LOVELAND UTILITIES COMMISSION

July 17, 2019 – 4:00pm

Service Center Willow Room – 200 N. Wilson Ave.

REGULAR MEETING AGENDA

CALL TO ORDER

NEW BOARD MEMBER INTRODUCTIONS

APPROVAL OF MINUTES – 6/19/2019

CITIZENS REPORT (*See procedural instructions on the following page.)

CONSENT AGENDA

1. Award Idylwilde FERC License Surrender – Phase 2 Contract to Meridiam Partners, LLC – Christine Schraeder

1.5. Big Thompson Canyon Voltage Conversion – Phase 3 Contract Increase – Jon Shepard

REGULAR AGENDA

2. Power Cost of Service Rate Study Update – Jim Lees
3. Proposed Amendments to Title 19, Sections 19.04.010, Definitions, and 19.04.020, Water rights required for development – Nathan Alburn
4. LUC Resolution Recognizing the Market Value of One Unit of Colorado-Big Thompson Project Water – Nathan Alburn

STAFF REPORTS

5. Water Distribution Master Plan Update – Tanner Randall
6. Quarterly Financial Report Update – Jim Lees

COMMISSION & COUNCIL REPORTS

DIRECTOR'S REPORT

ADJOURN

The password to the public access wireless network (colguest) is accesswifi

City of Loveland

* Citizens Report Procedures

Anyone in the audience may address the LUC on any topic relevant to the commission. If the topic is a Consent Agenda item, please ask for that item to be removed from the Consent Agenda; pulled items will be heard at the beginning of the Regular Agenda. If the topic is a Regular Agenda item, members of the public will be given an opportunity to speak to the item during the Regular Agenda portion of the meeting before the LUC acts upon it. If the topic is a Staff Report item, members of the public should address the LUC during this portion of the meeting; no public comment is accepted during the Staff Report portion of the meeting.

Anyone making comment during any portion of tonight's meeting should identify himself or herself and be recognized by the LUC chairman. Please do not interrupt other speakers. Side conversations should be moved outside the Service Center Board Room. Please limit comments to no more than three minutes.

Notice of Non-Discrimination

The City of Loveland is committed to providing an equal opportunity for services, programs and activities and does not discriminate on the basis of disability, race, age, color, national origin, religion, sexual orientation or gender. For more information on non-discrimination or for translation assistance, please contact the City's Title VI Coordinator at TitleSix@cityofloveland.org or 970-962-2372. The City will make reasonable accommodations for citizens in accordance with the Americans with Disabilities Act (ADA). For more information on ADA or accommodations, please contact the City's ADA Coordinator at adacoordinator@cityofloveland.org or 970-962-3319.

Notificación en Contra de la Discriminación

"La Ciudad de Loveland está comprometida a proporcionar igualdad de oportunidades para los servicios, programas y actividades y no discriminar en base a discapacidad, raza, edad, color, origen nacional, religión, orientación sexual o género. Para más información sobre la no discriminación o para asistencia en traducción, favor contacte al Coordinador Título VI de la Ciudad al TitleSix@cityofloveland.org o al 970-962-2372. La Ciudad realizará las acomodaciones razonables para los ciudadanos de acuerdo con la Ley de Discapacidades para americanos (ADA). Para más información sobre ADA o acomodaciones, favor contacte al Coordinador de ADA de la Ciudad en adacoordinator@cityofloveland.org o al 970-962-3319".

The password to the public access wireless network (colguest) is accesswifi

Commission Members Present: Dan Herlihey, Gene Packer, Larry Roos, John Butler, Randy Williams

Commission Members Absent: Gary Hausman, Sean Cronin, Stephanie Fancher-English

Council Liaison: Steve Olson

City Staff Members Present: Andrew Paranto, Alan Krcmarik, Bill Crowell, Courtney Whittet, Derek Turner, Frank Lindauer, Jim Lees, Joe Bernosky, John Beckstrom, Jon Shepard, Kim O'Field, Larry Howard, Michelle Erickson, Nathan Alburn, Roger Berg, Ryan Van Pelt, Tracey Hewson, Yarani Vasquez

Guest Attendance: Mark Beauchamp, Richard Jurin, Sovia McCune, Patrick Eitenbichler, Jane Clevenger, Brett Bolingez, Don Cook

CALL TO ORDER: Dan Herlihey called the meeting to order at 4:01 pm.

APPROVAL OF MINUTES: Herlihey asked for a motion to approve the minutes of the April 17, 2019 meeting.

Motion: John Butler made the motion to approve the minutes.
Second: Randy Williams seconded the motion. The minutes were approved unanimously.

INFORMATION ITEMS

Item 1: Financial Report Update – Jim Lees

This item summarizes the monthly and year-to date financials for April 2019.

Information Item only. No action required

Item 2: Water Supply Update – Ryan Van Pelt

Raw water supply update.

Information Item only. No action required.

CONSENT AGENDA

Item 3: Contract Bid Award for Concrete Vaults, Pads and Foundations – Yarani Vasquez

Award a one-year contract to Oldcastle Precast and Vaughn Concrete Products for electric utilities precast concrete needs.

Recommendation: Adopt a motion recommending that LUC award the contract for Concrete Vaults, Pads and Foundations to Oldcastle Precast in an amount not to exceed $441,335.00 and Vaughn Concrete Products in an amount to not exceed $60,185.00 and authorize the City Manager to execute the contract on behalf of the City, following consultation with the City Attorney, and to modify the contract in form or substance as deemed necessary to protect the interests of the City.

Motion: John Butler made the motion to approve the item.
Second: Randy Williams seconded the motion. The item was approved unanimously.

REGULAR AGENDA

Item 4: Power Cost of Service Rate Study Preliminary Results – Jim Lees

The purpose of this item is to provide the LUC with an overview of the Power cost-of-service rate study and get recommendations from the Commission on rate design.

Recommendation: Provide direction on rate design for the three key study components outlined earlier.

LUC Direction:

- Adjust the Monthly Base Charge to cost of service for all rate classes in 2020
- Overall average rate increase for 2020 of 5.0% and a cap on how much each individual rate class would be adjusted in 2020 of + or – 2% of the 5.0% overall average increase.
- Support for the presented 5-year rate track

Item 5: City of Loveland Wireless Communications Code – Kim O'Field

This item is seeking approval and recommendation to City Council of approval of the City of Loveland Wireless Communications Code located in Title 14 of the Loveland Municipal Code, and associated amendments to the Unified Development Code and Title 13 of the Loveland Municipal Code regarding pole attachments.

Recommendation: Motion to approve and recommend that City Council adopt the Wireless Communications Code in Title 14 of the Loveland Municipal Code and associated revisions to the Unified Development Code in Title 18 and pole attachment provisions in Title 13 of the Loveland Municipal Code.

Randy Williams suggested to amend the motion to include any and all modifications by staff that might occur before the changes to the Code is reviewed by City Council. John Butler made a motion to approve the amendment to the recommendation, Randy Williams seconded the motion. The amendment was approved unanimously.

Motion: John Butler made the motion to approve the item.
Second: Randy Williams seconded the motion. The item was approved unanimously.

Item 6: Supplemental Budget and Appropriation for Boise Avenue Land Acquisition – Roger Berg

This item is seeking approval and recommendation to City Council of a Supplemental Budget and Appropriation in the amount of $875,000 for the acquisition of 9.1 acres of property located just north of the Loveland Wastewater Treatment Plant at 460 South Boise Avenue.

Recommendation: Motion to approve and recommend that City Council adopt a Supplemental Budget and Appropriation in the amount of $875,000 to purchase the property at 460 South Boise Avenue.

Motion: John Butler made the motion to approve the item.
Second: Randy Williams seconded the motion. The item was approved unanimously.

Item 7: 2020 Proposed Budgets for Water, Wastewater and Power – Jim Lees

The purpose of this is to ask the LUC to adopt a motion indicating support of the proposed 2020 Water and Power budget for City Council's consideration.

Recommendation: Adopt a motion indicating support for the proposed 2020 Water and Power budget for City Council's consideration.

Motion: John Butler made the motion to approve the item.
Second: Randy Williams seconded the motion. The item was approved unanimously.

COMMISSION/COUNCIL REPORTS

Item 8: Commission/Council Reports
Discuss events that the Loveland Utility Commission Board members attended, special topics and any City Council items related to the Water and Power Department from the past month.

Dan Herlihey: None
Gene Packer: None
Gary Hausman:
John Butler: None
Larry Roos: None
Randy Williams: None
Sean Cronin:
Stephanie Fancher-English:
Tom Vail:

Council Report: Accelerate Colorado trip to Washington D.C., there were 15 items of interest on the agenda, including small cell wireless opposition.

DIRECTOR'S REPORT

Item 9: Director's Report – Joe Bernosky

ADJOURN The meeting was adjourned at 6:31 pm. The next LUC Meeting will be July 17, 2019 at 4:00 pm.

Respectfully submitted,

Courtney Whittet
Recording Secretary
Loveland Utilities Commission
/s/ Gary Hausman, LUC Chairman

LOVELAND UTILITIES COMMISSION

AGENDA ITEM: 1
MEETING DATE: 7/17/2019
SUBMITTED BY: Christine Schraeder
STAFF TITLE: Electrical Engineer

ITEM TITLE:

Idylwilde License Surrender – Phase 2

DESCRIPTION:

This part of the Idylwilde License Surrender Project consists of penstock removal from the surge pipe across City and Forest Service land, up to the private property on Idlewild Lane. This includes the removal of five steel trestles and one wooden trestle, as well as removal of all visible pipe and removal in two areas where the pipe impedes natural drainages. All other buried pipe will be sealed and abandoned in place.

SUMMARY:

Phase 2 of the Idylwilde License Surrender project covers the pipe the goes over land from above Viestenz-Smith Mountain Park to the private property on Idlewild Lane. The project entails removal of roughly 1000 linear feet of 36 inch steel pipe from exposed locations over roughly a half mile of forest. There are a dozen historical features that will need to be protected in the process, access roads that will need to be constructed, and trees removed (judiciously). All ancillary pipeline features will also be removed such as the cement thrust pipe and the thrust blocks.

During demolition, care will need to be taken in areas that require hazardous waste collection and mitigation. Post-construction, revegetation will need to be properly handled and monitored per USFS requirements.

The bids we received ranged from $584,996.28 to a little over $1,600,000. Meridiam Partners came in with the lowest bid. All referrals came back as “excellent” and Meridiam answered all of our follow-up questions satisfactorily.

Staff recommends awarding contract for this phase to Meridiam Partners.

RECOMMENDATION:

Adopt a motion recommending that LUC award the contract for Idylwilde License Surrender Phase 2 to Meridiam Partners in an amount not to exceed $584,996.28 and authorize the City Manager to execute the contract on behalf of the City, following consultation with the City Attorney, and to modify the contract in form or substance as deemed necessary to protect the interests of the City.

ATTACHMENTS:

- Attachment A: Bid Tabulation

1

Attachment A

Cost Estimate: April 2019
Estimator: Otak, Inc.
Date of Estimate: 4/29/19
Revised:

Otak, Inc.
700 Washington St., Suite 401
Vancouver, WA 98660
(360) 737-9613

Loveland CO Idylewilde FERC License Surrender Phase 2: Pipeline Demolition
Opinion of Probable Cost
Drake, CO and Big Thompson River, R-34

Structure Type: Trestle, penstock, and penstock features removal

ITEM No.	QTY	DESCRIPTION	UNIT	UNIT PRICE	COST				
						Harrison Western	NeZhoni Construction	Frontier Environmental	Meridian Partners
1	1	Mobilization	%	15%	$128,194.50	$12,800.00	$70,000.00	$146,391.02	$28,819.01
2	1	Access Road C-5	LS	$8,000.00	$8,000.00	$20,100.00	$17,640.00	$3,150.00	$13,692.81
3	1	Access Road C-6	LS	$5,000.00	$5,000.00	$11,600.00	$15,561.00	$3,150.00	$12,079.02
4	1	Access Road C-4	LS	$4,000.00	$4,000.00	$11,600.00	$5,187.00	$2,100.00	$4,026.34
5	1	Access Road C-7	LS	$3,500.00	$3,500.00	$11,600.00	$3,768.00	$2,625.00	$10,237.01
6	1	Access Road B-3	LS	$4,500.00	$4,500.00	$7,300.00	$3,536.00	$1,575.00	$3,602.51
7	1	Access Road C-3	LS	$5,000.00	$5,000.00	$11,600.00	$3,192.00	$2,625.00	$5,411.92
8	1	Access Road B-4	LS	$2,500.00	$2,500.00	$7,300.00	$2,832.00	$1,575.00	$2,885.27
9	1	Access Road C-2	LS	$2,500.00	$2,500.00	$5,800.00	$1,869.00	$1,050.00	$3,374.30
10	1	Access Road C-1	LS	$2,500.00	$2,500.00	$11,600.00	$4,347.00	$1,575.00	$2,885.27
11	1	Access Road B-1	LS	$2,500.00	$2,500.00	$7,300.00	$3,024.00	$1,575.00	$3,080.88
12	1	Access Road B-2	LS	$2,500.00	$2,500.00	$7,300.00	$2,752.00	$1,260.00	$2,803.77
13	1	Protection of Cultural Items	LS	$36,000.00	$36,000.00	$35,600.00	$18,000.00	$5,200.00	$8,857.32
14	1	Removal of West Portal Items	LS	$18,000.00	$18,000.00	$6,500.00	$1,200.00	$12,673.00	$7,185.35
15	1	Removal of East Portal Items	LS	$24,000.00	$24,000.00	$16,200.00	$1,800.00	$10,500.00	$6,150.00
16	1	Removal of Trestle 1	LS	$18,000.00	$18,000.00	$38,400.00	$8,525.00	$36,750.00	$18,900.00
17	1	Removal of Trestle 1 Pipe	LS	$26,000.00	$26,000.00	$57,500.00	$21,700.00	$92,628.00	$11,700.00
18	1	Grading Area 1 Removal	LS	$9,000.00	$9,000.00	$12,800.00	$6,500.00	$5,060.00	$3,950.00
19	1	Removal of Pipe Grading Area 1	LS	$15,000.00	$15,000.00	$92,100.00	$33,700.00	$51,975.00	$12,800.00
20	1	Removal of Trestle 2	LS	$18,000.00	$18,000.00	$29,900.00	$5,225.00	$36,750.00	$18,400.00
21	1	Removal of Trestle 2 Pipe	LS	$16,000.00	$16,000.00	$47,000.00	$13,300.00	$92,630.00	$11,700.00
22	1	Removal of Trestle 3	LS	$18,000.00	$18,000.00	$34,200.00	$7,150.00	$36,750.00	$18,900.00
23	1	Removal of Trestle 3 Pipe	LS	$21,000.00	$21,000.00	$47,000.00	$18,200.00	$92,630.00	$11,700.00
24	1	Removal of Trestle 4	LS	$18,000.00	$18,000.00	$64,000.00	$5,775.00	$36,750.00	$15,708.96
25	1	Removal of Trestle 4 Pipe	LS	$19,500.00	$19,500.00	$47,000.00	$14,700.00	$92,630.00	$9,962.43
26	1	Removal of Trestle 5	LS	$18,000.00	$18,000.00	$51,200.00	$7,425.00	$36,750.00	$16,413.30
27	1	Removal of Trestle 5 Pipe	LS	$16,700.00	$16,700.00	$51,200.00	$18,900.00	$92,630.00	$9,897.45
28	1	Removal of Trestle 6	LS	$19,000.00	$19,000.00	$42,700.00	$5,775.00	$36,750.00	$16,165.93
29	1	Removal of Trestle 6 Pipe	LS	$23,000.00	$23,000.00	$47,000.00	$14,700.00	$91,775.00	$9,962.43
30	1	Removal of Pipe Grading Area 2	LS	$18,400.00	$18,400.00	$46,300.00	$4,400.00	$68,125.00	$11,700.00
31	1	Removal, Grading Area 2	LS	$12,000.00	$12,000.00	$8,550.00	$3,500.00	$2,100.00	$3,950.00
32	1	Removal of Concrete Vent	LS	$8,000.00	$8,000.00	$3,050.00	$4,000.00	$2,999.00	$4,450.00

33	1	Removal of Dry Cistern, Grading Area 3	LS	$15,000.00	$15,000.00	$47,000.00	$4,500.00	$2,100.00	$2,900.00
34	1	Removal of Pipe, Grading Area 3	LS	$17,000.00	$17,000.00	$102,000.00	$10,000.00	$139,825.00	$12,700.00
35	1	Removal of Cinder Block	LS	$4,500.00	$4,500.00	$17,100.00	$6,000.00	$2,100.00	$4,450.00
36	1	Removal of Concrete Blocks	LS	$9,500.00	$9,500.00	$17,100.00	$2,500.00	$9,691.75	$8,950.00
37	1	Removal of Surge Pipe	LS	$32,000.00	$32,000.00	$161,000.00	$35,000.00	$10,500.00	$13,800.00
38	1	Fill Pipeline	LS	$65,000.00	$65,000.00	$92,700.00	$27,000.00	$99,650.00	$42,700.00
39	50	Removal of Debris	CY	$800.00	$40,000.00	$42,500.00	$5,000.00	$6,587.50	$4,675.00
40	30	Dozing and Excavation	HR	$225.00	$6,750.00	$16,800.00	$6,000.00	$4,500.00	$5,700.00
41	20	Concrete Class B	CY	$750.00	$15,000.00	$41,000.00	$5,000.00	$134,700.00	$13,500.00
42	1	Revegetation Area A	LS	$12,000.00	$12,000.00	$2,000.00	$2,925.00	$1,760.00	$7,600.00
43	1	Revegetation Area B	LS	$28,000.00	$28,000.00	$8,400.00	$12,150.00	$3,830.00	$7,600.00
44	1	Revegetation Area C	LS	$26,000.00	$26,000.00	$17,800.00	$25,813.00	$6,800.00	$7,600.00
45	1	Revegetation Area D	LS	$14,000.00	$14,000.00	$22,700.00	$32,847.00	$8,250.00	$7,600.00
46	1	Revegetation Area E	LS	$22,000.00	$22,000.00	$14,500.00	$20,973.00	$5,850.00	$7,600.00
47	1	Revegetation Area F	LS	$28,000.00	$28,000.00	$37,800.00	$59,266.50	$12,290.00	$7,600.00
48	1	Concrete Washout Structure	EA	$4,000.00	$4,000.00	$13,400.00	$1,000.00	$3,000.00	$860.00
49	3,900	Erosion Log (12 Inch) Type 1 Special (100% Biodegradable)	LF	$25.20	$98,280.00	$54,600.00	$124,800.00	$30,810.00	$50,700.00
50	1	Vehicle Tracking Pad	EA	$3,500.00	$3,500.00	$7,650.00	$3,500.00	$3,000.00	$6,950.00
51	3	Public Information Road Sign	EA	$1,500.00	$4,500.00	$1,380.00	$1,200.00	$2,413.41	$1,245.00
52	5	Trail Closure Sign	EA	$1,500.00	$7,500.00	$2,300.00	$2,000.00	$2,176.50	$1,925.00
53	2	Barricade	EA	$1,500.00	$3,000.00	$3,700.00	$900.00	$1,116.50	$1,240.00
54	50	Flagging	HR	$25.00	$1,250.00	$3,500.00	$2,400.00	$1,250.00	$21,500.00
55	1	Topsoil Salvage and Replacement	LS	$10,000.00	$10,000.00	$0.00	$0.00	$0.00	
56	50	Wildlife Biologist	HR	$150.00	$7,500.00	$7,500.00	$6,400.00	$6,307.00	$10,000.00
57	50	Removal of Nests	HR	$150.00	$7,500.00	$8,000.00	$6,250.00	$6,087.50	$10,000.00
58	250	Netting	SY	$5.00	$1,250.00	$8,500.00	$3,250.00	$3,000.00	$4,250.00
				Total	**$1,025,324.50**	$1,655,030.00	$754,857.50	$1,610,301.18	$584,996.28

LOVELAND UTILITIES COMMISSION

AGENDA ITEM: 1.5
MEETING DATE: 7/17/2019
SUBMITTED BY: Jon Shepard
STAFF TITLE: Senior Electric Distribution Designer

ITEM TITLE:

Big Thompson Canyon Voltage Conversion – Phase 3 Contract Increase

DESCRIPTION:

The purpose of this item is for the approval of an increase to the contract for construction of Big Thompson Canyon Voltage Conversion Phase 3 to include construction of the final sections of work.

SUMMARY:

Phase 3, approximately 14 miles, starts with the Bartram Park neighborhood and continues to a portion of Drake and through the end of the line in Waltonia. Initial plans for Phase 3D included rebuilding the tap along HWY 43, but the line was determined to be in good condition. Construction began in late July 2018 and will continue through the end of 2019.

- Phase 3A, Bartram Park to Viestenz-Smith Mountain Park (VSMP) is 100% complete.
- Construction on Phase 3B, VSMP to Fire Station 8 is 100% complete.
- Phase 3C construction, currently in progress, began in June 2019 and will last through August 2019.
- The small remaining portion of Phase 3D and all of Phase 3E is scheduled to begin in Fall 2019.

The original value of the Phase 3 construction contract was $312,389.71. Change Order 001, approved by LUC on December 19, 2018, increased the contract by $610,518.94. This included an additional $71,146.86 for Phase 3A and $539,372.08 for Phase 3B, bringing the adjusted contract cost to $922,908.65.

Change Order 002 will fund construction of the final sections of the canyon work including Phase 3C, a small portion of 3D, and all of 3E and increase the contract by $842,249.06

Per Municipal Code 3.12.060A and 3.12.060B, the LUC must approve Water and Power contracts above $500,000 or any change order that causes a contract to equal or exceed $500,000 and which, when combined with all previous change orders, equals or exceeds 20% of the original contract amount.

RECOMMENDATION:

Adopt a motion recommending that City Council approve the change order to the contract for Circuit 911 Voltage Conversion – Phase 3 with Power Contracting, LLC. to increase the not-to-exceed amount to $1,765,157.71 and authorize the City Manager to sign the change order on behalf of the City.

ATTACHMENTS:

- Attachment A: Canyon Phase 3 Map

1.5

Attachment A

~~Phase 3D:~~
~~Drake~~

COUNTY ROAD 43

Phase 3C:
Fire Station to Drake

Phase 3B:
VSMP to Fire Station

Phase 3E:
Waltonia

Phase 3A:
Bartram Park to VSMP

W HIGHWAY 34

MILE 74
MILE 75
MILE 76
MILE 77
MILE 78
MILE 79
MILE 80
MILE 81

N

0 1,200 2,400 Feet

City of Loveland

City of Loveland
Department of Water & Power
Loveland, Colorado

Phase 3 Overview
Created By: powereditor
Date Created: 6/5/2018

1.5

LOVELAND UTILITIES COMMISSION

AGENDA ITEM: 2
MEETING DATE: 7/17/2019
SUBMITTED BY: Jon Shepard
STAFF TITLE: Senior Electric Distribution Designer

ITEM TITLE:

Big Thompson Canyon Voltage Conversion – Phase 3 Contract Increase

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Change Order 002 will fund construction of the final sections of the canyon work including Phase 3C, a small portion of 3D, and all of 3E and increase the contract by $842,249.06

Per Municipal Code 3.12.060A and 3.12.060B, the LUC must approve Water and Power contracts above $500,000 or any change order that causes a contract to equal or exceed $500,000 and which, when combined with all previous change orders, equals or exceeds 20% of the original contract amount.

RECOMMENDATION:

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ATTACHMENTS:

- Attachment A: Canyon Phase 3 Map

LOVELAND UTILITIES COMMISSION

AGENDA ITEM: 2
MEETING DATE: 7/17/2019
SUBMITTED BY: Jim Lees
STAFF TITLE: Utility Accounting Manager

ITEM TITLE:

Power Cost-of-Service Rate Study Update

DESCRIPTION:

The purpose of this item is to get a recommendation from the LUC on a proposed 2020 Power rate design for all rate classes except Residential Self-Generation; and get a recommendation from the LUC to take to City Council on a proposed 2020 rate design for the Residential Self-Generation class.

SUMMARY:

At last month's LUC meeting, Mark Beauchamp, President of Utility Financial Solutions, our power rate consultant, made a presentation of the first results for 2020 rate designs from the Power cost-of-service rate study and asked for direction from the LUC on three key rate study components. Those three components are:

1) Increasing the Monthly Base Charge to reflect cost of service
   LUC Direction: Adjust the Monthly Base Charge to cost of service for all rate classes in 2020.
2) Implement full cost-of-service results for each customer class, regardless of what those rate increases or decreases might be, or put some limitations on how much each customer class will be adjusted for 2020
   LUC Direction: Take the overall average rate increase for 2020 of 5.0% and put a cap on how much each individual rate class would be adjusted in 2020 of + or – 2% of the 5.0% overall average increase.
3) Implement the following 5-year track of overall rate increases:
   2020: 5.0%
   2021: 3.0%
   2022 – 2024: 2.0% / yr.
   LUC Direction: Support for this rate track.

Mark will be joining us this month by videoconference to present the proposed rate design for 2020, taking into account the input received from the LUC at last month's meeting.

Currently, the overall average rate increase for 2020 is 5.0%, which is a combination of passing through PRPA's 1.0% wholesale power rate increase (which translates to a 0.81% retail rate increase) and an additional 4.19% increase to help offset the combined impact of the increased costs for the new CIS software and implementation, increased costs in Cost Allocations and for additional capital needs. The 1.0% proposed wholesale rate increase will be presented to the PRPA Board at their October meeting, and the hope is that what is presented to the Board will be very close to or exactly what the wholesale rates are that are being used to develop the 2020 retail rates.

The overall average rate increase for 2020 is 5.0%, and based on the proposed changes in the base, consumption and demand charges, the average rate increase by rate class is:

RATE CLASS:	% Increase
Residential	4.69%
Small General Service	4.19%
Large General Service	5.59%

Taking into account the direction from the LUC, here is a summary of the key rates Mark has developed for 2020:

SUMMARY OF KEY CHANGES

POWER: SUMMER MONTHS	July-Sept. 2019	July-Oct. Proposed 2020
Residential:		
Base Charge (per month)	$15.54	$15.79
Consumption Charge (per kWh including PILT)	$0.10105	$0.10470
Small General Service:		
Base Charge (per month)	$28.35	$28.35
Consumption Charge (per kWh including PILT)	$0.10825	$0.11335
Large General Service:		
Base Charge (per month)	$145.53	$150.00
Consumption Charge (per kWh including PILT)	$0.05542	$0.05985
Demand Charge (per kW)	$15.75	$16.50

POWER: NON-SUMMER MONTHS	Jan.-June, Oct.-Dec. 2019	Jan.-June, Nov.-Dec. Proposed 2020
Residential:		
Base Charge (per month)	$15.54	$15.79
Consumption Charge (per kWh including PILT)	$0.08353	$0.08702
Small General Service:		
Base Charge (per month)	$28.35	$28.35
Consumption Charge (per kWh including PILT)	$0.09654	$0.09933
Large General Service:		
Base Charge (per month)	$145.53	$150.00
Consumption Charge (per kWh including PILT)	$0.05195	$0.05333
Demand Charge (per kW)	$11.55	$11.80

If approved, the 5.0% overall rate increase would result in the following average monthly changes by rate class:

AVERAGE CHANGE IN MONTHLY POWER BILL	Overall Avg. Change	Summer Avg. Change	Non-Summer Avg. Change
Residential	$3.48	$5.06	$2.69
Small General Service	$10.03	$23.52	$3.29
Large General Service	$240.27	$635.18	$42.81

It is important to note that as a part of PRPA changing how they will bill the 4 member cities for wholesale power starting in 2020, there will now be 4 Summer months instead of 3. Based on analysis that PRPA has done on the past several years, September's usage profile more closely resembles the profile of a Summer month than a non-Summer month. So, for billing purposes, PRPA will now be considering June – September as Summer months instead of June – August, which is the current practice. Because of timing lags in how our Power customers are billed, beginning in 2020, the utility bills that customers receive in the months of July – October will reflect Summer rates instead of July – September, which is the current practice.

Two other items worth noting are that beginning in 2020, we are proposing a higher Monthly Base Charge in two rate classes to acknowledge customers whose electric configuration puts greater demands on our system. In the Residential class, we are proposing a higher Monthly Base Charge for customers whose electric panels are greater than 200 amps. For Small General Service customers, we are proposing a higher Monthly Base Charge for customers that have 3-phase service as opposed to single-phase service.

As part of this year's Power Cost-of-Service Rate Study, there were two important items that Staff was seeking direction on during the front end of the study. The items are 1) The Monthly Base Charge; and 2) The Rate Design for the Residential Self-Generating Class.

MONTHLY BASE CHARGE

At the April 17, 2019 LUC meeting, Staff sought direction on whether the rates for 2020 should be designed so that all of Power's fixed costs be recovered in the Monthly Base Charge, or whether we should continue with the methodology that has been used in the past 3 rate studies to calculate the Monthly Base Charge. The current methodology is called the Minimum System Requirement (MSR). With the MSR, the costs that are recovered in the Monthly Base Charge are the costs associated with delivering one kilowatt-hour of power to every customer. The MSR uses things like the smallest transformer size, the smallest poles, and the smallest conductor in its assumptions to calculate the Charge. After evaluating the two options, the LUC unanimously directed Staff to continue using the MSR methodology to calculate the Monthly Base Charge for 2020.

These two options were also presented to City Council at the May 14, 2019 Study Session, and Council gave unanimous direction to also stay with the MSR methodology.

