

2016



ANNUAL REPORT



COUNCIL BLUFFS WATER WORKS

Safe Drinking Water Is Our Business

MISSION STATEMENT:

THE COUNCIL BLUFFS WATER WORKS IS COMMITTED TO PROVIDING THE BEST POSSIBLE SERVICE WHILE SUPPLYING ADEQUATE QUANTITIES OF HIGH QUALITY TAP WATER TO MEET ALL THE DOMESTIC, INDUSTRIAL AND FIRE PROTECTION NEEDS OF OUR CUSTOMERS AND OUR COMMUNITY.

Front Cover Photo:

Top: Narrows Water Purification Plant and Bottom: Council Point Water Purification Plant

CHAIRMAN'S REPORT

2016 began with reports coming out of Flint, Michigan that the drinking water serving the community was tainted with lead contamination and unfit to drink. As more information surfaced, the extent of the contamination took on disastrous proportions with the citizens of Flint being exposed to unsafe concentrations of lead in drinking water for an extended period. Of most concern is the potentially serious long-term health effects to the children of Flint. Flint, Michigan is a city of similar size and age to Council Bluffs. Unfortunately for Flint, several circumstances converged to create a perfect storm. It all started with changing the source of supply from Lake Huron to the Flint River. One misstep after another resulted in corrosive water leaching lead from service lines to the homes. The Flint water crisis illustrates the serious nature of providing safe drinking water to our citizens.

Council Bluffs Water Works continues to be in compliance with the Safe Drinking Water Act's Lead & Copper Rule since it was promulgated in the early 1990s. This is accomplished by optimizing corrosion control treatment and supported by sampling of drinking water at the customer's tap. Shortly after the Flint story broke, to further transparency of the lead in drinking water issue, the Council Bluffs Water Works developed a Lead in Drinking Water Guide and posted the most recent lead testing results along with a map showing parcels served by lead services in Council Bluffs on its website. If needed, additional samples are taken to ensure the safety of our customers. While there are many lead services in Council Bluffs that number continues to decline. To further reduce the number of lead services the Water Works is committed to replacing failing lead service lines it owns rather than making repairs. The old lead service line is replaced with a new copper line at no cost to the customer.

In 2016, seventy percent of our capital improvement dollars were directed toward water main replacement. The Council Bluffs Water Works continues to coordinate with the IDOT for on-going Interstate improvements requiring relocations of water mains. We also continued our coordination of projects with the City including joint projects in the 1st Street Neighborhood area, East Manawa, Harmony and Baughn and East Broadway and Kanesville. The joint project formula has resulted in value added benefits for our customers. As the City undertakes the reconstruction of West Broadway the Council Bluffs Water Works will expend significant funds to replace some of the largest and oldest water mains in our system. This project will consume a large portion of our capital budget for the next several years and is funded solely by water rates.

Beyond coordinating with other agencies, the Water Works supports developer driven projects throughout the community to extend water mains including the new River's Edge development. The Board worked with Neighborhood Associations to replace water main. One such example was replacement of the water main on North Broadway. After hearing customer's concerns about the number of water main breaks in the area the Board instructed staff to develop a plan of action for replacement. Following meetings with the North Broadway Neighborhood Association the Board approved a two-year water main replacement project.

Even with all the demands for resources required to maintain our water system the Board is committed to maintaining stable water rates. The Board's Calendar Year 2017 Operating and Capital Improvement Budget did not include a rate increase for 2017.

A well maintained public water system is essential to a community's public health, public safety, economic development and quality of life. The Board of Water Works Trustees and Water Works employees will meet any challenge to fulfill its obligation and mission to our customers to provide a safe, dependable and affordable supply of high quality drinking water from the tap. Please read this report that details the accomplishments and challenges of the dedicated employees of the Council Bluffs Water Works.

Michael J. Wallner
Chairperson

Trustees:
Carl L. Heinrich
Martin L. Brooks
Caitlin A. Beresford
Maureen R. Kruse

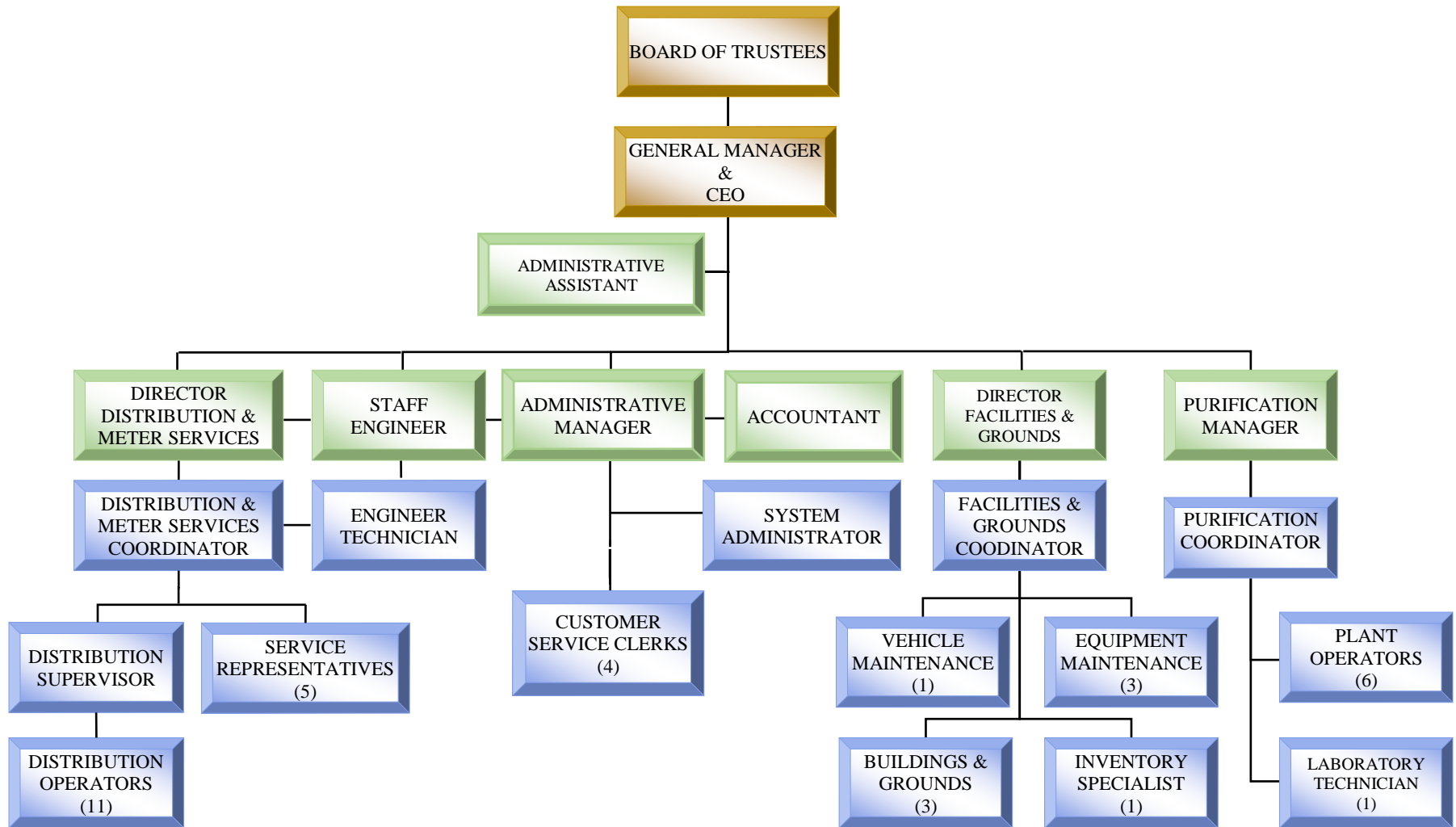
**2016
RATE SCHEDULE**

Monthly Retail Volume Charges		
	Monthly Billing	
	Inside City (\$/CCF)	Outside City (\$/CCF)
First 1,500 Cubic Feet	\$3.35	\$5.03
Next 28,500 Cubic Feet	\$2.44	\$3.66
Over 30,000 Cubic Feet	\$1.54	\$2.31

Bi-Monthly Retail Volume Charges		
	Bi-Monthly Billing	
	Inside City (\$/CCF)	Outside City (\$/CCF)
First 3,000 Cubic Feet	\$3.35	\$5.03
Next 57,000 Cubic Feet	\$2.44	\$3.66
Over 60,000 Cubic Feet	\$1.54	\$2.31

