

## **WATER RESOURCES ADVISORY BOARD MEETING**

**MEETING DATE: Monday, 28 March 2016**

**MEETING TIME: 7:00 p.m.**

**MEETING LOCATION: Municipal Services Center, 5050 E. Pearl St., Boulder, CO 80301**

### **Agenda Highlights:**

Utilities Capital Improvements Program Open House 7-8 p.m.

1. Call to Order (8:00 p.m.)
2. Approval of Feb. 22, 2016 Meeting Minutes (8:01 p.m.)
3. \*Public Comment (8:05 p.m.)
4. Information Item – Capital Improvement Program (8:15 p.m.)
5. Information Item – Carter Lake Pipeline (8:40 p.m.)
6. Matters from Board (9:15 p.m.)
7. Matters from Staff (9:20 p.m.)
8. Discussion of Future Schedule (9:25 p.m.)
9. Adjournment (9:30 p.m.)

\* Public Comment Item

**Agenda item times are approximate.**

### **Information:**

- Please contact the WRAB Secretary email group at:  
[WRABSecretary@bouldercolorado.gov](mailto:WRABSecretary@bouldercolorado.gov)
- Packets are available on-line at: <http://www.bouldercolorado.gov> – [A to Z, Water Resources Advisory Board \(WRAB\), Next Water Resources Advisory Board Meeting](#)

**CITY OF BOULDER, COLORADO  
BOARDS AND COMMISSIONS MEETING MINUTES**

<b>Name of Board / Commission:</b> Water Resources Advisory Board	
<b>Date of Meeting:</b> 22 February 2016	
<b>Contact Information of Person Preparing Minutes:</b> Rene Lopez 303-413-7149	
<b>Board Members Present:</b> Vicki Scharnhorst, Dan Johnson, Mark Squillace, Lesley Smith, Mike Barnes <b>Board Members Absent:</b> None	
<b>Staff Present:</b> Jeff Arthur, Director of Public Works for Utilities Bob Eiche, Chief Financial Officer for the City of Boulder Milford John-Williams, Budget Analyst Bret Linenfelder, Water Quality and Environmental Services Manager Ken Baird, Utilities Financial Manager Annie Noble, Acting Principle Engineer for Flood and Greenways Rene Lopez, Board Secretary	
<b>Consultants Present:</b> None	
<b>Meeting Type:</b> Regular	
<b>Agenda Item 1 – Call to Order</b>	<b>[7:00 p.m.]</b>
<b>Agenda Item 2 – Approval of the 25 January 2016 Meeting Minutes</b> Motion to approve minutes from 25 January 2016 as amended. <b>Moved by:</b> Squillace <b>Seconded by:</b> Smith <b>Vote: 5:0</b>	<b>[7:01 p.m.]</b>
<b>Agenda Item 3 – Public Participation and Comment</b> <b>Public Comment:</b>  Carl Norby – Continuation of this presentation from last month about the use of a backflow preventer. Mr. Norby believe this city should still not be recommending this product.  Catherine Long Gates –Monthly stormwater bill for her agricultural property is in excess of \$400 a month. An agricultural tenant that leases a portion of the property is paying \$600 a month. Fee is not consistent with impacts. Requesting relief from the city.	<b>[7:13 p.m.]</b>
<b>Agenda Item 4 – Information Item – Utility Financing</b>	<b>[7:13 p.m.]</b>
Ken Baird and Bob Eiche presented this item.	
<b>Executive Summary from the Packet Materials:</b>	
This memo serves as a brief introduction to the presentation at the February 22, 2016 meeting which will give an overview of financing of the Water, Wastewater, and Stormwater/Flood Management Utilities. This presentation is being provided as context as WRAB prepares to make recommendations on items such as the annual Capital Improvement Program (CIP) and the upcoming rate study. The following areas will be discussed: Enterprise Funds: Each of the three utilities operates as a separate enterprise, which was defined in the Colorado constitution through the Taxpayer’s Bill of Rights (TABOR) passed by Colorado voters in 1992. TABOR defines an enterprise as “a government-owned business authorized to issue its own revenue bonds and receiving under 10% of annual revenue in grants from all Colorado state and local governments combined.” In any given fiscal year, no more than 10% of revenues can come from state and local grants, which includes utility funding provided by the state or a district - such as the Urban Drainage Flood Control District. This also includes any City of Boulder tax revenues, and currently the enterprises receive no subsidy from other City funds. It is also important to note that Federal grants do not count towards the 10% rule. Bonding: Each utility has current and future anticipated debt to finance large capital projects. The February WRAB presentation will include discussion on the process for issuing debt and considerations when deciding to bond. An important part of the process is getting the debt issue rated, and the City does this through Standard & Poor’s and Moody’s, which rated the most recent utility bonds as AAA and Aa1, respectively.	

Grants and Other Funding Options: Because of more attention on funding for flood projects following the Sept. 2013 flood event, there has been interest in other ways to fund these improvements, including grants or special districts. The presentation will include information about grant funding, and funding for utilities through other methods.

**Current Utilities Financial Picture:** A general overview will be provided of the current state of the three utilities, with information on future anticipated bonds and rate increases.

**WRAB Discussion Included:**

- Questions regarding the maximum amount of bonds the city can have
- Comments regarding the debt service coverage ratio
- Comments regarding how other city services are funded
- Questions regarding cost of issuance of bonds
- Comments regarding other revenue generating sources

**Agenda Item 5 - Matters from Staff:** [8:28 p.m.]

- Information item – rate study
  - Stormwater fee's and equity upon all customer classes
  - Questions regarding the high rates for businesses
  - Requests for transparency in the scope of work
- Home resiliency grant
- Water main breaks
- Fluoride levels were lowered
- Farmers ditch; restoring capacity. Tree removal issues from residents

**Agenda Item 6 – Matters from Board:** [8:35 p.m.]

- WRAB Operating Agreements/Roles
  - Agreed as amended
- Greenways advisory committee designee from WRAB after Vicki's departure will be Leslie Smith

**Agenda Item 7 – Future Schedule** [9:15 p.m.]

Request to possibly change the May meeting date; schedule will be finalized after the new member starts in April.

March open house with CIP stations. Meeting held at normal time and convened after the open house.

**Adjournment** [9:29p.m.]

There being no further business to come before the Board at this time, by motion regularly adopted, the meeting was adjourned at 9:29 p.m.

**Motion to adjourn by:** Smith **Seconded by:** Squillace

**Motion Passes 5:0**

**Date, Time, and Location of Next Meeting:**

The next WRAB meeting will be **Monday, March 28<sup>th</sup> 2016 at 7:00 p.m.**, at the **City's Municipal Services Center, 5050 East Pearl St., Boulder, CO 80301**

APPROVED BY:

\_\_\_\_\_  
Board Chair

\_\_\_\_\_  
Date

ATTESTED BY:

\_\_\_\_\_  
Board Secretary

\_\_\_\_\_  
Date

*An audio recording of the full meeting for which these minutes are a summary, is available on the Water Resources Advisory Board web page.*

<https://bouldercolorado.gov/boards-commissions/water-resources-advisory-board-next-meeting-agenda-and-packet>

**CITY OF BOULDER**

**WATER RESOURCES ADVISORY BOARD  
AGENDA ITEM**

**MEETING DATE: March 28, 2016**

**AGENDA TITLE:** Update on 2017 Utilities Budget Process including updated six-year Utility Fund Financials and current CIP

**PRESENTERS:**

Jeff Arthur, Director of Public Works for Utilities  
Annie Noble, Acting Principal Engineer for Flood and Greenways  
Douglas Sullivan, Acting Principal Engineer for Water, Wastewater and Stormwater  
Ken Baird, Financial Manager

**EXECUTIVE SUMMARY:**

As part of the city’s annual budget process, Utilities develops a six-year planning budget, this year for the time period of 2017 through 2022. Within this process, funds are appropriated for the first year, 2017. The Water Resources Advisory Board (WRAB) role in this process is defined in the Boulder Revised Code; “. . . to review all environmental assessments and capital improvements conducted or proposed by the utilities division.” This agenda item is intended to initiate this process by providing:

- ❖ Background information
- ❖ Anticipated CIP highlights
- ❖ Schedule of key milestones

For reference, this packet includes materials from the adopted 2016 Utilities Budget and the 2016-2021 Utilities Capital Improvement Program (CIP) which was approved by City Council last fall. This information can be found in **Attachment A** – Water Utility, **Attachment B** – Wastewater Utility and **Attachment C** -Stormwater / Flood Management Utility. In addition, the citywide CIP document (2016 Annual Budget Vol. II) and other budget documents can be found in a links on the following webpage: <https://bouldercolorado.gov/budget>.

No formal action by the WRAB is requested at this time. WRAB recommendation on the CIP will be scheduled for the June 20 meeting. A public hearing will be scheduled for both the May 16 and June 20 budget discussions.

**BACKGROUND:**

The Utilities Division’s primary focus is to provide quality water services, as desired by the community, in a manner which emphasizes efficient management of fiscal and natural resources, and protects human and environmental health. Each of the city’s three utilities (water, wastewater and stormwater/flood management) is a separate enterprise fund established to finance and account for the acquisition, operation and maintenance of each utility’s facilities and services while

maintaining designated reserves and meeting debt service requirements. As enterprise funds, each utility is self-supporting and receives no subsidies from other city funds and all utility revenues remain within their respective funds.

Revenues generated from monthly utility bills are the largest source of revenue for each utility. Other significant sources of funds include development fees (plant investment fees) related to new construction, hydroelectric revenues, funding from the Urban Drainage and Flood Control District (UDFCD) and interest earnings.

The CIP development process identifies large capital projects (over \$50,000) in each of the three utilities and creates a funding plan. Generally, the projects are identified through various utilities master plans, asset management practices, regulatory requirements, and community priorities. In the budget process, WRAB reviews the proposed CIP and provides a recommendation for Planning Board and City Council approval. Since the CIP has a significant impact on utility rates, staff also seeks recommendation regarding the proposed rate increases.

### **2017-2022 CIP HIGHLIGHTS**

In the April WRAB CIP agenda item, staff will provide a draft 2017-2022 CIP that will include a detailed funding plan by year, and also draft fund financials showing the overall revenue and expenditure picture for each fund, including anticipated rate increases. The following are some of the important projects that will be highlighted through this process, and discussed at the CIP open house.

#### **Water Fund**

##### **Treated Water**

The Betasso Water Treatment Facility improvements project construction phase will begin in late 2016 with completion anticipated in early 2019. There were originally Betasso related improvements scheduled for 2021 and 2026, but these projects have been consolidated into a single larger project to be bid this year. Consolidating these projects takes advantage of the economies of scale, meets various Colorado Department of Public Health and Environment (CDPHE) requirements, and also utilizes the favorable bond rates available at this time.

A Boulder Reservoir Water Treatment Facility project is identified in the 2020 CIP budget to address filter valves, filter media, residuals handling, backup power and various site improvements. The estimated project cost is \$2,000,000. There is also a resiliency project underway at Boulder Reservoir to improve plant backup power along with lowering the carbon footprint and energy bills through the electrical improvements, the addition of batteries, backup generation and solar panels. The project is currently in the proposal solicitation stage and partially funded by federal grant money. The decision and scope of the 2016 and 2017 resiliency project may further reduce the 2020 project. Clarity should be achieved and detailed in next year's CIP budget process.