RATE DESIGN FOR THE RESIDENTIAL SELF-GENERATING CLASS

Here are the current summer rates for the Residential Self-Generating Class:

Monthly Base Charge: $15.54 (standard Residential rate) + $2.59/kW of capacity of the customer's solar unit

Rate for energy consumed: $0.10105/kWh

Buyback rate for excess energy generated: $0.10105/kWh

The reason for the additional $2.59/kW of installed capacity charge is because, when the 2016 Power Cost-of-Service Rate Study was conducted, one of the findings was that the rates for the Residential Self-Generating Class were not generating enough revenue to cover the cost of serving that class. The charge per kW capacity of the solar unit was the methodology used to make up the shortfall in revenue collected from the Residential Self-Generating Class to bring them up to cost of service. At the April 17, 2019 LUC meeting, Staff presented three options for rate designs for 2020 for Residential Self-Generating customers, and sought direction to take to City Council at their May 14, 2019.

Here are the three options that Staff proposed:

1) Stay with the current rate design, and just update the rates to cost of service
2) Eliminate the additional charge per kW of the solar unit's capacity and lower the buyback rate to $0.0475/kWh
3) Lower the buyback rate to $0.062/kWh (what it would cost to purchase from PRPA) and, therefore, be able to lower the charge per kW of the solar unit's capacity to $0.96/kW

In 2018, there was a total of $57,000 of revenue that was collected from the Residential Self-Generating Class, and the rates for 2018 were at cost-of-service levels, so, based on 2018 usage and excess generation by the Residential Self-Generating Class, the rates in Scenarios 2 and 3 would also result in $57,000 of revenue.

The LUC supported, by a vote of 5-2, Option 3. However, at the LUC meeting, Council Liaison Olson requested that a fourth option be presented to City Council at the May 14, 2019 Study Session. Option 4 was the same as Option 3 with one difference: the additional charge per kW of the solar unit's installed capacity would be eliminated, meaning the Residential Self-Generating customers would have the same Monthly Base Charge as a regular Residential Customer.

If Option 4 was implemented, instead of collecting $57,000 of revenue in 2018 from the Residential Self-Generating customers, $50,700 would have been collected, meaning a $6,300 revenue shortfall (all based on 2018 usage). This shortfall would have to be made up from another customer class or multiple customer classes. The likely outcome would be for the shortfall to be collected from the regular Residential customers, and would result in the regular Residential customers subsidizing the Residential Self-Generating customers by $6,300 per year. The two dissenting votes from the LUC members were votes that endorsed Option 4.

At the May 14, 2019 Study Session, City Council gave direction to Staff to eliminate Options 1 and 2 from consideration for using to design rates for 2020 and requested that Options 3 and 4 both be brought back to City Council for consideration at their August 27, 2019 Study Session, when the final rate study results will be presented.

The updated cost-of-service information for 2020 shows that the rate design for Residential Self-Generating customers using Option 3 would look like this:

Monthly Base Charge: $15.79 (standard Residential rate) + $1.59/kW of capacity of the customer's solar unit

Rate for energy consumed: $0.10470/kWh (Summer) / $0.08702 (non-Summer)

Buyback rate for excess energy generated: $0.06358/kWh (annual average; seasonal rates to be developed)

Option 4 would be the same as Option 3, but the $1.59/kW of capacity of the customer's solar would be eliminated. This would create a $10,269 revenue shortfall, which would mean that the regular Residential customers would be subsidizing the Residential Self-Generating customers by that same $10,269 per year.

Even with the introduction of Option 4, Staff still recommends Option 3. The cost-of-service philosophy to ratemaking has served us well for many years, and Staff still advocates for treating all of the customer classes the same, avoiding class-to-class subsidies, and having each class be charged true cost-of-service rates. We are seeking a recommendation from the LUC between Options 3 and 4 to take to City Council at the August 27, 2019 Study Session.

RECOMMENDATION:

Adopt a motion recommending the proposed Power rates for 2020 for all rate classes except Residential Self-Generation for City Council's consideration.

Adopt a motion recommending that Option 3 be used as the rate design for 2020 for the Residential Self-Generation class for City Council's consideration.

2

LOVELAND UTILITIES COMMISSION

AGENDA ITEM: 2
MEETING DATE: 7/17/2019
SUBMITTED BY: Nathan Alburn
STAFF TITLE: Civil Engineer I, Water Resources

ITEM TITLE:

Proposed Amendments to Title 19, Sections 19.04.010, Definitions, and 19.04.020, Water rights required for development.

DESCRIPTION:

The Water Division Staff have recently completed a Water Use Study analyzing recent indoor and outdoor water use for existing residential housing developments. Results indicate water use per capita has lowered since the last time the water rights requirements were updated in the Municipal Code. Staff recommends responding to this data by implementing changes in the City's raw water requirements for future developments.

SUMMARY:

As properties annexed over time into the City, various methods were applied to determine the water rights required for development. For residential developments, Section 19.04.020 of Title 19 of the Municipal Code specifies the current calculation:

Total water rights due (in acre-feet) = (1.6 x net lot acreage) + (1.4 x acreage of that portion of each residential lot which is greater than 15,000 square feet) + (0.23 x number of dwelling units)

This formula was adopted November 2, 1999, by City Council, in Ordinance 4488.

In April of 2019, Water Division Staff completed work leading to the, "*Indoor vs. Outdoor Water Use Study*" (Attachment A), analyzing current water uses of residential developments. Two key goals of the study were to, 1) analyze water use in residential structures built after low flow fixtures were mandated in 1994 and 1997, and 2) determine whether water use per capita had changed over time. Data covering the period from 2008 to 2017 was used. Both the indoor and outdoor water usage was calculated for three main types of dwelling units: Single Family Detached, Single Family Attached, and Multi-Family. Based on the study, Staff determined the potential water rights required for each of the types of dwelling units.

The main findings of the study were the following: Indoor water usage per dwelling unit has decreased for all analyzed types; outdoor water usage per lot has decreased for all types of analyzed housing developments; single family detached units on average use substantially more water for both indoor and outdoor use than attached and mulit-family dwellings.

Staff recommends updating the residential water rights requirement to be more in line with the actual water usage. Attachment B1 is the Proposed redline revisions to Loveland Municipal Code Section 19.04.020, and Attachment B2 is the proposed clean version. Attachment C is the draft ordinance revising Loveland Municipal Code Section 19.04.020.

RECOMMENDATION:

Approve a motion recommending that the City Council approve the proposed revisions to Sections 19.04.010, "Definitions", and 19.04.020, "Water rights required for development" of the Loveland Municipal Code, as shown in the attached proposed ordinance or as revised in form and substance as necessary.

ATTACHMENTS:

- Attachment A: 2008-2017 Water Use Study
- Attachment B1: Proposed redline revisions to Loveland Municipal Code Section 19.04.020.
- Attachment B2: Proposed clean version
- Attachment C: Draft ordinance revising Loveland Municipal Code Section 19.04.020.
- Attachment D: PowerPoint Presentation

Attachment A

Water and Power Department
Service Center • 200 N. Wilson Avenue • Loveland, CO 80537
(970) 962-3000 • (970) 962-3400 Fax • (970) 962-2620 TDD
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MEMORANDUM

TO: Joe Bernosky, Director of Loveland Water and Power
THROUGH: Roger Berg, Water Utilities Manager
FROM: Larry Howard, Water Resources Manager &
Michelle Erickson, Technical Specialist
DATE: June 18, 2019
SUBJECT: Indoor vs. Outdoor Water Use Study Summary

Currently our raw water requirements for residential developments are calculated based on municipal code 19.04.020 as follows: (1.6 AF x net lot acreage) + (1.4 AF x acreage of each lot greater than 15,000 sq. ft.) + (0.23 AF x number of dwelling units)

The table below explains each component of this raw water requirement equation.

Factor	Description
1.6 AF x net lot acreage	**Outdoor Irrigation:** The raw water requirement for irrigated open spaces is 3.0 acre feet (AF) of water per acre. For residential dwellings, the assumption used is that on average about 53% of each lot is irrigated (1.6 AF/3.0 AF = 53%). Use of this factor simplifies the calculation, avoiding having to do measurements of irrigated areas for each residential lot.
1.4 AF x acreage of each lot greater than 15,000 sq. ft.	**Large Lot Irrigation:** The factor of 1.4 AF is added to the areas above 15,000 square feet. It is assumed these areas would be irrigated open space requiring 3.0 AF of water per acre. The City already requires 1.6 AF of the 3.0 AF for the normal outdoor irrigation factor, this additional factor of 1.4 AF when added together provides the necessary 3.0 AF per acre (1.6 AF+1.4 AF =3.0 AF).
0.23 AF x number of dwelling units	**Indoor Water Use:** The factor of 0.23 AF is used for indoor water use for each domestic unit. This factor was previously calculated by staff and equates to 205 gallons per unit per day.

Staff performed a study to determine the average indoor and outdoor water usage and raw water requirements by housing type. We studied the outdoor component of the equation above of 1.6 AF times the net lot acreage for single family attached and single family detached dwellings. (Multi-family dwellings typically have separate dedicated irrigation taps that provide water for outdoor use.) We also studied the indoor

component of the equation above of 0.23 AF times the number of units for multi-family, single family attached and single family detached dwellings. If these factors vary significantly from the 1.6 factor for outdoor use and the 0.23 factor for indoor use, City Council may consider adjusting the factors accordingly.

Larry Owen, from M.Timm Development, Inc., commented that Loveland's current charge for indoor water rights is high when considering that current housing standards use more efficient water fixtures than in the past. Mr. Larry Owen wrote a letter to the City requesting the indoor raw water requirement be reduced to **0.15 AF/unit** from its current value of **0.23 AF/unit**, based on information provided by M. Timm Development, Inc. If changed, the modified value would then be applied to the developer's project, Tanima Peak Apartments. He claims "the water consumption in their apartments have been shown to be dramatically less than in single family homes," citing fewer square feet and lower occupancy per unit to be the cause.

A study by M. Timm Development for 606 apartments within the Longmont, Loveland and Evans areas was cited by Mr. Owen, which showed average indoor water use to be 0.1024 AF/unit. The study adds 8% for system losses and a 40% "drought buffer" resulting in the 0.15 AF/unit value that he proposes. There was no explanation provided on how the percentage for system losses or the drought buffer were determined. His study uses only one year of consumption that occurred in 2014 for the following apartment complexes:

- 104 units - Thompson Valley (Loveland)
- 212 units - Crescent Cove (Evans)
- 290 units - Grandview Meadows (Longmont)

The goals of this internal City of Loveland study are to evaluate whether the City's residential water right requirements need to be updated, determine if there is a difference in indoor water usage between multi-family developments and single family households, and determine their overall water consumption and subsequent raw water requirements.

Study Process

To determine an adequate study period, it was desired to include a time period after the requirements for water efficient fixtures were made. In 1992, the Energy Policy Act was signed into law and mandated the following low flow fixture requirements in new residential structures:

- 1.6 gallon per flush toilets
- 2.2 gallon per minute at 60 psi bathroom faucets
- 2.5 gallon per minute at 80 psi showerheads

This law went into effect January 1, 1994 for residential buildings, which includes single family attached and detached residences, and January 1, 1997 for commercial buildings, which includes multi-family dwellings. For our study, homes built since 1994

and multi-family dwellings built since 1997 were selected to represent what future water use might look like.

Water consumption data was acquired from utility billing to show actual consumption in gallons for each month. The study includes ten years of data for most sites from 2008 through 2017, giving a representation of water use through wet, dry and average water years. GIS maps were created to show the locations of the multi-family, single family attached, and single family detached residences included in the study.

City Council has directed that the City will continuously maintain a minimum quantity of raw water supplies to handle a 100-year drought, which has a 1 in 100 probability of occurring. To correlate with the 1 in 100 probability, staff used the 99% confidence interval, which is a range of values providing 99% certainty that it contains the true mean of the population for the actual average indoor water use by housing type: multi-family, single family attached, and single family detached.

The next steps were to apply the losses that are incurred throughout the City's water system to the values indicated at the upper end of the 99% confidence interval and to apply a vacancy rate on multi-family dwellings.

Residential Indoor Water Use by Housing Type

For all residential housing types studied, the winter quarter was used and extrapolated to an annual basis for all water meters showing outdoor irrigation occurring. Otherwise, the full annual data was used in determining indoor water use.

Annual Indoor Water Use for Multi-Family Dwelling Units

Eleven representative multi-family complexes were selected across the City for evaluation. See the map in Appendix 1 for the subdivision locations. The following is a list of the multi-family complexes and the average indoor water use per dwelling unit for each complex throughout the study period, and the number of water meters and dwelling units per complex that were examined. Most of these complexes have separate dedicated irrigation meters. Staff used the full year's worth of data for the meters that do not provide irrigation water. For the meters that provide both indoor usage and outdoor irrigation water, only the water consumption during winter quarter was used, to exclude outdoor irrigation from this study. More detailed information is available in Appendix 4.

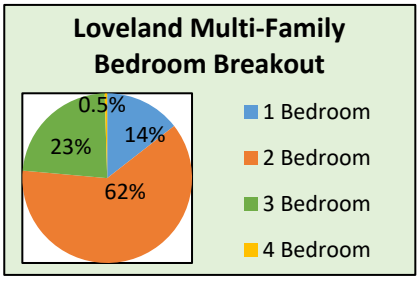
Average Annual Indoor Water Use for Multi-Family Residences

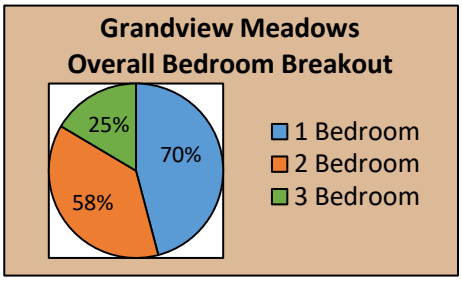
Multi-Family Complex *Subdivision*	**Average Annual Indoor Water Use** (Acre Feet per Dwelling Unit)	**Number of Dwelling Units**	**Number of Meters Examined[1]**
1. Waterford Place Apartments *Waterford Place 2nd*	0.14 AF/unit	128	7

2. Thompson Valley Apartments *Thompson Valley 2nd*	0.10 AF/unit	104	8
3. Peakview by Horseshoe Lake *Windsong 7th*	0.10 AF/unit	156	13
4. Reserve at Centerra *Rocky Mountain Village 1st*	0.17 AF/unit	128	13
5. The Buttes Apartments *Cooper 1st*	0.09 AF/unit	114	8
6. Eagle Ridge Apartments *McWhinney 11th*	0.11 AF/unit	168	14
7. High Plains Village Condos *Rocky Mountain Village 2nd*	0.12 AF/unit	116	24
8. Justice Center Apartments *Factory Place Addition*	0.15 AF/unit	7	2
9. Lakeshore at Centerra – Condominium Apartments *Rocky Mountain Village 5th*	0.10 AF/unit	192	24
10. Condos at Tulip Creek *Millennium SW 5th*	0.11 AF/unit	18	3
11. Stone Creek Townhomes *Millennium SW 2nd*	0.13 AF/unit	36	6
Weighted Average Billed Usage	**Weighted Average 0.12 AF/unit**	**1,249**	**122**
Upper Limit of the 99% Confidence Interval	**0.13 AF/unit**		

[1] *No dedicated irrigation meters were included in the meters studied. Most meters studied were exclusively for indoor use. Winter quarter data only was used for those meters that exhibited both indoor and outdoor use.*

The average annual indoor water usage for the multi-family dwellings studied including one, two, three and four bedroom units was 0.12 AF/unit with a standard deviation of 0.03 and the upper level of the 99% confidence interval at 0.13 AF/unit.





Of the multi-family units studied, 85% had either 2 or 3 bedrooms as shown in the chart to the right as compared to the majority of the apartments in the M. Timm Development's study, which had 70% being one bedroom apartments. This may help explain why the average Loveland multi-family water use is 0.12 AF/unit as compared to the proposed water use by Larry Owen or M. Timm Developments to be 0.1024 AF/unit. Multi-family dwellings with single bedroom units tend to show a lower water use. Overall, M. Timm Development's apartment units have fewer numbers of bedrooms and are smaller in

size than the average multi-family units found in this study. It is not expected that variance in square feet per bedroom would affect overall water use per unit.

Annual Indoor Water Use for Single Family Attached Dwelling Units

To study the indoor water use of single family attached homes, staff selected homes from thirteen subdivisions built after the 1994 residential plumbing code changes went into effect. See the map in Appendix 2 for the subdivision locations. To exclude possible outdoor irrigation water from the study, the monthly average during the winter quarter months of December through February was multiplied by 12 to determine the overall annual indoor water usage. More detailed information is available in Appendix 5.

Average Annual Indoor Water Use for Single Family Attached Residences

Subdivision	Units per Building	Average Annual Indoor Water Use (Acre Feet per Dwelling Unit)	No. of Dwelling Units
1. Picabo Hills	4 - 8	0.10 AF/unit	7
2. Townhomes at Stone Creek	2	0.07 AF/unit	9
3. Vanguard- Famleco 11th	4-5	0.10 AF/unit	8
4. Shamrock West	2-7	0.11 AF/unit	10
5. Winona 1st	2	0.13 AF/unit	10
6. Schroeder Office Park 1st	2	0.12 AF/unit	7
7. Westwood	2	0.13 AF/unit	10
8. Vanguard-Famleco 12th	2	0.13 AF/unit	7
9. Thompson Valley 2nd	2	0.13 AF/unit	11
10. Mariana Butte 12th	2	0.07 AF/unit	10
11. Mariana Butte	2-3	0.11 AF/unit	10
12. Millennium SW 5th	4	0.12 AF/unit	8
13. Mirasol 1st	2	0.07 AF/unit	10
Weighted Average Billed Usage		**0.11 AF/unit**	**117**
Upper Limit of the 99% Confidence Interval		**0.12 AF/unit**	

The average annual indoor water usage for single family attached homes studied was 0.11 AF/unit per year with a standard deviation of 0.04 and the upper level of the 99% confidence interval at 0.12 AF/unit.

Annual Indoor Water Use for Single Family Detached Dwelling Units

To study the indoor water use of single family detached homes, staff selected 120 homes from fifteen subdivisions built after the 1994 residential plumbing code changes went into effect 1994. See Appendix 3 for the subdivision locations. To exclude possible outdoor irrigation water from the study, the monthly average during the winter months of December through February was multiplied by 12 to determine the overall annual indoor water usage. More detailed information is available in Appendix 6.

Average Annual Indoor Water Use for Single Family Detached Residences

Subdivision	Average Annual Indoor Water Use (Acre Feet per Dwelling Unit)	No. of Dwelling Units
1. Hunters Run	0.15 AF/unit	10
2. Alford Lake 1st Sub	0.16 AF/unit	9
3. Alford Lake 4th Sub	0.21 AF/unit	7
4. Mariana Butte 13th Sub	0.13 AF/unit	6
5. Blackbird Knolls 2nd Sub	0.16 AF/unit	8
6. Winona 3rd Addition	0.21 AF/unit	3
7. Garden Gate 1st Sub	0.19 AF/unit	9
8. Seven Lakes North Addition	0.14 AF/unit	4
9. Anderson Farms 5th Sub	0.29 AF/unit	4
10. Vanguard-Famleco 12th Sub	0.15 AF/unit	12
11. Buck 2nd Sub	0.16 AF/unit	12
12. Anderson Farm 7th Sub	0.14 AF/unit	12
13. Rocky Mountain Village 2nd Sub	0.13 AF/unit	12
14. Millennium SW 2nd Sub	0.17 AF/unit	10
15. Kendall Brook 1st Sub	0.14 AF/unit	2
Weighted Average Billed Usage	**0.16 AF/unit**	**120**
Upper Limit of the 99% Confidence Interval	**0.17 AF/unit**	

The average annual indoor water usage for single family detached homes studied was 0.16 AF/unit per year with a standard deviation of 0.06 and the upper limit of the 99% confidence interval at 0.17 AF/unit.

Residential Outdoor Water Use by Housing Type

We studied single family detached and single family attached housing units demonstrating outdoor irrigation usage. Because most multi-family dwellings built after the new plumbing code went into effect have separate dedicated irrigation meters rather than meters with mixed indoor and outdoor usage, we excluded studying the outdoor usage component for multi-family dwellings.

Annual Outdoor Water Use for Single Family Attached Dwelling Units

To study the indoor water use of single family attached homes, staff selected homes from six subdivisions built after the 1994 residential plumbing code changes went into effect and for which demonstrated outdoor water usage. We calculated the outdoor water usage by deducting the winter quarter average extrapolated to an annual basis to account for indoor water usage from the average annual water usage. More detailed information is available in Appendix 7.

Average Annual Outdoor Water Use for Single Family Attached Residences

Subdivision	Units per Building	Average Annual Outdoor Water Use (Acre Feet per Acre)	No. of Dwelling Units
1. Shamrock West	2-7	0.57 AF/acre	10
2. Winona 1st	2	0.64 AF/acre	10
3. Schroeder Office Park 1st	2	0.88 AF/acre	7
4. Westwood	2	0.85 AF/acre	10
5. Vanguard-Famleco 12th	2	1.53 AF/acre	7
6. Thompson Valley 2nd	2	0.84 AF/acre	11
Weighted Average Billed Usage		**0.86 AF/acre**	**55**
Upper Limit of the 99% Confidence Interval		**1.28 AF/acre**	

The average annual outdoor water usage for single family attached homes studied was 0.86 AF/acre per year with a standard deviation of 0.46 and the upper level of the 99% confidence interval at 1.28 AF/acre.

Annual Outdoor Water Use for Single Family Detached Dwelling Units

To study the outdoor water use of single family detached homes, staff selected 114 homes from fourteen subdivisions built after the 1994 residential plumbing code changes went into effect 1994 that exhibited outdoor water usage. We calculated the outdoor water usage by deducting the winter quarter average extrapolated to an annual basis to account for indoor water usage from the average annual water usage. More detailed information is available in Appendix 8.

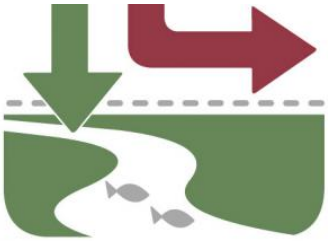
Average Annual Outdoor Water Use for Single Family Detached Residences		
Subdivision	**Average Annual Outdoor Water Use** (Acre Feet per Acre)	**No. of Dwelling Units**
1. Hunters Run	0.73 AF/acre	10
2. Alford Lake 1st Sub	1.30 AF/acre	9
3. Alford Lake 4th Sub	0.94 AF/acre	7
4. Blackbird Knolls 2nd Sub	0.62 AF/acre	8
5. Winona 3rd Addition	0.56 AF/acre	3
6. Garden Gate 1st Sub	1.27 AF/acre	9
7. Seven Lakes North Addition	1.61 AF/acre	4
8. Anderson Farms 5th Sub	0.54 AF/acre	4
9. Vanguard-Famleco 12th Sub	0.89 AF/acre	12
10. Buck 2nd Sub	0.80 AF/acre	12
11. Anderson Farm 7th Sub	1.08 AF/acre	12
12. Rocky Mountain Village 2nd Sub	0.65 AF/acre	12
13. Millennium SW 2nd Sub	1.54 AF/acre	10
14. Kendall Brook 1st Sub	1.01 AF/acre	2
Weighted Average Billed Usage	**0.98 AF/acre**	**114**
Upper Limit of the 99% Confidence Interval	**1.37 AF/acre**	

The average annual indoor water usage for single family detached homes studied was 0.98 AF/acre per year with a standard deviation of 0.52 and the upper limit of the 99% confidence interval at 1.37 AF/acre.

System Water Losses

Water systems require more raw water entering the system than what actually reaches the end billed customer. These system losses need to be accounted for and applied to the annual billed consumption to determine the annual raw water requirements. For more information, see Appendix 9. Below is the breakout of the losses applied to the study data:

1. Raw Water Delivery Losses



Scenario 1: Forgo Most Junior Water Right Available - Under the City's Carriage Contract with Northern Water and the U.S. Bureau of Reclamation, orders for water deliveries into Green Ridge Glade Reservoir must be made by 3 pm the day prior to delivery. When the river is dropping, the River Commissioner makes an estimated guess at that time of what water will be available to the City the following day. To stay within the City's legal diversion entitlement for the following day, staff often places an order that does not include the most junior water right potentially available, often resulting in a loss of water. (The alternative, which is not attractive to the State of Colorado, is to continue an out-of-priority diversion for the day it occurs and then replace it the following day with an order of CBT water given to the River Commissioner.) The loss in water ordered versus water rights available potentially occurs for the period of approximately 75 days, between mid-June through the end of August each year. During this period of time, staff often uses a priority anywhere up to about priority number 13. The average of the City's water rights up to priority number 13.5 is 5.73 Acre Feet (2.86 cubic feet per second x 2 = 5.72 AF).

5.72 AF	Average junior water right not taken, but available
x 75 days	Number of days between mid-June through end of August
429 AF	Annual loss on forgoing most junior water right available

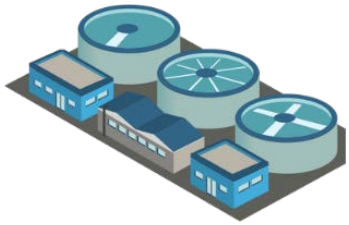
Scenario 2: Plant Cuts Back River Diversions after Water Ordered – If staff orders water to be delivered through the Big Thompson River and the operators cut back the water production in the plant, they also must cut back the amount of water diverted from the river causing water to be lost downstream. (i.e. rain causes demand to drop, plant maintenance issues require stopped or lowered water production, water turbidity makes river water untreatable, etc.) This is particularly important when the City is taking the full amount of water it is entitled to divert.

Scenario 3: Leave Flows in the River – Native waters can only be diverted at the City pipeline, directly into the water treatment plant, when carriage capacity under the City's carriage contract is limited or nonexistent. During that time, if the river water is untreatable due to poor water quality, the water must be left in the river without being diverted even though the City is entitled to it.

Staff began tracking the losses described in scenarios two and three in May of 2018 with an initial estimate for the combined losses at 1%, to be used until further data becomes available. Total raw water delivery losses were estimated at 3.95% of the total raw water delivered at the City's headgates.

2. **Evaporative Water Loss**, includes evaporation occurring off the surface of Green Ridge Glade Reservoir and the seven decant ponds at the Water Treatment Plant. Green Ridge Glade Reservoir has approximately 160 surface acres and the seven decant ponds are approximately 4 surface acres total in surface area and the annual net evaporative loss is 27.5 inches. This loss equates to 2.42% of the total raw water delivered between 2015-2017 to the water treatment plant equating to approximately 380 AF per year.

3. **Treatment Loss**, results from water used in the treatment process at the Water Treatment Plant, but that does not enter into the water distribution system. Treatment loss equates to 3.54% of the total raw water delivered and is measured by the amount of water sent to the river outfall between 2015-2017.



4. **Conveyance Loss**, is the amount of loss that occurs in the water distribution system before reaching the end customer. It is calculated by determining how much water enters the distribution system minus the sum of all authorized water consumption. The City of Loveland calculates its water distribution system losses, based on industry best practices following the American Water Works Association's, M36 Manual: Water Audits and Loss Control methodology. This loss equates to 13.64% of the total raw water delivered between 2015-2017.

5. **Community Benefit Use:** Water used for fire training, firefighting and for maintaining our water distribution system (hydrant flushing, tank cleaning, etc.) benefits the entire community. All water customers pay for a portion of this water usage, called here "community benefit use," equating to 0.96% of total raw water delivered between 2015-2017.

Vacancy Rate for Multi-Family Dwelling Units

Because each single family dwelling in this study had its own water meter, staff excluded months of vacancy when zero consumption occurred. For multi-family dwellings, each building provides water to multiple units so it was necessary to account for the vacant multi-family dwellings to estimate actual maximum use. To do so, staff averaged Loveland's quarterly apartment vacancy rates from 3rd Quarter 2008 through 1st Quarter 2018 found in Loveland's Annual Data and Assumptions Reports and the Colorado Division of Housing Multi-Family Housing Vacancy and Rental reports, which equated to a 4.22% vacancy rate for multi-family units. See Appendix 10.

Raw Water Requirements Based on Housing Type

The following charts outline the calculated mean, the upper limit of the 99% confidence interval and system losses and vacancy factor used to determine the average annual raw water requirements needed for each new residential dwelling unit based on housing type for indoor verses outdoor water use.

Average Raw Water Required for Annual Indoor Water			
Dwelling Unit Type	**Multi-Family Dwellings**	**Single Family Attached**	**Single Family Detached**
Average Billed Water Usage	0.12 AF/Unit	0.11 AF/Unit	0.16 AF/Unit
99% Confidence Interval Upper Limit	0.13 AF/Unit	0.12 AF/Unit	0.17 AF/Unit
Raw Water Delivery Loss	3.95%	3.95%	3.95%
Evaporative Loss	2.42%	2.42%	2.42%
Treatment Loss	3.54%	3.54%	3.54%
Conveyance Loss	13.64%	13.64%	13.64%
Community Benefit Use	0.96%	0.96%	0.96%
Vacancy Rate	4.22%	*	*
Average Annual Raw Water Requirement for Indoor Water Use by Housing Type	**0.16 AF/Unit**	**0.15 AF/Unit**	**0.22 AF/Unit**

*Note: Because City records include individual meter readings and records for the single family dwelling units, it was not necessary to apply a vacancy rate. Instead, periods of vacancy were excluded from the analysis.

Average Raw Water Required for Annual Outdoor Water		
Dwelling Unit Type 	**Single Family Attached** 	**Single Family Detached** 
Average Billed Water Usage	0.86 AF/Acre	0.98 AF/Acre
99% Confidence Interval Upper Limit	1.03 AF/Acre	1.10 AF/Acre
Raw Water Delivery Loss	3.95%	3.95%
Evaporative Loss	2.42%	2.42%
Treatment Loss	3.54%	3.54%
Conveyance Loss	13.64%	13.64%
Community Benefit Use	0.96%	0.96%
Vacancy Rate	*	*
Average Annual Raw Water Requirement for Outdoor Water Use by Housing Type	**1.28 AF/Acre**	**1.37 AF/Acre**

*Note: Because City records include individual meter readings and records for the single family dwelling units, it was not necessary to apply a vacancy rate. Instead, periods of vacancy were excluded from the analysis.

