drought cannot be known at this time, staff and LUC believe that current water supplies are adequate to satisfy this year's projected demands without restrictions and recommend using the voluntary drought response level. At this time, staff believes increased education and voluntary participation in wise water use will suffice, along with, continuing the Shave the Peak Program. Should conditions change, staff will return to Council and recommend implementing one of the four mandatory restriction levels included in the Drought Management Plan to curtail demand.

Staff presented the conceptual draft of the Drought Management Plan to the City Management Team on April 9, 2013, the LUC on March 20, 2013, the LUC on April 24, 2013 and the CAB on April 24, 2013. Revisions reflecting comments received at those meetings were made, and a draft document was prepared for the Study Session.

Staff will give a brief PowerPoint presentation summarizing the highlights of the proposed draft Drought Management Plan. Copies of the presentation slides are attached. Comments, suggestions, and guidance are requested following the presentation.

After receiving guidance, staff will return at the June 4, 2013 regular City Council meeting to obtain approval of the Drought Management Plan. The objective is final adoption by the City Council of a plan that establishes action items the City may take when experiencing drought.

As part of the Drought Management Plan, the City could declare a specific Drought Response Level based upon current information. Given recent changes in weather conditions (i.e. snow), staff will present current information at the Study Session, so Council can discuss a specific Drought Response Level to adopt for the City.

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**REVIEWED BY CITY MANAGER:**

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**LIST OF ATTACHMENTS:**
DRAFT City of Loveland Drought Management Plan
PowerPoint Presentation
PowerPoint Recommendation Presentation

# City of Loveland

## DRAFT

## Drought Management Plan

## May 14, 2013

## Executive Summary

The Drought Management Plan (Plan) provides a short term, managed response to water shortages exceeding a 1-in-100 year drought event. The City's current policy of using a 1-in-100 year drought recurrence interval as the basis of planning for the City's raw water supply results in a one percent chance that in any year the City could not meet demands without curtailment. The Drought Management Plan will preserve the sufficiency of Loveland's water supply while ensuring adequate allocations of water to protect the public's health, safety, and welfare during a greater than 1-in-100 year drought.

Based on City water supply projections, if a shortage is expected the Plan provides a system of specific measures meant to lower customer treated water demand. These measures are arranged into four increasingly restrictive response levels linked to the severity of the projected water supply shortage.

The City of Loveland operates, maintains and develops a complex, highly-integrated water supply system balancing east and west slope sources including direct flow and stored supplies, providing flexibility to meet the varying annual water supply conditions and the municipal demands of the customers for both current and long term needs. The city promotes efficient and effective use of its developed water resources for the benefit of its citizens and customers.

Both water conservation and demand management are integral factors in the relationship between the water utility and customers. Demand management is the short-term response to drought or other emergency conditions, and is the subject of this proposed Drought Management Plan. This plan will guide the city's response when it is experiencing drought worse than a 1-in-100 year event. Water conservation differs from drought management in that it involves the application of wise use practices for the water resource over the long-term, and is the subject of a separate water conservation plan. In accordance with direction in the city's approved Raw Water Master Plan, the City does not plan for water conservation to provide supplies for drought management.

City staff projects each current year's demand for water based on historical demand patterns adjusted for growth, differing climatic conditions, and changing trends in water use. Demand as used in this plan is defined as the amount of raw water diverted from the various sources into Loveland's water treatment plant.

Municipal water supply projections are made in mid-April after the Northern Colorado Water Conservancy District Board sets the yearly quota for Colorado-Big Thompson water, which is also when the mountain snowpack is typically at or near its peak. Anticipated supply from all raw water sources are compared to projected demand, and the surplus or shortage is estimated. This estimate is updated regularly throughout the season.

Should a water supply shortage be projected, the city may choose among a number of steps to mitigate the effect without initially imposing usage restrictions on its customers. First, rentals of

raw water from the city to agricultural users may be curbed or cut completely. The Parks and Recreation Department has its own irrigation conservation plan which deals with drought and putting that into action also lowers the city's demand. The Thompson School District can also restrict outdoor use at its facilities and conserve water.

Loveland Water and Power's Customer Relations group will lead the public outreach campaign when the Drought Management Plan is implemented. Basic outreach tools, such as press releases and the city's website will be used. Other tools such as a Drought Blog, YouTube, utility bill inserts, community meetings, social media Key Account email blasts, and special events will be employed as needed.

## Introduction

This Drought Management Plan (Plan) provides a short term, managed response to water shortages exceeding a 1-in-100 year drought event. The City's current policy of using a 1-in-100 year drought recurrence interval as the basis of planning for the City's raw water supply results in a one percent chance that in any year the City could not meet demands without curtailment. The Drought Management Plan will preserve the sufficiency of Loveland's water supply while ensuring adequate allocations of water to protect the public's health, safety, and welfare during a greater than 1-in-100 year drought. Water conservation differs from drought management in that it involves the application of wise use practices for the water resource over the long-term, and is the subject of a separate water conservation plan. In accordance with direction in the city's approved Raw Water Master Plan, the City does not plan for water conservation to provide supplies for drought management.

## Purpose

The City of Loveland's Drought Management Plan is intended to manage the negative effects of drought while experiencing the fewest social and economic impacts until conditions return to normal. The city's current policy of using a 1-in-100 year drought recurrence interval as the basis of planning for the City's raw water supply, results in a one percent chance that in any year the city would not meet demands without curtailment. Based on city water supply shortage projections, this plan provides a system of specific measures meant to lower customer demand. This plan is meant to balance the current year's water needs with available supplies and simultaneously ensure that a reasonable amount of water is reserved to meet demands for the following year. It is also meant to establish a methodology to inform the public of the declaration, severity, change, and removal of a drought response level.

In summary, the purposes of this Drought Management Plan are to:

- Ensure an adequate water supply for each year during a drought event to preserve and protect the public health, safety and welfare with the least social and economic impact;
- Allocate uses so that reasonable quantities of water are reserved for future years to the extent possible;
- Establish methodology used to inform the decision to declare, change or remove a drought response level;
- Outline measures to result in the corresponding necessary level of water use reduction.

Included in this plan are four increasingly restrictive levels of response which may be implemented, from which the city may choose in order to reduce customer water usage and lower the overall demand on Loveland's water system. Each higher level corresponds to a drought of increasing severity. The degree of restriction in each level is meant to coincide with the drought severity and decrease the demand on the system by an estimated 10 percent.