Cubic foot = 7.48 gallons
 100 cubic feet (CCF) = 748 gallons

COUNCIL BLUFFS WATER WORKS ORGANIZATIONAL CHART



ORGANIZATION

AND

PERSONNEL

BOARD OF WATER WORKS TRUSTEES

Chairperson	Michael J. Wallner	term expires June 30, 2022
Trustee	Carl L. Heinrich	term expires June 30, 2021
Trustee	Martin L. Brooks	term expires June 30, 2019
Trustee	Maureen R. Kruse	term expires June 30, 2022
Trustee	Caitlin A. Beresford	term expires June 30, 2018

STAFF

CEO and General Manager:	Douglas P. Drummey	Iowa Grade IV Operator
Administrative Assistant:	Celestine Powell	
Staff Engineer:	Brian T. Cady	Professional Engineer

PURIFICATION DEPARTMENT

Purification Manager:	John M. Meads	Iowa Grade IV Operator
Coordinator:	---	---
Personnel:	Rodney A. Scott	Iowa Grade IV Operator
	Timothy C. Parker	Iowa Grade IV Operator
	Joseph S. Rhoades	Iowa Grade III Operator
	Brandon L. Wear	Iowa Grade III Operator
	Ian J. Cassidy	Iowa Grade III Operator
	Ketrick E. Dilworth	Iowa Grade II Operator
	Cody R. Weddon	Iowa Grade II Operator

DISTRIBUTION & METER SERVICES DEPARTMENT

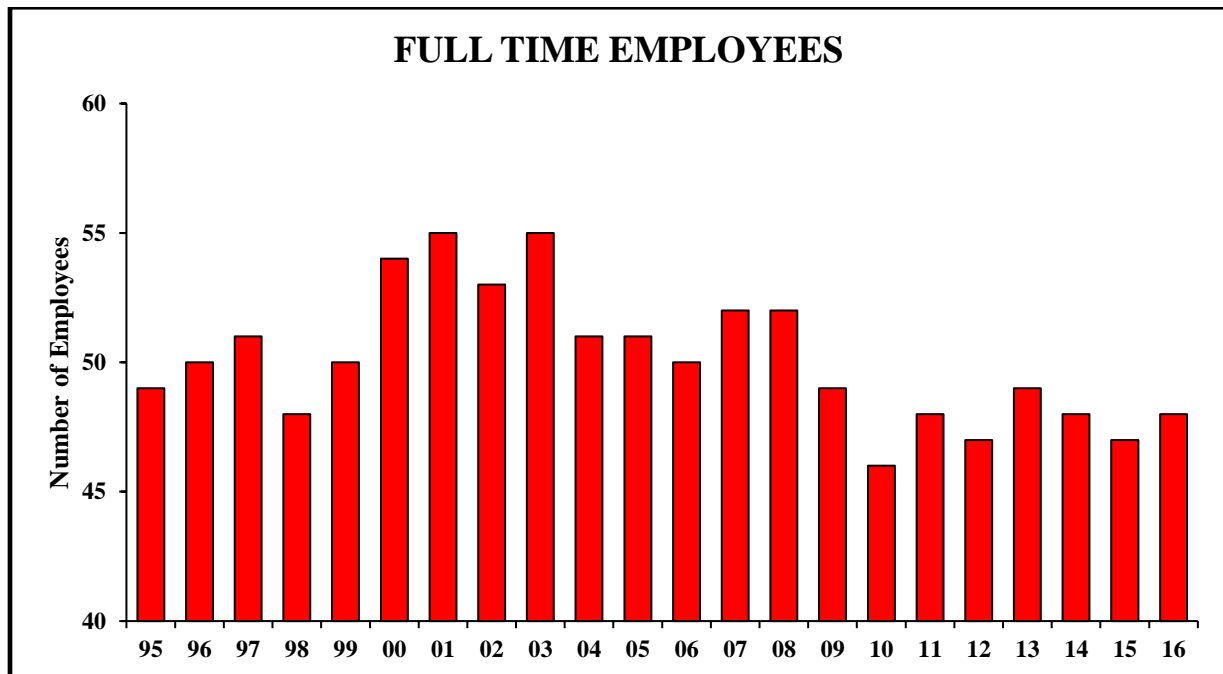
Director:	William E. Wiggins Jr.	Iowa Grade IV Operator
Coordinator:	Douglas P. Adkins	Iowa Grade II Operator
Supervisor:	Josh W. Ryan	Iowa Grade II Operator
Engineering Technician:	Karen R. Cedeno-Perdue	
Distribution Personnel:	Matthew L. Farrell	Iowa Grade II Operator
	John D. Penney	Iowa Grade II Operator
	Jeffry A. Schuster	Iowa Grade II Operator
	Robert D. Hildreth	Iowa Grade II Operator
	Sammy J. McNeal	Iowa Grade I Operator
	Dustin L. Christensen	Iowa Grade I Operator
	Edwin C. Kuhl	
	Michael J. Tornblom	
	Jeffrey S. Chanley	
	Jacob J. Slobodnik	
	Logan S. Hudspeth	
Meter Personnel:	Stephen J. Ronk	
	Russell D. Osbahr	
	Kenny C. McKeighan	
	Chad M. Springer	
	Kyle W. Newsom	

FACILITIES & GROUNDS DEPARTMENT

Director:	Raymond P. Stevens	Iowa Grade IV Operator
Coordinator:	Phil V. Kinart	Iowa Grade II Operator
Personnel:	Mark P. Applegate James L. Smith Jr. Joseph A. Masker Shane E. Ruckman Frank J. Bouska Jr. Elden D. Tackett Andrew D. Diller Matthew B. Truax	Iowa Grade I Operator

CUSTOMER SERVICE & ACCOUNTING DEPARTMENT

Administrative Manager:	Karen A. Wisniski
Systems Administrator:	Bruce M. Riegel
Personnel:	Travis P. Anderson Lisa A. Hammer Loni N. Neve Amy M. Driver Alyssia J. Wiebold



HIGHLIGHTS
AND
STATISTICS

PURIFICATION DEPARTMENT

The Purification Department's primary responsibility is to produce safe drinking water in compliance with all Federal and State Drinking Water Standards. The Council Bluffs Water Works delivered 4,045,182,000 gallons of potable water to our customers in 2016. The Narrows Water Purification Plant produced 3,209,458,000 gallons for an average of 8.769 million gallons per day. The Council Point Water Purification Plant produced 835,724,000 gallons for an average of 2.283 million gallons per day. In typical fashion our peak month occurred during the summer in June, when more than 430,000,000 gallons of water was pumped to the system at an average daily flow of 14.333 million gallons of water per day. The peak day occurred on June 17th when 17,500,000 gallons was pumped to the system.

The Purification Department met the new challenge of complying with the terms and conditions of the NPDES permit regulating the discharge of water treatment residuals from the Narrows Purification Plant to the Missouri River. Compliance includes sampling and monitoring of discharges for suspended solids and pH. By carefully monitoring discharges the Council Bluffs Water Works successfully met the requirements and reduced any potential impacts to the environment by the discharge. Included in the permit was a minimum production requirement at the Council Point Water Purification Plant since Council Point does not discharge water treatment residual to the Missouri River. In 2016, we were required to produce at least 800,000,000 gallons, when in fact we produced over 835 million gallons.

The departments performed numerous cleans to the Ultra Filtration (UF) System throughout 2016 in order to maintain optimum performance at the Council Point Water Purification Plant. Council Point has three trains with four sets of cassettes for a total of twelve (12) cassettes. Each cassette contains 57 modules. Each module contains 30,000 fibers that are cleaned routinely to keep the filtration fibers performing properly. There is a weekly clean referred to as a "Maintenance Clean" and a monthly clean referred to as a "Recovery Clean". Both of these cleans keep the UF fibers free of inorganic and organic fouling and functioning within given parameters to increase the lifespan of the UF fibers. This is an involved process with many steps. In all, 271 maintenance cleans and 122 recovery cleans were performed by the department in 2016.