Comparison to other Communities

Loveland's current and observed raw water requirements fall within the range of what neighboring communities are charging, with some communities charging more and others less than Loveland.

The table below outlines the raw water requirements for residential dwellings of Loveland compared to other Northern Colorado water providers.

Entity	Calculation & Source
City of Loveland (current)	(0.23 x 1 unit) + (1.6 x net acres) + (1.4 x lot area >15,000 sf) *Source: Loveland Municipal Code Section 19.04.020*
City of Fort Collins	**Single Family, Duplex, & Mobile Homes** 1.92 x [(7.048 x lot size sf)+(12,216.9 x Bedrooms)]/325,851 **Multi-Family for Greater than 2 Dwelling Units** 1.92 x [(9.636 x lot size sf)+(13592.8 x Bedrooms)]/325,851 *Source: Fort Collins Municipal Code Section 26-148*
East Larimer County Water District	**Residential** Lot Size (sf) CBT or North Poudre Irrigation Co AF 1 - 2,999: 0.3653 AF 3K- 4,999: 0.4899 AF 5K- 6,999: 0.5672 AF

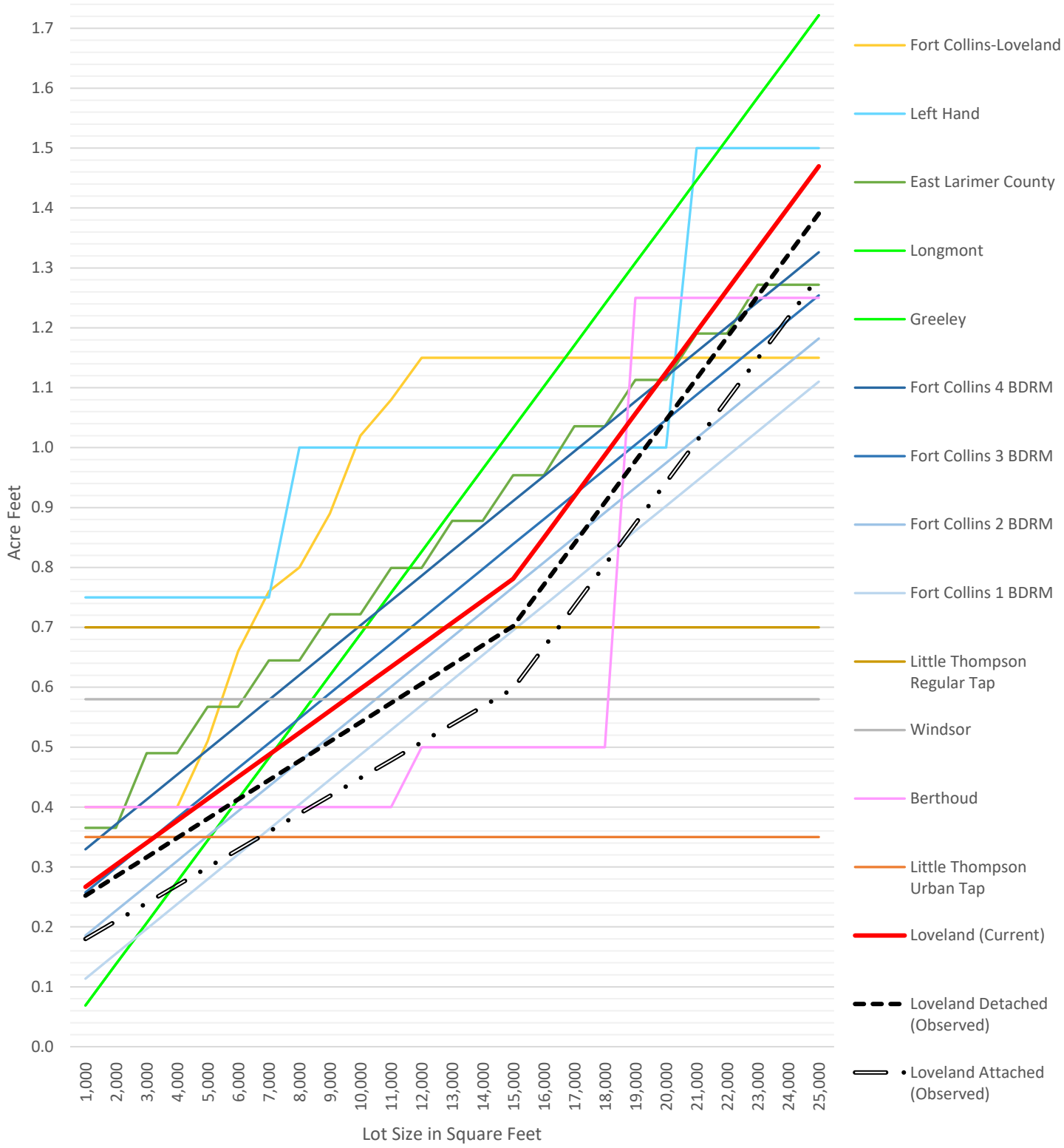
	7K- 8,999: 0.6446 AF 9K-10,999: 0.7219 AF 11K-12,999: 0.7993 AF 13K-14,999: 0.8776 AF 15K-16,999: 0.954 AF 17K-18,999: 1.0356 AF 19K-20,999: 1.113 AF 21K-22,999: 1.1903 AF >23K: 0. AF 1.2719 AF **Multi-Family** 0.2578 AF x Dwelling Units *Source: 2018 Raw Water Requirements Schedule*
Little Thompson Water District Urban Tap	0.35 Acre Feet *Source: Development – Tap Fees Webpage*
Little Thompson Water District Regular Tap	**Single Family:** 0.70 Acre Feet **Multi-Family:** 0.23 AF *Source: Development – Tap Fees Webpage*
City of Greeley	3 AF of raw water per acre of land *Source: Greeley's Raw Water Dedication webpage*
City of Longmont	3 AF of raw water per acre of land *Source: Longmont Municipal Code Section 14.05*
Town of Berthoud	0.2 AF for indoor and 0.2 AF for outdoor **Single Family** <12K sf = 0.4 AF * 1 12K-18K sf =0.4 AF * 1.25 >18K sf = 1.25 AF minimum 0.8 AF/Ac native seed + 3.0 AF/ac turf + 1.33 AF/ac for non-turf vegetation **Duplex** <12K sf = 0.40 AF * 2 12K-18K = 0.40 AF * 2.5 >18K = 0.40 * 2.5 minimum 0.8 AF/Ac native seed + 3.0 AF/ac turf + 1.33 AF/ac for non-turf vegetation **Multi-Family (3 or more units)** 0.40 AF * 0.5 * DU + Irrigation 0.8 AF/Ac native seed + 3.0 AF/ac turf + 1.33 AF/ac for non-turf vegetation *Source: Berthoud Municipal Code Section 30.10-105 H & J*
Town of Windsor	**Single Family:** 0.5 AF+17% shrinkage factor = 0.58 AF **Multi-Family:** 0.15 AF + 3 AF per irrigated area + 17% shrinkage factor *Source: Municipal Code Section 13-2-80*

Fort Collins – Loveland Water District	**Single Family** Lot Size (sf) AF <=4K 0.40 4,001-5,000 0.51 5,001-6,000 0.66 6,001-7,000 0.76 7,001-8,000 0.80 8,001-9,000 0.89 9,001-10,000 1.02 10,001-11,000 1.08 >11,000 1.15 **Multi-Family:** 0.40 AF per DU *Source: 9-1-2018 Tap Fee Schedule*
Left Hand Water District	**Single Family** <7K sf in platted subdivision = 0.75 AF >7K – 20K in platted subdivision = 1 AF Rural lots not in platted subdivision = 1 AF >20K sf in platted subdivision = 1.5 AF **Multi-Family** 0.42 AF/DU *Source: 2018 District Policies*
City of Loveland (observed) *Average observed water requirements from 2008 to 2017 of sites included in this study.*	**Single Family Detached** (0.22 x 1 unit) + (1.4 x net acres) + (1.6 x lot area >15,000 sf) **Single Family Attached** (0.15 x 1 unit) + (1.3 x net acres) + (1.7 x lot area >15,000 sf) **Multi-Family*** (0.16 x 1 unit) + (1.3 x net acres) + (1.7 x lot area >15,000 sf) **For multi-family dwellings, only the indoor factor of 0.16 was studied. Because the indoor water usage was most similar to single family attached dwellings, we updated the outdoor factors to be consistent with the observed water requirements of single family attached dwellings.*

Following is a table and chart of the acre feet of raw water required for single family residences based on lot size and water provider.

Acre Feet of Raw Water Required for Development of Single Family Homes based on Lot Size & Water Provider																
Lot SF	Loveland (Current)	Loveland Detached (Observed)	Loveland Attached (Observed)	Fort Collins 1 BDRM	Fort Collins 2 BDRM	Fort Collins 3 BDRM	Fort Collins 4 BDRM	East Larimer County	Little Thompson Urban Tap	Little Thompson Regular Tap	Greeley	Longmont	Berthoud	Windsor	Fort Collins-Loveland	Left Hand
1,000	0.3	0.3	0.2	0.1	0.2	0.3	0.3	0.4	0.4	0.7	0.1	0.1	0.4	0.6	0.4	0.8
2,000	0.3	0.3	0.2	0.2	0.2	0.3	0.4	0.4	0.4	0.7	0.1	0.1	0.4	0.6	0.4	0.8
3,000	0.3	0.3	0.2	0.2	0.3	0.3	0.4	0.5	0.4	0.7	0.2	0.2	0.4	0.6	0.4	0.8
4,000	0.4	0.3	0.3	0.2	0.3	0.4	0.5	0.5	0.4	0.7	0.3	0.3	0.4	0.6	0.4	0.8
5,000	0.4	0.4	0.3	0.3	0.4	0.4	0.5	0.6	0.4	0.7	0.3	0.3	0.4	0.6	0.5	0.8
6,000	0.5	0.4	0.3	0.3	0.4	0.5	0.5	0.6	0.4	0.7	0.4	0.4	0.4	0.6	0.7	0.8
7,000	0.5	0.4	0.4	0.4	0.4	0.5	0.6	0.6	0.4	0.7	0.5	0.5	0.4	0.6	0.8	0.8
8,000	0.5	0.5	0.4	0.4	0.5	0.5	0.6	0.6	0.4	0.7	0.6	0.6	0.4	0.6	0.8	1.0
9,000	0.6	0.5	0.4	0.4	0.5	0.6	0.7	0.7	0.4	0.7	0.6	0.6	0.4	0.6	0.9	1.0
10,000	0.6	0.5	0.4	0.5	0.6	0.6	0.7	0.7	0.4	0.7	0.7	0.7	0.4	0.6	1.0	1.0
11,000	0.6	0.6	0.5	0.5	0.6	0.7	0.7	0.8	0.4	0.7	0.8	0.8	0.4	0.6	1.1	1.0
12,000	0.7	0.6	0.5	0.6	0.6	0.7	0.8	0.8	0.4	0.7	0.8	0.8	0.5	0.6	1.2	1.0
13,000	0.7	0.6	0.5	0.6	0.7	0.8	0.8	0.9	0.4	0.7	0.9	0.9	0.5	0.6	1.2	1.0
14,000	0.7	0.7	0.6	0.7	0.7	0.8	0.9	0.9	0.4	0.7	1.0	1.0	0.5	0.6	1.2	1.0
15,000	0.8	0.7	0.6	0.7	0.8	0.8	0.9	1.0	0.4	0.7	1.0	1.0	0.5	0.6	1.2	1.0
16,000	0.8	0.8	0.7	0.7	0.8	0.9	1.0	1.0	0.4	0.7	1.1	1.1	0.5	0.6	1.2	1.0
17,000	0.9	0.8	0.7	0.8	0.8	0.9	1.0	1.0	0.4	0.7	1.2	1.2	0.5	0.6	1.2	1.0
18,000	1.0	0.9	0.8	0.8	0.9	1.0	1.0	1.0	0.4	0.7	1.2	1.2	0.5	0.6	1.2	1.0
19,000	1.1	1.0	0.9	0.9	0.9	1.0	1.1	1.1	0.4	0.7	1.3	1.3	1.3	0.6	1.2	1.0
20,000	1.1	1.0	0.9	0.9	1.0	1.0	1.1	1.1	0.4	0.7	1.4	1.4	1.3	0.6	1.2	1.0
21,000	1.2	1.1	1.0	0.9	1.0	1.1	1.2	1.2	0.4	0.7	1.4	1.4	1.3	0.6	1.2	1.5
22,000	1.3	1.2	1.1	1.0	1.1	1.1	1.2	1.2	0.4	0.7	1.5	1.5	1.3	0.6	1.2	1.5
23,000	1.3	1.3	1.1	1.0	1.1	1.2	1.2	1.3	0.4	0.7	1.6	1.6	1.3	0.6	1.2	1.5
24,000	1.4	1.3	1.2	1.1	1.1	1.2	1.3	1.3	0.4	0.7	1.7	1.7	1.3	0.6	1.2	1.5
25,000	1.5	1.4	1.3	1.1	1.2	1.3	1.3	1.3	0.4	0.7	1.7	1.7	1.3	0.6	1.2	1.5

Acre Feet of Raw Water Required for Development of Single Family Homes Based on Lot Size & Water Provider



Following is a table and chart of the acre feet of raw water required for each dwelling unit of multi-family residences based on lot size and water provider.

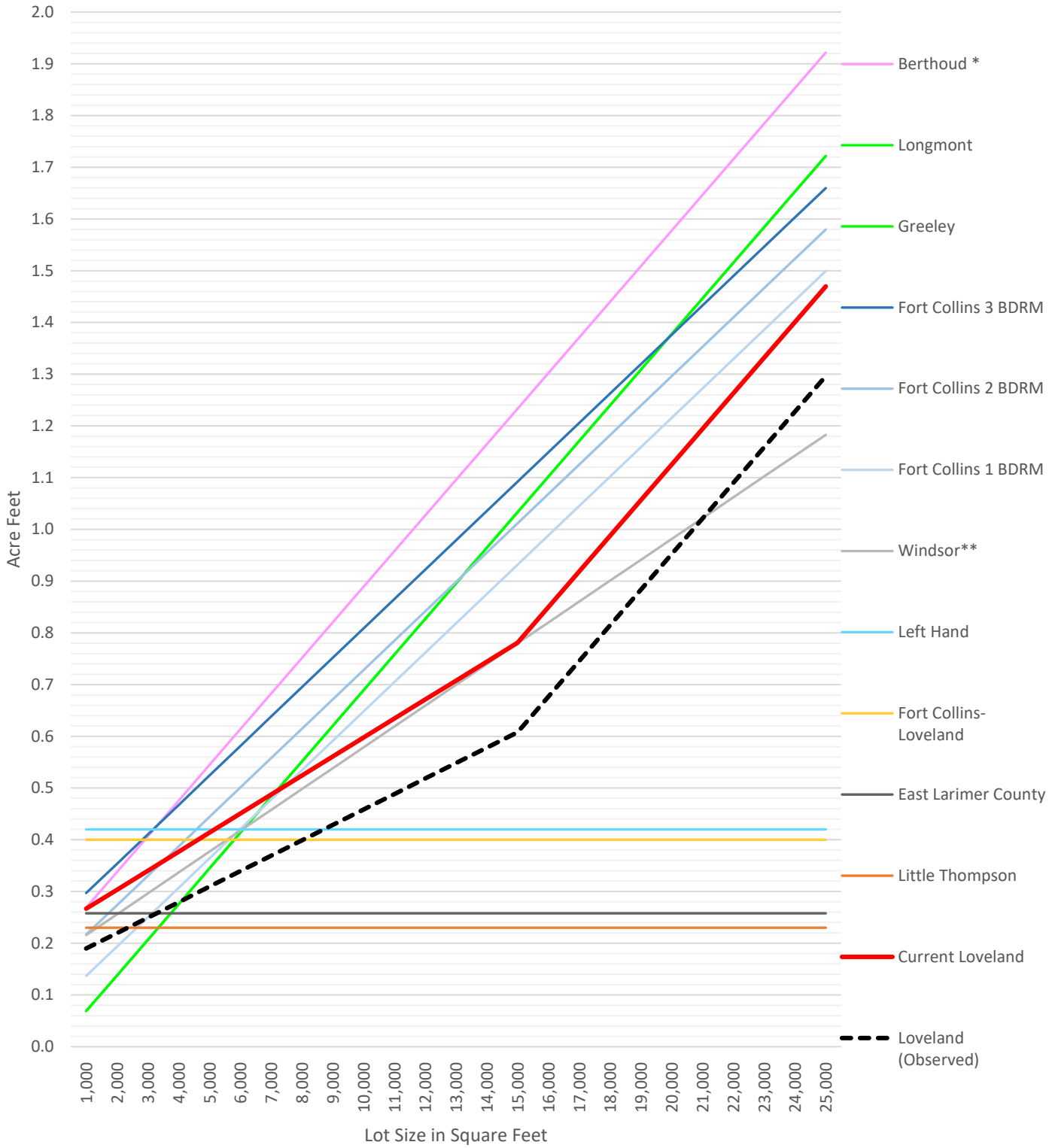
Acre Feet of Raw Water Required for Development of Multi-Family Homes based on Lot Size & Water Provider													
Lot SF	Current Loveland	Loveland (Observed)	Fort Collins 1 BDRM	Fort Collins 2 BDRM	Fort Collins 3 BDRM	East Larimer County	Little Thompson	Greeley	Longmont	Berthoud *	Windsor**	Fort Collins-Loveland	Left Hand
1,000	0.3	0.2	0.1	0.2	0.3	0.3	0.2	0.1	0.1	0.3	0.2	0.4	0.4
2,000	0.3	0.2	0.2	0.3	0.4	0.3	0.2	0.1	0.1	0.3	0.3	0.4	0.4
3,000	0.3	0.2	0.3	0.3	0.4	0.3	0.2	0.2	0.2	0.4	0.3	0.4	0.4
4,000	0.4	0.3	0.3	0.4	0.5	0.3	0.2	0.3	0.3	0.5	0.3	0.4	0.4
5,000	0.4	0.3	0.4	0.4	0.5	0.3	0.2	0.3	0.3	0.5	0.4	0.4	0.4
6,000	0.5	0.3	0.4	0.5	0.6	0.3	0.2	0.4	0.4	0.6	0.4	0.4	0.4
7,000	0.5	0.4	0.5	0.6	0.6	0.3	0.2	0.5	0.5	0.7	0.5	0.4	0.4
8,000	0.5	0.4	0.5	0.6	0.7	0.3	0.2	0.6	0.6	0.8	0.5	0.4	0.4
9,000	0.6	0.4	0.6	0.7	0.8	0.3	0.2	0.6	0.6	0.8	0.5	0.4	0.4
10,000	0.6	0.5	0.6	0.7	0.8	0.3	0.2	0.7	0.7	0.9	0.6	0.4	0.4
11,000	0.6	0.5	0.7	0.8	0.9	0.3	0.2	0.8	0.8	1.0	0.6	0.4	0.4
12,000	0.7	0.5	0.8	0.8	0.9	0.3	0.2	0.8	0.8	1.0	0.7	0.4	0.4
13,000	0.7	0.5	0.8	0.9	1.0	0.3	0.2	0.9	0.9	1.1	0.7	0.4	0.4
14,000	0.7	0.6	0.9	1.0	1.0	0.3	0.2	1.0	1.0	1.2	0.7	0.4	0.4
15,000	0.8	0.6	0.9	1.0	1.1	0.3	0.2	1.0	1.0	1.2	0.8	0.4	0.4
16,000	0.8	0.7	1.0	1.1	1.1	0.3	0.2	1.1	1.1	1.3	0.8	0.4	0.4
17,000	0.9	0.7	1.0	1.1	1.2	0.3	0.2	1.2	1.2	1.4	0.9	0.4	0.4
18,000	1.0	0.8	1.1	1.2	1.3	0.3	0.2	1.2	1.2	1.4	0.9	0.4	0.4
19,000	1.1	0.9	1.2	1.2	1.3	0.3	0.2	1.3	1.3	1.5	0.9	0.4	0.4
20,000	1.1	1.0	1.2	1.3	1.4	0.3	0.2	1.4	1.4	1.6	1.0	0.4	0.4
21,000	1.2	1.0	1.3	1.4	1.4	0.3	0.2	1.4	1.4	1.6	1.0	0.4	0.4
22,000	1.3	1.1	1.3	1.4	1.5	0.3	0.2	1.5	1.5	1.7	1.1	0.4	0.4
23,000	1.3	1.2	1.4	1.5	1.5	0.3	0.2	1.6	1.6	1.8	1.1	0.4	0.4
24,000	1.4	1.2	1.4	1.5	1.6	0.3	0.2	1.7	1.7	1.9	1.1	0.4	0.4
25,000	1.5	1.3	1.5	1.6	1.7	0.3	0.2	1.7	1.7	1.9	1.2	0.4	0.4

Notes:

*Assume 50% of land is irrigated turf

**Assume 50% of land is irrigated

Acre Feet of Raw Water Required for Each Multi-Family Dwelling Unit Based on Lot Size & Water Provider



* Assumed 50% of lot is irrigated turf

**Assumes 50% of land is irrigated

Summary

The study period included ten years of indoor and outdoor water use data that covered wet, dry and normal years for the majority of water taps studied. This study included records from 122 multi-family buildings providing water to 1,249 dwelling units, 117 single family attached residences, and 120 single family detached residences. All units selected were built after the 1992 Energy Policy Act requirements of low-flow plumbing fixture were mandated to reflect the most likely water usage and raw water requirements of future developments.

Based on the results of this study, there is a material difference in the indoor and outdoor water use between the single family detached residences verses the other types of housing included in this study as summarized in the table below.

	Multi-Family Homes	Single Family Attached Homes	Single Family Detached Homes
	Loveland Indoor Raw Water Requirements		
	AF/Unit	**AF/Unit**	**AF/Unit**
Current Indoor Requirement	0.23	0.23	0.23
Upper Limit of 99% Confidence Interval for Indoor Use	0.16	0.15	0.22
	Loveland Outdoor Raw Water Requirements		
	AF/Acre	**AF/Acre**	**AF/Acre**
Current Outdoor Requirement	1.6	1.6	1.6
Upper Limit of 99% Confidence Interval for Outdoor Use	Excluded from study	1.28	1.37

Recommendation

Staff recommends using the results of this study to modify the raw water requirements for future residential developments. Because the indoor use results for the single family attached and multi-family homes are close, and to simplify the calculation, staff recommends using the higher of the two values for both of those categories.

Staff recommends the following raw water requirements:

RESIDENTIAL DWELLING TYPE			Indoor Water Rights	Outdoor Water Rights*	
Detached Units	**Home Size**	**Water Tap Service**	Acre feet (AF) required x No. of dwelling units	AF required x net lot acreage	AF required x acres in excess of 15,000 sf per lot
Single Family Detached	> 800 sf	Separate water tap to each dwelling unit	0.22 AF	1.4 AF	1.6 AF
Cottage Homes and Micro Homes	≤ 800 sf		0.16 AF	1.3 AF	1.7 AF
Attached Units	**Home Size**	**Water Tap Service**	**Indoor**	**Outdoor**	**Outdoor**
Single Family Attached (and Cluster Duplexes)	N/A	Separate water tap to each dwelling unit	0.16 AF	1.3 AF	1.7 AF
Multi-Family	N/A	Water tap serves multiple dwelling units without a dedicated irrigation tap	0.16 AF	1.3 AF	1.7 AF
		Water Tap Service	**Indoor**	**Outdoor Water Rights per Acre of Irrigated Area**	
		Each water tap serves multiple dwelling units and there is a dedicated irrigation tap	0.16 AF	3.0 AF	

* Note: If a dedicated irrigation tap provides all the water for outdoor use, then the outdoor water rights requirements would not apply for the individual lots. Instead, 3.0 AF per acre of water rights or the amount specified in an approved hydrozone plan would be required for the total area irrigated from the dedicated irrigation tap.

Appendices

1. **Figure 1** – Map of multi-family complexes include in study
2. **Figure 2** – Map of single family attached subdivisions included in study
3. **Figure 3 –** Map of single family detached subdivisions included in study
4. **Indoor Study Summary -** Multi-family dwellings
5. **Indoor Study Summary -** Single family detached dwellings
6. **Indoor Study Summary -** Single family attached dwellings
7. **Outdoor Study Summary –** Single family detached dwellings
8. **Outdoor Study Summary -** Single family attached dwellings
9. **Water Loss Breakout** – Summary of water loss calculations
10. **Vacancy Rates** – Summary of quarterly apartment vacancy rates

3

Appendix 1

Peak View Apartments
The Buttes Apartments
Justice Center Apartments
Thompson Valley Apartments
Waterford Place Apartments
Lakeshore at Centerra
High Plains Village Condos
Eagle Ridge Apartments
Reserve at Centerra Apartments
The Condos at Tulip Creek
Stone Creek Townhomes

N WILSON AVE
GLEN ISLE DR
N DUFFIELD AVE
N GRANT AVE
E 42ND ST
N COUNTY ROAD 11C
N BOYD LAKE AVE
INTERSTATE 25 SB
INTERSTATE 25 NB
W 37TH ST
N TAFT AVE
SHERIDAN AVE
N GARFIELD AVE
E 37TH ST
N MONROE AVE
SEVEN LAKES DR
E 37TH ST
E 37TH ST
W 29TH ST
ARBOR DR
CUSTER DR
BUCHANAN AVE
E 29TH ST
SILVER LEAF DR
E COUNTY ROAD 24
E 23RD ST
N MADISON AVE
N BOISE AVE
W 22ND ST
W 18TH ST
E 18TH ST
E 16TH ST
E 15TH ST
E EISENHOWER BLVD
W EISENHOWER BLVD
NICKEL DR
E 13TH ST
N DENVER AVE
W 10TH ST
W 10TH ST
W 8TH ST
N CLEVELAND AVE
N LINCOLN AVE
N WASHINGTON AVE
E 7TH ST
E COUNTY ROAD 20E
N NAMAQUA AVE
W 4TH ST
E 4TH ST
W 1ST ST
E 1ST ST
S TYLER AVE
S CLEVELAND AVE
S LINCOLN AVE
4TH ST SE
S MADISON AVE
S BOISE AVE
S WILSON AVE
CARLISLE DR
8TH ST SE
S COUNTY ROAD 9E
14TH ST SW
14TH ST SE
E HIGHWAY 402

N

1 in = 2,500 ft

Feet

0 1,250 2,500

City of Loveland

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Department of Water & Power

Loveland, Colorado

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FIGURE 1 - Indoor Water Use Study
Multi-Family Dwellings

Created By: muellc

Date Created: 9/14/2018

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Appendix 2

Picabo Hills
Shamrock West
Vanguard - Famleco
Vangard-Famleco
Mariana Butte
Mariana Butte
Westwood
Schroeder Office Park
Thompson Valley
Millenium SW
The Townhomes at Stone Creek
Winona
Mirasol

N WILSON AVE
N GRANT AVE
N MONROE AVE
N COUNTY ROAD 11C
N BOYD LAKE AVE
E 42ND ST
E 37TH ST
W 37TH ST
N TAFT AVE
SHERIDAN AVE
N GARFIELD AVE
SEVEN LAKES DR
MORNING DR
W 29TH ST
ARBOR DR
CUSTER DR
BUCHANAN AVE
E 29TH ST
SILVER LEAF DR
E 23RD ST
N MADISON AVE
N BOISE AVE
E 18TH ST
E 16TH ST
E 15TH ST
W 22ND ST
W 18TH ST
W EISENHOWER BLVD
E EISENHOWER BLVD
N NAMAQUA AVE
NICKEL DR
E 13TH ST
E 11TH ST
W 10TH ST
W 8TH ST
N CLEVELAND AVE
N LINCOLN AVE
N WASHINGTON AVE
N DENVER AVE
E 7TH ST
E COUNTY ROAD 20E
FOOTHILLS DR
W 4TH ST
E 4TH ST
W 1ST ST
E 1ST ST
4TH ST SE
S CLEVELAND AVE
S LINCOLN AVE
8TH ST SE
CARLISLE DR
S WILSON AVE
S TYLER AVE
S ROOSEVELT AVE
S SAINT LOUIS AVE
S BOISE AVE
S COUNTY ROAD 9E
14TH ST SW
14TH ST SE
E HIGHWAY 402

N

1 in = 2,500 ft

Feet

0 1,250 2,500

City of Loveland

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Loveland, Colorado

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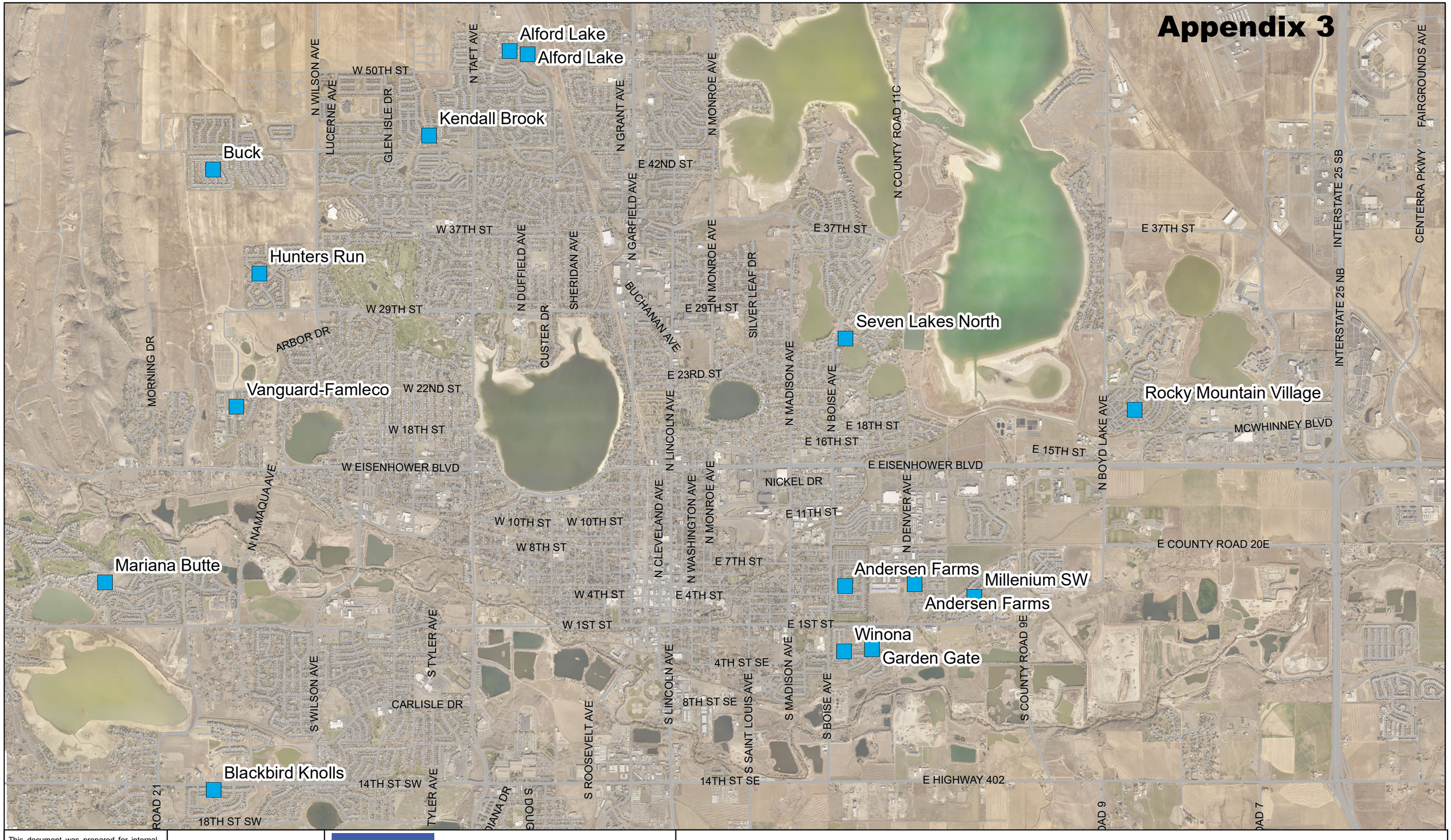
FIGURE 2 - Indoor Water Use Study
Single Family Attached Residence

Created By: muellc
Date Created: 9/14/2018

3



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Due to security concerns, the city requests that you do not post this document on the internet or otherwise make it available to persons unknown to you.