Funding for treated water transmission infrastructure includes both assessment and replacement of critical large diameter pipes. A project to replace and rehabilitate 12,500 feet of 18-inch diameter steel water line in pressure zone 3 is currently in design. The project will begin late this year with construction occurring over two consecutive winter periods, ending in spring 2018. Additional

funds for the inspection and prioritization of other large mains in the City's water transmission are included in the CIP. These transmission pipes are 14" in diameter and greater and they constitute around 65 of the 460 miles of treated water pipe that delineate our system.

The annual distribution main replacement program has been in place for over 15 years and has focused on the 460 miles of treated water pipe 12-inch diameter and smaller that make up the majority of the system (approx. 395 miles). At current levels, Utilities will be able to replace the remaining ductile iron pipe (DIP) in 100 years. Work is done in collaboration with other departments and prioritized through analysis and assessment of the distribution system.

#### Source Water

Final right-of-way purchasing and council approval for the Carter Lake Pipeline is slated for the 2016/2017 time period with final design in 2017 and construction scheduled for early 2018.

The Barker Dam Outlet System Rehabilitation Project is scheduled for design and construction in 2017 and 2018 respectively. The Barker Gravity Pipeline is scheduled for rehabilitation on an annual basis beginning in 2017 for the next 15 years. Current CIP funding for this project is \$1,125,000 per year. City staff will be analyzing the potential to rehabilitate segments of the pipeline on an accelerated basis based on present condition assessments and trenchless rehabilitation technologies.

Green Lake No. 2 Dam, which is located in the upper watershed, is scheduled for a rehabilitation project with design and construction in 2021 and 2022 respectively.

#### **Wastewater Fund**

The wastewater collection system condition assessment and rehabilitation funding was significantly increased as part of the 2015 rate increases. The additional funding has allowed staff to implement large-scale improvement projects with the goal of cleaning and inspecting the sanitary sewer system within two years - 2016 and 2017. The increased funding will also allow the rehabilitation of the remaining non-PVC pipe within the next 20 years. In 2015 74,000 ft of sanitary sewer were lined using cured-in-place-pipe and utilities staff anticipates lining another 80,000 ft in 2016. This is approximately in line with the anticipated 20 year cycle and utilities staff anticipates continuing at this rate throughout the 2017-2022 CIP. The Wastewater Collection System Master Plan (WWCSMP) Update is being finalized at this time and will be presented to the WRAB at the April 2016 meeting.

The Wastewater Treatment Facility (WWTF) has two new projects in the six year CIP. The first is necessary to address more stringent CDPHE effluent discharge regulations specific to phosphorus. This project is identified in the CIP in year 2020 with an estimated construction cost of \$18,500,000. The second project involves modifications to the facility's secondary digester. The secondary digester floating cover has tipped on several occasions over the last decade requiring rehabilitation projects and the digester taken offline. This project will replace the existing cover with a more reliable alternative with design and construction projected in 2019 and 2020 respectively.

### **Stormwater & Flood Management Fund**

The city has a comprehensive flood management program designed to identify flood risks along the major drainageways, reduce those risks, minimize loss of life and property damage, and support recovery following major flood events. The overall process for meeting these objectives includes: updating the Flood Insurance Rate Maps (FIRMs), developing mitigation plans to identify feasible opportunities to reduce the risk of flooding and programming flood mitigation projects into the CIP.

Flood mitigation projects in the 2016-2021 CIP focused on Fourmile Canyon Creek, based on recommendations of the 2011 mitigation plan and South Boulder Creek, in anticipation of completing a plan in 2015. Additional funding was also shown for projects along several of the other major drainageways with the expectation of completing mapping studies and mitigation master plans for these floodplains.

Since last year's CIP was reviewed by WRAB, flood mitigation plans have been approved by WRAB and Council for South Boulder Creek, Gregory Creek and Boulder Creek. In addition to projects along Fourmile Canyon Creek, funding for projects along these three drainageways will continue to be considered as part of the 2017-2022 CIP process. A flood mitigation plan is anticipated to be completed this year for Bear Canyon Creek and next year for Upper Goose, Twomile, Skunk, King's Gulch and Bluebell Creeks, at which time specific projects will be programmed into the CIP.

Utilities staff is in the process of completing a comprehensive storm sewer system condition assessment program which is anticipated to be completed in 2019. The condition assessment program has focused on the University Hill and downtown areas in 2015 and 2016. Early results indicate there will be a need for significant storm sewer rehabilitation and replacement. Utilities staff anticipates increased expenditures in the storm sewer rehabilitation program during the 2017-2022 CIP to address this need. The Stormwater Master Plan (SMP) Update is being finalized at this time and will be presented to the WRAB at the April 2016 meeting.

### **CIP OPEN HOUSE:**

The Utilities CIP Open House is scheduled for Monday, March 28 from 7- 8 p.m. and will provide the public and the WRAB an opportunity to learn more about the CIP process and projects included on the 6-year CIP planning horizon. Each station will display maps, graphics, financial highlights and explanations of how projects are prioritized. The Open House will be followed by the WRAB meeting, which will include a verbal summary of open house discussions and an information item presentation on the proposed Carter Lake Pipeline.

### **BUDGET SCHEDULE:**

The current schedule of major budget milestones is provided below. Elements involving the WRAB are highlighted in bold italics.

Milestone	Date
<b><i>CIP Open House</i></b>	<b><i>March 28, 2016</i></b>
<b><i>Draft CIP WRAB Discussion</i></b>	<b><i>April 15, 2016</i></b>
Budget Guidelines to Departments	April 18, 2016
<b><i>WRAB meeting – review updated CIP</i></b>	<b><i>May 16, 2016</i></b>
Proposed Budget Submittal to City Manager	May 31, 2016
<b><i>WRAB Recommendation on CIP/Budget</i></b>	<b><i>June 20, 2016</i></b>
Planning Board CIP Hearing	July 28, 2016
City Council Study Session on Budget (CIP)	Aug. 9, 2016
City Council Study Session on Budget	Sept. 13, 2016
City Council Study Session on Budget (if needed)	Sept. 27, 2016
City Council Consideration/Adoption of Budget	Oct. 4 and Oct. 18, 2016

**NEXT STEPS:**

Staff will return to the WRAB’s April meeting for draft CIP review and discussion. At the June 17 WRAB meeting, staff will request that the WRAB provide a final recommendation concerning the proposed 2014-2019 CIP to Planning Board and City Council.

**Attachments:**

- A:** Water – 2016 Budget Fund Financial and Capital Improvement Program
- B:** Wastewater - 2016 Budget Fund Financial and Capital Improvement Program
- C:** Stormwater/ Flood Management - 2016 Budget Fund Financial and Capital Improvement Program

## Attachment A

**CITY OF BOULDER  
2016 FUND FINANCIAL**

**WATER UTILITY**

	2014 Actual	2015 Revised	2016 Approved	2017 Projected	2018 Projected	2019 Projected	2020 Projected	2021 Projected
<b>Beginning of Year Fund Balance</b>	\$ 34,394,472	\$ 37,283,402	\$ 33,680,656	\$ 30,225,313	\$ 30,198,798	\$ 35,916,673	\$ 35,583,298	\$ 38,282,899
<b>Sources of Funds</b>								
Operating-								
Sale of Water to General Cust	\$ 20,232,876	\$ 22,363,662	\$ 23,528,592	\$ 25,461,486	\$ 27,553,185	\$ 29,816,739	\$ 31,071,211	\$ 32,378,472
Projected Rate Increase	-	1,118,183	1,882,287	2,036,919	2,204,255	1,192,670	1,242,848	1,295,139
Bulk/Irrigation Water Sales	233,116	143,050	143,050	143,050	143,050	143,050	143,050	143,050
Hydroelectric Revenue	2,395,835	2,217,600	2,226,600	2,177,730	2,313,000	2,313,000	2,313,000	2,313,000
Miscellaneous Operating Revenues	52,006	25,000	25,000	25,000	25,000	25,000	25,000	25,000
Non-Operating--								
Plant Investment Fees	6,733,984	3,500,000	2,800,000	2,800,000	2,500,000	2,500,000	2,500,000	2,500,000
Connection Charges	235,060	130,000	130,000	130,000	130,000	130,000	130,000	130,000
Special Assessments	(24,892)	2,505,000	5,000	5,000	5,000	5,000	5,000	5,000
Federal, State, County Grants	1,286,716	-	-	-	-	-	-	-
Interest on Investments	188,574	186,417	252,605	528,943	754,970	897,917	889,582	957,072
Rent, assessments and other misc revenues	92,128	20,500	20,500	20,500	20,500	20,500	20,500	20,500
Sale of Real Estate	-	1,014,750	-	-	-	-	-	-
Transfer from General Fund - Fire Training Center	92,785	92,785	92,811	92,827	92,843	92,859	92,875	92,891
Projected Bond Proceeds	-	-	24,240,000	-	37,915,263	-	10,455,509	-
<b>Total Sources of Funds</b>	<b>\$ 31,518,187</b>	<b>\$33,316,947</b>	<b>\$55,346,446</b>	<b>\$ 33,421,454</b>	<b>\$ 73,657,065</b>	<b>\$ 37,136,734</b>	<b>\$ 48,888,576</b>	<b>\$ 39,860,124</b>
<b>Uses of Funds</b>								
Operating-								
Administration	\$ 914,078	\$ 930,877	\$ 1,003,052	\$ 1,033,144	\$ 1,064,138	\$ 1,096,062	\$ 1,128,944	\$ 1,162,812
Planning and Project Management	640,957	615,356	611,220	629,557	648,443	667,897	687,933	708,571
Water Resources and Hydroelectric Operations	2,254,874	2,622,787	2,754,443	2,928,076	3,065,919	3,214,896	3,375,343	3,547,603
Water Treatment	4,406,801	4,655,178	4,766,150	4,909,135	5,056,409	5,208,101	5,364,344	5,525,274
Water Quality and Environmental Svcs	948,877	1,042,902	1,003,455	1,033,559	1,064,565	1,096,502	1,129,397	1,163,279
Water Conservation	328,578	414,185	412,058	424,420	437,152	450,267	463,775	477,688
System Maintenance	3,025,098	3,134,469	3,227,533	3,324,359	3,424,090	3,526,812	3,632,617	3,741,595
Windy Gap Payment	2,093,254	2,634,004	2,618,958	2,314,181	251,200	258,736	266,498	274,493
Sick and Vacation Accrual	91,600	100,000	100,000	103,000	106,090	109,273	112,551	115,927
<b>TOTAL OPERATING USES OF FUNDS</b>	<b>\$ 14,704,118</b>	<b>\$ 16,149,758</b>	<b>\$ 16,496,869</b>	<b>\$16,699,429</b>	<b>\$15,118,006</b>	<b>\$15,628,546</b>	<b>\$16,161,402</b>	<b>\$16,717,244</b>