Water conservation and demand management are integral factors in the relationship between the utility and its customers. Water conservation, defined as a long-term process involving the ongoing wise use of water resources and resulting in long-term permanent changes to customer water use, is the subject of a separate plan. Demand management is the short-term response to drought or other emergency conditions, and is the subject of this Drought Management Plan, which will guide the city's response when experiencing a drought worse than a 1-in-100 year event. Water conservation differs from demand management in that it involves the application of wise use practices for the water resource over the long-term, and is the subject of a separate water conservation plan. In accordance with direction in the city's Raw Water Master Plan, the City does not plan for water conservation to provide supplies for drought management.

The proposed Drought Management Plan defines four levels of supply and deficit factors and corresponding responses. It can remain in place indefinitely, ready for implementation when drought conditions warrant. Throughout the year, specific projections may be updated periodically as necessitated by changes in the City's raw water supplies.

Consideration is given to the following factors:

- Loveland's unrestricted water demand, as projected.
- City-owned reservoir storage in Green Ridge Glade Reservoir,
- Projected water supplies available from the Big Thompson River sources.
- Projected water supplies available from the Colorado River sources (Eureka Ditch, CBT and Windy Gap).
- Carryover of CBT water as authorized by Northern Water.
- Other appropriate data and experience in water supply operations

## Loveland's Planned Drought Scenario

Loveland's raw water drought supply policy is discussed in the 2012 Raw Water Master Plan. This plan describes the City's policy of using a 1-in-100 year drought recurrence interval as the basis of planning for the City's raw water supply, which translates into a 1% chance that in any year the City could not meet demands without curtailment.

Between 1986 and 1988 the City initiated work on a two-phase drought study using the services of the engineering firm of Camp, Dresser & McKee, Inc. Phase I of the study contained a recommendation that the City prepare to meet its full demands during a drought event with an average recurrence of 1-in-100 years, which translates into a 1% chance that in any year the City could not meet demands without curtailment. Council accepted Phase I of the report, including the recommendation, on October 7, 1986. The 1-in-100 year level of drought protection remains the goal for the City's raw water supply planning.

This planning policy requires developing sufficient supplies to meet the City's full water demand during the 1-in-100 year drought without water use restrictions. The LUC and City Council

reaffirmed this policy as part of the approval process for the original Raw Water Master Plan in 2005 and the update in 2012.

As stated in the Raw Water Master Plan, Loveland's raw water supply planning goal is to provide the capability for unrestricted use of water to its customers in anything up to 1-in-100 year drought conditions. This translates to a less than 1 percent chance each year that the city will not be able to meet customer demands with current supplies.

In 2003, a Drought Management Plan was created in response to the 2002 drought. While only designed specifically for that year, aspects of that plan were taken to create this broader Drought Management Plan.

## Water Supplies

The City of Loveland promotes the efficient and effective use of its developed water resources for the benefit of its citizens and customers. It operates and maintains a complex system of east and west slope sources including direct flow and stored rights, managed to meet the current and future demands of its customers. Loveland's water supplies used to meet municipal demand are the following:

*Colorado River Supplies (West Slope):*

- Eureka Ditch: This 180 acre-feet of water is delivered under contract from the CBT Project, and is not subject to the annual quota set by Northern Water's board. It is the first water delivered to the city from Northern each water year.
- CBT balance carried over: Water from the previous year may be kept in storage over the winter in the CBT facilities and made available for use in the following year. This may only be used the first year it is carried over under Northern Water's policy, or it is forfeited.
- Quota Water Available: The annual allocation declared by Northern Water's board, typically yielding between 0.5 - 1.0 acre-foot annually per unit. The initial allocation is set in early November each year, typically at 0.5 acre-foot for every CBT unit owned. Usually an additional allocation is granted in early April, based on the need for additional supplies and the availability of water.
- Carryover for the following year: Up to 20 percent, in acre-feet, of the City's ownership of CBT units may be carried over in the CBT system for use the following year. The City owns 12,068 units, so the City may carryover up to 2,414 acre-feet. Also the City uses carryover space from other CBT users to carry over unused City CBT water.
- Windy Gap Water: The City owns 40 units of Windy Gap Project water (WG) which is projected to yield over 4,000 acre-feet of yield during drought following construction of storage in the Windy Gap Firming Project.

*Big Thompson River Supplies (East Slope):*

- GRG Reservoir Storage: The total capacity of storage in the city's Green Ridge Glade Reservoir is 6,835 acre-feet. The goal at the beginning of each new water year on November 1st is to start with the reservoir full.
- Direct Flow: Water which forms the basis of Loveland's direct diversions, some of which is available year-round.
- Ditches transferred in the 202A decree: Transferred ditch shares in the 202A suite of cases. The water may be stored under specific terms, but doing so reduces the amount diverted.
- Ditches transferred in the 392 decree: Transferred ditch shares in the 392 case, with conditions different from the 202A transfers.

Further details of the city's raw water inventory can be found in the 2012 Raw Water Master Plan.

## Declaration of a Drought Level

When drought conditions are experienced, Water Resources staff will determine the projected sufficiency of the city's supplies by monitoring drought indicators and forecasting raw water availability. Staff will make a recommendation to the LUC at or before its April meeting. An LUC and staff recommendation will be made to City Council, which will make the decision whether or not to move into drought management operations and if necessary will declare the appropriate drought response level. As drought conditions change, staff will inform the City Manager and recommend changes to the response level for City Council's consideration and decision.

## Description of Drought Response Levels

The Drought Management Plan contains four increasingly restrictive response levels. For every ten percent of projected supply shortage, a higher level response may be needed with the corresponding restrictions being implemented. During a drought, staff is responsible for monitoring drought indicators and forecasting raw water availability so that the city's appropriate response may be made or changed as conditions warrant. It should be noted that a water shortage does not necessarily mean the city will run out of water. On the first day of each successive water year, which begins on November 1st, having a full water supply would mean that the City's C-BT carryover capacity is fully utilized and Green Ridge Glade Reservoir is full. Not being able to achieve these levels by November 1st indicates a supply shortage, with less water available to meet demands over the following year. If the city is already in a drought, its ability to respond to subsequent drought year scenarios would be reduced.

The colored chart on the following page contains a summary of the four drought levels and the corresponding restrictions.