N

1 in = 2,917 ft

Feet

0 1,400 2,800

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Department of Water & Power

Loveland, Colorado

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FIGURE 3 - Indoor Water Use Study
Single Family Detached Residence

Created By: muellc

Date Created: 9/14/2018

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Appendix 4

City of Loveland • MULTI-FAMILY RESIDENCE • INDOOR • Water Use (2008-2017)

Subdivision	Water Meter Set Years	No. of Dwelling Units	Multi-Family Complex Name	No. of Water Meters	Billed Water Use (AF/unit)
Waterford Place 2nd Sub	2003	128	Waterford Place Apartments	7	0.141
Thompson Valley 2nd Sub	2001 - 2002	104	Thompson Valley Apartments	8	0.104
Windsong 7th Subdivision	2001 - 2002	222	Peak View Apartments	13	0.101
Rocky Mountain Village 1st Sub	2002	144	Reserve at Centerra Apartments	13	0.160
Cooper 1st Sub	1997	114	The Buttes Apartments	8	0.094
McWhinney 11th Sub	1999-2001	168	Eagle Ridge Apartments	14	0.108
Rocky Mountain Village 2nd Sub	2001-2005	116	High Plains Village Condos	24	0.124
Factory Place Addition	2002	7	Justice Center Apartments	2	0.155
Rocky Mountain Village 5th Sub	2002-2007	192	Lakeshore at Centerra - Condo Apartments	24	0.098
Millennium SW 5th Sub	2003-2006	18	The Condos at Tulip Creek	3	0.112
Millennium SW 2nd Sub	2003-2006	36	Stone Creek Townhomes	6	0.135

Note: Only winter quarter water consumption was used on taps that included outdoor irrigation. (Dec, Jan, & Feb)

Weighted Average of Annual Water Use per Multi-Family Unit in Study:	0.12	AF/unit
Upper Limit of the 99% Confidence Interval =	0.13	AF/Unit
Raw Water Delivery Loss[1] =	3.95%	Loss in water received versus ordered
Evaporative Loss[2] =	2.42%	Loss in reservoir before its delivered
Treatment Loss[3] =	3.54%	Loss in the water treatment process
Conveyance Loss[4] =	13.64%	Loss throughout water distribution system
Community Benefit Cost[5] =	0.96%	Water use paid by all water users
Vacancy Rate[6] =	4.22%	Average of quarterly vacancy rates (3rd Qtr 2008 -1st Qtr 2018)
Average Annual Water Supply Needed for a Multi-Family Unit =	**0.16**	AF/unit

NOTES:

(1) Raw Water Delivery Loss includes is the difference between water ordered/available and what actually enters the WTP.

(2) Evaporative Loss includes water lost due to evaporation off the reservoir and the WTP decant ponds.

(3) Treatment Loss is calculated as the water that comes out of the WTP to the Outfall location.

(4) Conveyance Loss is treated water produced at WTP + Imported Water - Exported Water - Authorized Consumption

(5) Community Benefit Cost includes water used for fire training and fighting and water used to test, clean and maintain the water distribution system

(6) Apartment Vacancy Rate was an average of Loveland's quarterly apartment vacancy rates from 3rd Quarter 2008 through 1st Quarter 2018 from the "Colorado Division of housing Multi-family Housing Vacancy and Rental" report listed in Loveland's Annual Data and Assumptions Reports.

STATISTICAL ANALYSIS	AF/Unit
Mean:	0.120
Standard Deviation:	0.033
99% Confidence Interval	0.008
Mean - Confidence Interval	0.112
Mean + Confidence Interval	0.128
Upper Limit of 99% Confidence Interval with Losses	**0.160**

Notes:
1. Water meters with suspected partial water use in a month were excluded from the analysis. Multiple meter records for a single month is an indication that the meter was read more than once in the month, which may indicated the meter was turned off and on, therefore only recording water use for a portion of the month. This is indicated in the meter record by a month with lower than normal water use or a month with multiple measurements listed.
2. Water meter reads showing a negative water use for a month, indicate an overbilling for the previous month. For this analysis, we corrected that by combining the water use for the negative consumption month with the preceding month, and then dividing the net water use evenly between the months.
3. If the individual meter data showed significant increase in water use during the irrigation season of April to October, only the winter quarter water consumption was used to exclude outdoor irrigation.

Appendix 5

City of Loveland • SINGLE FAMILY ATTACHED RESIDENCE • INDOOR • Water Use (2008-2017)

Subdivision	Dates Built	No. of Dwelling Units	Qty of Units Attached	Average Annual Indoor Water Use (AF/unit)
Picabo Hills 1st Sub	2005 - 2007	7	4 to 8	0.10
The Townhomes at Stone Creek Sub	2003 - 2005	9	2	0.07
Vanguard- Famleco 11th Sub	2002 - 2005	8	4 to 5	0.10
Shamrock West Sub	1999 - 2002	10	2 to 7	0.11
Winona 1st Sub	2002 - 2003	10	2	0.13
Schroeder Office Park 1st Sub	2003 - 2007	7	2	0.12
Westwood Sub	1998 - 1998	10	2	0.13
Vanguard-Famleco 12th Sub	2005 - 2007	7	2	0.13
Thompson Valley 2nd Sub	2000 - 2001	11	2	0.13
Mariana Butte 12th Sub	1999 - 2004	10	2	0.07
Mariana Butte Sub	1999 - 2003	10	2 to 3	0.11
Millennium SW 5th Sub	2005 - 2005	8	4	0.12
Mirasol 1st Sub	2007 - 2007	10	2	0.07

Note: Estimated annual indoor water usage based on winter use gallons (Dec, Jan, & Feb).

Average Annual Water Use per Single Family Attached Residence in Study =	0.11	AF/Unit
Upper Limit of the 99% Confidence Interval =	0.12	AF/Unit
Raw Water Delivery Loss[1] =	3.95%	Loss in water received versus ordered
Evaporative Loss[2] =	2.42%	Loss in reservoir & decant ponds
Treatment Loss[3] =	3.54%	Loss in the water treatment process
Conveyance Loss[4] =	13.64%	Loss throughout water distribution system
Community Benefit Cost[5] =	0.96%	Water use paid by all water users
Average Annual Water Supply Needed for a Single Family Attached Residence =	**0.15**	**AF/Unit**

NOTES:

(1) Raw Water Delivery Loss includes is the difference between water ordered/available and what actually enters the WTP.
(2) Evaporative Loss includes water lost due to evaporation off the reservoir and the WTP decant ponds.
(3) Treatment Loss is calculated as the water that comes out of the WTP to the Outfall location.
(4) Conveyance Loss is treated water produced at WTP + Imported Water - Exported Water - Authorized Consumption
(5) Community Benefit Cost includes water used for fire training and fighting and water used to test, clean and maintain the water distribution system

STATISTICAL ANALYSIS

Mean:	0.107	AF/Unit
Standard Deviation:	0.042	AF/Unit
99% Confidence Interval	0.012	AF/Unit
Mean - Confidence Interval	0.094	AF/Unit
Mean + Confidence Interval	0.119	AF/Unit
Upper Limit of 99% Confidence Interval with Losses	**0.150**	AF/Unit

Notes:
1. Water meters with suspected partial water use in a month were excluded from the analysis. Multiple meter records for a single month is an indication that the meter was read more than once in the month, which may indicated the meter was turned off and on, therefore only recording water use for a portion of the month. This is indicated in the meter record by a month with lower than normal water use or a month with multiple measurements listed and when the customer records changed.
2. Water meter reads showing a negative water use for a month, indicate an overbilling for the previous month. For this analysis, we corrected that by combining the water use for the negative consumption month with the preceding month, and then dividing the net water use evenly between the two months.
4. When there was zero water use measured in one month followed by an abnormally large reading the next month, it is an indicator that the larger reading is for both months. The water use was averaged over both months.
5. One thousand gallons, is the lowest increment that water is billed. When a customer uses less than 1000 gallons in a month, the usuage is not billed and is lumped in with the following month. When the customer records displayed periods of low usage alternating with 0 gallon reads when the customer records did not change, (which would account for vacancies) the water usage was averaged between the months to more accurately account for the actual monthly usage.

Appendix 6

City of Loveland • SINGLE FAMILY DETACHED RESIDENCE • INDOOR • Water Use (2008-2017)

Subdivision	Dates Built	No. of Dwelling Units	Average Annual Indoor Water Use (AF/unit)
Hunters Run	2002 - 2006	10	0.15
Alford Lake 1st Sub	2005 - 2007	9	0.15
Alford Lake 4th Sub	2006 - 2010	7	0.22
Mariana Butte 13th Sub	2002 - 2008	6	0.14
Blackbird Knolls 2nd Sub	2003 - 2003	8	0.16
Winona Third Addition	2001 - 2003	3	0.22
Garden Gate 1st Sub	2005 - 2005	9	0.19
Seven Lakes North Addition	1994 - 1998	4	0.15
Anderson Farms 5th Sub	1999 - 1999	4	0.21
Vanguard-Famleco 12th Subdivision	2001 - 2005	12	0.15
Buck 2nd Subdivision	2002 - 2005	12	0.16
Anderson Farm 7th Subdivision	2001 - 2004	12	0.14
Rocky Mountain Village 2nd Subdivision	2001 - 2005	12	0.13
Millennium SW 2nd Subdivision	2003 - 2005	10	0.17
Kendall Brook 1st Subdivision	2004 - 2004	2	0.14

Note: Estimated annual indoor water usage base on winter use gallons (Dec, Jan, & Feb).

Average Water Use per Single Family Detached Residence in Study =	0.16	AF/Unit
Upper Limit of the 99% Confidence Interval =	0.17	AF/Unit
Raw Water Delivery Loss[1] =	3.95%	Loss in water received versus ordered
Evaporative Loss[2] =	2.42%	Loss in reservoir & decant ponds
Treatment Loss[3] =	3.54%	Loss in the water treatment process
Conveyance Loss[4] =	13.64%	Loss throughout water distribution system
Community Benefit Cost[5] =	0.96%	Water use paid by all water users
Average Annual Water Supply Needed for a Single Family Detached Residence =	**0.22**	**AF/Unit**

NOTES:

(1) Raw Water Delivery Loss includes is the difference between water ordered/available and what actually enters the WTP.
(2) Evaporative Loss includes water lost due to evaporation off the reservoir and the WTP decant ponds.
(3) Treatment Loss is calculated as the water that comes out of the WTP to the Outfall location.
(4) Conveyance Loss is treated water produced at WTP + Imported Water - Exported Water - Authorized Consumption
(5) Community Benefit Cost includes water used for fire training and fighting and water used to test, clean and maintain the water distribution system

STATISTICAL ANALYSIS

Mean:	0.16	AF/Unit
Standard Deviation	0.06	AF/Unit
99% Confidence Interval	0.01	AF/Unit
Mean - Confidence Interval	0.14	AF/Unit
Mean + Confidence Interval	0.17	AF/Unit
Upper Limit of 99% Confidence Interval with Losses	**0.22**	AF/Unit

Notes:
1. Water meters with suspected partial water use in a month were excluded from the analysis. Multiple meter records for a single month is an indication that the meter was read more than once in the month, which may indicated the meter was turned off and on, therefore only recording water use for a portion of the month. This is indicated in the meter record by a month with lower than normal water use or a month with multiple measurements listed and when the customer records changed.
2. Water meter reads showing a negative water use for a month, indicate an overbilling for the previous month. For this analysis, we corrected that by combining the water use for the negative consumption month with the preceding month, and then dividing the net water use evenly between the two months.
4. When there was zero water use measured in one month followed by an abnormally large reading the next month, it is an indicator that the larger reading is for both months. The water use was averaged over both months.
5. One thousand gallons, is the lowest increment that water is billed. When a customer uses less than 1000 gallons in a month, the usuage is not billed and is lumped in with the following month. When the customer records displayed periods of low usag alternating with 0 gallon reads when the customer records did not change, (which would account for vacancies) the water usage was average between the months to more account for the actual monthly usage.

Appendix 7

City of Loveland • SINGLE FAMILY DETACHED RESIDENCE • OUTDOOR • Water Use (2008-2017)

Subdivision	Dates Built	No. of Dwelling Units	Average Annual Outdoor Water Use (AF/Acre)
Hunters Run	2002 - 2006	10	0.73
Alford Lake 1st Sub	2005 - 2007	9	1.30
Alford Lake 4th Sub	2006 - 2010	7	0.94
Blackbird Knolls 2nd Sub	2003 - 2003	8	0.62
Winona Third Addition	2001 - 2003	3	0.56
Garden Gate 1st Sub	2005 - 2005	9	1.27
Seven Lakes North Addition	1994 - 1998	4	1.61
Anderson Farms 5th Sub	1999 - 1999	4	0.54
Vanguard-Famleco 12th Subdivision	2001 - 2005	12	0.89
Buck 2nd Subdivision	2002 - 2005	12	0.80
Anderson Farm 7th Subdivision	2001 - 2004	12	1.08
Rocky Mountain Village 2nd Subdivision	2001 - 2005	12	0.65
Millennium SW 2nd Subdivision	2003 - 2005	10	1.54
Kendall Brook 1st Subdivision	2004 - 2004	2	1.01
		Total	**Weighted Avg**
NOTES:		**114**	**0.98**

(1) Outdoor usage calculated as estimated annual indoor water usage based on average winter use gallons (Dec, Jan, & Feb), is deducted from total annual usage.
(2) The Mariana Butte 13th Subdivision was excluded due to no increase in water consumption during the irrigation season. We assume that the HOA irrigates the small portions of the yard within the property lines.

Average Water Use per Single Family Detached Residence in Study =	0.98	AF/Acre
Upper Limit of the 99% Confidence Interval =	1.10	AF/Acre
Raw Water Delivery Loss[1] =	3.95%	Loss in water received versus ordered
Evaporative Loss[2] =	2.42%	Loss in reservoir & decant ponds
Treatment Loss[3] =	3.54%	Loss in the water treatment process
Conveyance Loss[4] =	13.64%	Loss throughout water distribution system
Community Benefit Cost[5] =	0.96%	Water use paid by all water users
Average Annual Water Supply Needed for a Single Family Detached Residence =	**1.37**	**AF/Acre**

NOTES:
(1) Raw Water Delivery Loss includes is the difference between water ordered/available and what actually enters the WTP.
(2) Evaporative Loss includes water lost due to evaporation off the reservoir and the WTP decant ponds.
(3) Treatment Loss is calculated as the water that comes out of the WTP to the Outfall location.
(4) Conveyance Loss is treated water produced at WTP + Imported Water - Exported Water - Authorized Consumption
(5) Community Benefit Cost includes water used for fire training and fighting and water used to test, clean and maintain the water distribution system

STATISTICAL ANALYSIS

Mean:	0.98	AF/Acre
Standard Deviation	0.52	AF/Acre
99% Confidence Interval	0.13	AF/Acre
Mean - Confidence Interval	0.85	AF/Acre
Mean + Confidence Interval	1.10	AF/Acre
Upper Limit of 99% Confidence Interval with Losses	**1.37**	AF/Acre

Appendix 7

NOTES:

(1) Water meters with suspected partial water use in a month were excluded from the analysis. Multiple meter records for a single month is an indication that the meter was read more than once in the month, which may indicated the meter was turned off and on, therefore only recording water use for a portion of the month. This is indicated in the meter record by a month with lower than normal water use or a month with multiple measurements listed and when the customer records changed.

(2) Water meter reads showing a negative water use for a month, indicate an overbilling for the previous month. For this analysis, we corrected that by combining the water use for the negative consumption month with the preceding month, and then dividing the net water use evenly between the two months.

(4) When there was zero water use measured in one month followed by an abnormally large reading the next month, it is an indicator that the larger reading is for both months. The water use was averaged over both months.

(5) One thousand gallons, is the lowest increment that water is billed. When a customer uses less than 1000 gallons in a month, the usuage is not billed and is lumped in with the following month. When the customer records displayed periods of low usage alternating with 0 gallon reads when the customer records did not change, (which would account for vacancies) the water usage was averaged between the months to more accurately account for the actual monthly usage.

Appendix 8

City of Loveland • SINGLE FAMILY ATTACHED RESIDENCE • OUTDOOR • Water Use (2008-2017)

Subdivision	Dates Built	Qty of Units Attached	No. of Dwelling Units	Average Annual Outdoor Water Use (AF/Acre)
Shamrock West Sub	1999 - 2002	2 to 7	10	0.57
Winona 1st Sub	2002 - 2003	2	10	0.64
Schroeder Office Park 1st Sub	2003 - 2007	2	7	0.88
Westwood Sub	1998 - 1998	2	10	0.85
Vanguard-Famleco 12th Sub	2005 - 2007	2	7	1.53
Thompson Valley 2nd Sub	2000 - 2001	2	11	0.84
			Total	**Weighted Avg**
NOTES:			**55**	**0.86**

(1) Outdoor usage calculated as estimated annual indoor water usage based on average winter use gallons (Dec, Jan, & Feb) deducted from average total annual usage.
(2) Homes with no increase in consumption during the irrigation season were excluded. We assume that the HOA irrigates the portions of the yard within the property lines or irrigation is turned off.
(3) Condos are excluded, the HOA maintains everything exterior to the building.

Average Annual Water Use per Single Family Attached Residence in Study =	0.86	AF/Acre
Upper Limit of the 99% Confidence Interval =	1.03	AF/Acre
Raw Water Delivery Loss[1] =	3.95%	Loss in water received versus ordered
Evaporative Loss[2] =	2.42%	Loss in reservoir & decant ponds
Treatment Loss[3] =	3.54%	Loss in the water treatment process
Conveyance Loss[4] =	13.64%	Loss throughout water distribution system
Community Benefit Cost[5] =	0.96%	Water use paid by all water users
Average Annual Water Supply Needed for a Single Family Attached Residence =	**1.28**	**AF/Acre**

NOTES:
(1) Raw Water Delivery Loss includes is the difference between water ordered/available and what actually enters the WTP.
(2) Evaporative Loss includes water lost due to evaporation off the reservoir and the WTP decant ponds.
(3) Treatment Loss is calculated as the water that comes out of the WTP to the Outfall location.
(4) Conveyance Loss is treated water produced at WTP + Imported Water - Exported Water - Authorized Consumption
(5) Community Benefit Cost includes water used for fire training and fighting and water used to test, clean and maintain the water distribution system

STATISTICAL ANALYSIS

Mean:	0.86	AF/Acre
Standard Deviation:	0.46	AF/Acre
99% Confidence Interval	0.17	AF/Acre
Mean - Confidence Interval	0.69	AF/Acre
Mean + Confidence Interval	1.03	AF/Acre
Upper Limit of 99% Confidence Interval with Losses	**1.28**	AF/Acre

Appendix 7

NOTES:

(1) Water meters with suspected partial water use in a month were excluded from the analysis. Multiple meter records for a single month is an indication that the meter was read more than once in the month, which may indicated the meter was turned off and on, therefore only recording water use for a portion of the month. This is indicated in the meter record by a month with lower than normal water use or a month with multiple measurements listed and when the customer records changed.

(2) Water meter reads showing a negative water use for a month, indicate an overbilling for the previous month. For this analysis, we corrected that by combining the water use for the negative consumption month with the preceding month, and then dividing the net water use evenly between the two months.

(4) When there was zero water use measured in one month followed by an abnormally large reading the next month, it is an indicator that the larger reading is for both months. The water use was averaged over both months.

(5) One thousand gallons, is the lowest increment that water is billed. When a customer uses less than 1000 gallons in a month, the usuage is not billed and is lumped in with the following month. When the customer records displayed periods of low usage alternating with 0 gallon reads when the customer records did not change, (which would account for vacancies) the water usage was averaged between the months to more accurately account for the actual monthly usage.

Water Loss Breakout

		2017 Calendar Year		2016 Calendar Year		2015 Calendar Year		Average
		Millions of Gallons (MG)	% of Raw Water	Millions of Gallons (MG)	% of Raw Water	Millions of Gallons (MG)	% of Raw Water	% of Raw Water
1. Raw Water Delivery Losses		**186.696**	**3.98%**	**189.082**	**3.84%**	**185.794**	**4.04%**	**3.95%**
2. Raw Water		**4,690.611**		**4,929.219**		**4,600.356**		
3. Evaporative Loss *(GRG & WTP Decant Ponds)*	-	**114.433**	**2.44%**	**114.433**	**2.32%**	**114.433**	**2.49%**	**2.42%**
4. Treatment Loss Water Loss through WTP (outfall)	-	**168.300**	**3.41%**	**206.290**	**4.19%**	**138.930**	**3.02%**	**3.54%**
5. Treated Water Produced	=	4,407.878		4,608.496		4,346.993		
6. Plus Water Imported (Bought from other water utilities)	+	26.097		35.564		4.350		
7. Less Water Exported (Sold to other water utilities)	-	22.461		21.888		87.113		
8. Less Water Used by End Consumers	-	3,744.183		3,958.631		3,623.282		
9. Conveyance Loss Water Distribution System Losses	=	**667.331**	**13.54%**	**663.541**	**13.46%**	**640.948**	**13.93%**	**13.64%**
10. Fire Training/Fighting		0.847		0.858		0.625		
11. Water Used by the Utilities (testing, cleaning, and maintaining the system)	+	62.022		40.914		34.329		
12. Community Benefit Water usage covered by all water customers that benefits the community as a whole	=	**62.869**	**1.28%**	**41.772**	**0.85%**	**34.954**	**0.76%**	**0.96%**
Total of Losses		**1,012.933**	**24.65%**	**1,026.036**	**24.65%**	**929.265**	**24.24%**	**24.51%**

Source Notes

1. Losses when less raw water received than ordered or available in water rights
2. Evaporative Loss(2) + Treatment Loss(3) +Treated Water Produced(4)
3. Based on yearly evaporation of exposed surface area, less evaporation of average yearly precipitation
4. WIMS & Water Loss Audit Detail - BTR Outfall (Ponds)
5. WIMS Daily Flow Report: Annual Summary Table in Millions of Gallons
6. December Revenue Analysis: Total Wholesale Water Purchased
7. December Revenue Analysis: Total Wholesale Water Sold
8. M36 AWWA Water Loss Audit Details: Authorized Consumption
   Authorized = billed metered + billed unmetered (est. use) + unbilled metered + unbilled unmetered (est. use)
9. Treated Water Produced (4) + Water Imported (5) - Water Exorted (6) - Water Used by End Consumbers (7)
10. WIMS Daily Flow Report: Annual Summary Table in Millions of Gallons
11. M36 AWWA Water Loss Audit Details: Water Used by the utility to test and maintain the water distribution system
12. M36 AWWA Water Loss Audit Details: Water Used by for fire fighting and maintaining water system.

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Loveland Apartment Vacancy Rates

	Qtr 1	Qtr 2	Qtr 3	Qtr 4
2018	3.4%			
2017	6.7%	4.1%	4.5%	3.8%
2016	3.7%	3.7%	8.4%	8.7%
2015	2.7%	3.9%	3.8%	5.4%
2014	2.3%	2.6%	3.1%	2.0%
2013	2.8%	3.2%	2.4%	2.7%
2012	4.5%	3.5%	2.1%	1.9%
2011	4.1%	5.2%	3.4%	5.3%
2010	3.8%	4.1%	5.5%	3.6%
2009	6.1%	7.0%	4.3%	6.6%
2008			3.5%	6.1%
				4.22%

Average Quarterly Vacancy Rate (2008 3rd Qtr - 1st Qtr 2018)

Sources

City of Loveland Annual Data and Assumptions Reports
Colorado Division of Housing Multi-family Housing Vacancy and Rental

Report Date	Sources/Links - *Color Coded to Match the Data in the Table Above*
8/13/2018	Email from David Eisenbraun, in City of Loveland Planning Dept
7/31/2018	Email from David Eisenbraun, in City of Loveland Planning Dept
June 2017	http://www.cityofloveland.org/home/showdocument?id=36955
June 2016	http://www.ci.loveland.co.us/home/showdocument?id=30224
10/18/2016	Email from Karl Barton, in City of Loveland Planning Dept
August 2014	http://www.cityofloveland.org/Home/ShowDocument?id=21438
6/24/2013	http://www.loveland.org/upload/2013_Annual_Data_and_Assumptions_Report.pdf
2/22/2012	http://www.ci.loveland.co.us/Home/ShowDocument?id=10015
1/1/2011	http://www.cityofloveland.org/Home/ShowDocument?id=7298
7/1/2010	http://s3.amazonaws.com/zanran_storage/www.ci.loveland.co.us/ContentPages/121679903.pdf

Attachment B1

PROPOSED REDLINE: Section 19.04.010.A and 19.04.020.A

19.04.010 Definitions.

A. As used in this chapter, all words and phrases shall be interpreted and defined in accordance with Division 18.19.02 of the City of Loveland Unified Development Code~~Section 16.08.010~~ and Subsection B. of this section. In the event of a conflict, Subsection B. of this section shall control.

19.04.020 Water rights required for development.

A. Residential development.

1. Land zoned R1e, R1, R2, R3e, or R3 after June 5, 1984 and developed for residential uses and land zoned PUD, MAC, or E and developed for residential uses shall not receive final approval for development, nor shall construction or development be allowed on any such land, nor shall water service be furnished to any such land, until the city has received by grant or transfer the perpetual right to use the total amount of divertible water rights for the development, in acre feet of water, as determined by the following table~~following formula~~:

INSERT TABLE

RESIDENTIAL DWELLING TYPE		Home Size *Current in Red*	Water Meter	Indoor Water Rights *Current in Red*	Outdoor Water Rights[1] *Current in Red*	
				Acre feet (AF) per dwelling unit required x No. of dwelling units	Acre feet (AF) per acre required x net lot acreage	Acre feet (AF) per acre required x net lot acres in excess of 15,000 square feet per lot
Detached Units	**Single Family Detached**	> 800 sf	Separate water meter to each dwelling unit[3]	**0.22 AF** *0.23 AF* *(~4.5%)*	**1.4 AF** *1.6 AF* *(~12.5%)*	**1.6 AF** *1.4 AF*
	Cottage Homes or Micro Homes[2]	≤ 800 sf		**0.16 AF**	**1.3 AF**	**1.7 AF**
Attached Units	**Single Family Attached or Cluster Duplexes**	N/A	Separate water meter to each dwelling unit[3]	**0.16 AF** *0.23 AF* *(~30.5%)*	**1.3 AF** *1.6 AF* *(~18.5%)*	**1.7 AF** *1.4 AF*
	Multi-family	N/A	Water meter serves multiple dwelling units without a separate dedicated irrigation meter	**0.16 AF** *0.23 AF* *(~30.5%)*	**1.3 AF** *1.6 AF* *(~18.5%)*	**1.7 AF** *1.4 AF*
			Water meter serves multiple dwelling units, and there is a separate dedicated irrigation meter	**0.16 AF** *0.23 AF* *(~30.5%)*	Acre feet (AF) per acre of irrigated area **3.0 AF** *3.0 AF*	

[1]If a dedicated irrigation meter provides all the water for outdoor use, then the outdoor water rights requirements would not apply for the individual lots. Instead, 3.0 AF per acre of water rights as specified in Section 19.06.040 (Irrigation with treated city water) or the amount specified in an approved Hydrozone plan

as authorized by Section 19.06.050 (Irrigation subject to Hydrozone water budget) would be required for the total area irrigated from the dedicated irrigation meter.

[2]*Micro Homes: For the purposes of the water rights requirement calculation described in this table, each micro home is counted as one dwelling unit.*

[3]Under certain circumstances, a single meter may be allowed to serve multiple dwelling units.