The sampling and analysis for the Long Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR) performed by the Purification Department will be completed in 2017. In the fall of 2015, surface water systems were required to conduct source water monitoring for Cryptosporidium, E.coli, and turbidity monthly for a period of two years. The LT2ESWTR and the Stage 2 Disinfection Byproduct Rules, was the second round of rules established by the United States Environmental Protection Agency (USEPA). These rules are intended to strengthen protection against microbial contaminants especially cryptosporidium and reduce potential health risk from disinfection byproducts. Cryptosporidium is a significant concern in drinking water because it contaminates most surface waters used as drinking water sources, it is resistant to chlorine and other disinfectants, and it has caused waterborne disease outbreaks in other parts of the United States. Consuming water with cryptosporidium can cause gastrointestinal illness, which may be severe and sometimes fatal for people with weakened immune systems which may include infants, the elderly, and people who have contracted AIDS. The Council Bluffs Water Works does source water monitoring from the Missouri River. The department collected 13 water samples in 2016 and had them analyzed for cryptosporidium. The monitoring of the water from the river indicates the presence of cryptosporidium. However, the analysis of the treated water or finished water has shown no presence of the pathogen.

The Council Bluffs Water Works volunteered to participate in the Microcystin Surveillance Program sponsored by the Iowa Department of Natural Resources (IDNR) for a period of one year that started in July of 2016. The samples were collected and analyzed for microcystins. The IDNR provided funds to support the shipping of the samples and analysis by the State Hygienic Laboratory for all samples required during the one year period. Microcystins are toxins produced by cyanobacteria. Cyanobacteria are also known as blue-green algae and are ubiquitous in surface water when conditions are favorable for growth and formation of algal blooms during summer months. Cyanobacteria release toxins upon cell death. While the liver is the primary target of microcystins, it is also a skin, eye, and throat irritant. Currently, microcystins are not regulated by the USEPA in drinking water, but are listed on USEPA's Contaminant Candidate Lists 1 and 2 as cyanobacteria and their toxins. Sampling and test results of our water supply have not detected elevated concentrations of microcystins.

The Council Bluffs Water Works Certified Bacteriological Laboratory purchased a new incubator in 2016. The new incubator is a Binder BF115 and is an essential piece of equipment in keeping the Council Bluffs Water Works Laboratory certified by the State of Iowa to perform bacteriological analysis. The incubator is a device used to grow and maintain

microbiological cultures. The incubator maintains optimal temperature for bacterial growth, to assist in determining if a sample is present or absent of coliform bacteria.

The Council Bluffs Water Works Certified Bacteriological Laboratory processed a total of 2,779 bacteriological samples in 2016. Of the samples processed, 1,779 were for the Council Bluffs Water Works, 441 for other public water supplies, 157 pool samples, and 402 “Special Purpose” samples which consist of samples taken after water main breaks. The Laboratory Technician also collected 192 samples for disinfection by-product analysis and 212 total suspended solid samples for National Pollutant Discharge Elimination System/Sanitary Discharge Compliance.

2016 Water Quality Facts and Figures

Narrows Purification Plant

Total Gallons Pumped to System	3,209,458,000	
Average Gallons Pumped to System (daily)	8,769,000	
Maximum Gallons Pumped to System (single day)	13,500,000	
Average Gallons Used Per Person Per Day	177	
Source of Water	Missouri River & Missouri River Alluvium	
Finished Water Chemical Analysis		
pH	9.2	Standard Units
Alkalinity	70	mg/L as CaCO ₃
Hardness	182	mg/L as CaCO ₃
Calcium	100	mg/L as CaCO ₃
Magnesium	83	mg/L as CaCO ₃
Non-Carbonate Hardness	113	mg/L as CaCO ₃
Total Chlorine	2.27	mg/L as CaCO ₃
Fluoride	0.64	mg/L as CaCO ₃
Turbidity	0.08	Nephelometric Turbidity Units
Annual Average Temperature (Fahrenheit)	58	degrees

Council Point Purification Plant

Total Gallons Pumped to System	835,724,000	
Average Gallons Pumped to System (daily)	2,283,000	
Maximum Gallons Pumped to System (single day)	4,000,000	
Average Gallons Used Per Person Per Day	177	
Source of Water	Missouri River Alluvium	
Finished Water Chemical Analysis		
pH	8.0	Standard Units
Alkalinity	202	mg/L as CaCO ₃
Hardness	161	mg/L as CaCO ₃
Calcium	114	mg/L as CaCO ₃
Magnesium	46	mg/L as CaCO ₃

Total Chlorine	2.25	mg/L as CaCO ₃
Fluoride	0.66	mg/L as CaCO ₃
Turbidity	0.07	Nephelometric Turbidity Units
Annual Average Temperature (Fahrenheit)	57	degrees

The following chemicals and quantities were used to treat our water:

Narrow Water Purification Plant

<u>Water Treatment Chemical</u>	<u>Tons Used</u>	<u>\$ Cost</u>
Lime	1,877.0	\$339,743
Soda Ash	341.9	100,655
Ferric Sulfate	210.1	123,674
Liquid Chlorine	72.3	50,021
Sodium Silicofluoride	6.8	6,882
Polymer	11.8	11,814
Anhydrous Ammonia	8.3	14,141
Powder Activated Carbon	11.1	12,922
Sodium Hexametaphosphate	4.8	9,578
Potassium Permanganate	.5	<u>1,934</u>
Total Water Treatment Chemical Cost		<u>\$671,364</u>

Council Point Water Purification Plant

<u>Water Treatment Chemical</u>	<u>Tons Used</u>	<u>\$ Cost</u>
MCI310 Antiscalant	11.3	\$ 42,750
Aqueous Ammonia	11.3	3,384
Citric Acid	8.0	7,871
Hydrofluosilicic Acid	9.8	6,711
Hydrochloric Acid	104.4	18,681
Ortho-polyphosphate	3.1	3,010
Anionic Polymer	0.5	898
Kleen MCT – 105, Low pH	1.1	11,730
Kleen MCT – 405, High pH	2.0	10,266
Sodium Bisulfite	4.9	2,224
Sodium Hydroxide	201.9	47,847
Sodium Permanganate	45.8	73,266
Sodium Chloride	37.4	<u>6,349</u>
Total Water Treatment Chemical Cost		<u>\$234,987</u>

DISTRIBUTION DEPARTMENT

The Distribution Department is responsible for the maintenance and operation of all underground facilities in the water distribution system and fire hydrants, including 300 miles of water main, 8,015 valves and 2,943 fire hydrants. The department responds to emergency call-outs 24/7 under all weather conditions to repair water main breaks and restore water service to Water Works' customers in a timely manner.

In 2016, the Distribution Department continued with the leak survey of our entire system, and maintained all fire hydrants as a part of our annual hydrant maintenance program. Additionally, our personnel responded to 116 emergency call-outs throughout the year during all hours and weather conditions to ensure continued water service to our customers.

The Distribution Department's water main replacement efforts this year continued in support of city street and sewer replacement projects. Water mains were also added in new developments. Department personnel repaired approximately 2,295 square yards of Portland Cement Concrete (PCC) paving, 199 square yards of additional (PCC) paving and 417 square yards of asphalt overlay was installed by various contractors.

This year the department:

- Made 168 small taps, and 22 purification taps
- Replaced/Killed 77 lead services
- Checked 71 service leaks
- Turned on/off 90 services
- Repaired 27 service lines and 141 curb boxes
- Replaced 35 services from the main to stop box
- 2 services were moved for construction by Water Works personnel
- 71 services were connected by contractors
- Killed 42 services at the main and 15 at the curb stop
- Answered 7,477 requests for service line or main location
- Turned 372 large valves, rebuilt 3, replaced 7 and added 3 new valves
- Installed 11 additional valves with Water Works mains
- Repaired 51 main breaks, moved 5 water mains
- Repaired 23 valve boxes
- Made 15 large taps (4 inches and above)
- Removed 21 fire hydrants from service which were obsolete, damaged or for main replacement
- 11 hydrants were replaced by Water Works personnel
- 2,633 hydrants were listened to while performing leak survey
- Checked 2,640 hydrants
- Repaired 47 hydrants
- Relocated 8 hydrants
- Flushed 202 hydrants
- Thawed out 12 fire hydrants

Observed installation of 14,836 feet of new mains installed by contractors.