ATTA

# Drought Management Plan

| | | Response Level | Voluntary | I | II | III | IV |
|---|---|---|---|---|---|---|---|
| | | % Projected Raw Water Supply Shortage | Water Conservation Measures | 1-10% | 11-20% | 21-30% | >30% |
| Type of Water Use | Customer | Turf/Lawn Watering | Shave the Peak Program on even/odd watering days | 3 days/week | 2 days/week | 1 day/week | No lawn watering |
| | | Trees, Shrubs, Perennials | No restrictions | Hand/drip/subsurface or 3 days/week | Hand/drip/subsurface or 2 days/week | Hand/drip/ subsurface only | No water outside |
| | | Non-automated Car Washing | Best Management Practices | Best Management Practices | Best Management Practices | Not allowed | Not allowed |
| | | Dedicated Irrigation Meters | Shave the Peak Program or Best Management Practices | 3 days/week | 2 days/week | 1 day/week | Not allowed |
| | | Spraying Impervious Surfaces | Only as necessary for health & safety | Not allowed (except as necessary for health & safety) | Not allowed (except as necessary for health & safety) | Not allowed (except as necessary for health & safety) | Not allowed (except as necessary for health & safety) |
| | | Hydraulic Fracturing | Customer provides raw water | Customer provides raw water | Customer provides raw water | Customer provides raw water | Customer provides raw water |
| | City | Curtail Leases | Limited by water availability | Limited by water availability | Limited by water availability | No agricultural leases | No agricultural leases |
| | | Public Facilities/Parks/ R2J School District/ Turf/Lawn Watering | Separate approved plans for equal or greater reductions | Separate approved plans for equal or greater reductions | Separate approved plans for equal or greater reductions | Separate approved plans for equal or greater reductions | Separate approved plans for equal or greater reductions |
| | | Non-automated Car Washing | Best Management Practices | Best Management Practices | Not allowed (except as necessary for health & safety) | Not allowed (except as necessary for health & safety) | Not allowed (except as necessary for health & safety) |
| | | Washing City Fleet Vehicles | As needed | Once/week (except as necessary for health & safety) | Once/week (except as necessary for health & safety) | Not allowed (except as necessary for health & safety) | Not allowed (except as necessary for health & safety) |
| | | Fire Hydrant Flushing & Testing | As needed | Limited to transmission lines or critical situations | Limited to transmission lines or critical situations | Limited to critical situations | Limited to critical situations |
| Permits | | Medical Hardship | Does not apply | Permit required | Permit required | Permit required | No exception |
| | | Religious Objection | Does not apply | Permit required | Permit required | Permit required | No exception |
| | | New Lawns | Does not apply | Permit required | Permit required | Permit required | Not allowed |
| Fines | | Residential Fines per Violation | Does not apply | $50 to $1000 | $50 to $1000 | $50 to $1000 | $50 to $1000 |
| | | Business Fines per Violation | Does not apply | $50 to $1000 | $50 to $1000 | $50 to $1000 | $50 to $1000 |

**Notes:** 1. Vegetable gardens and swimming pools are exempt
2. Measures are intended to avoid impact on successful business operations
3. Best Management Practices as referenced by Greenco http://www.greenco.org/ and Colorado WaterWise Council *http://coloradowaterwise.org/*

## *Voluntary*

During normal conditions, including drought up to the 1-in-100 year level of severity, the City of Loveland plans for an unrestricted supply of water to its customers. While no drought plans are in effect under these conditions, customers are encouraged to continue their wise use of water.

- Lawn Watering – Unrestricted. Recommend Shave the Peak Program whereby watering occurs on even/odd days based on address.
- Trees, Shrubs, and Perennials – Unrestricted.
- Non-Automated Car Washing – Unrestricted. Use of a shutoff nozzle and bucket are recommended.
- Dedicated Irrigation Meters – Unrestricted. Recommend Shave the Peak Program whereby watering occurs on even/odd days based on address. Following GreenCO.org Best Management Practices for irrigation is encouraged.
- Spraying of Impervious Surfaces – Unrestricted. Use of nozzles and minimizing water use is encouraged during the spraying of driveways, sidewalks, and siding.
- Hydraulic Fracturing – Customer provides all raw the water necessary, for treatment by the city.
- Raw water leases are limited to the availability of water above municipal needs.
- City Fleet Vehicles – As needed.
- Fire Hydrant Flushing & Testing – Unrestricted.
- New Lawns – Unrestricted.

## *Drought Response Level 1*

At level 1, the city is projected to experience up to a 10 percent shortage of raw water. This response level addresses the shortage by implementing water use restrictions that would have minimal impact on the health of customers' landscaping.

- Lawn Watering – Limited to 3 days per week per the Level 1 Irrigation Schedule below.
- Trees, Shrubs, and Perennials – Unrestricted by hand, drip or subsurface applications. Otherwise limited to 3 days per week per the Level 1 Irrigation Schedule below.
- Non-Automated Car Washing – Shutoff nozzle and bucket required.
- Dedicated Irrigation Meters – Limited to 3 days per week per the Level 1 Irrigation Schedule below. GreenCO.org Best Management Practices for irrigation must be used.
- Spraying of Impervious Surfaces – Not allowed. This includes spraying of driveways, sidewalks, and siding, unless necessary for health and safety reasons.
- Hydraulic Fracturing – Customer provides all the necessary raw water, for treatment by the city.
- Raw water leases limited to availability of water above municipal needs.
- City Fleet Vehicles – Washed only once per week or as determined by the city manager for health or safety reasons.
- Fire Hydrant Flushing & Testing – Limited to transmission lines or critical situations.
- New Lawns – Should use GreenCO.org Best Management Practices.

Permits may be acquired for exceptions, if necessary due to medical hardship or religious objection. Newly seeded or sodded lawns may be eligible for a permit as well.

## Level 1 Irrigation Schedule

| Day | Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|---|---|---|---|---|---|---|---|
| **Last Number of Address** | EVEN | ODD/OTHER | EVEN | ODD/OTHER | EVEN | OTHER | ODD |
| **Property Type** | Single Family, Duplex, Triplex, & Fourplex | <u>ODD</u><br>Single Family, Duplex, Triplex, & Fourplex<br><br><u>OTHER</u><br>Multifamily, HOA, Non-Residential | Single Family, Duplex, Triplex, & Fourplex | <u>ODD</u><br>Single Family, Duplex, Triplex, & Fourplex<br><br><u>OTHER</u><br>Multifamily, HOA, Non-Residential | Single Family, Duplex, Triplex, & Fourplex | Multifamily, HOA, Non-Residential | Single Family, Duplex, Triplex, & Fourplex |

For single family, duplex, triplex, and fourplex residences, the watering schedule is based on whether the final digit of the address is an odd or even number. HOAs, multifamily, and all non-residential properties that do not have a dedicated irrigation meter are to water on Monday, Wednesday, and Friday regardless of their address number. Watering hours are Midnight to 9:59 am and 6 pm through 11:59 pm on the assigned day. In other words, there is no visible, above-ground watering between 10 am and 6 pm.

## *Drought Response Level 2*

At Level 2, the city is projected to face an 11 percent – 20 percent shortage of raw water. Since the shortage is more severe, the measures are more restrictive. The following outdoor restrictions should have minimal effect on the long-term health of the customers' landscaping, but may cause wilting or browning during the hottest parts of the summer.