## Attachment A

**CITY OF BOULDER  
2016 FUND FINANCIAL**

**WATER UTILITY**

	2014 Actual	2015 Revised	2016 Approved	2017 Projected	2018 Projected	2019 Projected	2020 Projected	2021 Projected
<b>Debt-</b>								
BRWTP 1996 Revenue Bond; Refunding in 2006	858,469	857,708	858,531	-	-	-	-	-
Refunding of the 1999 and 2000 Revenue Bonds	2,523,521	2,522,054	2,517,388	2,524,233	2,524,650	1,375,102	-	-
Lakewood 2001 Rev Bond; Refunded in 2012	2,057,000	2,065,733	2,065,950	2,065,333	2,072,083	2,080,817	2,081,367	2,088,883
Projected Bond-Betasso WTP Improvements	-	-	2,040,000	2,040,000	2,040,000	2,040,000	2,040,000	2,040,000
Projected Bond-NCWCD Conveyance Line	-	-	-	-	3,568,700	3,568,700	3,568,700	3,568,700
Projected Bond - Barker Dam	-	-	-	-	-	-	983,773	983,773
<b>TOTAL DEBT SERVICE</b>	<b>\$5,438,990</b>	<b>\$5,445,495</b>	<b>7,481,869</b>	<b>6,629,566</b>	<b>10,205,433</b>	<b>9,064,619</b>	<b>8,673,840</b>	<b>\$8,681,356</b>
<b>Transfers -</b>								
Cost Allocation	1,255,221	1,020,728	1,189,353	1,248,821	1,311,262	1,376,825	1,445,666	1,517,949
Planning & Development Services	212,564	218,941	225,509	232,275	239,243	246,420	253,813	261,427
General Fund - City Attorney	52,888	59,665	58,937	61,294	63,746	66,296	68,285	70,334
<b>TOTAL TRANSFERS OUT</b>	<b>\$1,520,673</b>	<b>\$1,299,334</b>	<b>\$1,473,799</b>	<b>\$1,542,390</b>	<b>\$1,614,251</b>	<b>\$1,689,541</b>	<b>\$1,767,764</b>	<b>\$1,849,710</b>
<b>Capital</b>								
Projected Bond - Betasso WTP IMP	-	-	\$24,000,000	-	-	-	-	-
Projected Bond - NCWCD Conveyance	-	-	-	-	\$37,565,263	-	-	-
Projected Bond - Barker Dam/Boulder Reservoir WTP	-	-	-	-	-	-	\$10,355,509	-
Projected Bond Issuance Costs	-	-	\$240,000	-	\$350,000	-	\$100,000	-
Encumbrances, Carryover and Adjustments to Base	-	4,345,099	-	-	-	-	-	-
<b>Total Uses of Funds</b>	<b>\$ 28,720,857</b>	<b>\$ 37,019,693</b>	<b>\$58,901,788</b>	<b>\$33,550,970</b>	<b>\$68,045,280</b>	<b>\$ 37,579,381</b>	<b>\$46,301,526</b>	<b>\$ 39,566,455</b>
Sick/Vacation Accrual Adjustment	\$ 91,600	\$ 100,000	\$ 100,000	\$ 103,000	\$ 106,090	\$ 109,273	\$ 112,551	\$ 115,927
<b>Ending Fund Balance Before Reserves</b>	<b>\$ 37,283,402</b>	<b>\$ 33,680,656</b>	<b>\$ 30,225,313</b>	<b>\$ 30,198,798</b>	<b>\$ 35,916,673</b>	<b>\$ 35,583,298</b>	<b>\$ 38,282,899</b>	<b>\$ 38,692,495</b>
<b>Reserves</b>								
Bond Reserve	\$ 3,034,796	\$ 3,034,796	\$ 5,074,796	\$ 4,221,429	\$ 7,790,129	\$ 7,790,129	\$ 7,398,800	\$ 7,398,800
Lakewood Pipeline Remediation Reserve	15,852,739	16,262,501	17,223,131	18,212,981	19,232,937	19,962,812	21,035,991	22,141,813
FEMA Deobligation Reserve	87,951	87,951	87,951	87,951	87,951	87,951	87,951	87,951
Sick/Vacation/Bonus Reserve	592,681	610,461	628,775	647,639	667,068	687,080	707,692	728,923
Pay Period 27 Reserve	163,400	214,400	265,400	316,400	367,400	418,400	469,400	520,400
Operating Reserve	4,056,198	4,362,273	4,492,667	4,560,455	4,183,064	4,329,522	4,482,291	4,641,739
Capital Reserve	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000
<b>Total Reserves</b>	<b>\$ 25,787,765</b>	<b>\$ 26,572,382</b>	<b>\$ 29,772,721</b>	<b>\$ 30,046,854</b>	<b>\$ 34,328,549</b>	<b>\$ 35,275,894</b>	<b>\$ 36,182,126</b>	<b>\$ 37,519,625</b>
<b>Ending Fund Balance After Reserves</b>	<b>\$ 11,495,637</b>	<b>\$ 7,108,274</b>	<b>\$ 452,592</b>	<b>\$ 151,944</b>	<b>\$ 1,588,124</b>	<b>\$ 307,405</b>	<b>\$ 2,100,773</b>	<b>\$ 1,172,870</b>

**Note:**  
Operating reserve levels are based on industry standards and are maintained for revenue bonds, revenue fluctuations (weather and water usage impacts) and the capital intensive nature of the utility.

**Attachment A**

Attachment A: Water – 2016 Budget Fund Financial and Capital Improvement Program

	A	K	L	M	N	O	P
1				<b>CITY OF BOULDER</b>			
2				<b>2016-2021 CAPITAL IMPROVEMENT PROGRAM</b>			
3				<b>WATER UTILITY FUND</b>			
4							
5							
6	<b>Assumed Inflation Rate</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>
7	<b>PROJECT NAME</b>	<b>APPROVED</b>	<b>PROJECTED</b>	<b>PROJECTED</b>	<b>PROJECTED</b>	<b>PROJECTED</b>	<b>PROJECTED</b>
8	<b>F</b>						
9	<b>Treated Water Pressure Reducing and Hydroelectric Facilities</b>						
12	Orodell Hydro/PRV Facility	\$75,000	\$0	\$0	\$0	\$0	\$0
13	Sunshine Hydro/PRV Facility	\$0	\$271,875	\$0	\$0	\$0	\$0
14	Pearl Street Hydro/PRV Facility	\$0	\$0	\$24,333	\$243,331	\$0	\$0
15	<b>Subtotal - Treated Water PRV and Hydro</b>	<b>\$75,000</b>	<b>\$271,875</b>	<b>\$24,333</b>	<b>\$243,331</b>	<b>\$0</b>	<b>\$0</b>
16							
17	<b>Water Treatment Facilities</b>						
18	Betasso WTF	\$900,000	\$0	\$0	\$0	\$0	0
19	Betasso WTF - Bond Proceeds	\$24,000,000	\$0	\$0	\$0	\$0	\$0
20	Bond Issuance Costs	\$240,000	\$0	\$350,000	\$0	\$100,000	\$0
21	Boulder Reservoir WTF	\$314,000	\$0	\$0	\$0	\$2,000,000	\$0
22	Boulder Res WTF - Bond Proceeds	\$0	\$0	\$0	\$0	\$0	\$0
23	<b>Subtotal - Water Treatment Facilities</b>	<b>\$25,454,000</b>	<b>\$0</b>	<b>\$350,000</b>	<b>\$0</b>	<b>\$2,100,000</b>	<b>\$0</b>
24							
25							
31	<b>Treated Water Storage Tanks</b>						
36	Kohler Storage Tank	\$799,875	\$0	\$0	\$0	\$0	\$0
37	Chautauqua Storage Tank	\$0	\$0	\$0	\$0	\$0	\$0
38	Betasso Storage Tank	\$0	\$292,465	\$0	\$0	\$0	\$0
40	<b>Subtotal - Treated Water Storage Tanks</b>	<b>\$799,875</b>	<b>\$292,465</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
41							
42	<b>Treated Water Distribution System</b>						
45	Waterline Replacement	\$3,352,960	\$3,487,078	(\$0)	\$3,771,624	\$3,922,489	\$4,079,389
46	<b>Subtotal - Treated Water Distribution System</b>	<b>\$3,352,960</b>	<b>\$3,487,078</b>	<b>(\$0)</b>	<b>\$3,771,624</b>	<b>\$3,922,489</b>	<b>\$4,079,389</b>
47							
48	<b>Treated Water Transmission System</b>						
52	Zone 1 Transmission Pipes	\$0	\$0	\$250,000	\$0	\$0	\$250,000
53	Zone 2 Transmission Pipes	\$0	\$250,000	\$0	\$0	\$250,000	\$0
54	Zone 3 Transmission Pipes	\$1,200,000	\$0	\$0	\$250,000	\$0	\$0
55	<b>Subtotal - Treated Water Transmission System</b>	<b>\$1,200,000</b>	<b>\$250,000</b>	<b>\$250,000</b>	<b>\$250,000</b>	<b>\$250,000</b>	<b>\$250,000</b>
56							
57	<b>Source Water Transmission System</b>						
58	Lakewood Pipeline	\$0	\$0	\$0	\$316,330	\$0	\$0
61	<b>Subtotal - Source Water Transmission System</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$316,330</b>	<b>\$0</b>	<b>\$0</b>
62							
63	<b>Barker Water System</b>						
64	Barker Gravity Pipeline Repair	\$667,416	\$1,169,859	\$1,216,653	\$1,265,319	\$1,315,932	\$1,368,569
65	Barker-Kossler Penstock Repair	\$0	\$116,986	\$0	\$0	\$0	\$0
66	Barker Dam Outlet	\$100,000	\$175,000	\$0	\$835,551	\$0	\$0
67	Barker Dam Outlet - Bond Proceeds	\$0	\$0	\$0	\$0	\$8,355,509	\$0
68	Barker Dam and Reservoir	\$65,000	\$50,000	\$0	\$0	\$0	\$0
74	Kossler Dam	\$75,000	\$0	\$0	\$0	\$0	\$0
75	<b>Subtotal - Barker Water System</b>	<b>\$907,416</b>	<b>\$1,511,844</b>	<b>\$1,216,653</b>	<b>\$2,100,870</b>	<b>\$9,671,441</b>	<b>\$1,368,569</b>
76							
77	<b>Raw Water Storage Reservoirs</b>						
78	Albion Dam	\$125,000	\$0	\$341,636	\$3,416,361	\$0	\$0
79	Silver Lake Dam	\$0	\$0	\$100,000	\$0	\$0	\$0
80	Island Lake Dam	\$0	\$0	\$50,000	\$0	\$0	\$0
82	Green Lake 2 Dam - Bond Proceeds	\$0	\$0	\$0	\$0	\$0	\$0
83	Green Lake 2 Dam	\$0	\$0	\$0	\$0	\$75,000	\$486,773
85	Goose Lake Dam	\$0	\$0	\$75,000	\$0	\$0	\$0
86	Boulder Reservoir	\$50,000	\$0	\$0	\$0	\$118,434	\$0
87	Lakewood Dam	\$0	\$0	\$124,707	\$0	\$0	\$0
88	Skyscraper Dam	\$0	\$0	\$0	\$0	\$0	\$171,071
89	Wittemyer Ponds	\$0	\$0	\$0	\$100,000	\$492,685	\$4,926,849
90	<b>Subtotal - Raw Water Storage Reservoirs</b>	<b>\$175,000</b>	<b>\$0</b>	<b>\$691,343</b>	<b>\$3,516,361</b>	<b>\$686,119</b>	<b>\$5,584,692</b>
91							
92	<b>Other Raw Water Facilities</b>						
93	Farmer's Ditch	\$0	\$0	\$0	\$108,160	\$0	\$0
95	Source Water Facilities Rehab Program	\$150,000	\$150,000	\$150,000	\$150,000	\$150,000	\$150,000
96	Watershed Improvements	\$80,000	\$0	\$0	\$0	\$100,000	\$0
103	NCWCD Conveyance - Carter Lake Pipeline	\$850,000	\$2,036,322	\$0	\$0	\$0	\$0
104	NCWCD Conveyance/Waterline replacement	\$0	\$0	\$37,565,263	\$0	\$0	\$0
105	<b>Subtotal - Other Raw Water Facilities</b>	<b>\$1,080,000</b>	<b>\$2,186,322</b>	<b>\$37,715,263</b>	<b>\$258,160</b>	<b>\$250,000</b>	<b>\$150,000</b>
106							
107	<b>Source Water Pressure Reducing, Pumping and Hydroelectric</b>						
108	Lakewood Hydroelectric/PRV	\$130,000	\$0	\$0	\$300,000	\$0	\$0