Mains installed by the Distribution Department were:

- 780 feet of 6 – inch main
- 310 feet of 8 – inch main
- 520 feet of 12 – inch main
- 622 feet of 16 – inch main

Mains installed by contractors were:

- 54 feet of 6 – inch main
- 5,604 feet of 8 – inch main
- 930 feet of 10 – inch main
- 5,918 feet of 12 – inch main
- 2,330 feet of 16 – inch main

METER SERVICES DEPARTMENT

The Meter Department's primary function is to read over 22,000 water meters on a monthly and bi-monthly basis, repair and replace meters as needed, complete disconnect and reconnect orders, collect delinquent accounts and respond to service call requests as needed.

In 2016, the Meter Department continued to upgrade and exchanged 370 water meters as part of our meter replacement program. While continuing to maintain and upgrade the Water Works' 22,000 plus water meters, we installed an additional 311 radio read meters to improve meter reading efficiency.

In addition to the meter exchanges this year the department:

- Replaced 117 dead meters
- Removed 35 meters for demolition
- Repaired 56 leaking meters
- Replaced 51 frozen meters
- Installed 257 touch pads
- Installed 311 radio reading devices
- Exchanged 118 radio reading devices
- Exchanged 360 radio reading batteries
- Set 104 new addresses with meters
- Set 22 new addresses with large meters
- Exchanged 106 small meters
- Exchanged 12 large meters
- 370 meters were exchanged for the Meter Exchange Program
- 257 notes were left to exchange meter
- 197 meters were tested for accuracy or malfunction
- Wired 111 new construction homes
- Rewired 72 existing customer homes
- Monitored 788 new construction homes
- Checked 47 homes for low water pressure
- Surveyed 226 accounts for leaks
- Set and Removed 168 Hydrant Meters
- Performed 3,546 final readings
- Read 4,304 RMMS (Reading Meter Management System)
- Researched 397 high bill orders
- Verified 425 meter readings
- 1,203 notes were left to read the meter
- Turned on 773 delinquent accounts for Customer Service
- 4,806 cards were left for delinquent accounts
- Turned on 1,093 water services
- Turned off 896 water services
- Inspected Pump Stations 1,359
- Investigated 2 water main leaks
- Investigated 25 service leaks
- Inspected 4 Fire Hydrants
- There were 142,852 meter readings

FACILITIES & GROUNDS DEPARTMENT

The Facilities and Grounds Department is responsible for the maintenance of all facilities, equipment, buildings and grounds, including the Narrows and Council Point Water Purification Plants, Administration Building, five (5) Booster Pump Stations, four (4) Ground Storage Reservoirs, and five (5) Elevated Storage Tanks. The eleven (11) locations account for approximately 217 acres of land spread throughout the city, along with all of the equipment at and within those facilities, including but not limited to HVAC systems, pumps and their control systems, telemetry and process monitoring equipment. The Facilities and Grounds crew takes pride in maintaining the appearance of all Water Work's properties and facilities.

Department personnel oversee the daily operations of the store room and warehouse. The Inventory Specialist is responsible for the purchase, storage and allocation of material and resources needed for all departments with an inventory value at \$879,091.20.

The department maintains the organization vehicle and equipment fleet with over forty (40) pieces of equipment including automobiles, service trucks, dump trucks, backhoes, tractors, mowers, compressors, welders, trailers and specialty equipment used for concrete and water main repair.

Power and fuel are essential to our operations. It took 9,184,289 kWh of electricity at a cost of \$548,804.02 to process and distribute over four billion gallons of water. We also used 18,515 gallons of lead free gasoline at a cost of \$32,369.37 and 11,023 gallons of red diesel fuel at a cost of \$18,510.27 to fuel the Water Works fleet. We used 43,159 thousand cubic feet (MCF) of natural gas at a cost of \$22,065.16 to heat our buildings and structures.

CUSTOMER SERVICE & ACCOUNTING DEPARTMENT

Our Customer Service Representatives do an excellent job assisting Water Works customers with their questions concerning their bills, turning on/off services, signing up for service and paying bills, whether it is by telephone or in person. If Customer Service need to send a Service Representative to the customer's location, a service order is prepared for the Meter Department and then processed when the order is completed.

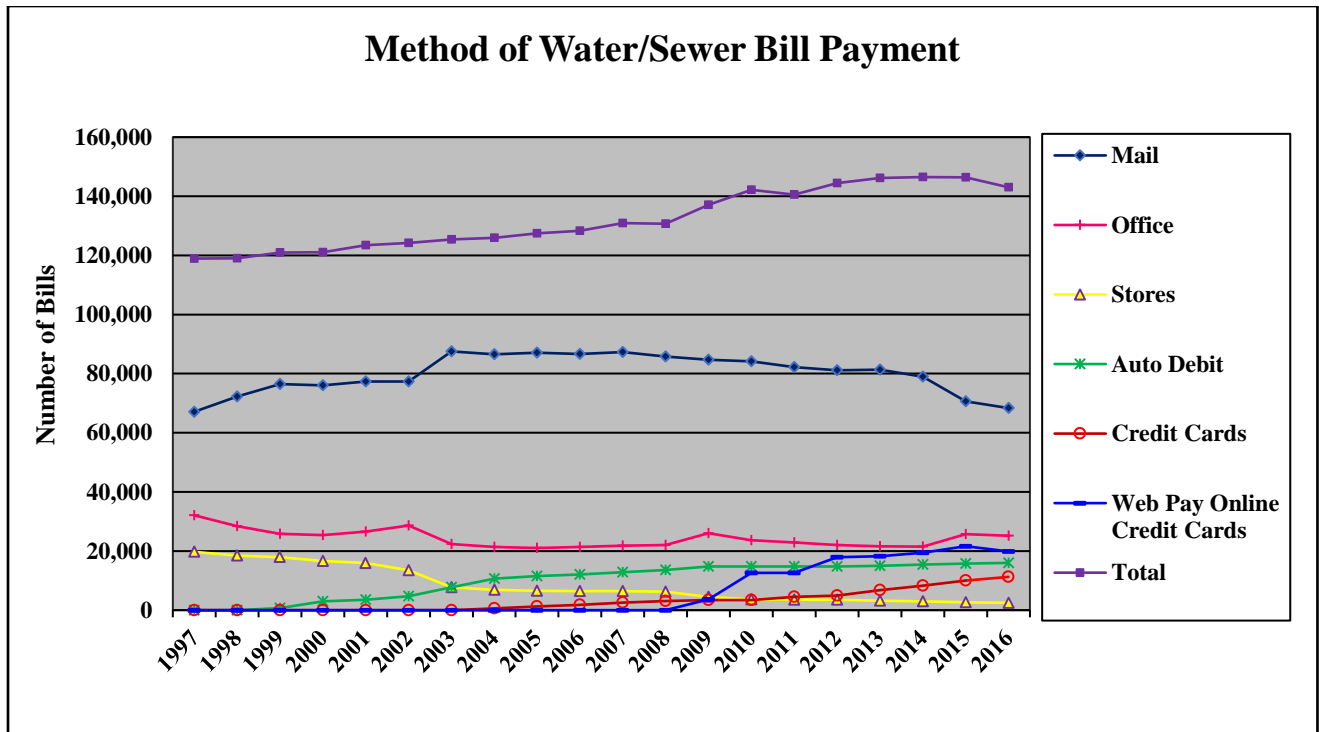
In 2016, the Water Works completed a computer software upgrade to Microsoft Great Plains Dynamics Financials and Cogsdale Customer Service/Utility Billing System. Our hardware (computers and servers) also had to be updated to meet the software changes.

With upgrading our Utility Billing System to the newest version, our online Customer Service Module also required upgrading and has a new look and a lot more functionality for our customers. With this upgrade customers can now sign up to receive electronic bills, if they desire to go paperless.

In 2016, the department mailed out 139,640 water bills, and sent 19,044 reminder notices and 35,197 shut-off notices to customers. There were 143,091 payments processed. There were 16,003 automatic bank payments. There were 8,490 service orders processed for final readings, high bills, dead meters, or to install new meters. There were 770 meters installed or replaced. Customer Service Representative made 1,753 payment arrangements with customers. 1,086 water bills were paid on the day of shut-off and 1,060 services were discontinued for non-payment. There were 154 returned checks that had to be collected from customers. 4,736 service contracts were processed to transfer, reinstate or add new customers to the system.

The Council Bluffs Water Works continues to see an increase in the number of customers paying their bills on our website. There were 11,266 credit card payments and 19,824 online web credit card payments.