- Lawn Watering – Limited to 2 days per week per the Level 2 Irrigation Schedule below.
- Trees, Shrubs, and Perennials – Unrestricted by hand, drip or subsurface applications. Otherwise limited to 2 days per week per the Level 2 Irrigation Schedule below.
- Non-Automated Car Washing – Shutoff nozzle and bucket required.
- Dedicated Irrigation Meters – Limited to 2 days per week per the Level 2 Irrigation Schedule below. GreenCO.org Best Management Practices for irrigation must be used.
- Spraying of Impervious Surfaces – Not allowed. This includes spraying of driveways, sidewalks, and siding unless necessary for health and safety reasons.
- Hydraulic Fracturing – Customer provides all the necessary raw water for treatment by the city.
- Raw water leases limited to availability of water above municipal needs.
- City Fleet Vehicles – Washed only once per month or as determined by the city manager for health or safety reasons.
- Fire Hydrant Flushing & Testing – Limited to transmission lines or critical situations.
- New Lawns – Permit required. Use GreenCO.org Best Management Practices.

Permits may be acquired for exceptions, if necessary due to medical hardship or religious objection. Newly seeded or sodded lawns may be eligible for a permit as well.

## Level 2 Irrigation Schedule

| Day | Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|---|---|---|---|---|---|---|---|
| **Last Number of Address** | EVEN | X | OTHER | ODD | EVEN | OTHER | ODD |
| **Property Type** | Single Family, Duplex, Triplex, & Fourplex | No watering except by permit. | Multifamily, HOA, Non-Residential | Single Family, Duplex, Triplex, & Fourplex | Single Family, Duplex, Triplex, & Fourplex | Multifamily, HOA, Non-Residential | Single Family, Duplex, Triplex, & Fourplex |

For single family, duplex, triplex, and fourplex residences, the watering schedule is based on whether the final digit of the address is an odd or even number, as assigned above. HOAs, multifamily, and all non-residential properties are to water on Tuesday and Friday regardless of their address number. Watering hours are Midnight to 9:59 am and 6 pm through 11:59 pm on the assigned day. In other words, there is no visible, above-ground watering between 10 am and 6 pm.

## *Drought Response Level 3*

Response level 3 applies for situations where the city is experiencing a 21 percent-30 percent raw water shortage. These are severe conditions, and the restrictions reflect that. The purpose is to reduce customer demand as much as possible while still keeping their outdoor landscaping alive. There will be significant wilting and browning of the customers' landscaping and possibly some long-term damage. The following watering schedule should, however, keep trees, shrubs, perennials, and most lawns alive.

- Lawn Watering – Limited to 1 day per week per the Level 3 Irrigation Schedule below.
- Trees, Shrubs, and Perennials – Water by hose with shutoff nozzle or low-volume efficient drip or subsurface irrigation.
- Non-Automated Car Washing – Not allowed.
- Dedicated Irrigation Meters – Limited to 1 day per week, per the Level 3 Irrigation Schedule below.
- Spraying of Impervious Surfaces – Not allowed. This includes spraying of driveways, sidewalks, and siding unless necessary for health and safety reasons.
- Hydraulic Fracturing – Customer provides all the necessary raw water for treatment by the city.
- No agricultural leases made.
- City Fleet Vehicles – Washing not allowed or as determined by the city manager for health or safety reasons.
- Fire Hydrant Flushing & Testing – Limited to critical situations.
- New Lawns – Permit required. Use GreenCO.org Best Management Practices.

Permits may be acquired for exceptions, if necessary due to medical hardship or religious objection. Newly seeded or sodded lawns may be eligible for a permit as well.

## Level 3 Irrigation Schedule

| Day | Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|---|---|---|---|---|---|---|---|
| **Last Number of Address** | EVEN | X | OTHER | X | X | OTHER | ODD |
| **Property Type** | Single Family, Duplex, Triplex, & Fourplex | No watering except by permit. | Multifamily, HOA, Non-Residential | No watering except by permit. | No watering except by permit. | Dedicated irrigation taps. | Single Family, Duplex, Triplex, & Fourplex |

For single family, duplex, triplex, and fourplex residences, the watering schedule is based on whether the final digit of the address is an odd or even number. HOAs, multifamily, and all non-residential properties are to water on Tuesdays only, regardless of their address number unless using a dedicated irrigation meter. Dedicated irrigation meters are to water on Fridays only. Watering hours are Midnight to 9:59 am and 6 pm through 11:59 pm on the assigned day. In other words, there is no visible, above-ground watering between 10 am and 6 pm.

## *Drought Response Level 4*

Drought response level 4 is only for extreme drought conditions. At this level, the city is experiencing greater than a 30 percent raw water shortage and is unable to meet the needs of customers' outside watering demands. Under these restrictions, it is possible that customers may lose a significant portion of their landscaping.

- Lawn Watering – Not allowed.
- Trees, Shrubs, and Perennials – Water by hose with shutoff nozzle or low-volume efficient drip or subsurface irrigation.
- Non-Automated Car washing – Not allowed.
- Dedicated Irrigation Taps – Not allowed to irrigate lawns.
- Spraying of Impervious Surfaces – Not allowed. This includes spraying of driveways, sidewalks, and siding unless necessary for health and safety reasons.
- Hydraulic Fracturing – Customer provides all the necessary raw water for treatment by the city.
- No agricultural leases made.
- City Fleet Vehicles – Washing not allowed or as determined by the city manager for health or safety reasons.
- Fire Hydrant Flushing & Testing – Limited to transmission lines or critical situations.
- New Lawns – No newly seeded or sodded lawns may be installed.

There are no permits for exceptions for medical hardship or religious objections, as there are not much allowable outdoor uses.

### *Issuing Permits and Enforcing Drought Responses*

Permits for exceptions may be acquired from the Loveland Water & Power office at 200 N. Wilson Ave, Loveland, CO 80537. They will be available if necessary due to medical hardship or religious objection. Frequent irrigation as required for newly seeded or sodded lawns may be eligible for a permit as well under Level III conditions.

Adopted per 13.04.235, the City Manager would designate persons within the Water staff to act as peace officers to enforce section 13.04.235 of the by the issuance of summonses and complaints in accordance with the Colorado Municipal Court Rules of Procedure. Education and warning for the first offense, citation for the second and possible court appearance thereafter.