**Attachment A**

Attachment A: Water – 2016 Budget Fund Financial and Capital Improvement Program

	A	K	L	M	N	O	P	
1		<b>CITY OF BOULDER</b>						
2		<b>2016-2021 CAPITAL IMPROVEMENT PROGRAM</b>						
3		<b>WATER UTILITY FUND</b>						
4								
5								
6	<b>Assumed Inflation Rate</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	
7	<b>PROJECT NAME</b>	<b>APPROVED</b>	<b>PROJECTED</b>	<b>PROJECTED</b>	<b>PROJECTED</b>	<b>PROJECTED</b>	<b>PROJECTED</b>	
8	<b>F</b>							
109	Silver Lake Hydroelectric/PRV	\$25,000	\$50,000	\$80,000	\$0	\$0	\$0	
110	Boulder Reservoir Intake and Pumping	\$0	\$0	\$0	\$0	\$0	\$0	
111	Betasso Hydroelectric / Pressure Reducing	\$0	\$380,000	\$480,000	\$0	\$0	\$0	
112	Barker Dam Hydroelectric	0	\$0	\$0	\$0	\$0	\$0	
113	Barker Dam Hydro	\$0	\$0	\$0	\$0	\$0	\$0	
117	Carter Lake Hydroelectric	\$0	\$0	\$50,000	\$250,000	\$0	\$0	
118	Carter Lake Hydro	\$0	\$0	\$0	\$0	\$2,500,000	\$0	
119	Source Water Pressure Reducing, Pumping	\$0	\$0	\$0	\$0	\$193,472	\$201,210	
120	<b>Subtotal - Source Water PRV, Pumping and</b>	<b>\$155,000</b>	<b>\$430,000</b>	<b>\$610,000</b>	<b>\$550,000</b>	<b>\$2,693,472</b>	<b>\$201,210</b>	
121								
126	<b>Water System Monitoring and Metering</b>							
127	Automated Meter Reading	\$0	\$0	\$0	\$0	\$0	\$684,285	
128	Water System Security/Quality Improvement	\$150,000	\$150,000	\$150,000	\$90,000	\$0	\$0	
129	Source Water Monitoring and Protection	\$100,000	\$100,000	\$100,000	\$100,000	\$0	\$0	
134	Utility Billing Computer System	\$0	\$0	\$0	\$0	\$125,000	\$0	
135	<b>Subtotal - Water System Monitoring and Metering</b>	<b>\$250,000</b>	<b>\$250,000</b>	<b>\$250,000</b>	<b>\$190,000</b>	<b>\$125,000</b>	<b>\$684,285</b>	
136								
137	<b>TOTAL CAPITAL USES OF FUNDS</b>	<b>\$33,449,251</b>	<b>\$8,679,585</b>	<b>\$41,107,591</b>	<b>\$11,196,676</b>	<b>\$19,698,520</b>	<b>\$12,318,145</b>	

## Attachment B

**CITY OF BOULDER  
2016 FUND FINANCIAL**

**WASTEWATER UTILITY**

	2014 Actual	2015 Revised	2016 Approved	2017 Projected	2018 Projected	2019 Projected	2020 Projected	2021 Projected
<b>Beginning Fund Balance</b>	\$ 12,481,148	\$ 13,596,397	\$ 7,635,286	\$ 8,463,020	\$ 8,421,341	\$ 9,578,794	\$ 9,777,196	\$ 10,390,604
<b>Sources of Funds</b>								
Operating-								
Sewer Charges to General Customers	\$ 13,850,189	\$ 14,126,140	\$ 18,400,711	\$ 19,359,388	\$ 20,368,012	\$ 21,429,186	\$ 22,545,646	\$ 24,849,811
Projected Rate Increase		4,237,842	920,036	967,969	1,018,401	1,071,459	2,254,565	1,242,491
Surcharge/ Pretreatment Fees	127,274	118,000	118,000	118,000	118,000	118,000	118,000	118,000
Plant Investment Fees	2,221,937	700,000	700,000	700,000	700,000	700,000	700,000	700,000
Connection Charges	11,263	10,000	10,000	10,000	10,000	10,000	10,000	10,000
Special Assessments	(9,795)	5,000	5,000	5,000	5,000	5,000	5,000	5,000
Federal & State Grants	681,482	1,486,018	-	-	-	-	-	-
Interest on Investments	73,622	193,754	152,706	211,576	252,640	287,364	293,316	311,718
Rent and other miscellaneous revenue	5,423	1,500	1,500	1,500	1,500	1,500	1,500	1,500
Sale of Real Estate - Yards Masterplan	-	357,375	-	-	-	-	-	-
Bond Proceeds	-	10,125,000	-	-	-	-	20,625,000	-
<b>Total Sources of Funds</b>	<b>\$ 16,961,395</b>	<b>\$ 31,360,629</b>	<b>\$ 20,307,952</b>	<b>\$ 21,373,433</b>	<b>\$ 22,473,553</b>	<b>\$ 23,622,509</b>	<b>\$ 46,553,027</b>	<b>\$ 27,238,520</b>
<b>Uses of Funds</b>								
Operating-								
Administration	\$ 581,235	\$ 585,713	\$ 632,454	\$ 651,428	\$ 670,970	\$ 691,100	\$ 711,833	\$ 733,188
Planning and Project Management	268,324	386,778	404,733	416,875	429,381	442,263	455,531	469,196
Wastewater Quality & Environmental Svcs	1,127,229	1,392,332	1,393,904	1,435,721	1,478,793	1,523,157	1,568,851	1,615,917
System Maintenance	1,640,118	1,923,718	1,681,345	1,731,785	1,783,739	1,837,251	1,892,369	1,949,140
Wastewater Treatment	4,872,877	5,166,106	5,113,656	5,267,066	5,425,078	5,587,830	5,755,465	5,928,129
Sick/Vacation Accrual	(71,987)	75,000	75,000	77,250	79,568	81,955	84,413	86,946
<b>TOTAL OPERATING USES OF FUNDS</b>	<b>8,417,797</b>	<b>9,529,647</b>	<b>9,301,092</b>	<b>9,580,125</b>	<b>9,867,529</b>	<b>10,163,554</b>	<b>10,468,461</b>	<b>10,782,515</b>
Debt-								
2012 Refunding of the WWTP 2005 Revenue Bond	3,463,046	3,439,462	3,199,450	3,177,125	3,153,292	3,145,375	3,132,458	3,124,750
WWTP UV, Digester, Headworks Imp 2010 Rev Bond	673,529	672,638	673,863	670,938	672,700	674,013	669,888	671,688
WWTP Nutrient Compliance Bond 2020							1,947,500	1,947,500
Sanitary Sewer Rehabilitation Bond 2015		900,000	900,000	900,000	900,000	900,000	900,000	900,000
<b>TOTAL DEBT SERVICE</b>	<b>4,136,575</b>	<b>5,012,100</b>	<b>4,773,313</b>	<b>4,748,063</b>	<b>4,725,992</b>	<b>4,719,388</b>	<b>6,649,846</b>	<b>6,643,938</b>

## Attachment B

**CITY OF BOULDER  
2016 FUND FINANCIAL**

**WASTEWATER UTILITY**

	<b>2014 Actual</b>	<b>2015 Revised</b>	<b>2016 Approved</b>	<b>2017 Projected</b>	<b>2018 Projected</b>	<b>2019 Projected</b>	<b>2020 Projected</b>	<b>2021 Projected</b>
Transfers-								
Cost Allocation	900,430	756,671	879,372	923,341	969,508	1,017,983	1,068,882	1,122,326
Planning & Development Services	213,210	219,607	226,195	232,981	239,970	247,169	254,584	262,222
General Fund - Utilities Attorney	17,629	19,888	19,646	20,432	21,249	22,099	22,983	23,673
TOTAL TRANSFERS OUT	1,131,269	996,166	1,125,213	1,176,754	1,230,727	1,287,251	1,346,449	1,408,221
Capital Improvement Program	\$2,073,371	6,768,978	4,355,600	5,987,421	5,571,420	7,335,867	6,934,277	7,242,543
2011 Bond-UV, Digester, Headworks IMP	\$15,148	1,198	-	-	-	-	-	-
Projected Bond-WWTP Improvements	-	-	-	-	-	-	\$20,500,000	-
Projected Bond-Sanitary Sewer Rehab	-	\$10,000,000	-	-	-	-	-	-
Bond Issuance Costs	-	125,000	-	-	-	-	125,000	-
Carryover, Encumbrances and Adjustments to Base	-	4,963,651	-	-	-	-	-	-
<b>Total Uses of Funds</b>	<b>\$ 15,774,160</b>	<b>\$ 37,396,740</b>	<b>\$ 19,555,218</b>	<b>\$ 21,492,363</b>	<b>\$ 21,395,668</b>	<b>\$ 23,506,061</b>	<b>\$ 46,024,033</b>	<b>\$ 26,077,216</b>
Sick/Vacation Accrual Adjustment	\$ (71,987)	\$ 75,000	\$ 75,000	\$ 77,250	\$ 79,568	\$ 81,955	\$ 84,413	\$ 86,946
<b>Ending Fund Balance Before Reserves</b>	<b>\$ 13,596,397</b>	<b>\$ 7,635,286</b>	<b>\$ 8,463,020</b>	<b>\$ 8,421,341</b>	<b>\$ 9,578,794</b>	<b>\$ 9,777,196</b>	<b>\$ 10,390,604</b>	<b>\$ 11,638,853</b>
<b>Reserves</b>								
Bond Reserves	\$ 670,139	\$ 1,570,139	\$ 1,570,139	\$ 1,570,139	\$ 1,570,139	\$ 1,570,139	\$ 3,517,139	\$ 3,517,139
FEMA Deobligation Reserve	\$ 36,445	\$ 36,445	\$ 36,445	\$ 36,445	\$ 36,445	\$ 36,445	\$ 36,445	\$ 36,445
Sick/Vacation/Bonus Reserve	602,059	620,120	638,724	657,886	677,622	697,951	718,890	740,456
Pay Period 27 Reserve	142,480	181,480	220,480	259,480	298,480	337,480	376,480	415,480
Operating Reserve	2,387,266	2,631,453	2,606,576	2,689,220	2,774,564	2,862,701	2,953,728	3,047,684
Capital Reserve	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000
<b>Total Reserves</b>	<b>\$ 4,301,944</b>	<b>\$ 5,503,193</b>	<b>\$ 5,535,919</b>	<b>\$ 5,676,724</b>	<b>\$ 5,820,805</b>	<b>\$ 5,968,271</b>	<b>\$ 8,066,236</b>	<b>\$ 8,220,759</b>
<b>Ending Fund Balance After Reserves</b>	<b>\$ 9,294,453</b>	<b>\$ 2,132,093</b>	<b>\$ 2,927,101</b>	<b>\$ 2,744,616</b>	<b>\$ 3,757,988</b>	<b>\$ 3,808,925</b>	<b>\$ 2,324,367</b>	<b>\$ 3,418,093</b>