The Accounting Department processed \$17,999,640.38 in receipts and payments in 2016, including processing water and sewer bill payments and making the daily bank deposits. The department is responsible for processing accounts payable invoices, checks, payroll, the budget, fixed assets and other information for the general ledger. The department prepares monthly reports for the Board and other departments. The most recent audit found no irregularities or deficiencies in accounting practices and procedures.



GENERAL INFORMATION

The Council Bluffs Water Works has 22,001 active service accounts: 20,162 residential; 1,839 are commercial or industrial.

Last year, total production was 4,045,182,000 gallons.

Residential customers consumed 1,063,358,296 gallons in 2016. The average residential customer used 52,741 gallons at a cost of \$254.23 per year or \$21.19 per month.

Our top ten customers consumed 1,343,223,992 gallons, 33% total production.

SERVICES PROVIDED OUTSIDE THE CITY OF COUNCIL BLUFFS, IOWA

649 outside-City customers paid \$803,649.41 for 207,374,024 gallons of water.

The City of Crescent paid \$57,297.39 for 19,644,724 gallons of water.

Regional Water paid \$145,718.61 for 45,531,508 gallons of water.

In total, outside City Customers paid \$1,006,665.41 for 272,550,256 gallons of water. This represents 8.91% of metered water sales and 6.7% of total water production.

SERVICES PROVIDED TO THE CITY OF COUNCIL BLUFFS, IOWA

The Council Bluffs Water Works provided 56,286,252 gallons of water to the City free of charge, having a value of \$188,310.10. Also, on behalf of the City, the Council Bluffs Water Works collected \$5,207,749.71 in sewer use fees.

TOP TEN CUSTOMERS

	<u>2016 Rank</u>	<u>2015 Rank</u>
1. Google, Inc. (Council Bluffs)		1
2. ConAgra Frozen Foods		2
3. Bunge Corporation		4
4. MidAmerican Energy		3
5. Tyson Foods, Inc.		5
6. Plumrose USA, Inc.		7
7. Tetra, LLC		6
8. City of Council Bluffs		8
9. Regional Water		9
10. Iowa Western Community College		10

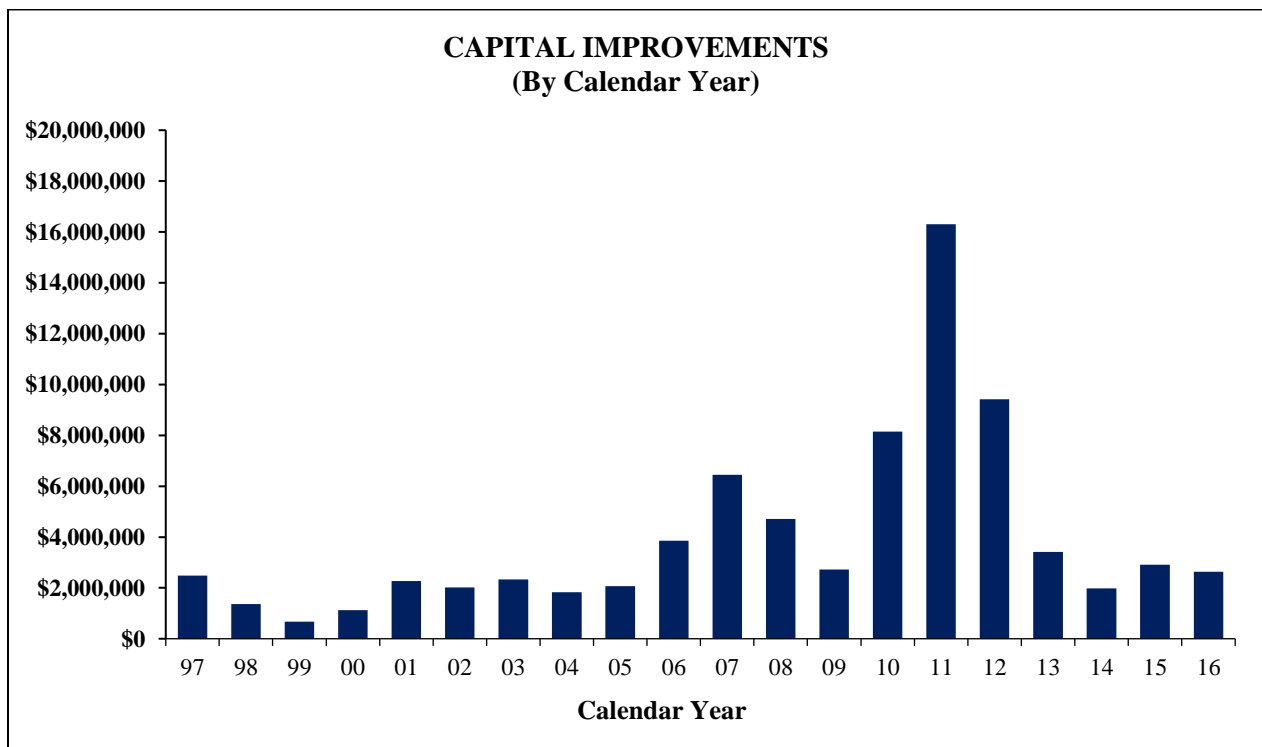
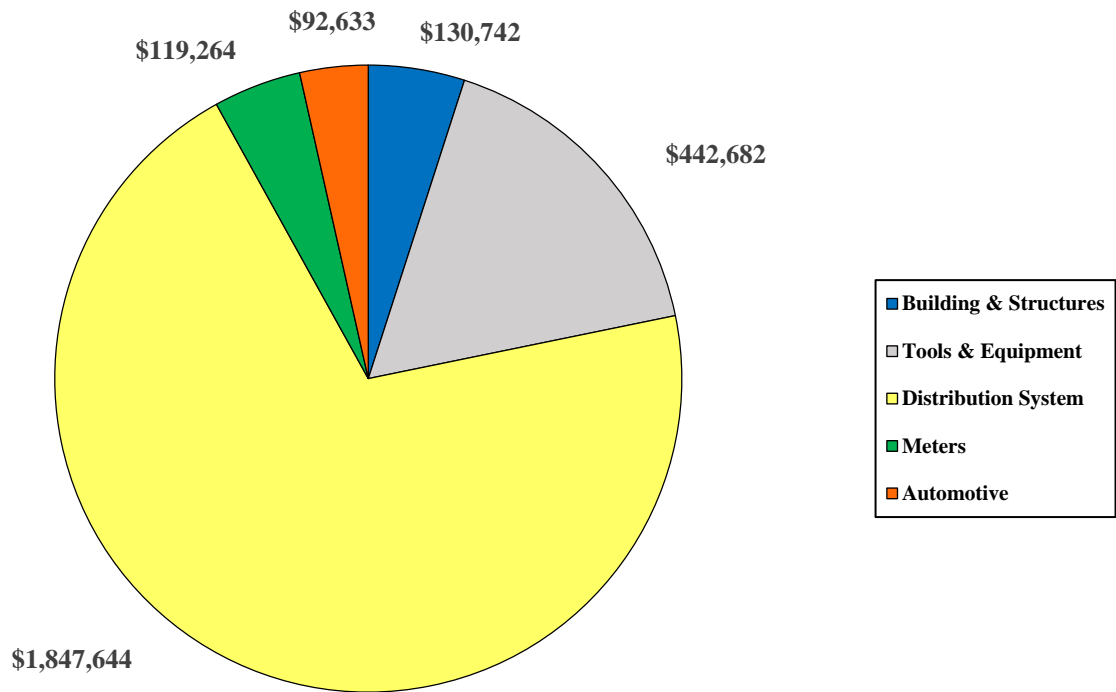
The Council Bluffs Water Works has 299.78 miles of water mains consisting of:

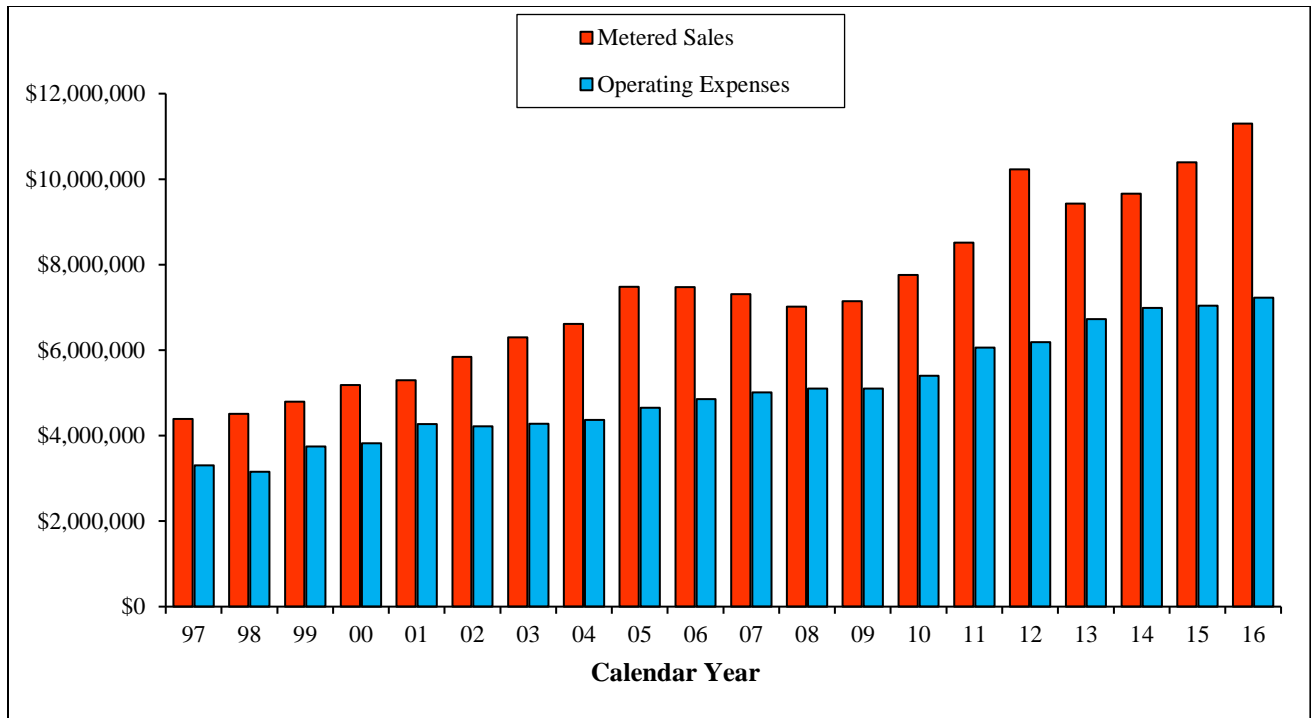
1-inch main	3,192	feet
1 ¼ - inch main	310	feet
1 ½ - inch main	138	feet
2-inch main	1,054	feet
4-inch main	47,432	feet
6-inch main	596,230	feet
8-inch main	333,246	feet
10-inch main	155,076	feet
12-inch main	244,539	feet
16-inch main	165,781	feet
20-inch main	7,723	feet
24-inch main	25,461	feet
30-inch main	13,638	feet
36-inch main	8,995	feet

Number of Hydrants: 2,943

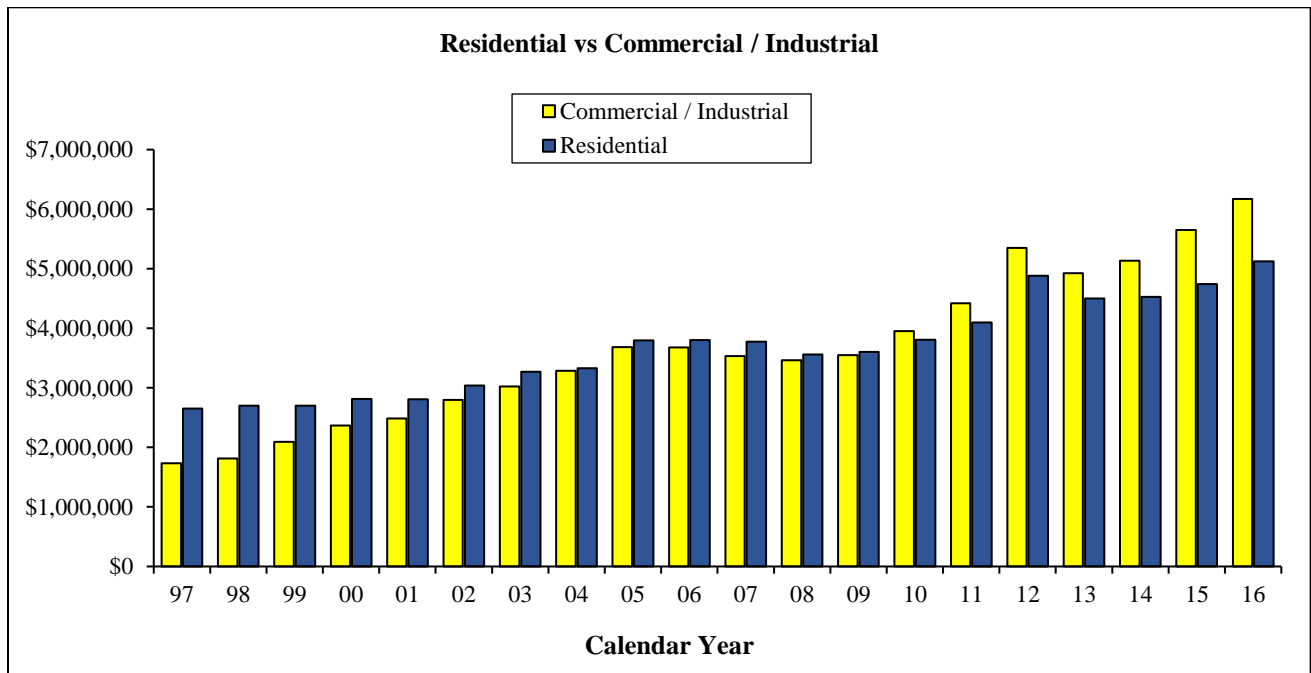
Number of Valves: 8,015

**2016 CAPITAL IMPROVEMENTS
TOTAL \$2,632,965**





METERED SALES vs OPERATING EXPENSES



WATER REVENUE

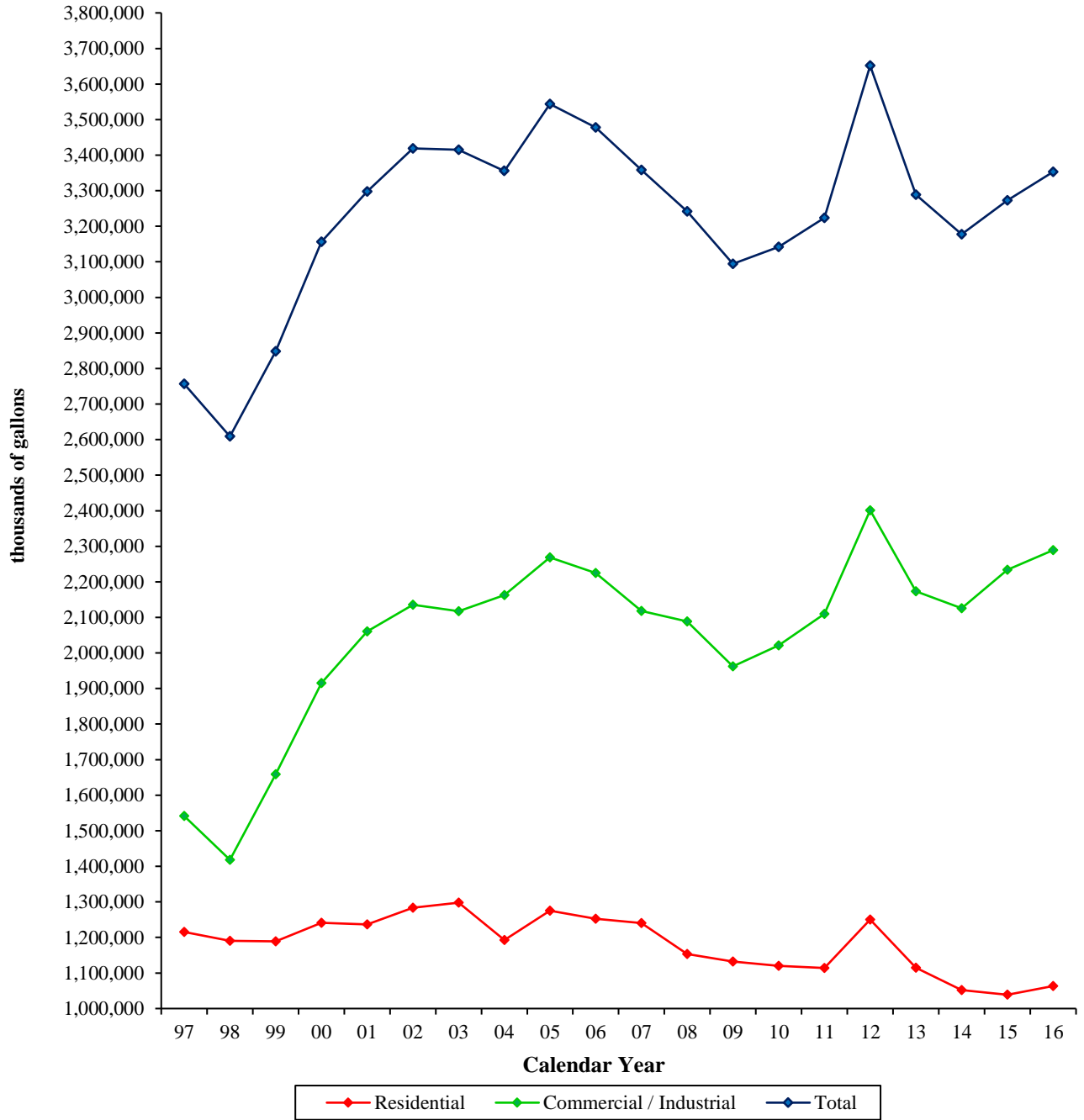
COUNCIL BLUFFS WATER WORKS
PUMPAGE & METERED CONSUMPTION
(1,000's Gallons)
2016