### *Additional Information*

- Watering vegetable gardens by hand is exempt from restriction under all drought levels.
- Swimming pools are allowed to operate and are exempt from restrictions under all drought levels.
- Loveland Parks and Thompson School District have separate plans which may achieve the same or better water savings than are outlined in this Drought Management Plan.
- Other dedicated irrigation tap areas may request to be placed on a separate plan. The plan must be submitted to the W&P Director and may be approved by him, given the level of savings is commensurate with what is being asked of other customers.
- Measures are intended to avoid negative impacts on successful business operations, wherever possible. Some examples include irrigation/landscape management and commercial car washes.
- Watering Tips and Best Management Practices are as referenced by Greenco (http://www.greenco.org) and the Colorado WaterWise Council (http://coloradowaterwise.org).
- Please visit the City of Loveland website for additional information as well as updates on the drought situation. (www.cityofloveland.org)

## Customer Relations

Loveland Water and Power's Customer Relations Division will assist the drought response efforts by leading the public information and education campaign. Staff will work quickly to enact a tailored drought response communication plan according to the situation and employ a multi-channel marketing campaign to maximize the outreach within the community. Communication will include both information about the drought situation and education about wise water use.

Examples of potential methods of outreach staff may use to increase public awareness of the need to implement the Drought Management Plan include, but are not necessarily limited to:

- Purchasing advertising space in the Loveland Reporter-Herald newspaper
- Local radio public service announcements and advertising
- Basic outreach methods such as press releases, the city website, and social media
- Direct Mailings
- Door to door visits with local business
- A "Drought Blog" in the Reporter-Herald and online
- Channel 16 and YouTube
- Community meetings with local clubs, HOAs, and industry professionals
- Educational information in the schools
- Service Center open houses
- Key Accounts email blasts
- Events such as Earth Day, Children's Day, Public Works Day, etc.

In addition to its integral role in drought response as presented above, the Water & Power Customer Relations group also actively supports and promotes the city's water conservation program. Some of the activities the city encourages its customers to participate in are the following:

- *Shave the Peak Program* – This voluntary program encourages customers to water on even/odd days to reduce strain on the water treatment plant during peak hours in the summer
- *Slow the Flow* – Free sprinkler irrigation inspections are offered to city residential customers to ensure water is not being wasted in faulty irrigation systems.
- *Garden in a Box* – Every year Loveland participates in the Garden-In-A-Box program to provide a fun, inexpensive way for citizens to learn how to successfully replace high water requiring turf with water conserving xeriscaping.
- Efficiency Express – This program can save city commercial customers water as well as energy, by reviewing uses within the business.

For more information about Loveland's water conservation activities, please reference the City of Loveland Water Conservation Plan and the city's website at http://www.cityofloveland.org.

## Conclusion

Excerpts from the Mission Statement of Loveland Water & Power ensure that the utility will provide reliable, high quality customer service offering safe and secure utilities. Being prepared to meet customer's demands during drought is an integral part of that mission. The Drought Management Plan provides the City of Loveland with options for a short-term, managed response to drought conditions that will preserve the integrity of the city's water supply system and the sufficiency of Loveland's raw water supply while ensuring adequate allocations of water to protect the public's health, safety, and welfare during a greater than 1-in-100 year drought.

# Drought Management Plan Proposed Draft Format

Presentation to City Council
May 14, 2013

## City of Loveland Drought Management Plan

- **Drought management** is the short-term managed response to water shortages at or exceeding a 1-in-100 year event.
- **Water conservation** is a long-term process involving the wise use of water resources. It is the subject of a separate plan.

## City of Loveland
## Drought Management Plan - Purpose

- Preserve and allocate water to protect the public health, safety, and welfare.
- Ensure adequate water reserves for current year and future years to the extent possible.
- Establish a methodology to inform and educate the public.
- Outline demand-reducing measures based on the degree of water supply shortage.

## City of Loveland
## Drought Management Plan

- Proposed plan outlines 4 supply shortage scenarios
  - Response level increases with every 10% increase in supply deficit
- If no supply shortage is projected, a response may be voluntary or existing conservation measures
- School District and Parks response plans could be implemented before residential restrictions are recommended

# Voluntary

**Lawn Watering –** Recommend even/odd (i.e. Shave the Peak Program)

**Car Washing –** Recommend use of bucket and shutoff nozzle


**Water Leases –** Limited to the availability above municipal needs

**No Warnings & Fines**
Imposed for violations

**No Enforcement necessary**
Not actively looking for violators

# Level I

3 **Lawn Watering**
3 days per week

**Exemptions Allowed**
For medical hardship, religious objections, and new lawns

**Warnings & Fines**
Imposed for reported violations

**Enforcement**
Not actively looking for violators

# Level II

**2** **Lawn Watering**
2 days per week

**Exemptions Allowed**
For medical hardship, religious objections, and new lawns

**Warnings & Fines**
Imposed for reported violations

**Enforcement**
Not actively looking for violators

# Level III

**1** **Lawn Watering**
1 day per week

**Exemptions Allowed**
For medical hardship, religious objections, and new lawns

**Car Washing**
Non-automated car washing not allowed


**Water Leases**
No agricultural leases

**Warnings & Fines**
Imposed for violations

**Enforcement**
Actively looking for violators

# Level IV

- **0** **Lawn Watering –** Not allowed
- **Exemptions -** Not allowed
- **Car Washing**
  Non-automated car washing not allowed
- **Water Leases -** No agricultural leases
- **Warnings & Fines**
  Imposed for violations
- **Enforcement**
  Actively looking for violators

| | | Drought Management Plan | | | | | |
|---|---|---|---|---|---|---|---|
| | Response Level | Voluntary | I | II | III | IV |
| | % Projected Raw Water Supply Shortage | Water Conservation Measures | 1-10% | 11-20% | 21-30% | >30% |
| Type of Water Use – Customer | Turf/Lawn Watering | Shave the Peak Program on even/odd watering days | 3 days/week | 2 days/week | 1 day/week | No lawn watering |
| | Trees, Shrubs, Perennials | No restrictions | Hand/drip/subsurface or 3 days/week | Hand/drip/subsurface or 2 days/week | Hand/drip/ subsurface only | No water outside |
| | Non-automated Car Washing | Best Management Practices | Best Management Practices | Best Management Practices | Not allowed | Not allowed |
| | Dedicated Irrigation Meters | Shave the Peak Program or Best Management Practices | 3 days/week | 2 days/week | 1 day/week | Not allowed |
| | Spraying Impervious Surfaces | Only as necessary for health & safety | Not allowed (except as necessary for health & safety) | Not allowed (except as necessary for health & safety) | Not allowed (except as necessary for health & safety) | Not allowed (except as necessary for health & safety) |
| | Hydraulic Fracturing | Customer provides raw water | Customer provides raw water | Customer provides raw water | Customer provides raw water | Customer provides raw water |
| Type of Water Use – City | Curtail Leases | Limited by water availability | Limited by water availability | Limited by water availability | No agricultural leases | No agricultural leases |
| | Public Facilities/Parks/ R2J School District/ Turf/Lawn Watering | Separate approved plans for equal or greater reductions | Separate approved plans for equal or greater reductions | Separate approved plans for equal or greater reductions | Separate approved plans for equal or greater reductions | Separate approved plans for equal or greater reductions |
| | Non-automated Car Washing | Best Management Practices | Best Management Practices | Not allowed (except as necessary for health & safety) | Not allowed (except as necessary for health & safety) | Not allowed (except as necessary for health & safety) |
| | Washing City Fleet Vehicles | As needed | Once/week (except as necessary for health & safety) | Once/week (except as necessary for health & safety) | Not allowed (except as necessary for health & safety) | Not allowed (except as necessary for health & safety) |
| | Fire Hydrant Flushing & Testing | As needed | Limited to transmission lines or critical situations | Limited to transmission lines or critical situations | Limited to critical situations | Limited to critical situations |
| Permits | Medical Hardship | Does not apply | Permit required | Permit required | Permit required | No exception |
| | Religious Objection | Does not apply | Permit required | Permit required | Permit required | No exception |
| | New Lawns | Does not apply | Permit required | Permit required | Permit required | Not allowed |
| Fines | Residential Fines per Violation | Does not apply | $50 to $1000 | $50 to $1000 | $50 to $1000 | $50 to $1000 |
| | Business Fines per Violation | Does not apply | $50 to $1000 | $50 to $1000 | $50 to $1000 | $50 to $1000 |