	A	K	L	M	N	O	P
1	<b>CITY OF BOULDER</b>						
2	<b>2016 - 2021 CAPITAL IMPROVEMENT PROGRAM</b>						
3	<b>WASTEWATER UTILITY FUND</b>						
4							
5							
6	<b>Assumed Inflation Rate</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>
7	<b>PROJECT NAME</b>	<b>APPROVED</b>	<b>PROJECTED</b>	<b>PROJECTED</b>	<b>PROJECTED</b>	<b>PROJECTED</b>	<b>PROJECTED</b>
8							
9	<b>Wastewater Treatment</b>						
10	WWTF Pumps	\$150,000	\$0	\$0	\$0	\$0	\$0
11	WWTF Permit Improvements	\$150,000	\$0	\$750,000	\$1,500,000	\$0	\$136,857
13	WWTF Permit Improvements - Proj. Bond	\$0	\$0	\$0	\$0	\$18,500,000	\$0
14	WWTF Laboratory	\$50,000	\$0	\$0	\$0	\$0	\$0
18	WWTF Instrumentation/Control	\$0	\$674,918	\$701,915	\$729,992	\$759,191	\$0
19	WWTF Electrical	\$120,000	\$1,200,000	\$0	\$0	\$0	\$0
20	WWTF Activated Sludge	\$0	\$175,479	\$0	\$0	\$0	\$0
26	WWTF Rehabilitation	\$0	\$0	\$0	\$0	\$150,000	\$375,000
31	WWTF Cogeneration	\$0	\$0	\$0	\$0	\$184,481	\$0
32	WWTF Digester Complex	\$0	\$0	\$0	\$200,000	\$2,000,000	\$0
34	WWTF Digester Cleaning	\$0	\$0	\$0	\$0	\$0	\$0
35	Bond Issuance Costs	\$0	\$0	\$0	\$0	\$125,000	\$0
36	<b>Subtotal - Wastewater Treatment Plant</b>	<b>\$470,000</b>	<b>\$2,050,397</b>	<b>\$1,451,915</b>	<b>\$2,429,992</b>	<b>\$21,718,672</b>	<b>\$511,857</b>
37							
38	<b>Marshall Landfill</b>						
39	Marshall Landfill	\$100,000	\$0	\$0	\$0	\$0	\$0
40	<b>Subtotal - Marshall Landfill</b>	<b>\$100,000</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
41							
42	<b>Wastewater System Monitoring and Metering</b>						
45	Utility Billing Computer System	\$0	\$0	\$0	\$0	\$65,000	\$0
46	<b>Subtotal - Monitoring and Metering</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$65,000</b>	<b>\$0</b>
47							
48	<b>Collection and Conveyance System Rehabilitation</b>						
50	Condition Assessment Program	\$811,200	\$843,648	\$877,394	\$912,490	\$948,989	\$986,949
51	Sanitary Sewer Rehabilitation	\$2,758,080	\$2,868,403	\$2,983,139	\$3,102,465	\$3,226,563	\$3,355,626
53	Sanitary Sewer Manhole Rehabilitation	\$216,320	\$224,973	\$233,972	\$243,331	\$253,064	\$657,966
56	Tier 1 Goose Creek 1/1A Master Plan Project	\$0	\$0	\$0	\$0	\$0	\$329,278
58	Tier 1 Goose Creek 5 Master Plan Project	\$0	\$0	\$25,000	\$647,590	\$1,346,988	\$1,400,867
66	<b>Subtotal - Sewer System Rehabilitation</b>	<b>\$3,785,600</b>	<b>\$3,937,024</b>	<b>\$4,119,505</b>	<b>\$4,905,875</b>	<b>\$5,775,604</b>	<b>\$6,730,686</b>
67							
71							
72	<b>TOTAL CAPITAL USES OF FUNDS</b>	<b>\$4,355,600</b>	<b>\$5,987,421</b>	<b>\$5,571,420</b>	<b>\$7,335,867</b>	<b>\$27,559,277</b>	<b>\$7,242,543</b>

## Attachment C

**CITY OF BOULDER  
2016 FUND FINANCIAL**

**STORMWATER/FLOOD MANAGEMENT UTILITY**

	2014 Actual	2015 Revised	2016 Recommended	2017 Projected	2018 Projected	2019 Projected	2020 Projected	2021 Projected
<b>Beginning Fund Balance</b>	\$ 16,195,856	\$ 15,450,198	\$ 12,962,605	\$ 12,745,927	\$ 11,478,354	\$ 8,036,481	\$ 7,971,514	\$ 7,633,207
<b>Sources of Funds</b>								
Operating-								
Service Charge Fees	\$ 5,592,683	\$ 5,482,012	\$ 9,612,708	\$ 10,017,210	\$ 10,840,224	\$ 11,730,857	\$ 12,577,121	\$ 13,106,367
Projected Rate Increases		4,111,509	384,508	801,377	867,218	821,160	503,085	524,255
Non-Operating--								
Plant Investment Fees	818,369	600,000	300,000	350,000	350,000	350,000	350,000	350,000
Urban Drainage District Funds	50,000	800,785	882,835	957,835	930,000	400,000	400,000	400,000
State and Federal Grants	4,794,503	2,655,468	-	-	-	-	-	-
Interest on Investments	71,936	97,318	129,626	191,189	229,567	160,730	159,430	152,664
Intergovernmental Transfers (KICP Program)	2,000	144,200	148,526	152,982	157,571	162,298	167,167	172,182
Rent and other miscellaneous revenue	44,561	40,000	40,000	40,000	40,000	40,000	40,000	40,000
Miscellaneous nonrecurring revenue	-	-	-	-	-	-	-	-
Sale of Real Estate - Yards Masterplan	-	357,375	-	-	-	-	-	-
Projected Bonds	-	23,075,000	-	-	25,325,000	-	-	-
<b>Total Sources of Funds</b>	<b>\$ 11,374,052</b>	<b>\$ 37,363,666</b>	<b>\$ 11,498,203</b>	<b>\$ 12,510,593</b>	<b>\$ 38,739,581</b>	<b>\$ 13,665,045</b>	<b>\$ 14,196,804</b>	<b>\$ 14,745,468</b>
<b>Uses of Funds</b>								
Operating-								
Administration	\$ 439,228	\$ 433,414	\$ 475,855	\$ 490,131	\$ 504,835	\$ 519,980	\$ 535,579	\$ 551,646
Planning and Project Management	1,066,947	1,253,577	1,289,877	1,328,573	1,368,431	1,409,483	1,451,768	1,495,321
Stormwater Contract Management	61,111	49,442	49,442	50,925	52,453	54,027	55,647	57,317
Stormwater Quality and Education	782,766	943,360	1,060,346	1,092,156	1,124,921	1,158,669	1,193,429	1,229,232
System Maintenance	1,035,053	1,618,165	1,343,771	1,384,084	1,425,607	1,468,375	1,512,426	1,557,799
Sick/Vacation Accrual	4,326	50,000	50,000	51,500	53,045	54,636	56,275	57,964
Debt--								
Refunding of the Goose Creek 1998 Revenue Bond	385,117	387,038	381,675	386,138	380,175	-	-	-
Projected Bond - South Boulder Creek	-	-	-	-	2,125,000	2,125,000	2,125,000	2,125,000
Projected Bond - Wonderland Creek	-	862,500	1,589,188	1,592,338	1,589,588	1,591,088	1,591,688	1,591,388
Transfers-								
Cost Allocation	219,451	246,288	284,264	298,477	313,401	329,071	345,525	362,801
Planning & Development Services	128,511	132,367	136,338	140,428	144,641	148,980	153,450	158,053
General Fund - Utilities Attorney	17,629	19,986	19,646	20,432	21,249	22,099	22,762	23,445

## Attachment C

**CITY OF BOULDER  
2016 FUND FINANCIAL**

**STORMWATER/FLOOD MANAGEMENT UTILITY**

	2014 Actual	2015 Revised	2016 Recommended	2017 Projected	2018 Projected	2019 Projected	2020 Projected	2021 Projected
Capital	7,983,897	3,212,900	5,084,480	6,994,483	7,806,155	4,903,241	5,547,837	5,003,924
Projected Bond - South Boulder Creek	-	-	-	-	25,000,000	-	-	-
Projected Bond - Wonderland Creek/4-Mile	-	23,000,000	-	-	-	-	-	-
Projected Bond Issuance Costs	-	75,000	-	-	325,000	-	-	-
Encumbrances, Carryover and Adj. to Base	-	7,617,222	-	-	-	-	-	-
<b>Total Uses of Funds</b>	<b>\$ 12,124,036</b>	<b>\$ 39,901,259</b>	<b>\$ 11,764,882</b>	<b>\$ 13,829,666</b>	<b>\$ 42,234,499</b>	<b>\$ 13,784,648</b>	<b>\$ 14,591,386</b>	<b>\$ 14,213,889</b>
Sick and Vacation Accrual Adjustment	\$ 4,326	\$ 50,000	\$ 50,000	\$ 51,500	\$ 53,045	\$ 54,636	\$ 56,275	\$ 57,964
<b>Ending Fund Balance Before Reserves</b>	<b>\$ 15,450,198</b>	<b>\$ 12,962,605</b>	<b>\$ 12,745,927</b>	<b>\$ 11,478,354</b>	<b>\$ 8,036,481</b>	<b>\$ 7,971,514</b>	<b>\$ 7,633,207</b>	<b>\$ 8,222,750</b>
<b>Reserves</b>								
Bond Reserves	\$ 324,984	\$ 2,312,552	\$ 2,312,552	\$ 2,312,552	\$ 4,362,568	\$ 4,362,568	\$ 4,362,568	\$ 4,362,568
Post Flood Property Acquisition	1,050,000	1,050,000	1,050,000	1,050,000	1,050,000	1,050,000	1,050,000	1,050,000
FEMA Deobligation Reserve	295,923	295,923	295,923	295,923	295,923	295,923	295,923	295,923
Sick/Vacation/Bonus Reserve	57,671	59,401	61,183	63,019	64,909	66,856	68,862	70,928
Pay Period 27 Reserve	34,480	48,480	62,480	76,480	90,480	104,480	118,480	132,480
Operating Reserve	938,756	1,186,650	1,177,385	1,214,177	1,252,145	1,291,330	1,331,715	1,373,394
Capital Reserve	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000
<b>Total Reserves</b>	<b>\$ 2,901,814</b>	<b>\$ 5,153,006</b>	<b>\$ 5,159,523</b>	<b>\$ 5,212,150</b>	<b>\$ 7,316,026</b>	<b>\$ 7,371,157</b>	<b>\$ 7,427,548</b>	<b>\$ 7,485,293</b>
<b>Ending Fund Balance After Reserves</b>	<b>\$ 12,548,385</b>	<b>\$ 7,809,599</b>	<b>\$ 7,586,404</b>	<b>\$ 6,266,204</b>	<b>\$ 720,455</b>	<b>\$ 600,357</b>	<b>\$ 205,659</b>	<b>\$ 737,457</b>

**Note:**

Operating reserve levels are based on industry standards and are maintained for revenue bonds, revenue fluctuations (weather and water usage impacts) and the capital intensive nature of the utility.