<u>MONTH</u>	<u>PUMPAGE TOTAL</u>	<u>METERED CONSUMPTION TOTAL</u>	<u>CONSUMPTION COMMERCIAL & INDUSTRIAL</u>	<u>RESIDENTIAL</u>
January	282,060	211,676	133,707	77,969
February	289,140	229,093	152,344	76,749
March	299,337	246,554	171,307	75,247
April	298,753	246,507	166,407	80,100
May	322,450	253,502	176,661	76,841
June	430,090	331,851	230,371	101,480
July	419,970	344,395	244,912	99,483
August	398,940	376,574	247,409	129,165
September	345,810	314,715	220,967	93,748
October	342,270	287,179	194,009	93,170
November	316,182	281,118	202,997	78,121
December	300,180	229,553	148,267	81,286
Totals 2016	4,045,182	3,352,717	2,289,358	1,063,359
Ratio		82.9%	56.6%	26.3%
Totals 2015	3,959,262	3,272,988	2,234,181	1,038,807
Ratio		82.7%	56.5%	26.2%
Totals 2006	4,125,479	3,477,757	2,224,976	1,252,781
Ratio		84.3%	53.9%	30.4%

COUNCIL BLUFFS WATER WORKS
METERED SALES (\$)
2016

<u>MONTH</u>	<u>TOTAL</u>	<u>COMMERCIAL & INDUSTRIAL</u>	<u>RESIDENTIAL</u>
January	\$ 743,295	\$ 377,678	\$ 365,617
February	780,763	414,038	366,725
March	846,473	469,964	376,509
April	846,904	448,043	398,860
May	868,085	487,019	381,066
June	1,098,656	609,605	489,051
July	1,125,144	654,823	470,321
August	1,239,210	651,898	587,313
September	1,041,330	595,806	445,524
October	975,842	525,380	450,462
November	920,004	534,043	385,961
December	814,223	405,859	408,364
Totals 2016	\$ 11,299,929	\$ 6,174,156	\$ 5,125,773
Ratio		54.6%	45.4%
Totals 2015	\$ 10,393,209	\$ 5,651,235	\$ 4,741,974
Ratio		54.4%	45.6%
Totals 2006	\$ 7,476,190	\$ 3,676,420	\$ 3,799,770
Ratio		49.2%	50.8%

RESIDENTIAL VERSUS COMMERCIAL / INDUSTRIAL CONSUMPTION



HISTORY

Construction of the Council Bluffs Water System began in 1881 by the American Construction Company of New York City, which had been granted a 25-year franchise by the City of Council Bluffs. Under the franchise, the American Construction Company was to construct and operate a water system. The system constructed was very inferior, and during the life of the franchise, practically no improvements or extensions were made. As a result, along with the poor service rendered by the water company, the renewal of the franchise was rejected by the voters in 1906. In 1911, the City acquired the water system through condemnation proceedings at a cost of \$510,000. On June 1, 1911, the control of the Council Bluffs Water Works came under the Board of Water Works Trustees, which had been appointed by the Mayor. Their first task was to reconstruct or replace practically the entire system. The utility remains under the control of a five-member Board of Trustees, appointed by the Mayor on alternate terms of six years each. Many physical changes have occurred within the water system itself. The system in 1911 consisted of obtaining water from the Missouri River near North 37th Street, settling in large reservoirs, disinfecting, and pumping. Disinfection was begun in 1910 which eliminated illness and deaths from typhoid. In 1952, a conventional lime softening water treatment plant, known as the Narrows was constructed at North 25th Street. The Administration Building was relocated to North 25th Street in 1974. In the ensuing thirty years many other improvements have been made including the construction of the 2,000,000 gallon Valley View Reservoir, a Distribution/Meter Department Office and Warehouse Complex, a 1,500,000 gallon Clearwell, a modern Chlorine Handling Facility, 3 Elevated Storage Tanks, two Pump Stations and one storage reservoir. In 2010 Board began construction of a new groundwater source of supply and integrated membrane water treatment plant known as Council Point, on the south side of the City. This new source of supply began serving the City in 2013.

GENERAL DESCRIPTION OF SYSTEM OPERATIONS

The Narrows Water Purification Plant's main source of water is the Missouri River. Four low service pumps are located at the intake pump station. #1 pump is rated at 12.5 million gallons per day (MGD) and is a dual drive pump (electric or gas engine). #2 pump is rated at 5.5 MGD. #3 pump is a variable speed with a maximum capacity of 9.0 MGD. #4 pump is also variable speed with a maximum capacity of 12.5 MGD. Any single pump can be run from a standby generator if commercial power fails.

The secondary source of water is the Missouri River Alluvium. Two wells at a depth of 150 feet have a capacity of 4.5 MGD each.

Traveling screens at the Intake Pump Station remove large debris before it is pumped to twin preliminary settling basins where the sand and heavy silt settle out. Polyelectrolytes are added when necessary to enhance the settling process. Well water is blended with the cold river water in the winter to minimize icing problems within the basins. Water then flows by gravity through the remaining treatment steps.

There are two independent treatment trains at the purification plant. Typically, the plant operates in a split treatment mode where lime is added to approximately 70% of the water to elevate the pH sufficiently to precipitate magnesium and calcium ions. This softened water is blended with un-softened water as needed to adjust the pH and hardness of the water. Soda Ash and Ferric Sulfate are added as required to complete the coagulation and softening process. A series of mixers and flocculators ensure a complete chemical reaction prior to the clarification basins. Solids are recycled to the mixers as a catalyst for the chemical reactions.

Water then flows to 8 gravity multi-media filters. Each filter has a rated capacity of 3.0 MGD. The filters remove any remaining particles. The filters have a granular activated carbon cap that remove dissolved organic compounds and taste and odor causing compounds by adsorption.

Chlorine is added as a disinfectant before and after the filters. Fluoride is added as a prophylaxis. The water then flows through two 1.5 million gallon baffled clearwells to ensure inactivation of microorganisms. Ammonia is then added to convert the chlorine to chloramines to stabilize the chlorine residual and control disinfection by-products.

There are four high service pumps that deliver water to the City. Two of the pumps have a capacity of 10 MGD, one is 7.5 MGD and the smallest is 6 MGD. Pumps can be run in any combination to meet demand. Typical plant discharge pressure is 90 – 100 pounds per square inch. A 500 kW and 100 kW generators provide emergency backup power to the

plant in case of commercial power failure.