~~a. Total water rights due (in acre-feet) = (1.6 x net lot acreage) + (1.4 x acreage of that portion of each residential lot which is greater than 15,000 square feet) + (0.23 x number of dwelling units)~~

2. Water rights required under this Subsection A. shall be paid prior to approval by the director of development services of the final plat ~~by the director of development services~~. Notwithstanding anything ~~herein~~ within this Code to the contrary, water rights required under this Subsection A. may not be paid prior to acceptance by the director of development services of a complete application for final plat ~~by the director of development services~~.
3. The applicant shall have a credit toward the requirements set forth in this Subsection A. for any water rights previously ~~furnished~~ transferred to the city as part of any~~in conjunction with~~ annexation or zoning.

Attachment B2

PROPOSED AMENDED LANGUAGE (CLEAN VERSION):
Section 19.04.010.A and 19.04.020.A

19.04.010 Definitions.

A. As used in this chapter, all words and phrases shall be interpreted and defined in accordance with Division 18.19.02 of the City of Loveland Unified Development Code and Subsection B. of this section. In the event of a conflict, Subsection B. of this section shall control.

19.04.020 Water rights required for development.

A. Residential development.

1. Land zoned R1e, R1, R2, R3e, or R3 after June 5, 1984 and developed for residential uses and land zoned PUD, MAC, or E and developed for residential uses shall not receive final approval for development, nor shall construction or development be allowed on any such land, nor shall water service be furnished to any such land, until the city has received by grant or transfer the perpetual right to use the total amount of divertible water rights for the development, in acre feet of water, as determined by the following table:

<table>
<tr><th colspan="2" rowspan="2">RESIDENTIAL DWELLING TYPE</th><th rowspan="2">Home Size</th><th rowspan="2">Water Meter</th><th>Indoor Water Rights</th><th colspan="2">Outdoor Water Rights[1]</th></tr>
<tr><th>Acre feet (AF) per dwelling unit required x No. of dwelling units</th><th>Acre feet (AF) per acre required x net lot acreage</th><th>Acre feet (AF) per acre required x net lot acres in excess of 15,000 square feet per lot</th></tr>
<tr><td rowspan="2">Detached Units</td><td>Single Family Detached</td><td>> 800 sf</td><td rowspan="2">Separate water meter to each dwelling unit[3]</td><td>0.22 AF</td><td>1.4 AF</td><td>1.6 AF</td></tr>
<tr><td>Cottage Homes or Micro Homes[2]</td><td>≤ 800 sf</td><td>0.16 AF</td><td>1.3 AF</td><td>1.7 AF</td></tr>
<tr><td rowspan="3">Attached Units</td><td>Single Family Attached or Cluster Duplexes</td><td>N/A</td><td>Separate water meter to each dwelling unit[3]</td><td>0.16 AF</td><td>1.3 AF</td><td>1.7 AF</td></tr>
<tr><td rowspan="2">Multi-family</td><td rowspan="2">N/A</td><td>Water meter serves multiple dwelling units without a separate dedicated irrigation meter</td><td>0.16 AF</td><td>1.3 AF</td><td>1.7 AF</td></tr>
<tr><td>Water meter serves multiple dwelling units, and there is a separate dedicated irrigation meter</td><td>0.16 AF</td><td colspan="2">Acre feet (AF) per acre of irrigated area
3.0 AF</td></tr>
</table>

[1]If a dedicated irrigation meter provides all the water for outdoor use, then the outdoor water rights requirements would not apply for the individual lots. Instead, 3.0 AF per acre of water rights as specified in Section 19.06.040 (Irrigation with treated city water) or the amount specified in an approved Hydrozone plan as authorized by Section 19.06.050 (Irrigation subject to Hydrozone water budget) would be required for the total area irrigated from the dedicated irrigation meter.

[2]Micro Homes: For the purposes of the water rights requirement calculation described in this table, each micro home is counted as one dwelling unit.

[3]Under certain circumstances, a single meter may be allowed to serve multiple dwelling units.

2. Water rights required under this Subsection A. shall be paid prior to approval by the director of development services of the final plat. Notwithstanding anything within this Code to the contrary, water rights required under this Subsection A. may not be paid prior to acceptance by the director of development services of a complete application for final plat.
3. The applicant shall have a credit toward the requirements set forth in this Subsection A. for any water rights previously transferred to the city as part of any annexation or zoning.

Attachment C

FIRST READING: _____

SECOND READING: _____

ORDINANCE NO. _____

AN ORDINANCE REVISING THE RESIDENTIAL WATER RIGHTS REQUIREMENTS FOR NEW DEVELOPMENT WITHIN THE CITY OF LOVELAND

WHEREAS, prior to new development, developers must contribute water rights to the City of Loveland ("City") in an amount set by ordinance promulgated in section 19.04.020 of the Loveland Municipal Code; and

WHEREAS, the water rights requirement is intended to ensure that the City's Water Utility Enterprise will have sufficient raw water supplies to serve the water demands for new development in the City; and

WHEREAS, the water rights requirement is updated from time to time based on water usage data collected from existing and new developments; and

WHEREAS, in late 2018, the City Council adopted the City's Unified Development Code which included new definitions and new residential housing types for new development in the City; and

WHEREAS, the City Council desires to amend section 19.04.010.A to reference the adoption of the Unified Development Code and to amend 19.04.020.A of the Loveland Municipal Code to revise the residential water rights requirements for new development within the City of Loveland.

NOW, THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF LOVELAND, COLORADO:

Section 1. That Section 19.04.010.A of the Loveland Municipal Code shall be amended as follows:

19.04.010 Definitions.

A. As used in this chapter, all words and phrases shall be interpreted and defined in accordance with Division 18.19.02 of the City of Loveland Unified Development Code and Subsection B. of this section. In the event of a conflict, Subsection B. of this section shall control.

Section 2. That Section 19.04.020.A of the Loveland Municipal Code shall be amended as follows:

19.04.020 Water rights required for development.

A. Residential development.

1. Land zoned R1e, R1, R2, R3e, or R3 after June 5, 1984 and developed for residential uses and land zoned PUD, MAC, or E and developed for residential uses shall not receive final approval for development, nor shall construction or development be allowed on any such land, nor shall water service be furnished to any such land, until the city has received by grant or transfer the perpetual right to use the total amount of divertible water rights for the development, in acre feet of water, as determined by the following table:

<table>
<tr><th colspan="2" rowspan="2">RESIDENTIAL DWELLING TYPE</th><th rowspan="2">Home Size</th><th rowspan="2">Water Meter</th><th rowspan="2">Indoor Water Rights
Acre feet (AF) per dwelling unit required x No. of dwelling units</th><th colspan="2">Outdoor Water Rights[1]</th></tr>
<tr><th>Acre feet (AF) per acre required x net lot acreage</th><th>Acre feet (AF) per acre required x net lot acres in excess of 15,000 square feet per lot</th></tr>
<tr><td rowspan="2">Detached Units</td><td>Single Family Detached</td><td>> 800 sf</td><td rowspan="2">Separate water meter to each dwelling unit[3]</td><td>0.22 AF</td><td>1.4 AF</td><td>1.6 AF</td></tr>
<tr><td>Cottage Homes or Micro Homes[2]</td><td>≤ 800 sf</td><td>0.16 AF</td><td>1.3 AF</td><td>1.7 AF</td></tr>
<tr><td rowspan="3">Attached Units</td><td>Single Family Attached or Cluster Duplexes</td><td>N/A</td><td>Separate water meter to each dwelling unit[3]</td><td>0.16 AF</td><td>1.3 AF</td><td>1.7 AF</td></tr>
<tr><td rowspan="2">Multi-family</td><td rowspan="2">N/A</td><td>Water meter serves multiple dwelling units without a separate dedicated irrigation meter</td><td>0.16 AF</td><td>1.3 AF</td><td>1.7 AF</td></tr>
<tr><td>Water meter serves multiple dwelling units, and there is a separate dedicated irrigation meter</td><td>0.16 AF</td><td colspan="2">Acre feet (AF) per acre of irrigated area
3.0 AF</td></tr>
</table>

[1]If a dedicated irrigation meter provides all the water for outdoor use, then the outdoor water rights requirements would not apply for the individual lots. Instead, 3.0 AF per acre of water rights as specified in Section 19.06.040 (Irrigation with treated city water) or the amount specified in an approved Hydrozone plan as authorized by Section 19.06.050 (Irrigation subject to Hydrozone water budget) would be required for the total area irrigated from the dedicated irrigation meter.
[2]Micro Homes: For the purposes of the water rights requirement calculation described in this table, each micro home is counted as one dwelling unit.
[3]Under certain circumstances, a single meter may be allowed to serve multiple dwelling units.

2. Water rights required under this Subsection A. shall be paid prior to approval by the director of development services of the final plat. Notwithstanding anything within this Code to the contrary, water rights required under this Subsection A. may not be

paid prior to acceptance by the director of development services of a complete application for final plat.

3. The applicant shall have a credit toward the requirements set forth in this Subsection A. for any water rights previously transferred to the city as part of any annexation or zoning.

Section 3. That as provided in City Charter Section 4-9(a)(7), this Ordinance shall be published by title only by the City Clerk after adoption on second reading unless the Ordinance has been amended since first reading in which case the Ordinance shall be published in full or the amendments shall be published in full. This Ordinance shall be in full force and effect ten days after its final publication, as provided in City Charter Section 4-8(b).

Adopted this ___ day of _____, 2019.

_____
Jacki Marsh, Mayor

ATTEST:

_____
City Clerk

APPROVED AS TO FORM:

Assistant City Attorney

Attachment D

Loveland
Water and Power

Updated Water Rights for Residential Developments

Nathan Alburn, Water Resources Engineer

July 17, 2019

2008-2017 Water Use Study

- Structures built after low flow fixtures mandated
- Analyzed 2008 to 2017 water usage on:

Quantity	Dwelling Type	Number of Subdivisions
120 water meters	Single Family Detached	15
117 water meters	Single Family Attached	13
122 water meters (1,249 dwelling units)	Multi-Family	11

- Calculated average indoor and outdoor water usage by dwelling type
- Based on the Study, determined potential water rights required
  - Observed water usage
  - Calculated system loss factors
  - Accounted for vacancies
  - Applied the 99% confidence interval to sample data

Loveland
Water and Power

Water Use Study Findings

- Indoor water usage per dwelling has decreased
- Outdoor water usage per lot has decreased
- Single family detached units on average use substantially more water for both indoor and outdoor use than other types of dwellings
- Staff recommends updating the residential water rights requirement to be more in line with the observed water usage trends

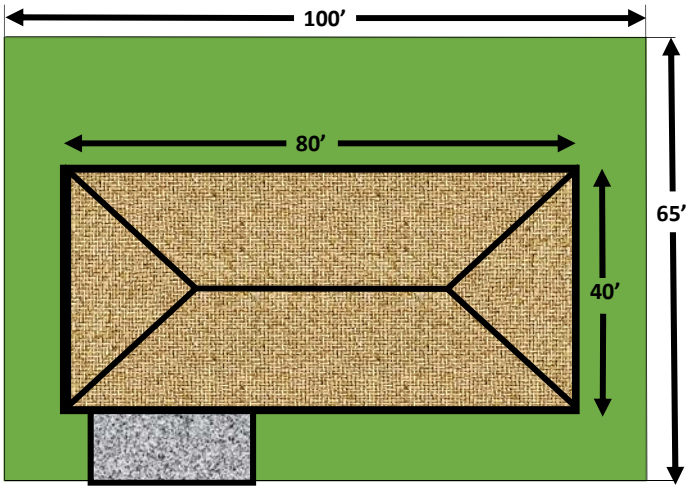
Current Equation: Section 19.04.020.A.1.: Total water rights due (in acre-feet) = (1.6 x net lot acreage) + (1.4 x acreage of that portion of each residential lot which is greater than 15,000 square feet) + (0.23 x number of dwelling units)

Loveland
Water and Power

DETACHED UNITS			Indoor Water Rights *Current in Red*	Outdoor Water Rights[1] *Current in Red*	
Dwelling Type	**Home Size**	**Water Meter**	Acre feet (AF) required x No. of dwelling units	Acre feet required x net lot acreage	Acre feet required x acres in excess of 15,000 sf per lot
Single Family Detached	> 800 sf	Separate water meter to each dwelling unit[3]	0.22 AF *0.23 AF* *(~4.5%)*	1.4 AF *1.6 AF* *(~12.5%)*	1.6 AF *1.4 AF*
(New Category) Cottage Homes and Micro Homes[2]	≤ 800 sf		0.16 AF	1.3 AF	1.7 AF

[1]If a dedicated irrigation meter provides all the water for outdoor use, then the outdoor water rights requirements would not apply for the individual lots. Instead, 3.0 AF per acre of water rights as specified in Section 19.06.040 (Irrigation with treated city water) or the amount specified in an approved Hydrozone plan as authorized by Section 19.06.050 (Irrigation subject to Hydrozone water budget) would be required for the total area irrigated from the dedicated irrigation meter.
[2]Micro Homes: For the purposes of the water rights requirement calculation described in this table, each micro home is counted as one dwelling unit.
[3]Under certain circumstances, a single meter may be allowed to serve multiple dwelling units.

Single Family Detached Dwelling



80 ft x 40 ft = 3,200 sf home
100 ft x 65 ft = 6,500 sf lot
6,500 sf lot ÷ 43,560 sf per acre = 0.15 acre lot

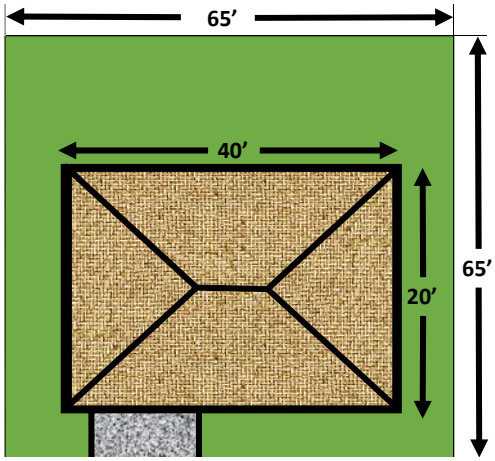
CURRENT EQUATION Acre Feet (AF) of Water Rights	
AF	**Calculation**
0.23	0.23 AF x 1 unit(s)
0.24	+ 1.6 AF x 0.15 net lot acres
0.00	+ 1.4 AF x 0 acres over 15,000 sf
0.47	**= AF of Water Rights Due**

PROPOSED EQUATION Acre Feet (AF) of Water Rights	
AF	**Calculation**
0.22	0.22 AF x 1 unit(s)
0.21	+ 1.4 AF x 0.15 net lot acres
0.00	+ 1.6 AF x 0 acres over 15,000 sf
0.43	**= AF of Water Rights Due**

Classification Parameters
Separate water tap to each detached dwelling unit
Home Size >800 sf

$1,489 Savings (Reduction of 0.04 AF x Current CIL $37,220)

Cottage and Micro Homes



Cottage Home: 40 ft x 20 ft = 800 sf home
65 ft x 65 ft = 4,225 sf lot
4,225 sf lot ÷ 43,560 sf per acre = 0.10 acre lot

CURRENT EQUATION Acre Feet (AF) of Water Rights	
AF	**Calculation**
0.23	0.23 AF x 1 unit(s)
0.16	+ 1.6 AF x 0.10 net lot acres
0.00	+ 1.4 AF x 0 acres over 15,000 sf
0.39	**= AF of Water Rights Due**

PROPOSED EQUATION Acre Feet (AF) of Water Rights	
AF	**Calculation**
0.16	0.16 AF x 1 unit(s)
0.13	+ 1.3 AF x 0.10 net lot acres
0.00	+ 1.7 AF x 0 acres over 15,000 sf
0.29	**= AF of Water Rights Due**

Classification Parameters (Cottage Home)
Separate water tap to each detached dwelling unit
Home Size >500 sf and ≤ 800 sf

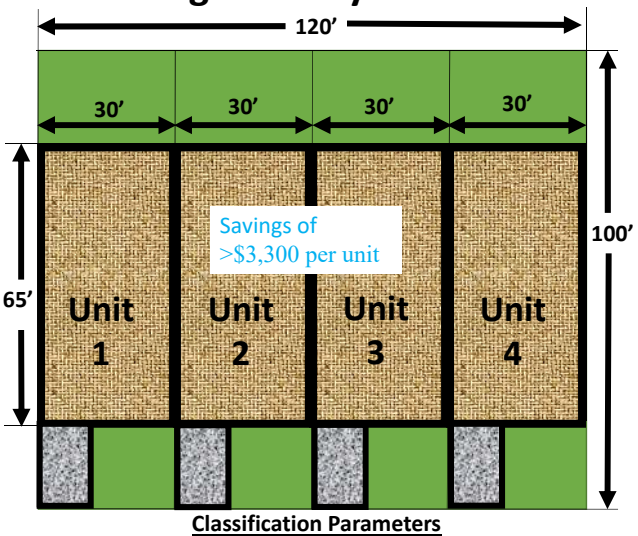
$3,722 Savings (Reduction of 0.10 AF x Current CIL $37,220)

Micro Home (<500 sf) ~$3,000 Savings

ATTACHED UNITS			Indoor Water Rights *Current in Red*	Outdoor Water Rights[1] *Current in Red*	
Dwelling Type	**Home Size**	**Water Tap Service**	Acre feet (AF) required x No. of dwelling units	Acre feet required x net lot acreage	Acre feet required x acres in excess of 15,000 sf per lot
Single Family Attached (and Cluster Duplexes)	N/A	Separate water tap to each dwelling unit[3]	**0.16 AF** *0.23 AF* *(~30.5%)*	**1.3 AF** *1.6 AF* *(~18.5%)*	**1.7 AF** *1.4 AF*
Multi-Family	N/A	Water tap serves multiple dwelling units without a dedicated irrigation tap	**0.16 AF** *0.23 AF* *(~30.5%)*	**1.3 AF** *1.6 AF* *(~18.5%)*	**1.7 AF** *1.4 AF*
		Water Tap Service	**Indoor Water Rights**	**Outdoor Water Rights per Acre of Permeable Area**	
		Each water tap serves multiple dwelling units and there is a dedicated irrigation tap	**0.16 AF** *0.23 AF* *(~30.5%)*	**3.0 AF** *3.0 AF*	

[1]See previous proposed water rights calculation table for complete footnotes.
[2]Micro Homes: For the purposes of the water rights requirement calculation described in this table, each micro home is counted as one dwelling unit.
[3]Under certain circumstances, a single meter may be allowed to serve multiple dwelling units.

Single Family Attached



Classification Parameters
Separate water tap to each attached dwelling unit
Home Size > 600 sf

$13,399 Savings (Reduction of 0.36 AF x Current CIL $37,220)

30 ft x 65 ft = 1,950 sf home
30 ft x 100 ft = 3,000 sf lot
3,000 sf lot ÷ 43,560 sf per acre = 0.07 acre lot

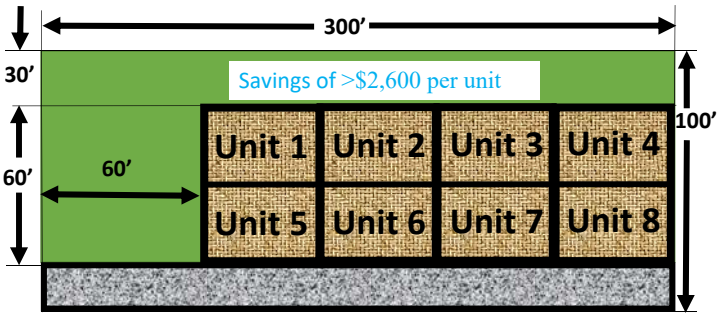
CURRENT EQUATION Acre Feet (AF) of Water Rights	
AF	**Calculation**
0.92	0.23 AF x 4 unit(s)
0.44	+ 1.6 AF x (0.07 x 4) net lot acres
0.00	+ 1.4 AF x 0 acres over 15,000 sf
1.36	**= AF of Water Rights Due**

PROPOSED EQUATION Acre Feet (AF) of Water Rights	
AF	**Calculation**
0.64	0.16 AF x 4 unit(s)
0.36	+ 1.3 AF x (0.07 x 4) net lot acres
0.00	+ 1.7 AF x 0 acres over 15,000 sf
1.00	**= AF of Water Rights Due**

Multi-Family

(With Separate Dedicated Irrigation Meter)

(300 ft x 30 ft) + (60 ft x 60 ft) = 12,600 sf irrigated
12,600 sf ÷ 43,560 sf per acre = 0.29 acres irrigated



Classification Parameters
Water tap serves multiple dwelling units
A separate dedicated irrigation tap for all outdoor irrigation

CURRENT EQUATION Acre Feet (AF) of Water Rights	
AF	**Calculation**
1.84	0.23 AF x 8 unit(s)
0.87	+ 3.0 AF x 0.29 irrigated acres
2.71	**= AF of Water Rights Due**

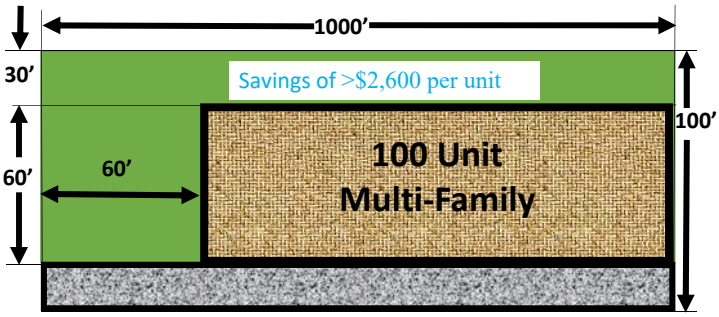
PROPOSED EQUATION Acre Feet (AF) of Water Rights	
AF	**Calculation**
1.28	0.16 AF x 8 unit(s)
0.87	+ 3.0 AF x 0.29 irrigated acres
2.15	**= AF of Water Rights Due**

$20,843 Savings (Reduction of 0.56 AF x Current CIL $37,220)

Large Multi-Family

(With Separate Dedicated Irrigation Meter)

(1,000 ft x 30 ft) + (60 ft x 60 ft) = 33,600 sf irrigated
33,600 sf ÷ 43,560 sf per acre = 0.77 acres irrigated



Classification Parameters
Water tap serves multiple dwelling units
A separate dedicated irrigation tap for all outdoor irrigation

CURRENT EQUATION Acre Feet (AF) of Water Rights	
AF	**Calculation**
23.0	0.23 AF x 100 unit(s)
2.31	+ 3.0 AF x 0.77 irrigated acres
25.31	**= AF of Water Rights Due**

PROPOSED EQUATION Acre Feet (AF) of Water Rights	
AF	**Calculation**
16.0	0.16 AF x 100 unit(s)
2.31	+ 3.0 AF x 0.77 irrigated acres
18.31	**= AF of Water Rights Due**

$260,540 Savings (Reduction of 7 AF x Current CIL $37,220)

Roll Out Schedule

- June 11, 2019 – Building Outreach Meeting
  - Positive reception
- June 26, 2019 – Construction Advisory Board
  - Unanimous vote to recommend change to City Council
- July 8, 2019 – Planning Commission
  - Unanimous vote to recommend change to City Council
- July 17, 2019 – Loveland Utilities Commission
- August 6, 2019 – City Council 1st reading
- August 20, 2019 – City Council 2nd reading

Loveland
Water and Power

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QUESTIONS?

LOVELAND UTILITIES COMMISSION

AGENDA ITEM: 4
MEETING DATE: 7/17/2019
SUBMITTED BY: Nathan Alburn
STAFF TITLE: Civil Engineer I, Water Resources

ITEM TITLE:

LUC Resolution Recognizing the Market Value of One Unit of Colorado-Big Thompson Project Water

DESCRIPTION:

This item presents an updated evaluation of the City of Loveland's (City's) Cash-in-Lieu price charged to satisfy water rights required for development, based on data on the market price of one Colorado-Big Thompson Project (C-BT) unit.

SUMMARY:

Section 19.04.041 of the Loveland Municipal Code authorizes the LUC to recognize by resolution the market price of one C-BT unit. The City's current Cash-in-Lieu (CIL) price of $37,220/acre-foot is set at the LUC's recognized C-BT market price plus 5%. The current market price of $35,444/unit was recognized by the LUC in Resolution R-1-2019U at the regular Commission meeting held on Wednesday, February 20, 2019. Previous to that, the LUC's recognized market price was $28,292/unit (R-1-2018U).

C-BT prices have risen steadily since January 2019. This information is shown graphically on Attachment B. This chart also shows the past 12 months of available data. The average price for the most current six months of data available (December 2018 through May 2019) is $37,453/unit. The vertical bars represent individual transactions, and prices have been relatively consistent between blocks of smaller and larger sizes. The difference between $37,453/unit and the currently recognized market price of $35,444/unit is 5.7%, so Staff requests LUC's consideration of recognizing a new price reflecting current market conditions.

Adding 5% to the current average price of $37,453/unit, as required by Section 19.04.041 of the Municipal Code, yields a rounded CIL price of $39,330/acre-foot should the LUC choose to recognize $37,453/unit as the current market price. A draft of proposed Resolution R-03-2019U is attached that would formally recognize this market price.

RECOMMENDATION:

Approve Resolution R-03-2019U (Attachment A), recognizing the City's current C-BT market value at $37,453/unit.

ATTACHMENTS:

- Attachment A: Resolution #R-03-2019U
- Attachment B: Graph of Price of C-BT and Units Sold per Transaction (Jun 2018 – May 2019)
- Attachment C: Graph of C-BT Price per Unit Over Time

Attachment A

LOVELAND UTILITIES COMMISSION

RESOLUTION #R-03-2019U

RESOLUTION RECOGNIZING THE MARKET PRICE OF ONE COLORADO-BIG THOMPSON PROJECT UNIT AS AUTHORIZED BY SECTION 19.04.041 OF THE LOVELAND MUNICIPAL CODE

WHEREAS, Section 19.04.041 of the Loveland Municipal Code authorizes the Loveland Utilities Commission to recognize by resolution the market price of one Colorado-Big Thompson Project ("C-BT") unit; and

WHEREAS, the Loveland Utilities Commission has reviewed relevant C-BT unit market data; and

WHEREAS, the current value of C-BT units per Section 19.04.018.C of the Loveland Municipal Code is one acre-foot per unit.

WHEREAS, following said review and applying the 1.05 quotient as required in Section 19.04.041 of the Loveland Municipal Code, the Loveland Utilities Commission is of the opinion that the market price of one C-BT unit is $37,453.

NOW, THEREFORE, BE IT RESOLVED BY THE LOVELAND UTILITIES COMMISSION OF THE CITY OF LOVELAND, COLORADO:

Section 1. That the Loveland Utilities Commission hereby recognizes that the market price of one C-BT unit as $37,453.

Section 2. That Resolution #R-01-2019U of the Loveland Utilities Commission is hereby repealed and superseded in all respects by this Resolution.

Section 3. That this Resolution shall be effective as of the date of its adoption.

ADOPTED this 17th day of July, 2019.