	A	I	J	K	L	M	N
1				<b>CITY OF BOULDER</b>			
2				<b>2016-2021 CAPITAL IMPROVEMENT PROGRAM</b>			
3							
4							
5							
6		<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>
7	<b>PROJECT NAME</b>	<b>PROPOSED</b>	<b>PROJECTED</b>	<b>PROJECTED</b>	<b>PROJECTED</b>	<b>PROJECTED</b>	<b>PROJECTED</b>
8							
9	<b>Major Drainageways</b>						
12	South Boulder Creek	\$750,000	\$750,000	\$0	\$0	\$0	\$0
13	South Boulder Creek - Bond Proceeds	\$0	\$0	\$25,000,000	\$0	\$0	\$0
14	Bond Issuance Costs	\$0	\$0	\$325,000	\$0	\$0	\$0
15	Skunk Canyon Creek	\$0	\$100,000	\$500,000	\$0	\$0	\$0
17	Twomile Canyon Creek	\$0	\$100,000	\$500,000	\$0	\$0	\$0
18	Bluebell Canyon Creek - King's Gulch	\$0	\$100,000	\$500,000	\$0	\$0	\$0
20	Four Mile Canyon Creek	\$0	\$0	\$500,000	\$1,250,000	\$1,250,000	\$500,000
21	Four Mile Canyon Creek - Upland to Violet	\$500,000	\$500,000	\$500,000	\$250,000	\$0	\$0
23	Bear Canyon Creek	\$500,000	\$0	\$0	\$0	\$0	\$0
24	Gregory Canyon Creek	\$500,000	\$0	\$0	\$0	\$0	\$0
25	Boulder Creek	\$0	\$2,500,000	\$2,250,000	\$0	\$0	\$0
32	Preflood Acquisition	\$500,000	\$550,000	\$600,000	\$633,000	\$660,000	\$684,285
33	Greenways Program Transfer	\$97,500	\$97,500	\$97,500	\$97,500	97,500	97,500
34	<b>Subtotal - Major Drainageway Improvements</b>	<b>\$2,847,500</b>	<b>\$4,697,500</b>	<b>\$30,772,500</b>	<b>\$2,230,500</b>	<b>\$2,007,500</b>	<b>\$1,281,785</b>
35							
36	<b>Miscellaneous</b>						
40	Utility Billing Computer System	\$0	\$0	\$0	\$0	\$65,000	\$0
41	<b>Subtotal - Miscellaneous Drainage Improvements</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$65,000</b>	<b>\$0</b>
42							
43	<b>Stormwater Management</b>						
44	Upper Goose Creek	\$750,000	\$750,000	\$750,000	\$1,000,000	\$1,165,547	\$1,221,869
45	Local Drainage Improvements	\$730,080	\$759,283	\$789,655	\$821,241	\$854,090	\$986,949
46	Stormwater Quality Improvements	\$162,000	\$169,000	\$175,500	\$182,500	\$190,000	\$197,390
47	Storm Sewer Rehabilitation	\$270,400	\$281,200	\$292,500	\$304,000	\$632,700	\$657,966
48	Transportation Coordination	\$324,500	\$337,500	\$351,000	\$365,000	\$633,000	\$657,966
49	<b>Subtotal - Localized Drainage Improvements</b>	<b>\$2,236,980</b>	<b>\$2,296,983</b>	<b>\$2,358,655</b>	<b>\$2,672,741</b>	<b>\$3,475,337</b>	<b>\$3,722,139</b>
50							
51	<b>TOTAL CAPITAL USES OF FUNDS</b>	<b>\$5,084,480</b>	<b>\$6,994,483</b>	<b>\$33,131,155</b>	<b>\$4,903,241</b>	<b>\$5,547,837</b>	<b>\$5,003,924</b>

**CITY OF BOULDER  
WATER RESOURCES ADVISORY BOARD  
INFORMATION ITEM**

**MEETING DATE: March 28, 2016**

**AGENDA TITLE:** Information Item – Carter Lake Pipeline

**PRESENTER/S:**

Jeff Arthur, Director of Public Works for Utilities  
Joe Taddeucci, Water Resources Manager  
Bret Linenfelser, Water Quality and Environmental Services Manager  
Tom Settle, Water Treatment Manager  
Douglas Sullivan, Acting Principal Engineer – Water, Wastewater, and Stormwater  
Ken Baird, Utilities Financial Manager

**EXECUTIVE SUMMARY:**

In establishing the 2017 capital improvements program (CIP), the City of Boulder must reach a final decision regarding participation in the Northern Colorado Water Conservancy District's (hereinafter Northern) Southern Water Supply Project II (hereinafter Carter Lake Pipeline). A decision is required in 2016 because the project schedule requires 2017 funding for final design, and because final design cannot proceed for other project participants until Boulder's involvement is determined.

The purpose of this item is to present an overall summary of the project and provide WRAB an opportunity to ask questions or request additional information prior to making a June recommendation on the 2017 CIP.

**BACKGROUND:**

Boulder's water supply comes from the following three sources: 1) the Middle Boulder Creek watershed; 2) the North Boulder Creek watershed; and 3) west slope water through the Northern system. Middle and North Boulder Creek sources are treated at the Betasso Water Treatment Plant and Northern supplies are treated at the Boulder Reservoir Water Treatment Plant. Boulder's three water sources and two treatment plants are a result of Boulder's long-term planning principles for system reliability, redundancy and flexibility. Boulder relies on Northern supplies for about one third of its annual water supply on average. **Attachment 1** provides a perspective map view of Boulder's water sources, and **Attachment 2** shows a graphic illustration of the annual composition of Boulder's water sources.

The Carter Lake Pipeline will not change the quantity of Northern supplies available to Boulder, but it would change the delivery mode of water used for treatment. Some of the water currently delivered in Northern's St. Vrain Supply Canal and Boulder Feeder Canal would instead be delivered through a closed, pressurized pipeline. **Attachment 3** provides a map of the proposed pipeline alignment and the existing canal system. The pipeline will be owned and operated by

Northern and will deliver Colorado-Big Thompson (CBT) and Windy Gap water to project participants, including the City of Boulder, Left Hand Water District, and Longs Peak Water District. The participants will each own a share of capacity in the pipeline and will provide all necessary funding for construction and operation and maintenance. Boulder's share of the overall project cost is estimated to be about \$35,000,000 and Boulder would pay up to \$158,000 per year for operations and maintenance.

Boulder's consideration of participation in the Carter Lake Pipeline dates back to an April 2003 Source Water Quality Planning Study. Staff and WRAB deliberated on the pipeline for several years, including evaluating water treatment and source water protection alternatives, and in 2007 agreed upon a measured path forward that included financial participation in Carter Lake Pipeline permitting activities and right-of-way (ROW) acquisition. In 2008, City Council approved \$1,000,000 in funding for permitting and ROW acquisition activities. That work is now mostly complete and most of the funding has expended. In 2009, City Council approved the Source Water Master Plan, which included the Carter Lake Pipeline as part of the Water Utility Fund 20-year CIP.

Boulder's participation in the Carter Lake Pipeline project was originally considered for the source water protection and water quality benefits of a pipeline compared to the existing canal system. The 2013 flood event and heavy rains in the spring of 2015 each made the canal system inoperable and exposed an additional vulnerability that had not been considered in previous Carter Lake Pipeline evaluations.

Additional background information is provided in **Attachment 4**.

#### **ANALYSIS:**

Staff analysis of the Carter Lake Pipeline has considered a number of factors, including: Boulder's reliance on Northern supplies, seasonal considerations, operational considerations, water quality considerations, water treatment alternatives, flood resiliency and financial considerations. A summary of each of those factors follows.

Reliance on Northern Supplies – Northern deliveries are an important source of Boulder's water supply. Boulder cannot meet its current water demand solely from Boulder Creek sources, and reliance on Northern supplies will likely increase as Boulder moves towards buildout and contends with climate change. As a theoretical illustration of this, staff compared average annual demand to Boulder's supply for the past 20 years as if Northern supplies had not been available (see **Attachment 5**). In this scenario, supply would have been short of customer demand in most years and water restrictions would have been likely. WRAB, City Council and a community study group who participated in the 2009 Source Water Master Plan recognized Northern's importance to Boulder's water supply and identified the Carter Lake Pipeline as a "no regrets" action subject to funding availability.

Seasonal Considerations - The existing canal system is not capable of winter operation, so Boulder must estimate its winter supply needs and ensure that water is delivered to Boulder Reservoir before the canal is taken offline each November. The seasonal canal deliveries and winter reservoir storage currently do allow year-round access to Northern supplies when necessary. Sometimes Boulder Creek source and treatment facilities, some of which are 100 years old, need to be taken offline for extended maintenance or CIP projects. These projects

typically occur in the winter when treated water demands are lower. The pipeline, with direct and continuous access to Northern supplies, would provide for more reliable winter supply than is currently provided by the reservoir. The pipeline's direct and continuous winter connection would also provide access to more of Boulder's water in the Northern system if Boulder encountered extremely low winter snowpack or drought concerns or in the event of a major unexpected issue on the Betasso side of the system.

Operational Considerations – Currently when Boulder places a water delivery order or makes a delivery change with Northern, the time required for the water to travel from Carter Lake to Boulder Reservoir is about 12 hours through the canal system. Because the Carter Lake Pipeline will be pressurized, Boulder will receive its desired order immediately once Northern adjusts flow.

The city is at the downstream end of the canal system, and delivery timing and flows can be affected by upstream operational changes and overall demand. At times the city can be one of few or the only call for water and very low flows delay delivery and adversely affect quality. At other times, upstream users' operations can unintentionally impact Boulder's deliveries. A pipeline will eliminate such issues.

Water Quality Considerations - All Boulder municipal water meets applicable water quality standards at present. However, there can be noticeable differences in taste and odor in water supplied from the Boulder Reservoir Treatment Plant compared to water supplied from the Betasso Water Treatment Plant. Source water quality at Carter Lake is similar to that of the city's high quality Boulder Creek water sources, but can degrade as a result of open canal transport and storage in Boulder Reservoir. Furthermore, as a necessary measure to control plant and algal growth and retain capacity in the canal system, Northern applies herbicides directly to the water and canal banks as part of the canal maintenance. Boulder does not divert water from the canal during such treatments. However, some herbicide active ingredients (from both canal maintenance and other unknown sources) have been detected in the finished water, although at concentrations well below regulated maximum contaminant levels.

Due to the small watershed area (which reduces runoff potential) and depth of the waterbody, Carter Lake has displayed minimal degradation since data collection began, and is expected to continue to serve as a long-term reliable source of high quality water. Boulder is home to a number of major employers that depend on a reliable municipal water supply to produce their products and services. Boulder businesses as diverse as pharmaceutical companies, breweries, and data centers are impacted by variations in water chemistry supplied by the Boulder Reservoir Treatment Plant, especially when raw water from Boulder Reservoir is used. The ability to provide water of more consistent quality would be beneficial to these types of customers in reducing their pretreatment needs.

Flood Resiliency - The 2013 flood event caused catastrophic damage to the Boulder Feeder Canal and caused extreme sediment loading to Boulder Reservoir, which rendered the Boulder Reservoir Water Treatment Plant inoperable for approximately one month. The canal damage required lengthy repairs. The same flood caused extreme road damage to all access routes to the Betasso Water Treatment Plant. Fuel and chemicals were just barely able to reach Betasso in time because of the road damage. Had the fuel and chemical deliveries not been possible, both of Boulder's treatment facilities would have been unavailable at the same time, and Boulder

would have potentially been without drinking water. Similarly, had the flood event unfolded in the same exact way it did in September but instead occurred in June, July or August when both treatment facilities are required to meet demand, restrictions would have been likely.