**Notes:** 1. Vegetable gardens and swimming pools are exempt
2. Measures are intended to avoid impact on successful business operations
3. Best Management Practices as referenced by Greenco http://www.greenco.org/ and Colorado WaterWise Council http://coloradowaterwise.org/

# Drought Management Plan
## Customer Relations

- Basic suite of outreach methods
  - (press releases, newspaper articles & ads, website, social media etc.)
- Local radio public service announcements and advertising
- Door to door visits with local businesses
  - (table top displays, posters)
- "Drought Blog" in Reporter-Herald newspaper
- Video Series on channel 16 and You Tube
- Community meetings
  - (Local Clubs, HOAs, Industry Professionals)
- Educational take home materials to schools
- Open House at the Service Center
- Email blasts to Key Accounts
- Direct mailings
- Events
  - (Key Accounts Earth Day Events, Children's Day, Public Works Day, Lunch and Learns, GIAB, Garden Tour, Corn Roast)

# Proposed Process

Once City Council adopts the Drought Management Plan:

1. Staff determines projected sufficiency of water supplies
2. Staff reports to LUC
3. LUC and staff recommend to City Council
4. City Council enacts drought response actions
5. As drought conditions change, staff informs City Manager and recommends changes for City Council consideration

# Questions?

# Determination of City's Drought Response Level

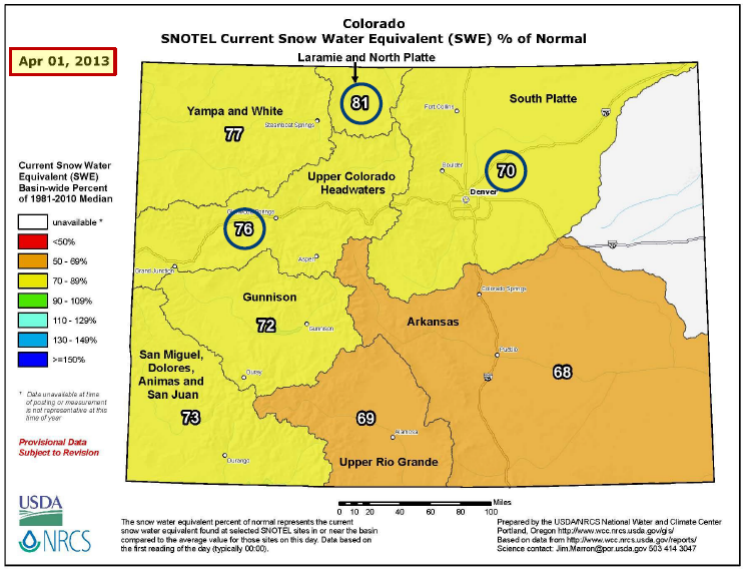
Presentation to City Council
May 14, 2013

# Specifics about 2013 Water Supply /Demand

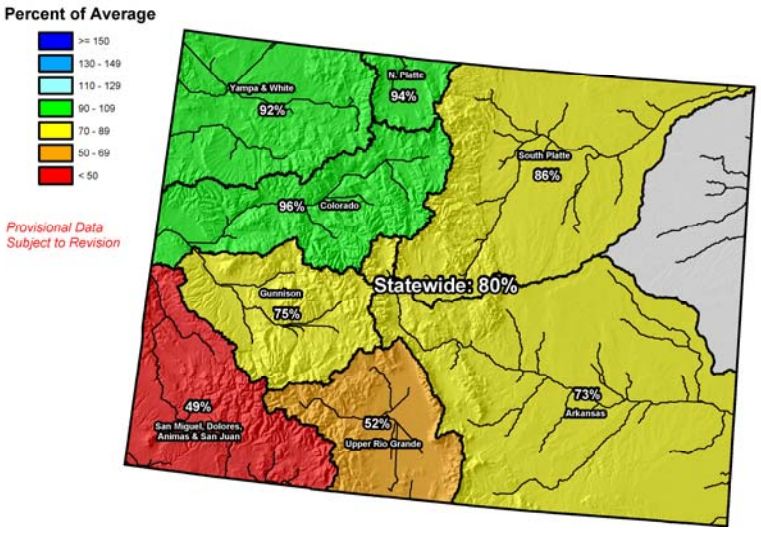
- Snowpack
- Temperature
- Precipitation
- Water Demand
- Water Supplies
- Surplus (not deficit) in projected supplies for 2013

# The Drought


The Weather Channel
SUMMER FACTORS
JET STREAM
DROUGHT
The Weather Channel
weather.com


Colorado
SNOTEL Current Snow Water Equivalent (SWE) % of Normal
Apr 01, 2013
Laramie and North Platte
81
South Platte
70
Yampa and White
77
Upper Colorado Headwaters
76
Gunnison
72
Arkansas
68
San Miguel, Dolores, Animas and San Juan
73
69
Upper Rio Grande
Current Snow Water Equivalent (SWE) Basin-wide Percent of 1981-2010 Median
unavailable *
<50%
50 - 69%
70 - 89%
90 - 109%
110 - 129%
130 - 149%
>=150%
Provisional Data Subject to Revision
USDA
NRCS
Miles
0 10 20 40 60 80 100
The snow water equivalent percent of normal represents the current snow water equivalent found at selected SNOTEL sites in or near the basin compared to the average value for those sites on this day. Data based on the first reading of the day (typically 00:00).
Prepared by the USDA/NRCS National Water and Climate Center
Portland, Oregon http://www.wcc.nrcs.usda.gov/gs/
Based on data from http://www.wcc.nrcs.usda.gov/reports/
Science contact: Jim.Marron@por.usda.gov 503 414 3047