_____
Chairman, Loveland Utilities Commission

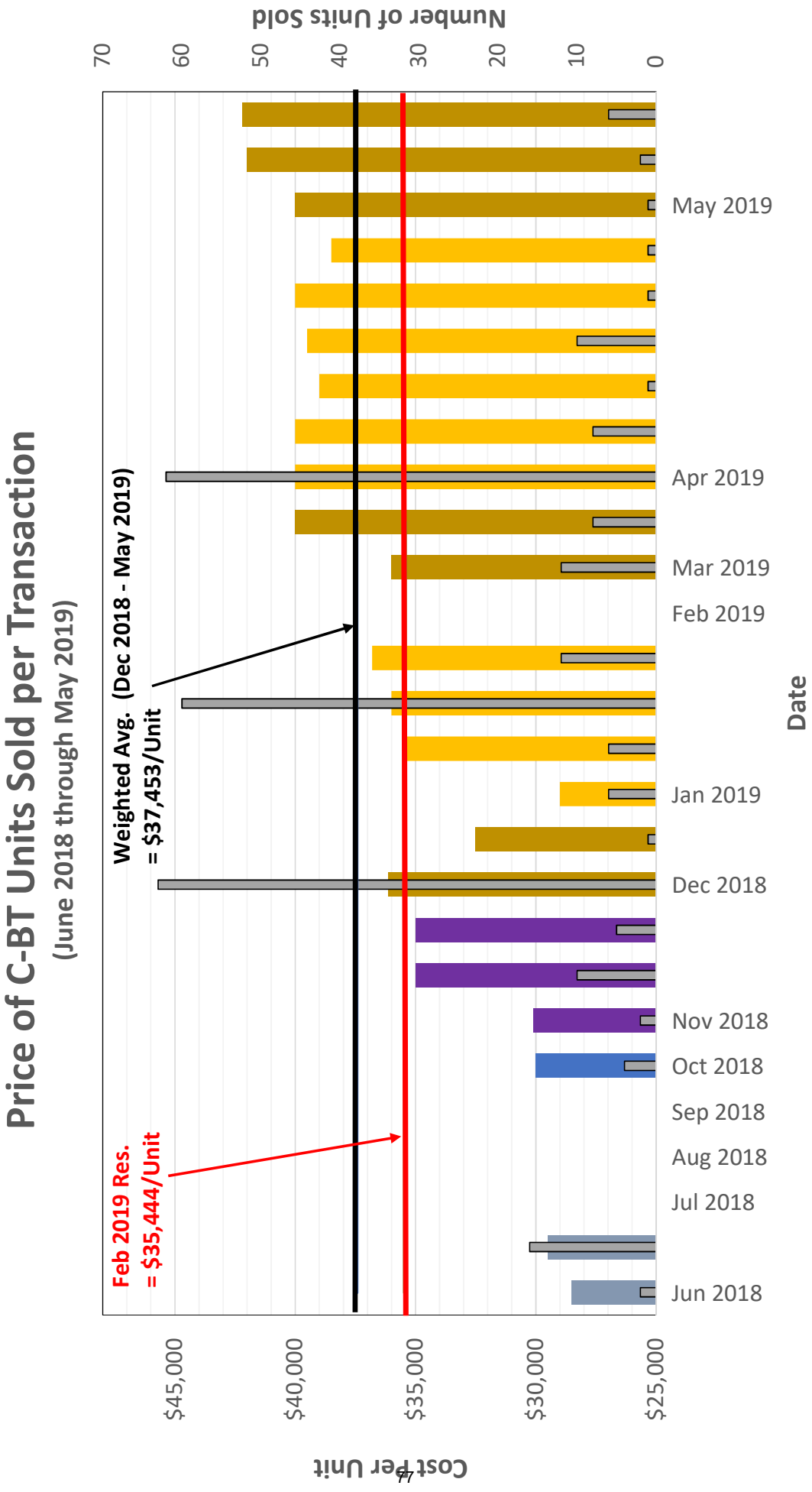
ATTEST:

_____
Secretary, Loveland Utilities Commission

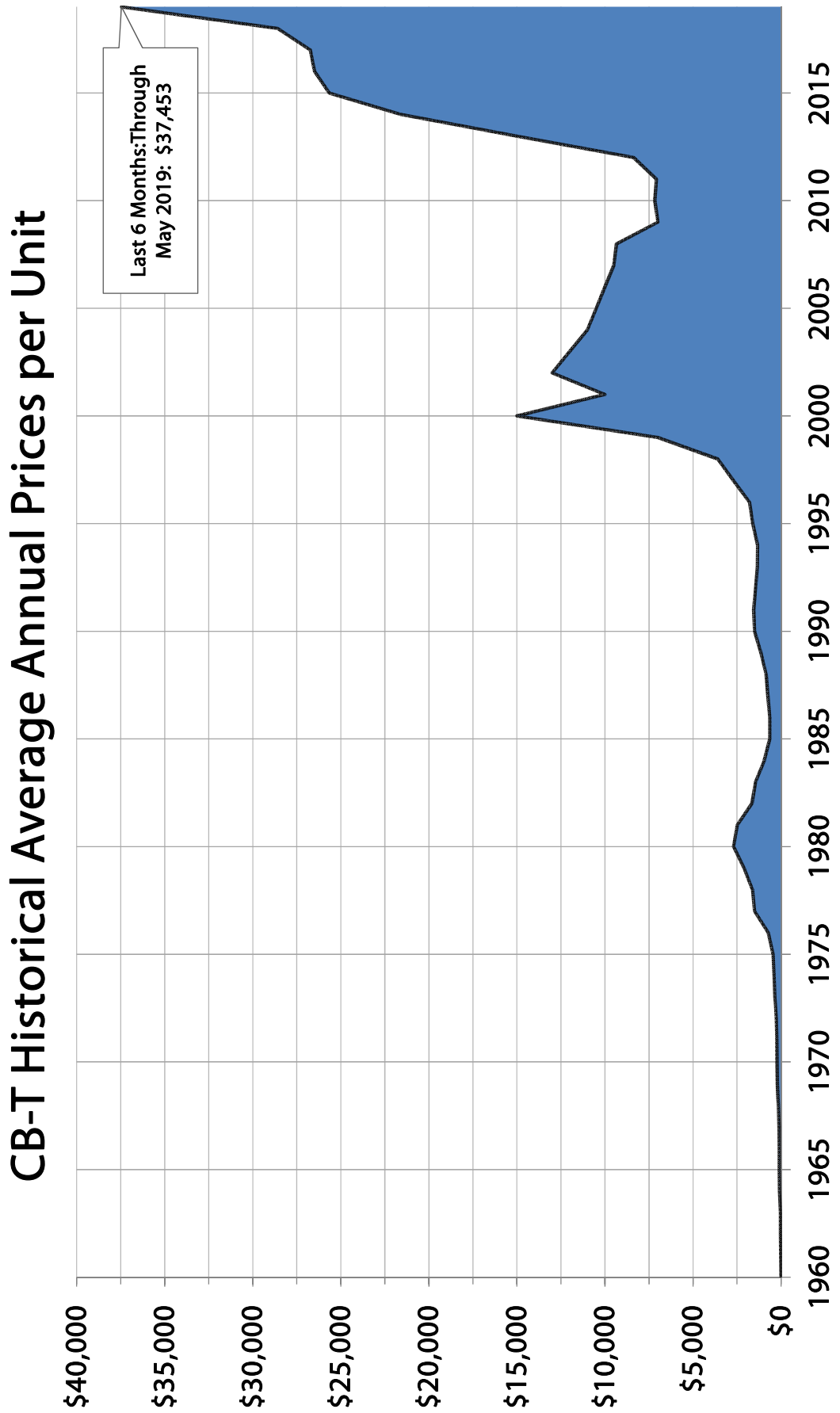
APPROVED AS TO FORM:

Assistant City Attorney

Attachment B



Attachment C



4

LOVELAND UTILITIES COMMISSION

AGENDA ITEM: 5
MEETING DATE: 7/17/2019
SUBMITTED BY: Tanner Randall PE
STAFF TITLE: Senior Civil Engineer

ITEM TITLE:

Water Distribution Master Plan Overview

DESCRIPTION:

This item reviews the City's effort over the last two years to update its computerized water model and how the results have shaped the latest Water Distribution Master Plan. The presentation will be a high level review of the contents of the plan.

SUMMARY:

The City of Loveland attempts to update its water master plan approximately every 10 years. The water master plan serves as a roadmap for staff in how to operate the existing system, make operational improvements, and it identifies the location and size of future distribution piping required for future developments.

Due to numerous changes and additions in the water distribution system over the past decade, the City began updating its hydraulic water model, InfoWater, in 2015. After a multi-year update, the completed water model was the backbone for the update of the water waster plan. The previous water master plan had been compiled in 2009. In addition to the City's goal of 10-year master plan updates, many of the projects identified in the 2009 plan have been completed. Therefore, with the help of Jacobs (formerly CH2MHill) the City embarked on a full scale update of the master plan.

Included in the update was a full review of how the system currently operates and a compilation of customers current water use. Additionally the master plan projects water demands into the future based on estimated growth rates and locations where growth is expected to occur. Utilizing this data, current and future demands are computed, then the required infrastructure is determined in order to meet the future demands. The future infrastructure is then planned based on expected growth rates. These projects form the backbone for planning and especially help set the 10-year capital improvement plan budget.

In addition to guiding the 10-year budget, planning for the system has been completed to full build out of the water service territory and is consistently being monitored for its accuracy.

Staff will share with the LUC the key findings identified in the water model update and water master plan update.

RECOMMENDATION:

Staff item only. No action required.

ATTACHMENTS:

- Attachment A: Presentation Slides

Attachment A

LOVELAND UTILITIES COMMISSION

Water Master Plan Update Overview

Tanner Randall P.E., Senior Civil Engineer

July 17, 2019

Water Model & Masterplan Update

- Why We Master Plan
- Overview of Existing System
- Water Model
- Capital Planning

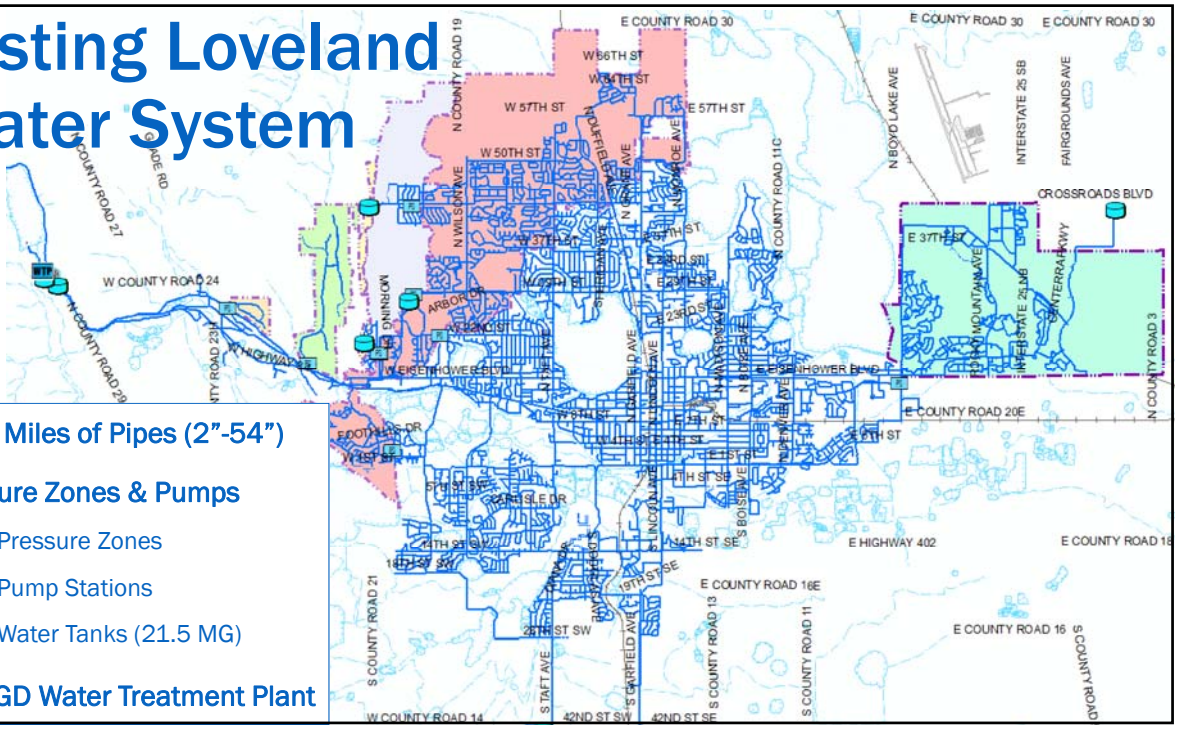
LOVELAND UTILITIES COMMISSION

Master Plan Purpose

- Why We Master Plan
  - Roadmap For Utility Planning
    - Plant Capacity
    - Water Usage
    - Triggers for Improvements
    - Operational Changes
  - Determines Pipe Sizes for Proposed Developments
  - Critical for 10 Year (& Beyond) Capital Planning
  - Update Approximately Every 10 Years
  - Complete Plan for Present Until System Fully Built Out
  - **Ensure Existing & Future Customers have Sufficient & Reliable Water**

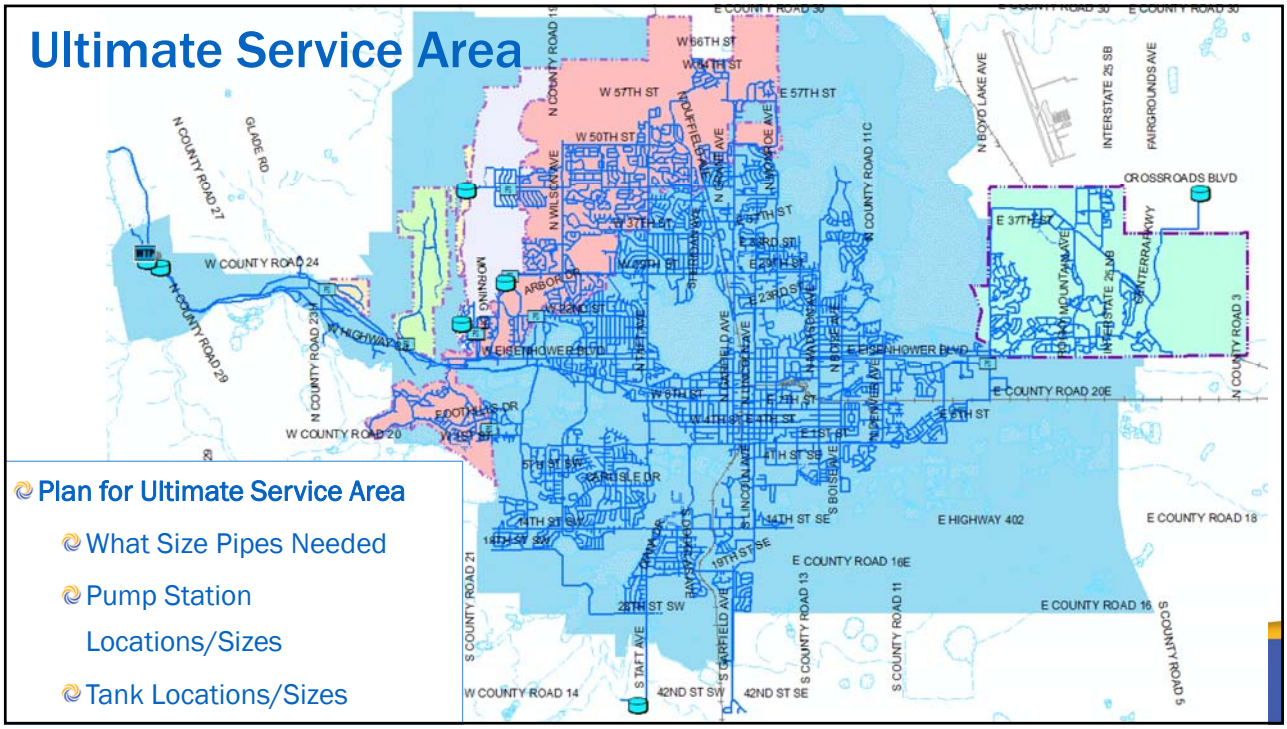
LOVELAND UTILITIES COMMISSION

Existing Loveland Water System



- ~436 Miles of Pipes (2”-54”)
- Pressure Zones & Pumps
  - 6 Pressure Zones
  - 7 Pump Stations
  - 7 Water Tanks (21.5 MG)
- 38 MGD Water Treatment Plant

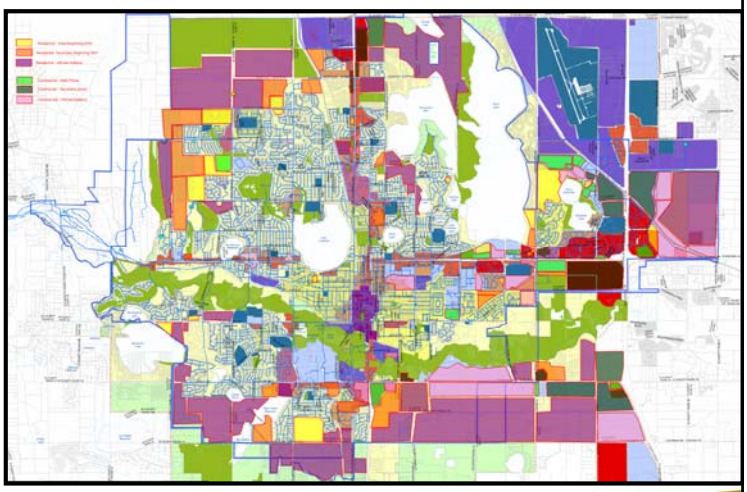
Ultimate Service Area



- Plan for Ultimate Service Area
  - What Size Pipes Needed
  - Pump Station Locations/Sizes
  - Tank Locations/Sizes

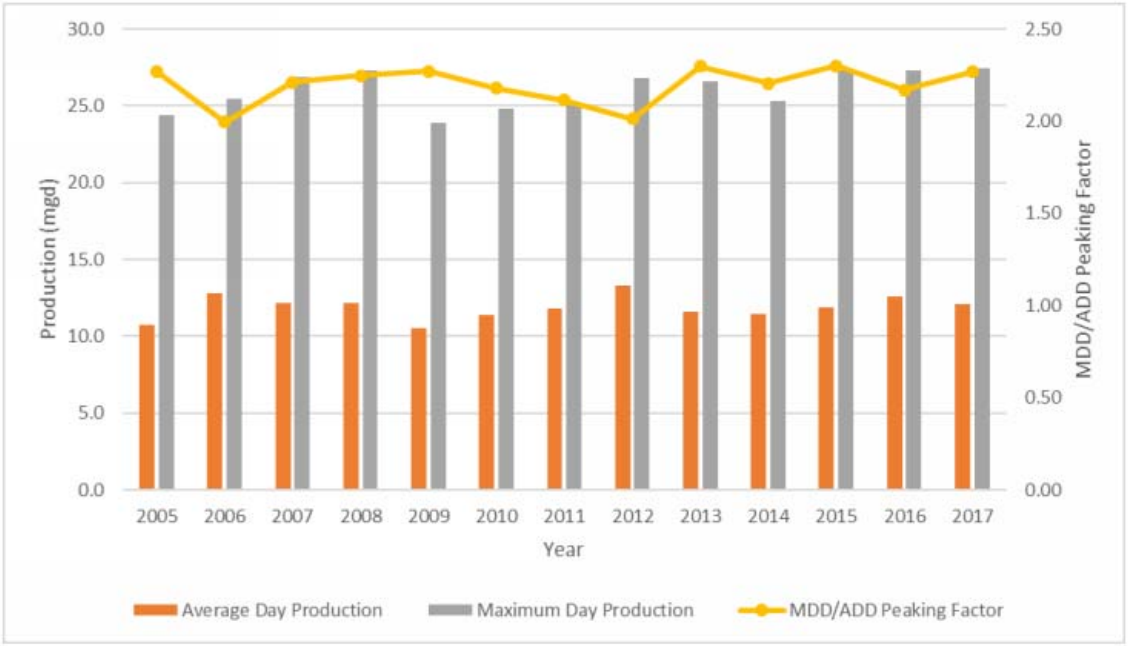
Planning for System Expansion

- Current Use Rates
  - Average & Peak Day Demand
  - Customer Usage
  - Diurnal Curves
  - Trends
- Future Use Rates
- Incorporate Comprehensive Plan
  - Proposed Land Uses
  - Densities

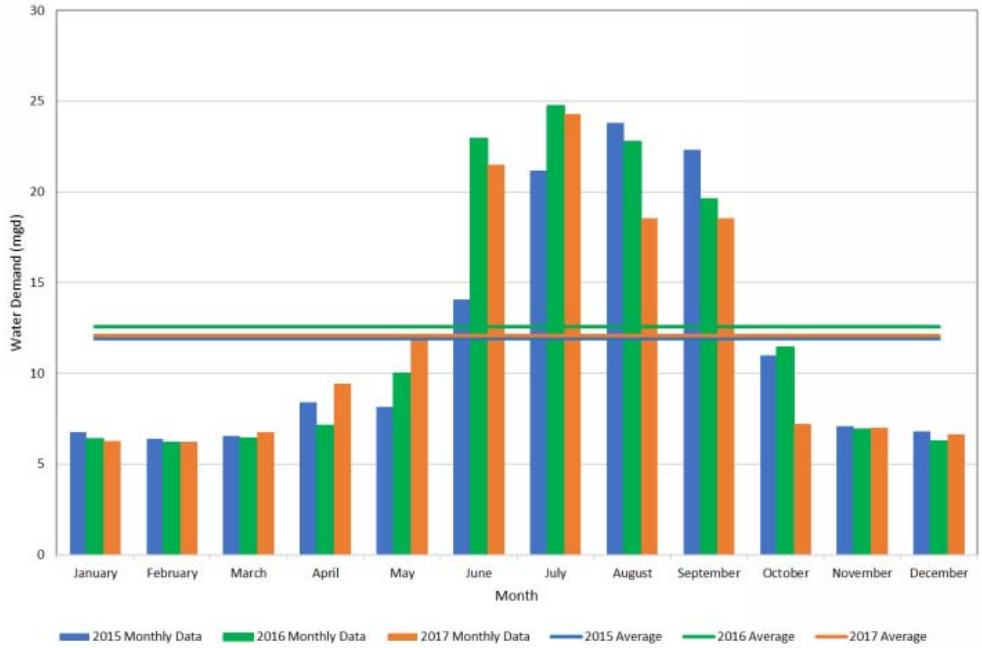


LOVELAND UTILITIES COMMISSION

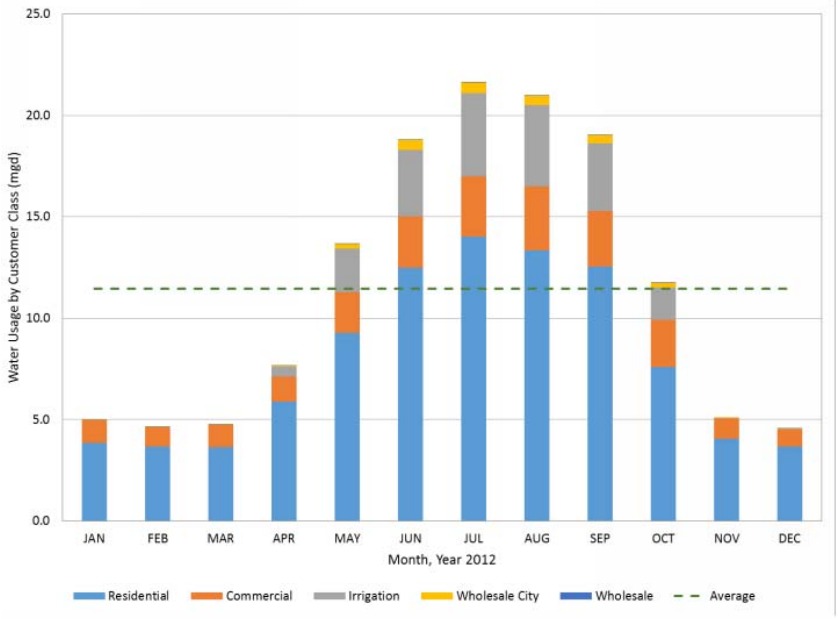
Historical Loveland Annual Water Production



Monthly Water Demand



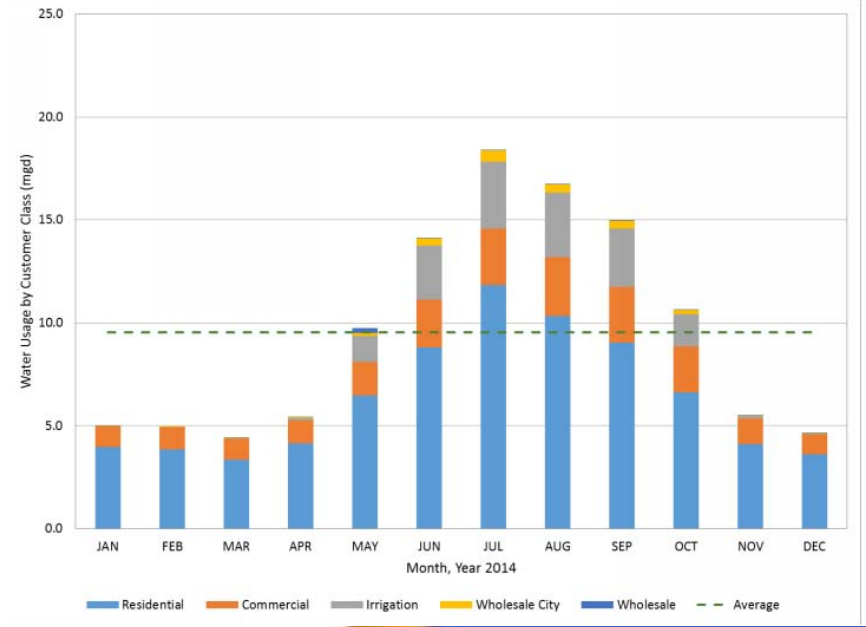
Tracking Water Usage per Customer Class - 2012



- Dry Precipitation Year
  - Increased Water Usage
  - More Irrigation
  - Higher Average Usage
- Yearly Variations vs. Trends

LOVELAND UTILITIES COMMISSION

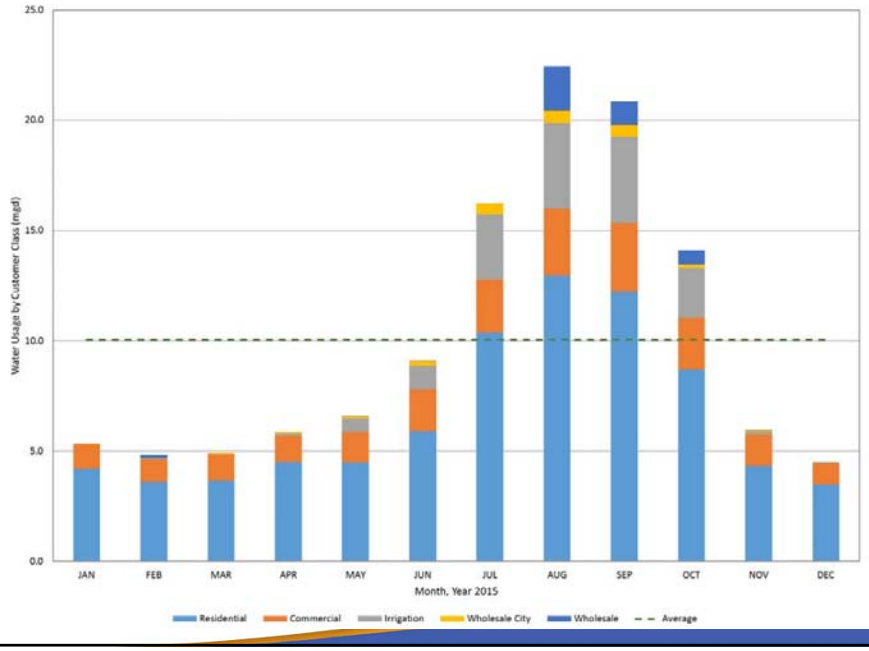
Tracking Water Usage per Customer Class - 2014



- Wet Precipitation Year
  - Decreased Water Usage
  - Less Irrigation from Residential
  - Lower Average Usage
- Yearly Variations vs. Trends

LOVELAND UTILITIES COMMISSION

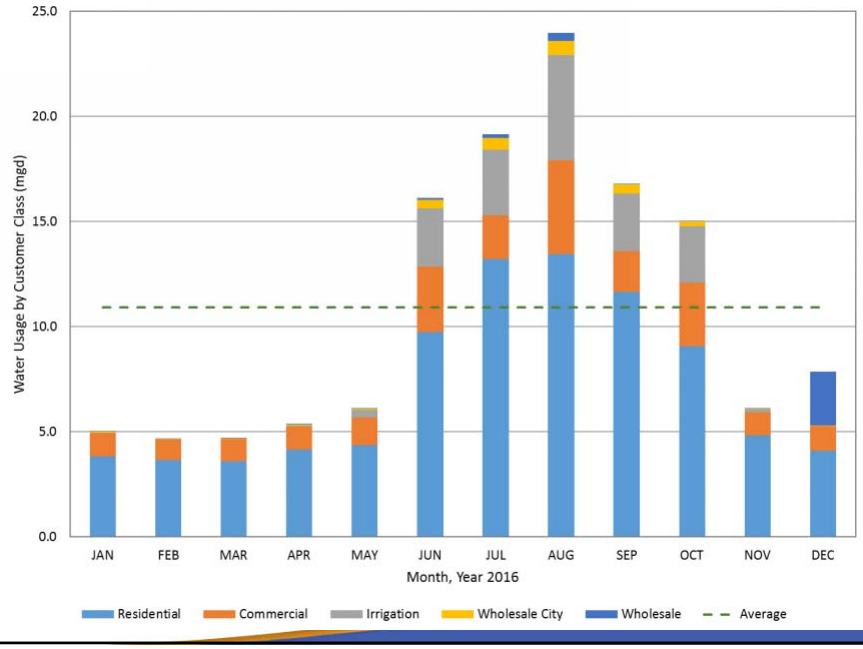
Tracking Water Usage per Customer Class - 2015



- "Average" Precipitation Year
  - Increased Wholesale Water Usage
  - Average Usage
- Yearly Variations vs. Trends

LOVELAND UTILITIES COMMISSION

Tracking Water Usage per Customer Class - 2016



- Peak Month Usage
- Average Usage Up
- Yearly Variations vs. Trends

LOVELAND UTILITIES COMMISSION

Demand & Peaking Factor by Customer Class

Dry Year

Customer Class	ADD (mgd)	%ADD	MMD (mgd)	%MMD	MDD (mgd)[1]	Peaking Factor (MDD/ADD)
2012						
Residential[2]	9.10	68.31%	14.02	64.82%	17.38	1.91
Commercial[3]	2.13	15.98%	2.96	13.67%	3.67	1.72
Irrigation	1.84	13.84%	4.11	18.98%	5.09	2.76
WC[4]	0.24	1.82%	0.52	2.42%	0.65	2.68
WH[5]	0.01	0.04%	0.02	0.11%	0.03	5.59
Total	**13.33**	--	**21.64**	--	**26.82**	**2.01**
2016						
Residential[2]	7.17	65.38%	13.44	56.05%	15.30	1.86
Commercial[3]	1.88	17.16%	4.48	18.70%	5.10	2.36
Irrigation	1.42	12.90%	5.00	20.84%	5.69	3.50
WC[4]	0.23	2.05%	0.68	2.82%	0.77	2.98
WH[5]	0.27	2.50%	0.38	1.59%	0.43	1.38
Total	**10.97**	--	**23.98**	--	**27.30**	**2.17**

Broad Takeaways:

-Seasonal Variations affect year to year numbers

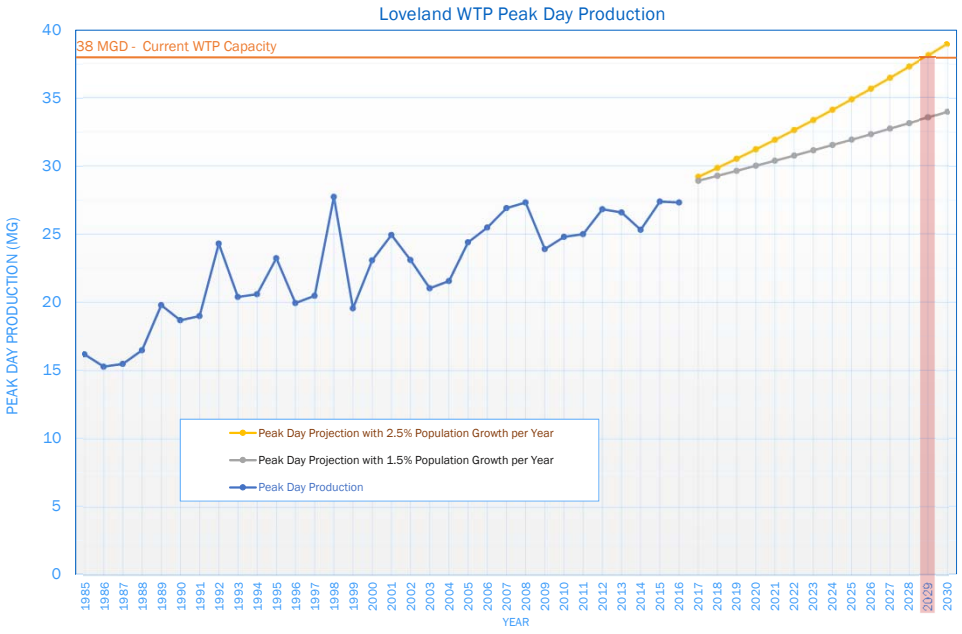
-Variations Between Customer Class over the Year vs. Max Month

-Peaking Factors, Usage Rates, & Growth Rates must be Averaged over Periods of Time

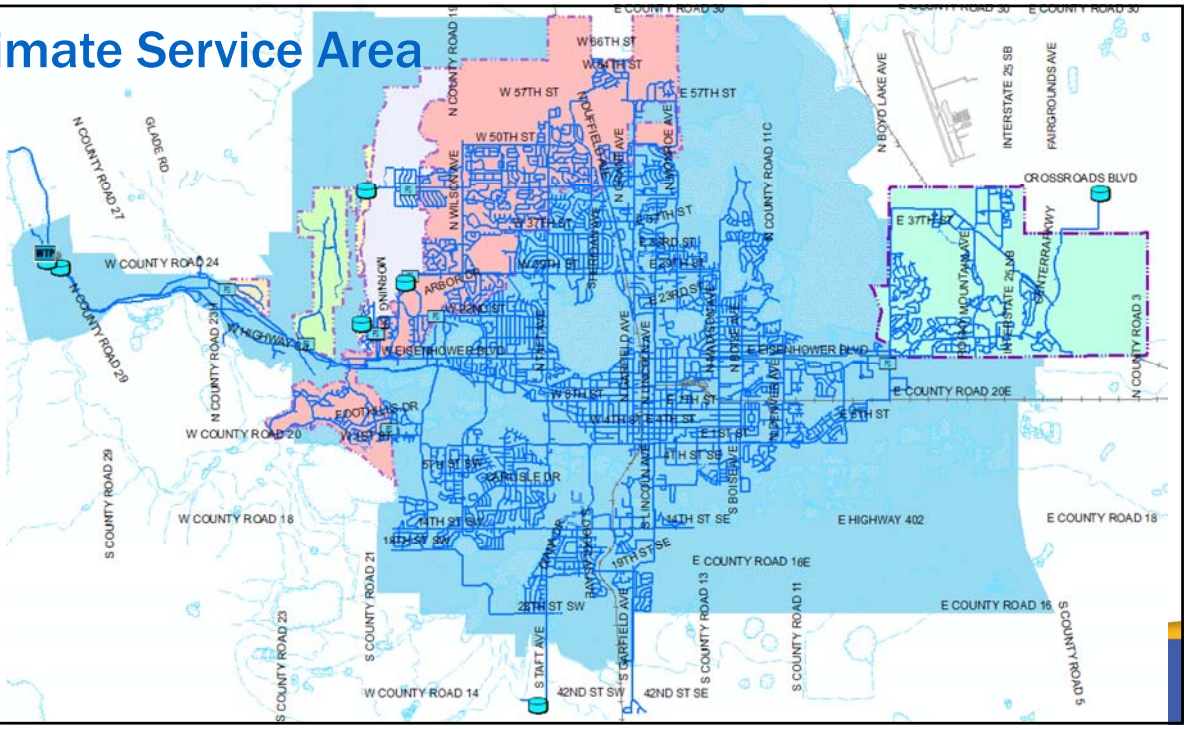
LOVELAND UTILITIES COMMISSION

Projecting Forward

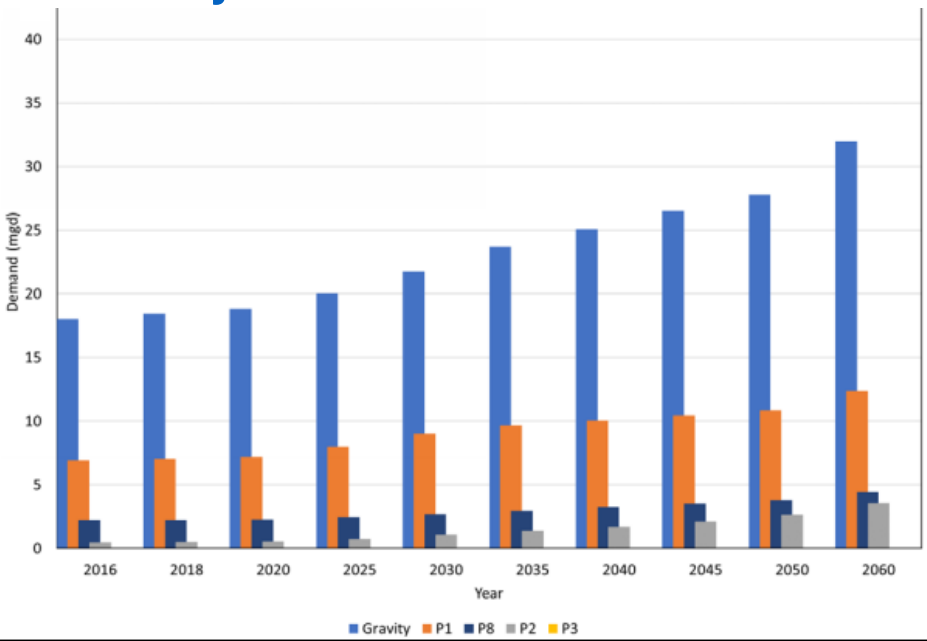
- Where Will Growth Occur
- Growth Rates
  - 1.5% Growth
  - 0.5% Water Conservation for 10 years
  - 40 MGD by 2040
- Rates Must be Projected per Pressure Zone



Ultimate Service Area



Growth Projections & Demand Per Pressure Zone



Broad Takeaways:

-Future Use Not Only Affects Raw Water Amounts and Reservoirs

-WTP Capacity

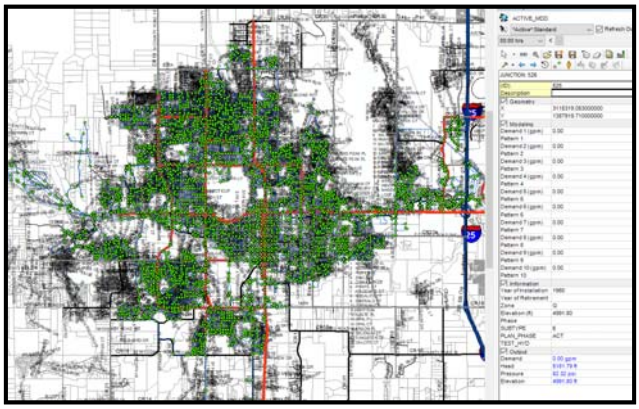
-Each Pressure Zone Pipe, Pump, & Tank Capacity

-Current Ultimate Projected Peak of 66 MGD.

ELAND
S COMMISSION

Hydraulic Water Model

- Water Model
  - Overview
    - Every Pipe in the System – GIS Data
    - Pump, Pipes, Water Tanks, Interconnects
  - Construct Model & Calibrate
  - Current & Future Demands
  - Help Identify Operational Concerns
  - Help Identify Masterplan Projects



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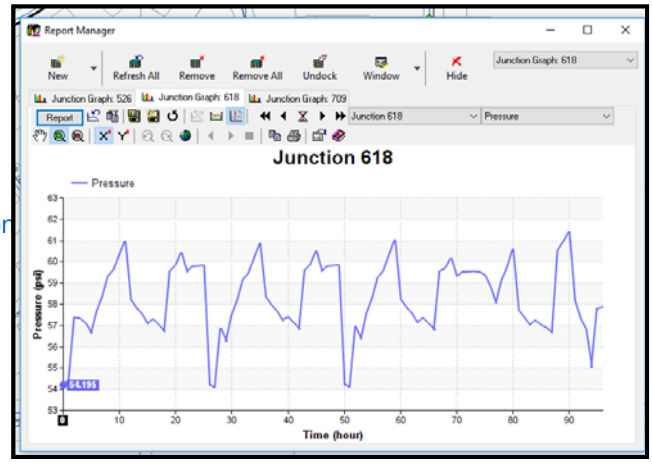
Hydraulic Water Model - Current

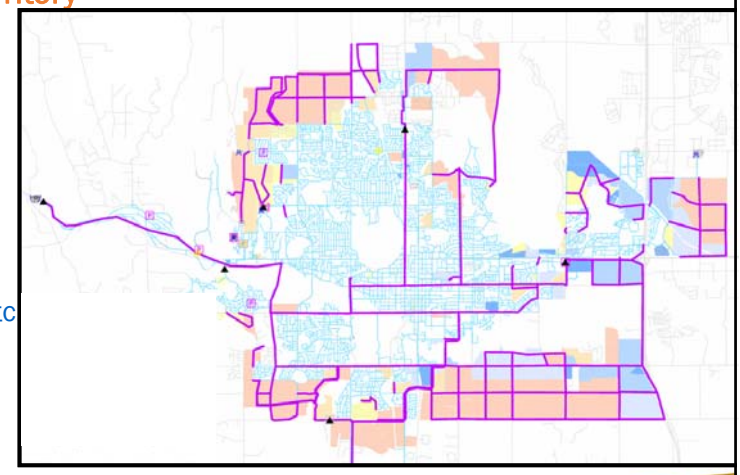
- Accuracy
  - SCADA Data – Pumps, Tanks, etc.
  - Water Meter Data
    - Monthly Data for Every Meter Averaged
  - Run Simulations Comparing Modeled Situation to Actual Data
- System Analysis
  - Additional Pumping Needs
  - Low/High Water Pressure
  - Water Age (Quality)
  - System Functionality



LOVELAND UTILITIES COMMISSION

Hydraulic Water Model – Full Build Out

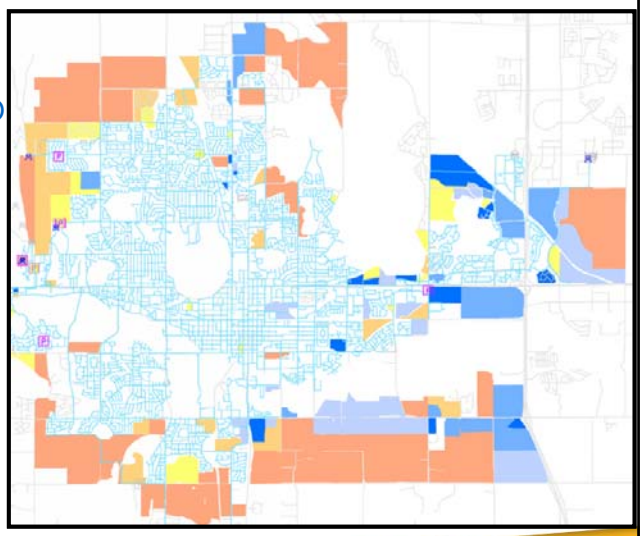
- All Undeveloped Land in Service Territory
  - Assumed Demand
    - Residential: 1,400 pgd/acre
    - Commercial 480 gpd/acre
  - Diurnal Curves
    - When People Use Water
  - Propose Pipe Sizes, Tank Locations, etc
    - Monthly Data for Every Meter Averaged
  - Optimatics
    - Cloud Based Software Runs 1,000's of Scenarios for Given Criteria



LOVELAND UTILITIES COMMISSION

Hydraulic Water Model – Interim

- Look at Interim Demands /Improvements
  - Incremental Steps from 28 MGD - 66 MGD
  - "Crystal Ball" on Timing & Areas of Growth
  - Triggers for Utility Improvements
  - What Demand (& Where) Prompts:
    - Tanks
    - Pipelines
    - Pump Stations



LOVELAND UTILITIES COMMISSION

Capital Planning

Looking For:

- Current Needs
- 10-20 Year Planning Window
  - Meet Interim Demand Points
- Ultimate Planning
  - Ultimate Planning

Utilize:

- Utilize Model Results
- Engineering Judgement
- Available Budget Resources
- Levels of Service
  - Pressure
  - Recommended Thresholds
    - Available Storage
  - Redundancy

LOVELAND UTILITIES COMMISSION

Capital Planning Overview

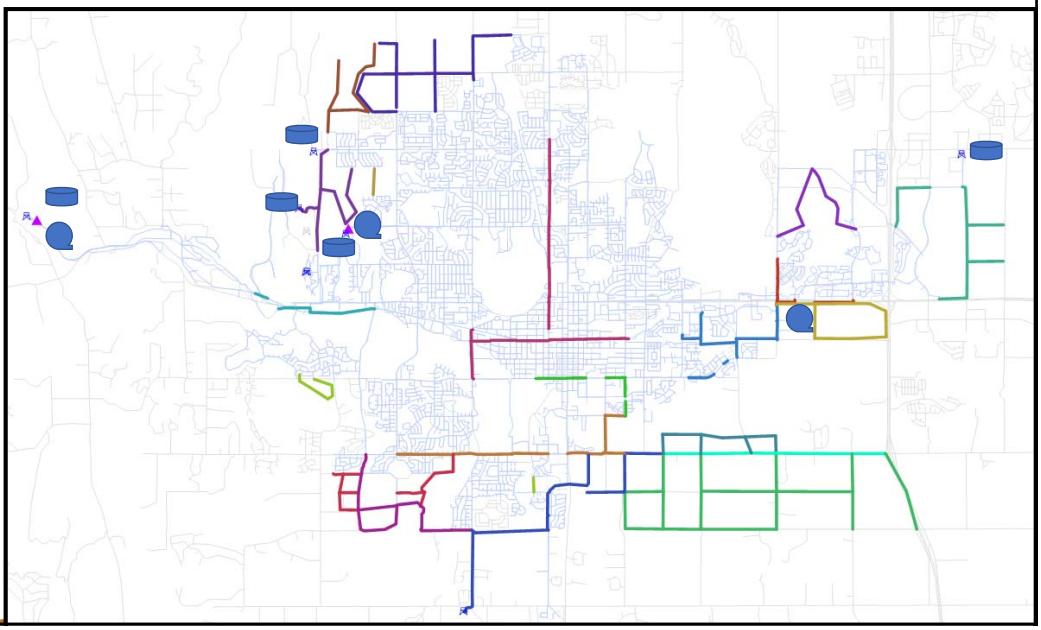
Planned Piping:
-Shown Pipes Meet Ultimate Loveland Buildout

-Just Based on Capacity Needs (Condition Projects Separate)

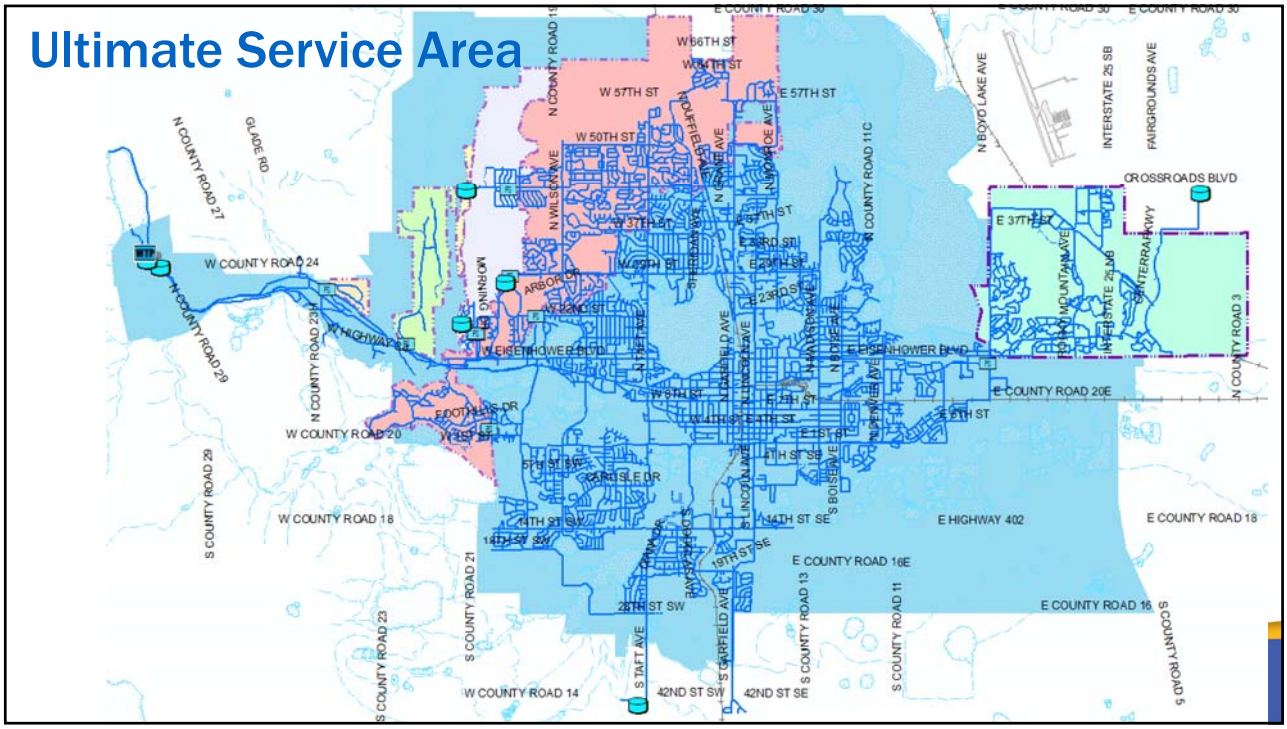
-Many Lines to be Built by Development & Reimbursed

-"Backbone" Pipes (Smaller Pipes not Shown)

-Conceptual Estimate of Project



Ultimate Service Area



Planning to Budgeting

Project	Proj #	Type	2023	2024	2025	2026	2027	2028	2029	5-Year Total (2020-2024)	10-Year Total (2020-2029)	Raw Water	General Unrestricted	SIF - Restricted
TRANSMISSION/DISTRIBUTION PROJECTS														
0	0	0	0	0	0	0	0	0	0	0	0	0%	0%	0%
East Gravity Zone 24" Phase 1a St Louis Design/SDC	0	Design/SDC	0	0	0	0	0	0	0	100,000	100,000	0%	20%	80%
East Gravity Zone 24" Phase 1b St Louis Design/SDC	0	Design/SDC	0	0	0	0	0	0	0	408,830	408,830	0%	20%	80%
East Gravity Zone 24" Phase 1 St Louis Construct	0	Construct	0	0	0	0	0	0	0	2,608,340	2,608,340	0%	20%	80%
East Gravity Zone 36" Phase 2 28th St SW Taft to Garfield Design/SDC	0	Design/SDC	679,800	0	0	0	0	0	0	1,331,880	1,331,880	0%	20%	80%
East Gravity Zone 36" Phase 2 28th St SW Taft to Garfield Construct	0	Construct	6,797,970	0	0	0	0	0	0	6,797,970	6,797,970	0%	20%	80%
East Gravity Zone 36" Phase 3 Garfield to 402 Design/SDC	0	Design/SDC	0	0	0	0	0	1,325,350	1,381,680	0	2,707,030	0%	20%	80%
East Gravity Zone 36" Phase 3 Garfield to 402 Construct	0	Construct	0	0	0	0	0	0	13,816,820	0	13,816,820	0%	20%	80%
0	0	0	0	0	0	0	0	0	0	0	0	0%	0%	100%
16" in Granite (57th to 50th) (Ranch Acres) Design/SDC	0	Design/SDC	0	0	43,340	45,190	0	0	0	0	88,530	0%	50%	50%
16" in Granite (57th to 50th) (Ranch Acres) Construct	0	Construct	0	0	0	564,820	0	0	0	0	564,820	0%	50%	50%
0	0	0	0	0	0	0	0	0	0	0	0	0%	10%	90%
402 Waterline Extension Design/SDC	0	Design/SDC	0	0	0	0	0	0	0	163,020	163,020	0%	0%	100%
402 Waterline Extension Design/SDC	0	Design/SDC	770,440	803,180	0	0	0	0	0	1,573,620	1,573,620	0%	0%	100%
402 Waterline Extension Construct	0	Construct	0	10,039,760	0	0	0	0	0	10,039,760	10,039,760	0%	0%	100%
0	0	0	0	0	0	0	0	0	0	0	0	0%	0%	100%
16" PB Extension (South of 34, Lot 1) Design/SDC	0	Design/SDC	0	0	0	0	0	0	0	48,000	48,000	0%	0%	100%
16" PB Extension (South of 34, Lot 1) Construct	0	Construct	0	0	0	0	0	0	0	300,000	300,000	0%	0%	100%
16" PB Extension (South of 34, Lot 2) Design/SDC	0	Design/SDC	0	0	0	0	0	0	0	52,170	52,170	0%	0%	100%
16" PB Extension (South of 34, Lot 2) Construct	0	Construct	0	0	0	0	0	0	0	326,040	326,040	0%	0%	100%
16" PB Extension (South of 34, Lot 3) Design/SDC	0	Design/SDC	108,770	0	0	0	0	0	0	108,770	108,770	0%	0%	100%
16" PB Extension (South of 34, Lot 3) Construct	0	Construct	679,800	0	0	0	0	0	0	679,800	679,800	0%	0%	100%

- Balancing Act of Working within a Budget to Ensure Excellent Service to Customers
- Improvements Completed Prior to Need

LOVELAND UTILITIES COMMISSION

Water Master Plan Overview

-Closely Monitoring Usage Trends

-Regular Inventory of System & Performance

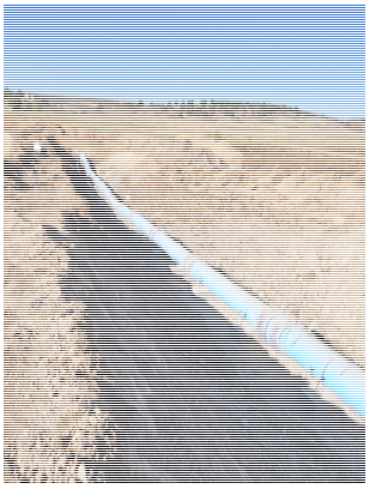
-Loveland Comprehensive Plan (Growth) & Department Projections

-Industry Recognized Guidelines

-Masterplan for Ultimate Water Service Territory

  -Congruent with Planning & Raw Water

-Budget Improvements



LOVELAND UTILITIES COMMISSION

QUESTIONS?

LOVELAND UTILITIES COMMISSION

AGENDA ITEM: 6
MEETING DATE: 7/17/2019
SUBMITTED BY: Jim Lees
STAFF TITLE: Utility Accounting Manager

ITEM TITLE:

Quarterly Financial Update

DESCRIPTION:

This item summarizes the monthly and year-to date financials for June 2019.

SUMMARY:

The June 2019 financial reports are submitted for Commission review. The following table summarizes the sales and expense results for the month of June, and the June Year-To-Date results in comparison to the same periods from 2018. The summarized and detailed monthly financial statements that compare June Year-To-Date actuals to the 2019 budgeted figures are attached.

	June				June Year-To-Date			
	2019	2018	$ Ovr/(Und) vs. 2018	% Ovr/(Und) vs. 2018	2019	2018	$ Ovr/(Und) vs. 2018	% Ovr/(Und) vs. 2018
WATER								
Sales	$1,704,236	$1,698,812	$5,424	0.3%	$6,382,001	$6,382,640	($639)	0.0%
Operating Expenses	$924,693	$959,221	($34,528)	-3.6%	$6,707,339	$6,709,204	($1,865)	0.0%
Capital (Unrestricted)	$10,825	$58,046	($47,221)	-81.4%	$2,052,664	$450,495	$1,602,169	355.6%
WASTEWATER								
Sales	$1,115,957	$1,059,070	$56,886	5.4%	$6,458,454	$6,062,981	$395,473	6.5%
Operating Expenses	$831,383	$741,736	$89,647	12.1%	$4,822,780	$3,981,203	$841,577	21.1%
Capital (Unrestricted)	$34,918	$1,166,005	($1,131,087)	-97.0%	$5,283,647	$4,023,400	$1,260,247	31.3%
POWER								
Sales	$4,965,228	$5,233,799	($268,571)	-5.1%	$30,668,614	$30,571,927	$96,687	0.3%
Operating Expenses	$5,194,308	$5,951,139	($756,831)	-12.7%	$27,141,789	$27,929,701	($787,912)	-2.8%
Capital (Unrestricted)	$993,533	$1,223,320	($229,787)	-18.8%	$4,805,494	$4,989,120	($183,626)	-3.7%

RECOMMENDATION:

Staff item only. No action required.

ATTACHMENTS:

- Attachment A: City of Loveland Financial Statement-Raw Water
- Attachment B: City of Loveland Financial Statement-Water
- Attachment C: City of Loveland Financial Statement-Wastewater
- Attachment D: City of Loveland Financial Statement-Power
- Attachment E: City of Loveland Quarterly Balance Sheet – Water
- Attachment F: City of Loveland Quarterly Balance Sheet – Wastewater
- Attachment G: City of Loveland Quarterly Balance Sheet – Power
- Attachment H: Quarterly Financial Update PowerPoint Presentation

Attachment A

City of Loveland
Financial Statement-Raw Water
For Period Ending 06/30/2019

		TOTAL BUDGET FYE 12/31/2019	YTD ACTUAL	YTD BUDGET	OVER <UNDER>	VARIANCE
1	**REVENUES & SOURCES**					
2	High Use Surcharge	73,118	17,310	8,450	8,860	104.9%
3	Raw Water Development Fees/Cap Rec Surcharge	485,213	203,108	244,216	(41,108)	-16.8%
4	Cash-In-Lieu of Water Rights	227,167	3,360,962	113,586	3,247,376	2859.0%
5	Native Raw Water Storage Fees	196,876	168,381	81,000	87,381	107.9%
6	Proceeds on Loan	37,560,000	0	0	0	0.0%
7	Raw Water 3% Transfer In	531,164	191,460	192,833	(1,373)	-0.7%
8	Interest on Investments	300,965	230,151	150,480	79,671	52.9%
9	**TOTAL REVENUES & SOURCES**	**39,374,503**	**4,171,372**	**790,565**	**3,380,807**	**427.6%**
10	**OPERATING EXPENSES**					
11	Loan to Water	0	0	0	0	0.0%
12	Windy Gap Payments	7,100	7,044	3,552	3,492	98.3%
13	**TOTAL OPERATING EXPENSES**	**7,100**	**7,044**	**3,552**	**3,492**	**98.3%**
14	NET OPERATING REVENUE/(LOSS) (excl depr)	39,367,403	4,164,328	787,013	3,377,315	429.1%
15	RAW WATER CAPITAL EXPENDITURES	59,433,300	4,473,583	31,524,802	(27,051,219)	-85.8%
16	**BUDGET FUND BALANCE**	**6,590,587**	**26,518,203**	**(4,081,305)**	**30,599,508**	**-749.7%**

NOTE: YTD ACTUAL DOES NOT INCLUDE ENCUMBRANCES TOTALING: 164,877

Attachment B

City of Loveland
Financial Statement-Water
For Period Ending 06/30/2019

		TOTAL BUDGET FYE 12/31/2019	YTD ACTUAL	YTD BUDGET	OVER <UNDER>	VARIANCE
1	****UNRESTRICTED FUNDS****					
2	**REVENUES & SOURCES**					
3	Water Sales	17,705,446	6,382,001	6,427,779	(45,778)	-0.7%
4	Raw Water Transfer Out	(531,164)	(191,460)	(192,833)	1,373	-0.7%
5	Wholesale Sales	181,091	39,451	30,283	9,168	30.3%
6	Meter Sales	92,269	37,985	46,134	(8,149)	-17.7%
7	Interest on Investments	120,220	26,795	60,108	(33,313)	-55.4%
8	Other Revenue	1,117,884	184,071	155,117	28,954	18.7%
9	Federal and State Grants	0	64,975	0	64,975	0.0%
10	Internal Loan Monies Received	0	0	0	0	0.0%
11	External Loan Monies Received	0	0	0	0	0.0%
12	**TOTAL REVENUES & SOURCES**	**18,685,746**	**6,543,817**	**6,526,588**	**17,229**	**0.3%**
13	**OPERATING EXPENSES**					
14	Source of Supply	2,623,913	804,172	1,328,288	(524,116)	-39.5%
15	Treatment	3,837,194	1,452,969	1,890,582	(437,613)	-23.1%
16	Distribution Operation & Maintenance	4,020,077	1,442,662	2,105,581	(662,919)	-31.5%
17	Administration	2,764,753	334,169	1,311,388	(977,219)	-74.5%
18	Customer Relations	418,311	158,060	218,955	(60,895)	-27.8%
19	PILT	1,202,200	386,544	601,092	(214,548)	-35.7%
20	1% for Arts Transfer	76,788	19,157	67,388	(48,231)	-71.6%
21	Services Rendered-Other Departments	1,530,293	765,150	765,150	0	0.0%
22	Internal Loan Debt Expense	783,750	792,458	783,750	8,709	1.1%
23	External Loan Debt Expense	1,015,685	551,999	507,840	44,159	8.7%
24	**TOTAL OPERATING EXPENSES**	**18,272,964**	**6,707,339**	**9,580,014**	**(2,872,675)**	**-30.0%**
26	NET OPERATING REVENUE/(LOSS)(excl depr)	412,782	(163,522)	(3,053,426)	2,889,904	-94.6%
27	CAPITAL EXPENDITURES	5,571,281	2,052,664	4,061,661	(2,008,997)	-49.5%
28	REVENUES LESS OPER EXP LESS CAPITAL	(5,158,499)	(2,216,186)	(7,115,087)	4,898,901	-68.9%
30	ENDING CASH BALANCE (28% OF OPER EXP)	**3,951,317**	**5,067,262**	**1,817,228**	3,250,034	178.8%
31	WATER DEBT FUNDS ENDING CASH BALANCE		**783,809**			
32	MINIMUM BALANCE (18% OF OPER EXP)		3,289,134			
33	**OVER/(UNDER) MINIMUM BALANCE**		**1,778,128**			
34	****RESTRICTED FUNDS****					
35	**REVENUES & SOURCES**					
36	SIF Collections	5,732,613	1,344,113	1,295,000	49,113	3.8%
37	SIF Interest Income	37,710	35,960	18,858	17,102	90.7%
38	SIF Federal and State Grants	0	64,975	0	64,975	0.0%
39	Internal Loan Monies Received	0	0	0	0	0.0%
40	**TOTAL SIF REVENUES & SOURCES**	**5,770,323**	**1,445,047**	**1,313,858**	**131,189**	**10.0%**
41	SIF Capital Expenditures	5,874,420	811,544	3,522,968	(2,711,424)	-77.0%
42	1% for Arts Transfer	40,372	6,723	22,972	(16,249)	-70.7%
43	Legal Agreements & Shared Costs	352,305	17,885	185,114	(167,229)	-90.3%
44	**TOTAL SIF CAPITAL EXPENDITURES**	**6,267,097**	**836,151**	**3,731,054**	**(2,894,903)**	**-77.6%**
45	**SIF REVENUE LESS EXPENDITURES**	**(496,774)**	**608,896**	**(2,417,196)**	**3,026,092**	**-125.2%**
46	SIF ENDING CASH BALANCE	**2,709,857**	**3,887,763**	**713,628**	**3,174,135**	**444.8%**
47	**TOTAL ENDING CASH BALANCE**		**8,955,025**			
	NOTE: YTD ACTUAL DOES NOT INCLUDE ENCUMBRANCES TOTALING:		2,717,209			
48	Water Treated at WTP (in million gallons)		1,668			
49	Water Sold To Customers (in million gallons, includes Ranch Water & Hydrant Sales)	3,808	1,148	1,163	(14)	-1.2%