The original Southern Supply Pipeline, which does not serve Boulder, is a buried steel pipeline and also was subjected to the 2013 flood. This pipeline withstood the flood and was the only available source out of five for a neighboring municipality. The proposed Carter Lake Pipeline would also be a buried steel pipeline.

The heavy rains that occurred in the spring of 2015 were not as extreme as the 2013 flood. However, concrete canal panels were damaged and canal deliveries were unavailable for an extended duration for the second time in two years, despite Northern's responsive repair efforts. The Carter Lake Pipeline would dramatically reduce, if not eliminate, the chance of delivery interruptions due to floods and extreme weather.

Water Treatment Alternatives - The city's water quality monitoring and treatment processes must consider a continuously evolving list of contaminants detected and regulated at the state and federal level. While there are presently no regulatory changes requiring immediate modifications to city water facilities, the strategy for achieving the city's water quality goals is to protect the drinking water supply through a combination of source water protection measures and treatment processes. The city assessed the addition of improvements at the Boulder Reservoir Treatment Plant and determined that substantial treatment process upgrades would be required to achieve the same water quality results as can be achieved with a pipeline and existing treatment facilities. The capital cost of the treatment process improvements might be more or less expensive than the Carter Lake Pipeline depending on which processes were ultimately chosen. The ongoing operations and maintenance costs of treatment processes upgrades could be significantly more than the annual cost of pipeline maintenance. Regardless, no treatment alternative can provide the flood resiliency benefits of a pipeline, eliminate the operational delivery interruptions associated with the canal system, ensure a more consistent water quality year round, or provide the same seasonal supply reliability of a pipeline.

Another relatively recent development involves disposal of sediment residuals (sludge) resulting from treatment processes. Since the 2013 flood, contaminants have been detected at higher concentrations in the residuals during routine monitoring. Staff believes the precipitation events may have generated enough runoff to carry these additional contaminants into the canal and reservoir. The city has been successful in removing the contaminants from finished drinking water, but the contaminants could eventually reach a threshold that would make disposal of residual materials significantly more expensive and less environmentally sustainable. A pipeline would eliminate such contaminants being intercepted by the canal and carried into the reservoir.

Funding Considerations – As mentioned previously, the 2009 Source Water Master Plan's recognition of the Carter Lake Pipeline as a "no regrets" action was subject to funding availability. Staff's current evaluation of the Carter Lake Pipeline project has focused on Boulder's ability to fund it without compromising other Water Utility system priorities and without requiring unacceptable increases to Water Utility rates. Staff has determined that the Carter Lake Pipeline's inclusion in the CIP can be done within the rates proposed last year and will not require deferral of other priority projects.

**NEXT STEPS:**

Staff is seeking WRAB's feedback on the Carter Lake Pipeline so that any additional information can be provided prior the June 2016 WRAB meeting when staff will request a final board recommendation concerning the proposed 2017-2022 CIP.

**ATTACHMENTS:**

- A. Boulder's Source Water System Map
- B. Boulder's Water Supply Composition
- C. Carter Lake Pipeline Alignment Map
- D. Table of Additional Background Information
- E. Boulder's Water Supply without Northern Supplies vs. Demand (bar chart)

**Attachment 1 – Boulder's Source Water System**



*West Slope – Upper CO River Watershed  
(Northern Supplies – CBT/Windy Gap)*

*Middle Boulder  
Creek  
Watershed*

*North Boulder  
Creek  
Watershed*

*Boulder 5  
Reservoir*

*Boulder Feeder Canal*

*St Vrain Supply Canal*

*Carter  
Lake*

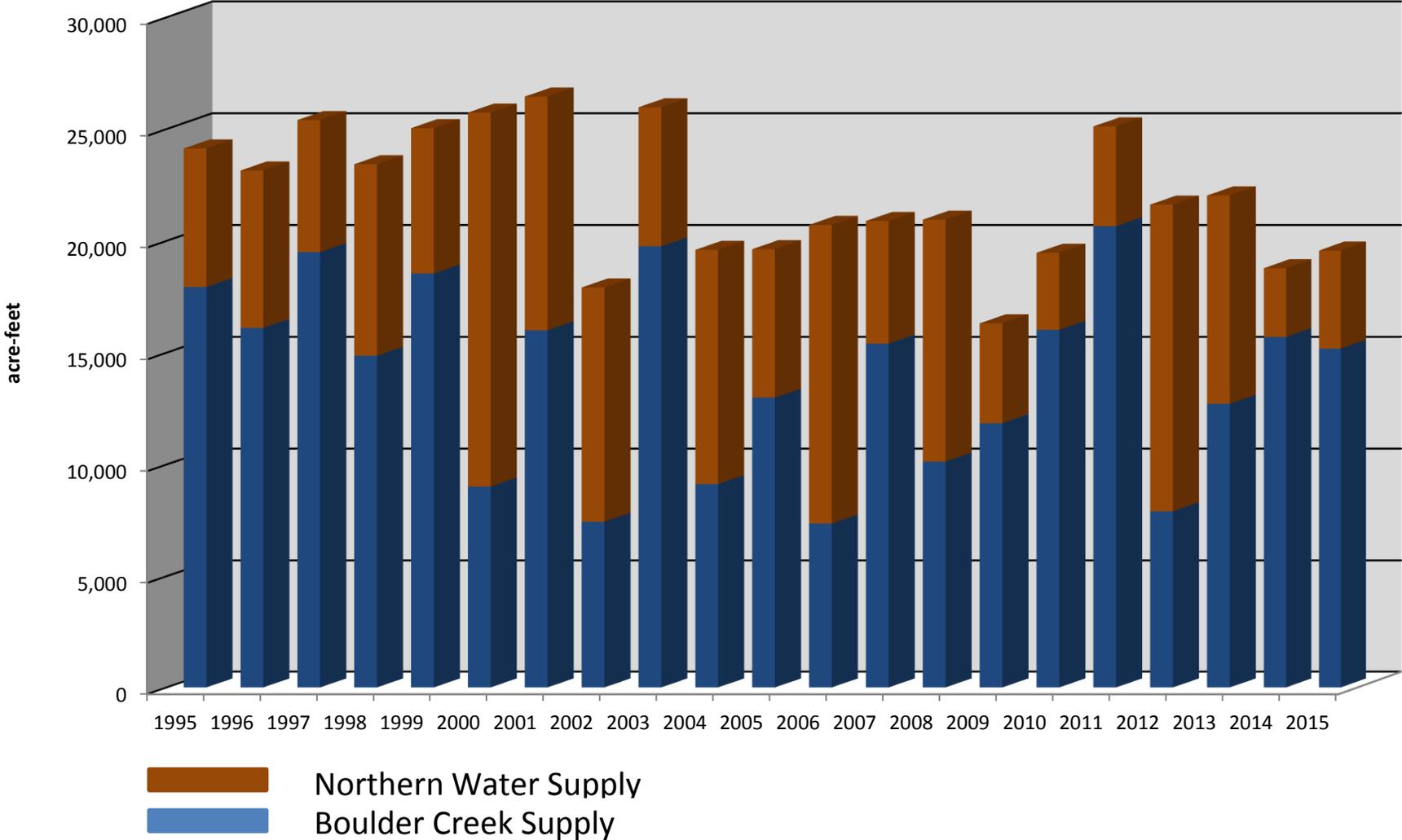
*Betasso Water Treatment Plant*

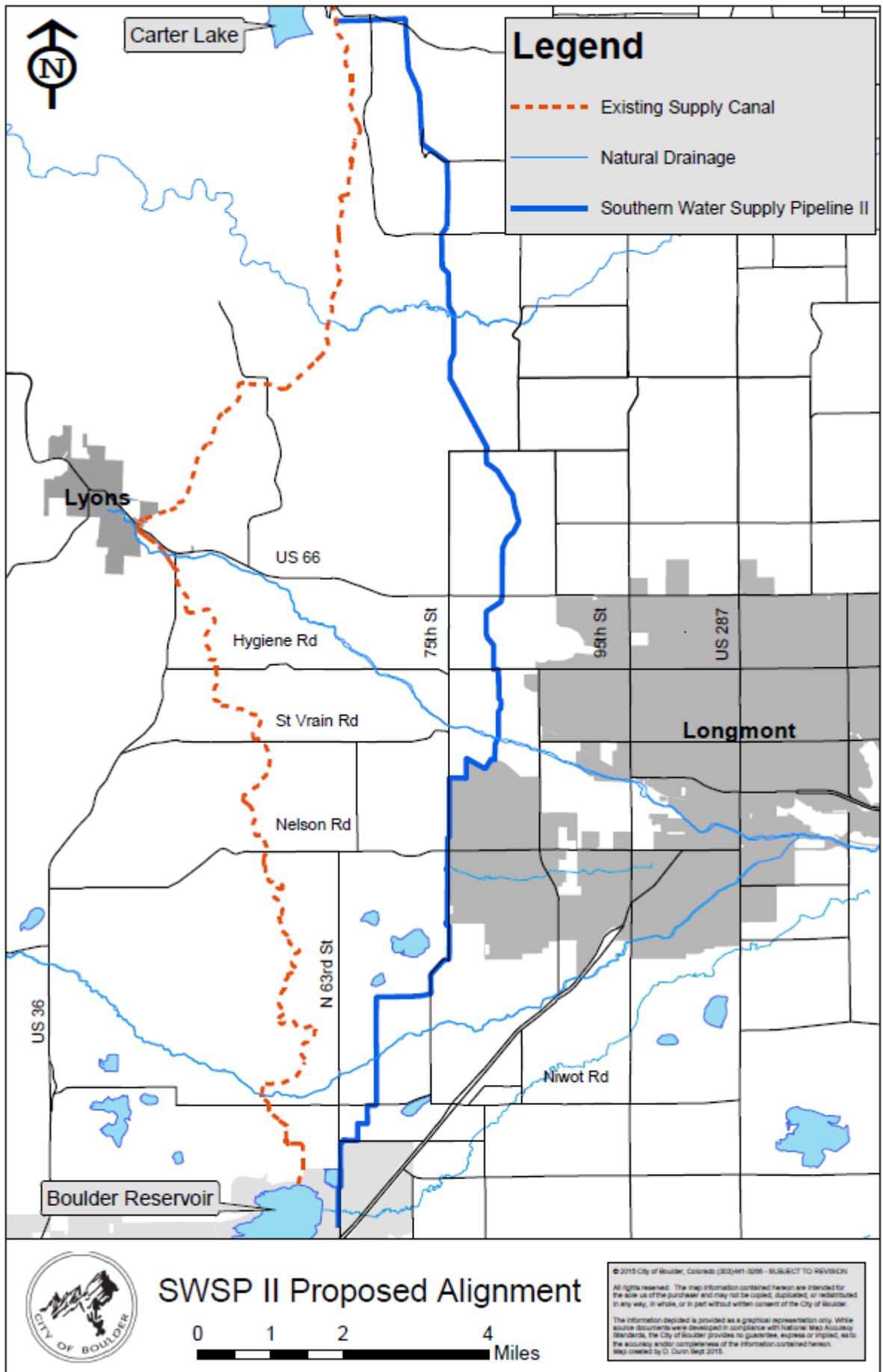
*Boulder Reservoir Water  
Treatment Plant*