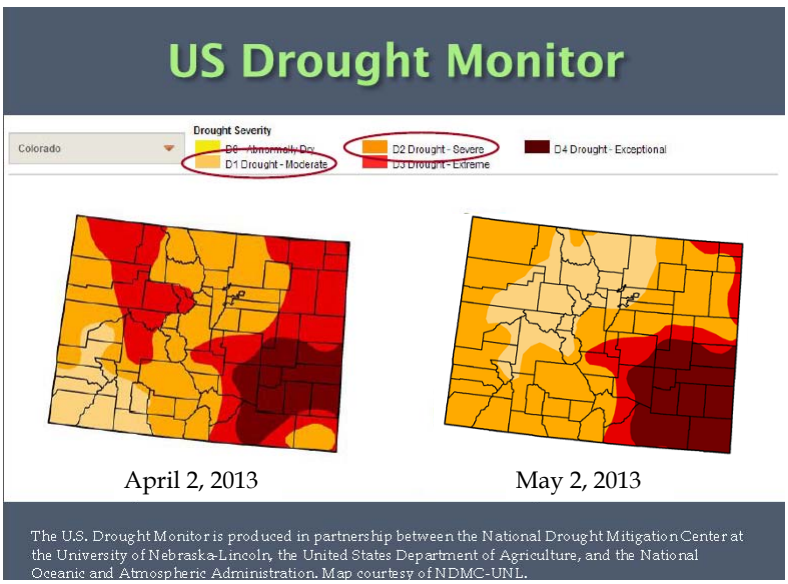
## Colorado SNOTEL Snowpack Update Map




Current as of Apr 30, 2013

*Data may not provide a valid measure of conditions

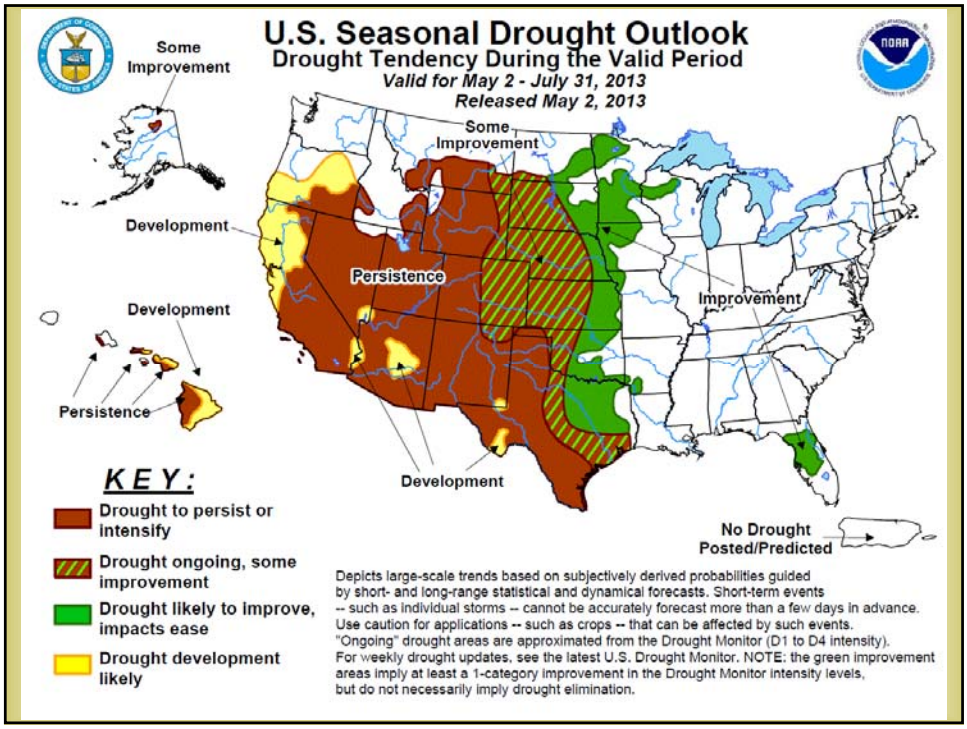
## US Drought Monitor




April 2, 2013

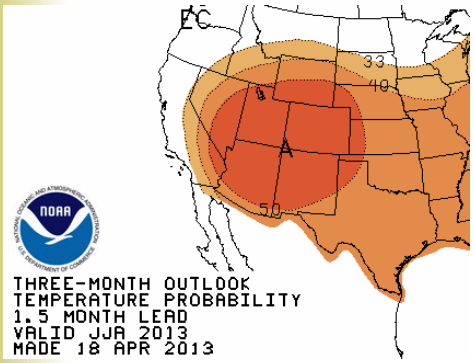
May 2, 2013

The U.S. Drought Monitor is produced in partnership between the National Drought Mitigation Center at the University of Nebraska-Lincoln, the United States Department of Agriculture, and the National Oceanic and Atmospheric Administration. Map courtesy of NDMC-UNL.

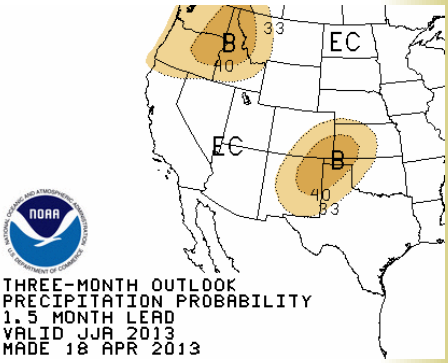



# Summer Temperature Projections

# June-July-August Forecast

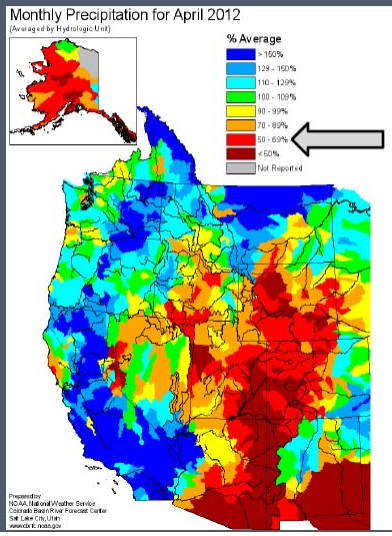



**Temperature**

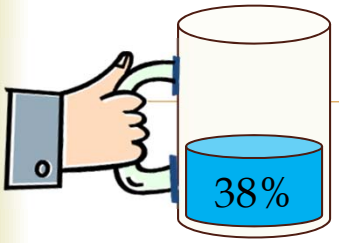



**Precipitation**

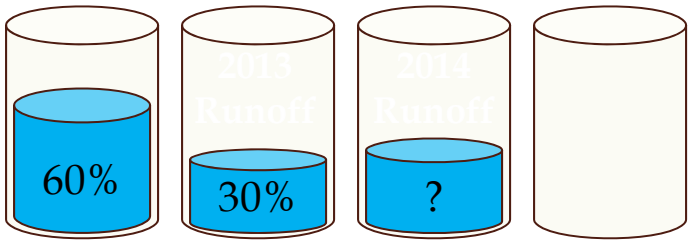
# April Precipitation Forecast (before the storm)