Attachment C

City of Loveland-LIVE
Financial Statement-Wastewater
For Period Ending 06/30/2019

		TOTAL BUDGET FYE 12/31/2019	YTD ACTUAL	YTD BUDGET	OVER <UNDER>	VARIANCE
1	****UNRESTRICTED FUNDS****					
2	**REVENUES & SOURCES**					
3	Sanitary Sewer Charges	13,584,364	6,458,454	6,518,555	(60,101)	-0.9%
4	High Strength Surcharge	427,327	145,733	179,121	(33,388)	-18.6%
5	Interest on Investments	38,862	108,691	19,434	89,257	459.3%
6	Other Revenue	1,124,075	11,152	16,902	(5,750)	-34.0%
7	Bond Proceeds	4,476,304	3,924,824	4,476,304	(551,480)	-12.3%
8	Federal Grants	0	0	0	0	0.0%
9	State Grants	0	0	0	0	0.0%
10	**TOTAL REVENUES & SOURCES**	**19,650,932**	**10,648,855**	**11,210,316**	**(561,461)**	**-5.0%**
11	**OPERATING EXPENSES**				0	0.0%
12	Treatment	4,204,696	1,977,457	1,990,658	(13,201)	-0.7%
13	Collection System Maintenance	3,570,346	1,112,484	1,962,837	(850,353)	-43.3%
14	Administration	1,512,390	215,718	1,223,931	(1,008,213)	-82.4%
15	Customer Relations	76,327	32,228	42,309	(10,081)	-23.8%
16	PILT	980,820	457,225	490,410	(33,185)	-6.8%
17	1% for Arts Transfer	167,020	50,448	148,006	(97,558)	-65.9%
18	Services Rendered-Other Departments	928,606	464,304	464,304	0	0.0%
19	Debt Service	2,063,177	512,917	531,588	(18,671)	-3.5%
20	**TOTAL OPERATING EXPENSES**	**13,503,382**	**4,822,780**	**6,854,043**	**(2,031,263)**	**-29.6%**
21	NET OPERATING REVENUE/(LOSS)(excl depr)	6,147,550	5,826,075	4,356,273	1,469,802	33.7%
22	CAPITAL EXPENDITURES	13,894,631	5,283,647	11,778,791	(6,495,144)	-55.1%
23	REVENUES LESS OPER EXP LESS CAPITAL	(7,747,081)	542,427	(7,422,518)	7,964,945	-107.3%
24	ENDING BUDGET FUND BALANCE (91% OF OPER EXP)	**6,082,085**	**12,266,798**	**4,586,814**	**7,679,984**	**167.4%**
25	WASTEWATER DEBT FUNDS ENDING CASH BALANCE		1,030,739			
26	MINIMUM BALANCE (18% OF OPER EXP)		2,430,609			
27	OVER/(UNDER) MINIMUM BALANCE		**9,836,189**			
28	****RESTRICTED FUNDS****					
29	**REVENUES & SOURCES**					
30	SIF Collections	2,774,324	666,812	887,166	(220,354)	-24.8%
31	SIF Interest Income	2,640	73,290	1,320	71,970	5452.3%
32	SIF Bond Proceeds	1,837,089	2,405,537	1,837,089	568,448	30.9%
33	**TOTAL SIF REVENUES & SOURCES**	**4,614,053**	**3,145,640**	**2,725,575**	**420,065**	**15.4%**
34	SIF Capital Expenditures	4,677,835	640,791	3,946,591	(3,305,800)	-83.8%
35	1% for Arts Transfer	92,384	5,074	86,136	(81,062)	-94.1%
36	Debt Service	591,393	314,368	295,692	18,676	6.3%
37	**TOTAL SIF CAPITAL EXPENDITURES**	5,361,612	**960,233**	4,328,419	(3,368,186)	-77.8%
38	**SIF REVENUE LESS EXPENDITURES**	(747,559)	2,185,406	(1,602,844)	3,788,250	-236.3%
39	SIF ENDING BUDGET FUND BALANCE	**3,431,413**	**4,562,228**	**2,576,877**	**1,985,351**	**77.0%**
40	**TOTAL ENDING CASH BALANCE**		**16,829,026**			
	NOTE: YTD ACTUAL DOES NOT INCLUDE ENCUMBRANCES TOTALING		11,216,734			
	Wastewater Treated at WWTP (in million gallons)	N/A	1,045	N/A		
	Wastewater Billed To Customers (in million gallons)	1,778	814	834	(20)	-2.4%

Attachment D

City of Loveland
Financial Statement-Power
For Period Ending 06/30/2019

		TOTAL BUDGET		YTD ACTUAL	YTD BUDGET	OVER <UNDER>	VARIANCE
	****UNRESTRICTED FUNDS****						
1	REVENUES & SOURCES:						
2	Electric revenues	$68,256,630		$30,668,614	$31,383,510	($714,896)	-2.3%
3	Wheeling charges	$265,000		$116,968	$132,500	($15,532)	-11.7%
4	Interest on investments	$397,580		$112,254	$198,790	($86,536)	-43.5%
5	Aid-to-construction deposits	$1,610,000		$822,086	$805,000	$17,086	2.1%
6	Customer deposit-services	$310,000		$49,147	$155,000	($105,853)	-68.3%
7	Late Payment Penalty Fees	$450,000		$224,229	$225,000	($771)	-0.3%
8	Connect Fees	$170,000		$74,870	$85,000	($10,130)	-11.9%
9	Services rendered to other depts.	$67,500		$0	$33,750	($33,750)	-100.0%
10	Other revenues	$386,572		$273,459	$193,286	$80,173	41.5%
11	Federal Grants	$0		$0	$0	$0	0.0%
12	State Grants	$0		$0	$0	$0	0.0%
13	Year-end cash adjustments	$0		$0	$0	$0	0.0%
14	**TOTAL REVENUES & SOURCES**	**$71,913,282**		**$32,341,627**	**$33,211,836**	**($870,209)**	**-2.6%**
15	OPERATING EXPENSES:						
16	Hydro oper. & maint.	$5,128,795		$107,841	$2,564,398	($2,456,557)	-95.8%
17	Solar oper.& maint.	$90,000		$0	$45,000	($45,000)	-100.0%
18	Purchased power	$44,761,779		$20,444,554	$21,059,374	($614,820)	-2.9%
19	Distribution oper. & maint.	$5,831,634		$2,087,090	$2,915,817	($828,727)	-28.4%
21	Customer Relations	$1,652,984		$357,565	$826,492	($468,927)	-56.7%
22	Administration	$3,581,360		$568,697	$1,790,680	($1,221,983)	-68.2%
23	Payment in-lieu-of taxes	$4,777,960		$2,109,861	$2,288,643	($178,781)	-7.8%
24	1% for Arts Transfer	$105,703		$24,231	$50,632	($26,401)	-52.1%
25	Services rendered-other depts.	$2,883,905		$1,441,950	$1,441,953	($3)	0.0%
26	**TOTAL OPERATING EXPENSES (excl depn)**	**$68,814,120**		**$27,141,789**	**$32,982,988**	**($5,841,199)**	**-17.7%**
27	NET OPERATING REVENUE/(LOSS) (excl depn)	$3,099,162		$5,199,838	$228,848	$4,970,990	
28	CAPITAL EXPENDITURES:						
29	General Plant/Other Generation & Distribution	$10,452,835		$3,938,815	$5,016,418	($1,077,602)	-21.5%
30	Aid-to-construction	$1,530,000		$763,520	$975,000	($211,480)	-21.7%
31	Service installations	$310,000		$103,159	$155,000	($51,841)	-33.4%
32	**TOTAL CAPITAL EXPENDITURES**	**$12,292,835**		**$4,805,494**	**$6,146,418**	**($1,340,923)**	**-21.8%**
33	**REVENUES LESS OPER EXP LESS CAPITAL**	($9,193,673)		$394,344	($5,917,570)	$6,311,914	
34	**ENDING BUDGET FUND BALANCE (16% of Oper Ex**	**$10,870,411**		**$11,110,791**	**$10,619,630**	**$491,161**	**4.6%**
35	MINIMUM BAL. (18% of OPER EXP)			$12,386,542			
36	OVER/(UNDER) MINIMUM BALANCE			($1,275,751)			
37	****RESTRICTED FUNDS****						
38	PIF Collections	$2,743,740		$1,350,324	$1,371,870	($21,546)	-1.6%
39	PIF Interest Income	$37,450		$87,179	$18,725	$68,454	365.6%
40	Water Loan Payback	$783,750		$792,458	$783,750	$8,708	1.1%
41	Federal Grants	$0		$0	$0	$0	0.0%
42	State Grants	$0		$0	$0	$0	0.0%
43	**TOTAL REVENUES**	**$3,564,940**		**$2,229,961**	**$2,174,345**	**$55,616**	**2.6%**
44	PIF Feeders	$5,835,511		$1,721	$2,917,756	($2,916,035)	-99.9%
45	PIF Substations & Solar	$2,464,418		$520,317	$1,232,209	($711,892)	-57.8%
46	**TOTAL EXPENDITURES**	**$8,299,929**		**$522,038**	**$4,149,965**	**($3,627,927)**	**-87.4%**
47	**PIF REVENUES LESS EXPENDITURES**	($4,734,989)		$1,707,923	($1,975,620)	$3,683,542	
48	**ENDING PIF BUDGET FUND BALANCE**	**$2,978,132**		**$9,485,038**	**$6,515,753**	**$2,969,285**	**45.6%**
49	**TOTAL ENDING CASH BALANCE**			**$20,595,829**			

NOTE: YTD ACTUAL does NOT include encumbrances totalling $3,626,763

50	Energy Purchased (in million kWh) from PRPA	739		344	356	(12)	-3.3%
51	Energy Sold to Customers (in million kWh)	716		327	342	(15)	-4.3%

Attachment E

City of Loveland

Statement of Net Assets - For Fund Water fund - Proprietary consolidated
For Period Ending 6/30/2019

Assets		
Current Assets		
Equity in Pooled Cash	$	982,606.34
Equity in Pooled Investments		4,045,450.87
Receivables, Net		2,245,608.44
Interfund Loan Receivable		-
Accrued Interest		118,433.93
Inventory, at Cost		307,205.82
Total Current Assets		7,699,305.40
Restricted Assets		
Future Raw Water Projects		26,251,639.20
Restricted Cash		785,819.77
System Impact Fees		3,831,116.35
Windy Gap Commitment		-
Total Restricted Assets		30,868,575.32
Property, Plant & Equipment		
Land		508,866.43
Intangible Assets/Easements		4,233,247.50
Infrastructure		75,950,237.42
Buildings		3,467,553.01
Equipment		2,401,104.31
Improvements Other Than Buildings		102,726,801.50
Water Rights		76,051,042.47
Construction in Progress		10,369,703.42
Total Property, Plant & Equipment		275,708,556.06
Accumulated Depreciation		(56,170,040.82)
Net Property, Plant & Equipment		219,538,515.24
Total Non-Current Assets		250,407,090.56
Total Assets	$	258,106,395.96
Liabilities		
Current Liabilities		
Accounts Payable	$	191,805.09
Accrued Liabilities		210,101.14
Current Portion Ltd Notes		640,000.00
Bond Interest Payable		156,701.03
Deferred Revenue		-

Current Portion of Long-Term Debt		279,887.60
Total Current Liabilities		1,478,494.86
Long-Term Liabilities		
Compensated Absences		228,998.95
External Loan Payable		11,340,000.00
Interfund Loan Payable		1,500,000.00
Total Long-Term Liabilities		13,068,998.95
Total Liabilities	$	14,547,493.81
Net Position		
Net Investment in Capital Assets	$	219,538,515.24
Restricted for Future Capital Improvements		30,868,575.32
Unrestricted		(6,848,188.41)
Total Net Position	$	243,558,902.15

NOTES:

Some items on the balance sheet are only changed at the end of the year, such as capital assets and accumulated depreciation.

Attachment F

City of Loveland

Statement of Net Assets - For Fund Wastewater fund - Proprietary consolidated
For Period Ending 03/31/2019

Assets

Current Assets	
Equity in Pooled Cash	$ (427,109.63)
Equity in Pooled Investments	12,514,072.68
Receivables, Net	1,689,331.83
Accrued Interest	77,526.99
Inventory, at Cost	2,598.12
Total Current Assets	13,856,419.99
Non-current Assets	
Interfund Loan Receivable	-
Restricted Assets	
Restricted Cash	1,030,738.94
Cash with Fiscal Agent	-
System Impact Fees	4,458,474.35
Total Restricted Assets	5,489,213.29
Property, Plant & Equipment	
Land	380,222.08
Intangible Assets/Easements	4,259,215.99
Infrastructure	34,716,381.25
Buildings	3,441,799.26
Equipment	3,167,955.12
Improvements Other Than Buildings	46,429,058.69
Construction in Progress	38,049,046.58
Total Property, Plant & Equipment	130,443,678.97
Accumulated Depreciation	(32,320,578.55)
Net Property, Plant & Equipment	98,123,100.42
Total Non-Current Assets	103,612,313.71
Total Assets	$ 117,468,733.70

City of Loveland

Statement of Net Assets - For Fund Wastewater fund - Proprietary consolidated
For Period Ending 03/31/2019

Liabilities

Current Liabilities		
Accounts Payable	$	1,390,962.62
Accrued Liabilities		114,938.66
Current Portion Ltd Notes		-
Bond Interest Payable		24,235,000.00
Deferred Revenue		-
Current Portion of Long-Term Debt		240,722.09
Total Current Liabilities		25,981,623.37
Long-Term Liabilities		
Compensated Absences		196,954.44
External Loan Payable		24,235,000.00
Total Long-Term Liabilities		24,431,954.44
Total Liabilities	$	50,413,577.81

Net Position

Net Investment in Capital Assets	$	98,123,100.42
Restricted for Future Capital Improvements		5,489,213.29
Unrestricted		(36,557,157.82)
Total Net Position	$	67,055,155.89

NOTES:

Some items on the balance sheet are only changed at the end of the year, such as capital assets and accumulated depreciation.

Attachment G

City of Loveland

Statement of Net Assets - For Fund Power fund - Proprietary consolidated
For Period Ending 06/30/2018

Assets		
Current Assets		
Equity in Pooled Cash	$	(2,878,927.93)
Equity in Pooled Investments		13,793,179.51
Receivables, Net		8,054,749.16
Accrued Interest		80,122.19
Inventory, at Cost		3,550,645.08
Total Current Assets		22,599,768.01
Non-current Assets		
Interfund Loan Receivable		1,500,000.00
Restricted Assets		
System Impact Fees		9,379,409.19
Property, Plant & Equipment		
Land		2,498,492.73
Intangible Assets/Easements		4,434,147.39
Infrastructure		177,250,305.08
Buildings		4,067,961.38
Equipment		4,254,226.50
Improvements Other Than Buildings		276,752.99
Construction in Progress		14,181,215.91
Total Property, Plant & Equipment		206,963,101.98
Accumulated Depreciation		(62,294,263.71)
Net Property, Plant & Equipment		144,668,838.27
Total Non-Current Assets		155,548,247.46
Total Assets	$	178,148,015.47

City of Loveland

Statement of Net Assets - For Fund Power fund - Proprietary consolidated
For Period Ending 06/30/2018

Liabilities

Current Liabilities		
Accounts Payable	$	4,861,547.93
Accrued Liabilities		195,764.14
Deposits		2,964,822.58
Current Portion of Long-Term Debt		328,989.58
Total Current Liabilities		8,351,124.23
Long-Term Liabilities		
Compensated Absences		269,173.30
Interfund Loan Payable		-
Total Liabilities	$	8,620,297.53

Net Position

Net Investment in Capital Assets	$	144,668,838.27
Restricted for Future Capital Improvements		9,379,409.19
Unrestricted		15,479,470.48
Total Net Position	$	169,527,717.94

NOTES:

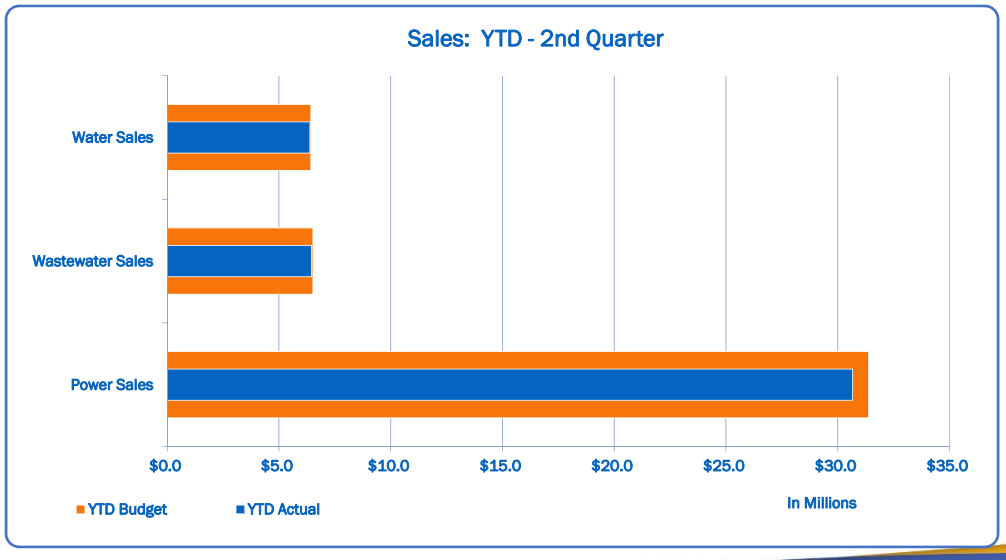
Some items on the balance sheet are only changed at the end of the year, such as capital assets and accumulated depreciation.

Attachment H

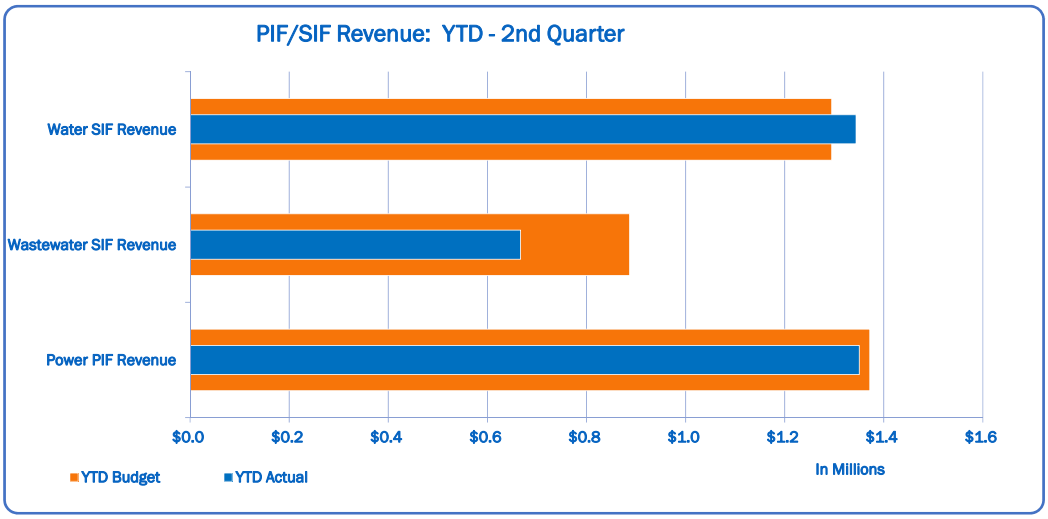
LOVELAND UTILITIES COMMISSION

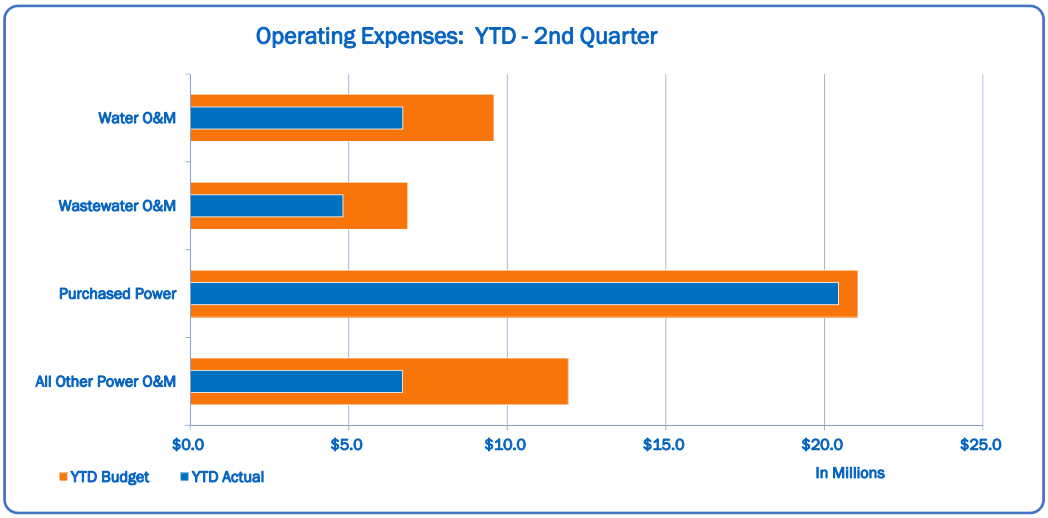
Quarterly Financial Report

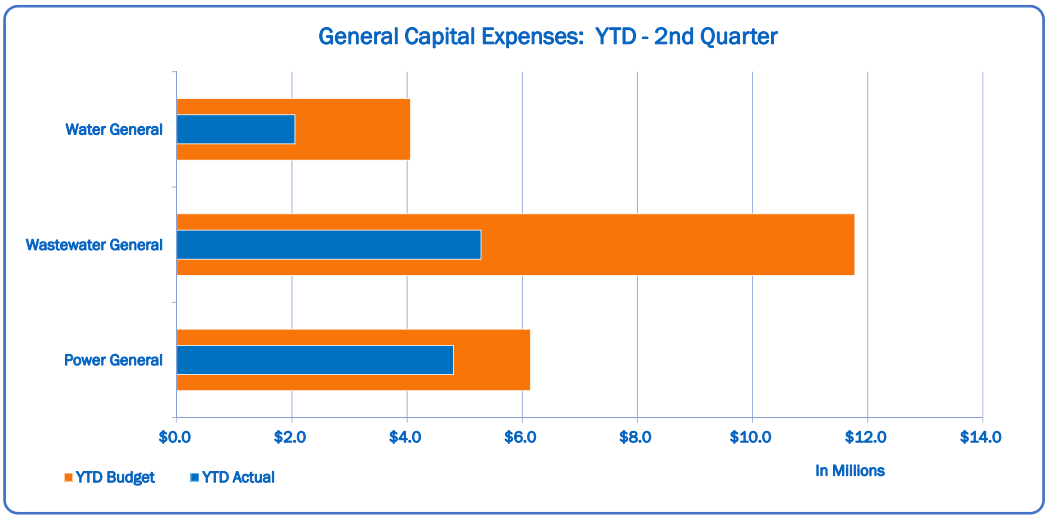
Jim Lees,
Utility Accounting Manager
July 17, 2019

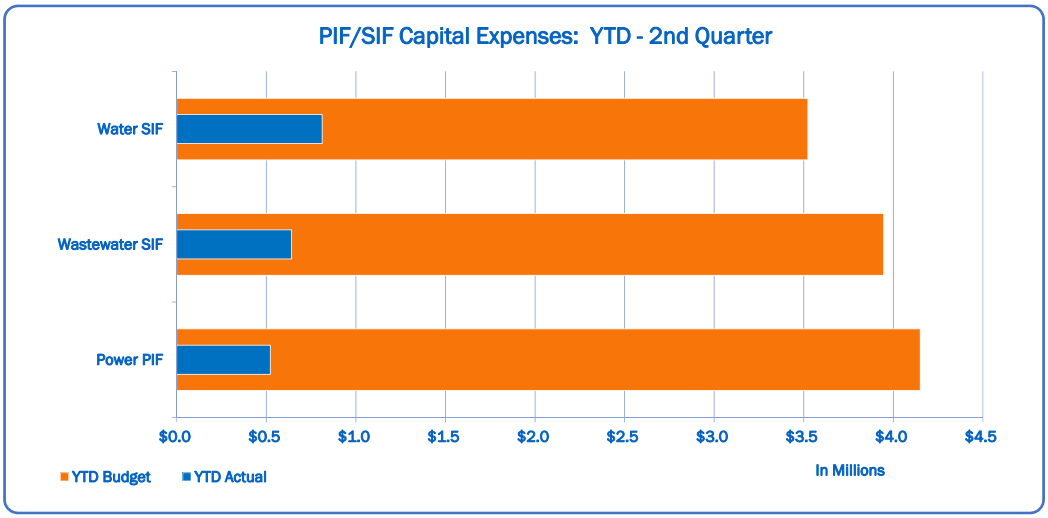


LOVELAND UTILITIES COMMISSION


PIF/SIF Revenue: YTD - 2nd Quarter
Water SIF Revenue
Wastewater SIF Revenue
Power PIF Revenue
$0.0
$0.2
$0.4
$0.6
$0.8
$1.0
$1.2
$1.4
$1.6
YTD Budget
YTD Actual
In Millions


Operating Expenses: YTD - 2nd Quarter
Water O&M
Wastewater O&M
Purchased Power
All Other Power O&M
$0.0
$5.0
$10.0
$15.0
$20.0
$25.0
YTD Budget
YTD Actual
In Millions


General Capital Expenses: YTD - 2nd Quarter
Water General
Wastewater General
Power General
$0.0
$2.0
$4.0
$6.0
$8.0
$10.0
$12.0
$14.0
YTD Budget
YTD Actual
In Millions


PIF/SIF Capital Expenses: YTD - 2nd Quarter
Water SIF
Wastewater SIF
Power PIF
$0.0
$0.5
$1.0
$1.5
$2.0
$2.5
$3.0
$3.5
$4.0
$4.5
YTD Budget
YTD Actual
In Millions

LOVELAND UTILITIES COMMISSION

QUESTIONS?

LOVELAND UTILITIES COMMISSION

AGENDA ITEM: 7
MEETING DATE: 7/17/2019
SUBMITTED BY: Joe Bernosky
STAFF TITLE: Director

ITEM TITLE:

Commission & Council Report

SUMMARY:

Discuss events that the Loveland Utility Commission Board members attended, special topics and any City Council items related to the Water and Power Department from the past month.

CITY COUNCIL REPORT:

Discuss events that the Loveland Utility Commission Board members attended, special topics and any City Council items related to the Water and Power Department from the past month.

- City Council Report

RECOMMENDATION:

Commission/Council report only.

ITEM TITLE:
Director's Report

SUMMARY:
Discuss upcoming events, special topics and follow up items from previous meetings.

EVENTS:
Colorado Water Congress Summer Conference: A smaller version of the Annual Convention, the Summer Conference is held the third week of August in one of Colorado's picturesque mountain communities. It includes updates and dialogue on Colorado water legislation, workshops and panel discussions on pressing water issues, and fun break-out opportunities. This year the conference will be held August 20-22, 2019 at the Steamboat Grand in Steamboat, CO. Contact Courtney Whittet for registration information.

Boards & Commissions Appreciation Event:

CUSTOMER RELATIONS:

Facebook Insights (June 2019):
- Reach (unique users) – 3,418 people
- Engagement (unique users) – 324 people
- Impressions (total count) – 11,111 people

Media:
- The Reporter Herald – June 17, 2019: Power outage will affect Big Thompson Canyon all day Wednesday.
- The Complete Colorado-Page 2 – June 18, 2019: Cutting the Cord: The cost behind broadband.
- Estes Park Trail Gazette – June 24, 2019: PRPA survey results shows engaged community.
- The Reporter Herald – July 1, 2019: Don Overcash: Loveland can count on Pulse.
- The Reporter Herald – July 5, 2019: Loveland eyes purchase of land wastewater treatment plant.