*Proposed Carter Lake Pipeline*

Attachment 2 - Boulder's Water Supply Composition

City of Boulder Water Sources





**Attachment 4-Carter Lake Pipeline Additional Background Information**

ITEM	DESCRIPTION
Basic Pipeline Facts	Length ..... Approximately 20 miles Diameter ..... 33 to 36 inches Material ..... Steel
Project Cost (Permitting, Right-of-Way Acquisition, Design and Construction)	Total Project Cost ..... \$46 Million City of Boulder Cost ..... \$35 Million (32 cfs capacity) Left Hand Water District Cost ..... \$10 Million (11 cfs capacity) Longs Peak Water District Cost ..... \$1 Million (3cfs capacity)  Cost allocation is primarily appropriated among participants based on percentage of overall capacity owned. However, each participant will completely fund project features for which it is the only user. For example, Left Hand Water will fund its portion of the pipeline that branches off of the main pipeline, and Boulder will fund the portion of the pipeline between the Left Hand Water branch and Boulder Reservoir.
Annual Operation and Maintenance Costs (Estimated at 0.5% of Construction Costs)	Total Annual O&M Cost ..... \$211,000 City of Boulder Cost ..... \$158,000 Left Hand Water District Cost ..... \$47,000 Longs Peak Water District Cost ..... \$6,000  In any given year, any unused cash balance for the pipeline O&M assessment carries over and is subtracted from the subsequent year's O&M assessment. For illustration purposes, if a participant's annual O&M assessment by agreement was \$100,000, and actual O&M costs for the year were \$60,000, a carryover of \$40,000 would be made for the subsequent year and the participant's O&M assessment for the subsequent year would be \$60,000.
Funding Strategy and Timing	Carter Lake Pipeline is currently scheduled for construction in 2018 but was originally scheduled to be completed several years earlier. Northern and the other project participants agreed to delay the project in order for Boulder to retire (in 2016) previous utility bonds associated with past projects. Boulder will fund Carter Lake Pipeline construction by issuing utility bonds starting in 2018.
Water Supply Costs of Service	Northern Water completed a <a href="#">Cost-of-Service Rate Study</a> in 2014. The result of the Study is that open Colorado Big Thompson (CBT) rates are on an increasing trend from \$28 per acre-foot to \$56.20 per acre-foot from 2014 to 2018 for municipal and industrial customers. By way of comparison based on very rough estimates, it costs the City of Boulder about \$300 per acre-foot to deliver source water to the treatment facilities.
Remaining Project Timeline	2016 and early 2017 ..... ROW acquisition activities completed 2017 ..... Final design 2018-2019 ..... Construction

**Attachment 4-Carter Lake Pipeline Additional Background Information**

ITEM	DESCRIPTION
Pipeline Right of Way (ROW) Acquisition	<p>Northern began ROW acquisition starting in 2008 and is planning to complete all necessary acquisitions by early 2017. Most of the remaining acquisitions involve City of Boulder property. The final Carter Lake Pipeline alignment crosses property with a number of City of Boulder interests. The pipeline crosses Open Space and Mountain Parks Department conservation easements jointly owned with Boulder County. It crosses Tom Watson Park, which is on an IBM easement owned by the city's Parks and Recreation Department. The pipeline also crosses Boulder Reservoir property owned by the Utilities Division of the Public Works Department and managed by the Parks and Recreation Department. Easements for the Utilities and Open Space and Mountain Parks Department property will require City Council action.</p> <p>The northern portion of the Carter Lake Pipeline is in the same alignment as the existing Southern Water Supply Project. The original SWSP owner agreement (1995) included an escalation clause for the value of the ROW of 9 percent per year. The participants of the Southern Water Supply Project II (Carter Lake Pipeline), including the City of Boulder, funded ROW acquisition well in advance of construction partly to avoid additional expenses due to the ROW escalation.</p>
Project Permits	<p>Northern completed a Boulder County 1041 process and a Larimer County location and extent review process for the Carter Lake Pipeline. The project is subject to regulation by the U.S. Army Corps of Engineers under Section 404 of the Clean Water Act. A Pre-Construction Notification for the pipeline impacts was sent to the U.S. Army Corps of Engineers and the project has been permitted under Nationwide Permit (NWP) 12 for utility lines. There are also a variety of routine construction permits typically required for pipeline projects, including county building permits, CDOT/County Utility permits, construction stormwater discharge permits and construction dewatering permits. These permits will either be obtained by Northern or the construction contractor.</p>
Northern Water/Pipeline Participant Agreements	<p>Pipeline design, permitting and ROW acquisition activities to date have been addressed by interim agreements between Northern and each of the project participants. Prior to construction in 2018, Boulder and Northern will execute an agreement to formalize each party's long-term interests and responsibilities associated with the pipeline. The agreement will formalize the ownership arrangement (Boulder will own capacity/Northern will own the pipeline) and payment terms and conditions among other things. By executing this agreement, Boulder will be making a perpetual commitment to its stake in the pipeline. However, Boulder would always have the option of selling its CBT and Windy Gap water and its share in the pipeline should it ever choose to do so.</p>
Past WRAB/Council Action	<p>In March 2007, staff presented the Integrated Evaluation of the Boulder Reservoir Water Treatment Plant Source Water Protection and Treatment Improvements to the Water Resources Advisory Board (WRAB) and requested that WRAB support the Carter Lake Pipeline as the preferred long-term capital improvement alternative. In June 2007, WRAB voted 3 to 2 to delay construction of the Carter Lake Pipeline primarily due to the costs, until other treatment alternatives had been constructed and practical and cost-effective</p>

**Attachment 4-Carter Lake Pipeline Additional Background Information**

ITEM	DESCRIPTION
	improvements to the Boulder Feeder Canal had been completed. In September 2007, WRAB approved a consensus proposal supporting continuing work related to pipeline planning, preliminary engineering, permitting and right-of-way acquisition, while evaluating other utility capital improvement and operating priorities. In November 2007, City Council approved the 2008 Capital Improvement Plan and budget, which included \$1 million for permitting and right-of-way acquisition for the Carter Lake Pipeline. In 2009, City Council approved the Source Water Master Plan, which included a recommendation to proceed with the Carter Lake Pipeline provided an adequate funding plan could be established.
Boulder County 1041 Process	Northern Water submitted its 1041 application for the Southern Water Supply Project II to Boulder County in May 2009. Following lengthy and detailed consideration of Northern's preferred alternative in comparison to a more urban alternative route through Longmont, the Board of County Commissioners ultimately approved Northern's preferred alignment in July 2012. The approval includes 34 detailed design and construction requirements that Northern must meet to ensure the project can satisfy the applicable 1041 criteria regarding preservation of productive agricultural land, comply with the Boulder County Comprehensive Plan and effectively mitigate the environmental impacts associated with the project.
Public Process Summary	The project went through a lengthy public process with the Boulder County Commissioners during the county 1041 proceedings that concluded in 2012. There were three public hearings, and four alignment alternatives that were formally studied as part of the process. The project had two public open houses (one at the Boulder Reservoir Water Treatment Plant and one at Left Hand Water's facilities). The project was also highlighted throughout development of the 2009 Source Water Master Plan, including discussions during public and stakeholder outreach. Prior to the county 1041 process, a city Community and Environmental Assessment Process (CEAP) was initiated and presented alternatives mainly in the form of a budget decision (fund the project or not). The CEAP process was put on hold in 2009 pending the outcome of the parallel county 1041 process. In 2015 it was determined that a CEAP was not an ideal process to facilitate public engagement since the completed county process had already performed an extensive environmental assessment and established an alignment and since the only remaining decision concerning Boulder's project participation was whether or not to fund the project. As such, it was determined that the 2017 capital improvements and budget process, which includes opportunity for public involvement, was the appropriate mechanism to perform a final and thorough evaluation of the project.
Boulder to Lyons Recreation Trail Planning	One community item of interest has been the status of the proposed Lyons to Boulder regional trail, one potential alignment for which is along Northern's Boulder Feeder Canal. City and county staff have previously evaluated the potential of moving forward with trail development. City staff prepared a CEAP document for the trail in 2006. In 2009, Northern indicated that it was not likely to grant permission for use of any part of its Boulder Feeder Canal ROW for the trail. While the pipeline and trail projects are separate projects, staff anticipates that the pipeline's inclusion in the capital improvements program and 2017 budget may result in renewed interest in the trail. Northern Water is managing the pipeline project as a service to the

**Attachment 4-Carter Lake Pipeline Additional Background Information**

ITEM	DESCRIPTION
	pipeline’s participants and otherwise does not have an interest in the pipeline that would be incentive to reconsider its position on the trail. Boulder to Lyons trail planning efforts, including consideration of other alignments, are ongoing in cooperation between the city and Boulder County.
Boulder Reservoir Operations (post pipeline)	There will be no significant changes to Boulder Reservoir levels post-pipeline. In general, the level of Boulder Reservoir gradually increases between May 1 and July 1 and gradually decreases between July 1 and April 30 of each year. Summer reservoir levels are largely determined by Northern Water operations unrelated to Boulder’s municipal deliveries. Winter storage levels are primarily determined both by the amount of “winter storage water” Boulder orders and the amount of water treated at Boulder Reservoir Water Treatment Plant over the winter. Historically, Boulder has ordered between two and four thousand acre feet of winter water to be delivered to Boulder Reservoir by November 1 of each year for treatment and winter municipal use and for early season exchanges. Although Boulder does not anticipate routinely treating water from the reservoir post-pipeline, Boulder will continue to have the option to order winter storage water to maintain a supplemental winter storage supply at BRWTP at no additional cost. Depending upon whether Boulder orders winter storage water, the May 1 reservoir storage level may be higher or lower than it has been historically. Regardless, the general pattern of gradual increase through July 1 and decrease over the fall and winter will continue. Pumping water from Boulder Reservoir into the treatment plant requires an average of approximately 100,000 kilowatt hours of electricity per year and costs about \$7,000 per year. These costs and energy consumption would decrease after completion of the Carter Lake Pipeline.
Boulder Feeder Canal Operation (post pipeline)	The Boulder Feeder Canal will continue to operate for agricultural water deliveries and the city’s exchange water after the pipeline is constructed. The participants’ municipal water deliveries will no longer be conveyed through the canal the majority of the time, but the canal will still be available (providing an additional level of redundancy) should the pipeline be offline for maintenance purposes. The city may take its exchange water through the pipeline (up to the limit of Boulder’s owned capacity) in the future should development of a hydroelectric facility be deemed feasible).
Boulder’s Water Source Selection Principles	In wet years when water is more abundant, Boulder preferentially draws more from its Boulder Creek sources in order to generate renewable energy through the city’s eight hydroelectric facilities. In dry years, Boulder uses more Northern Water as a drought protection measure to preserve storage in its Boulder Creek sources. Future reliance on Northern supplies will likely increase as Boulder moves towards buildout and contends with climate change.
Hydroelectric Potential	An additional benefit associated with the Carter Lake Pipeline would be an opportunity to develop the hydroelectric power potential of the pipeline should it prove economically feasible. The terminal structure at Boulder Reservoir will be designed to allow for the future addition of hydroelectric equipment.

**Attachment 5 - Boulder's Water Supply vs. Demand (without Northern Supplies)**