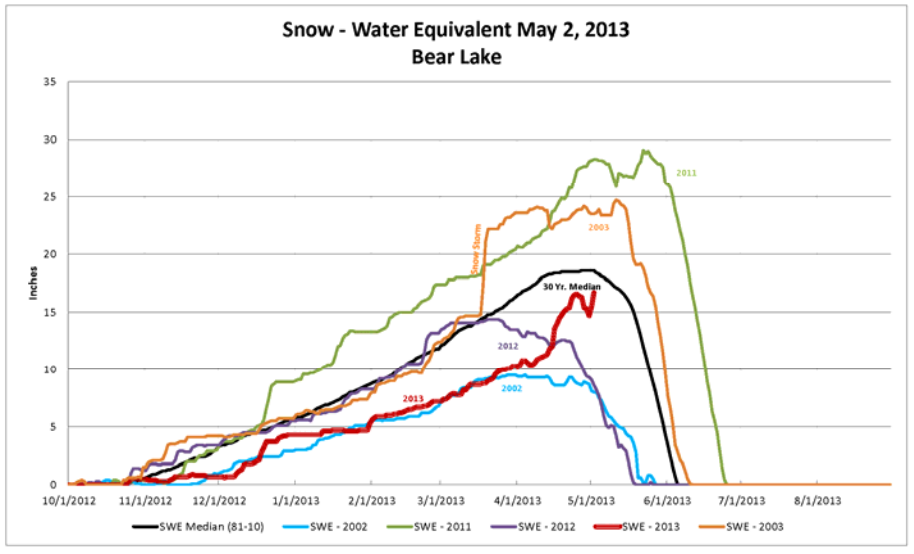
# CBT-System
# April 1, 2013



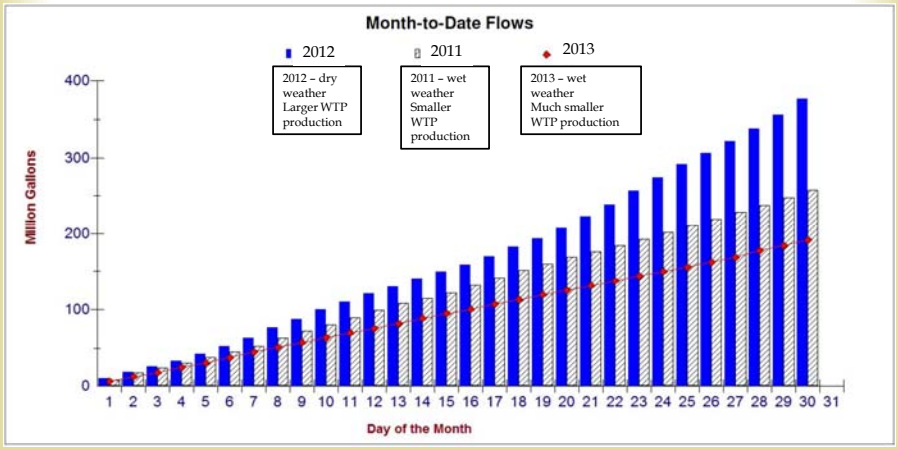

April 1, 2013
Project Reserves




# Big Thompson Basin
# Snow-Water Equivalent (SWE)



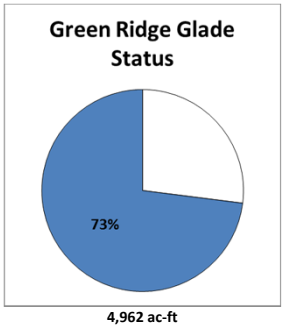
# April 2013 WTP Production



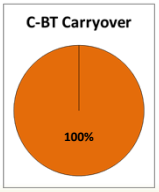

# Loveland's Current Supply

## April 24, 2013

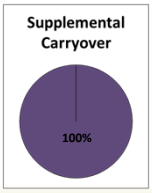

7,241 ac-ft




4,962 ac-ft




2,651 ac-ft




1,566 ac-ft

## Water Supply Projection Changes April 1st through May 1st

- Projected river availability was increased based on the most recent snowpack information as well as current river flow.
- In early April, projections showed not much, if any, Windy Gap Project Water pumping this year. As of April 30th, Windy Gap is projected to pump close to 25,000 acre-ft. This means Loveland should have at least 1,500 acre-ft of Windy Gap available if needed.
- Projected demand was lowered due to cooler temperatures and increased precipitation.
- This report is considered mildly conservative and will be updated often throughout the spring and summer.

## Loveland's Water Supply Projection for 2013

(all values in acre-feet)

| May 1, 2013 | Demand | Supply | Totals |
|---|---|---|---|
| **Storage** | | | |
| GRG Reservoir | | | |
| Volume Necessary to Fill | (1,830) | | |
| C-BT System | | | |
| Eureka Ditch Available | | 0 | |
| Balance Carried Over | | 3,213 | |
| Quota Water Available | | 7,241 | |
| Estimated Windy Gap | | 1,500 | |
| Carryover for Next Year | (2,651) | | |
| Supplemental Carryover | (1,566) | | |
| Net Storage Available | | | 5,907 |
| **Big Thompson River Rights** | | | |
| Net River Rights Available | | | 8,357 |
| **System Demands** | | | |
| Remaining Demand | (10,494) | | |
| Remaining Parks Leases | (700) | | |
| Net Remaining Demands | | | (11,194) |
| **Water Supply Status November 1, 2013** | | | 3,070 |

*Water Year is from November 1 through October 31*

*Projected Demand Based on 2010 Production*

# Summary

- The City of Loveland has developed a robust water supply over many decades.
- This water supply offers a very high degree of stability during periods of uncertain drought.
- Loveland is fortunate and has not endured any extraordinary challenges to our watershed, such as a forest fire, that could impact our water supply.
- Should additional impacts to our water supply occur, the Drought Management Plan allows for a quick response.

# City Council Recommendation

- Current water supplies are adequate to satisfy this year's projected demands without restrictions.
- Focus on education and voluntary participation in wise use of water at this time.
- Should conditions change, Staff will return to city council and recommend implementing one of the four mandatory restriction levels included in the Drought Management Plan to curtail demand.