The Council Point Water Purification Plant's source of water is five wells in the Missouri River alluvium to a depth of 100 feet. The groundwater is pumped to the pretreatment building where it is first aerated to oxidize iron followed by chemical addition to oxidize manganese. Insoluble iron and manganese is removed by ultrafiltration. Dissolved minerals are removed by reverse osmosis. Chlorine is added as a disinfectant. Fluoride is added as a prophylaxis. Finished water is stored in a 3.0 million gallon clearwell. There are three high service pumps that deliver water to the City, each with variable frequency drives and capable of delivering 4.0 MGD. The plant is automated and controlled by the water plant operators from the Narrows Water Purification Plant.

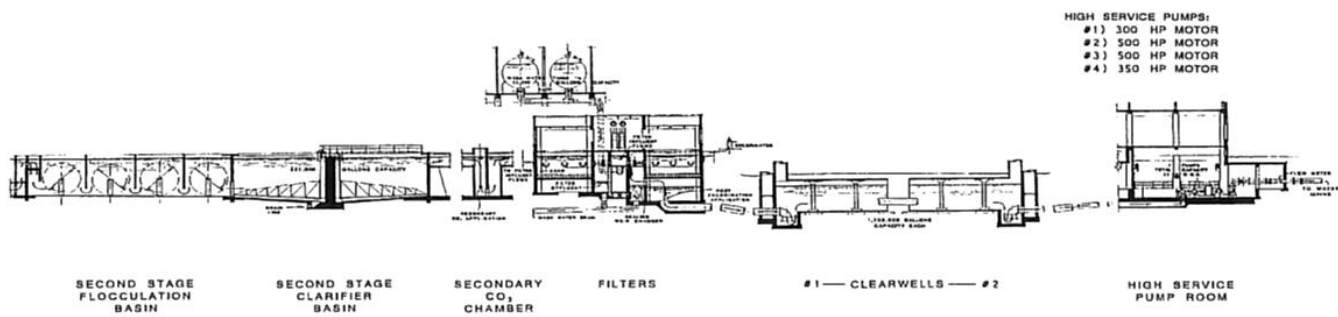
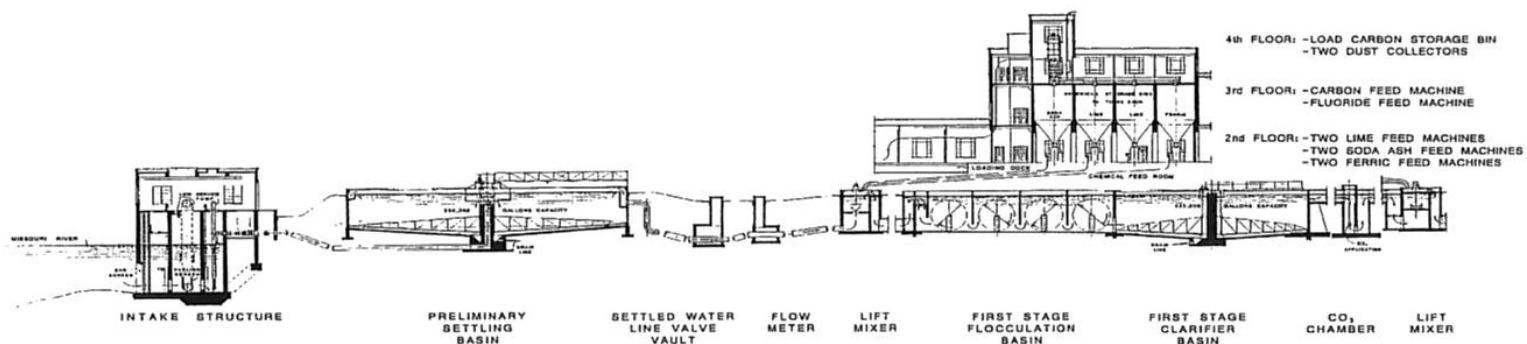
The distribution system has three pressure zones. The first zone is the flat (western and southern) sections of the city and is served by three 2 million gallon reservoirs and one 3-million gallon reservoir. Three of the reservoirs are located downtown and one is located in the southeastern part of the city.

Four booster pump stations and 4 elevated storage tanks with a combined capacity of 1.2 million gallons serve the second pressure zone (bluffs). Lincoln Pump Station has three pumps rated at 600, 750 and 750 gallons per minute (GPM), one is dual drive (electric or gas). Lincoln Pump Station delivers water to the northern section of the City and pumps to a 500,000 gallon elevated tank at Buena Vista Circle and a 200,000 gallon elevated tank at Simms Avenue. Glen Pump Station has three pumps rated at 1500, 800 and 2500 GPM, the largest being a dual drive. This booster pump station delivers to the eastern section of the city and pumps to a 200,000 gallon elevated tank at Memorial Park and a 300,000 gallon tank on Greenview Drive. The Valley View Pump Station has two pumps rated at 750 GPM and 1500 GPM. A gas fired generator provides emergency backup power. This new pump station supports the rapidly growing eastern sections of the city. Oak Street Pump Station has three pumps rated at 400, 700 and 700 GPM, one is a dual drive. This pump station supports both the northern and eastern sections of the bluffs.

A third pressure zone of the distribution system serves the eastern portions of the system. The Airport/Bent Tree pump station has three variable speed pumps each with a maximum capacity of 600 gallons per minute and pump to a 400,000 gallon elevated tank on Highway 6. A gas fired generator provides emergency backup power.

A Supervisory Control and Data Acquisition System monitors all pump station and tank operations from the Water Treatment Plant located on North 25th Street.

WATER TREATMENT PROCESS





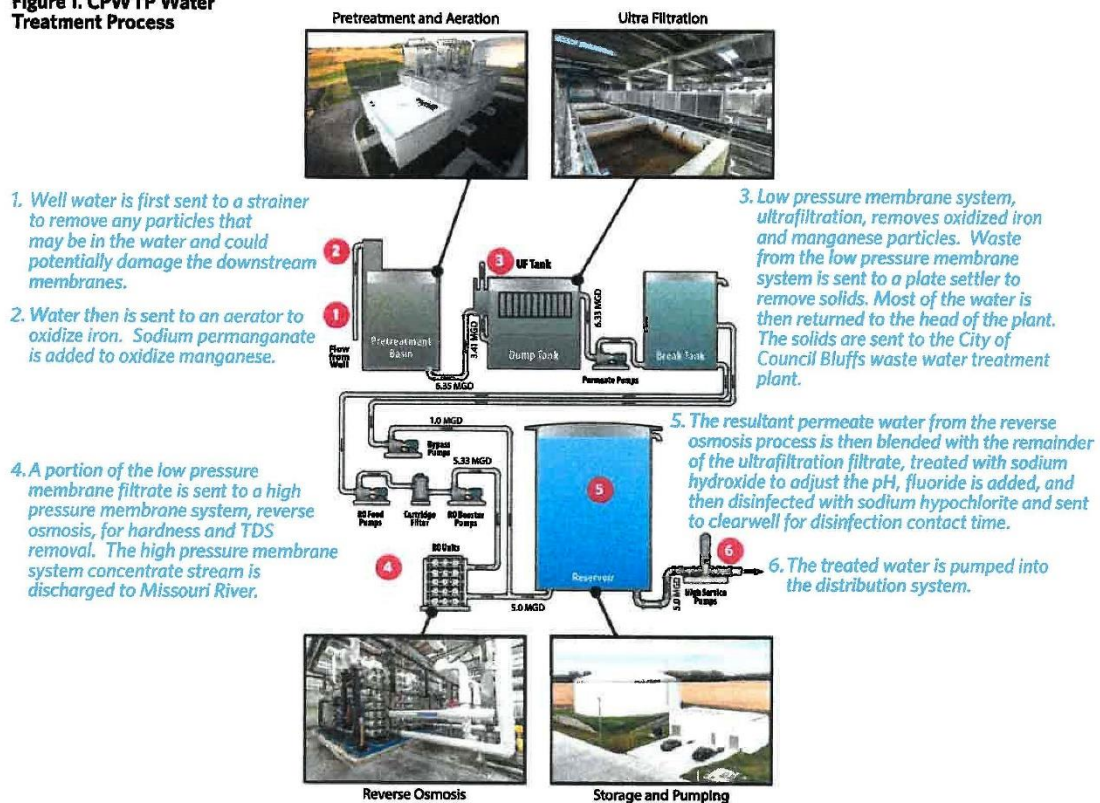
Unique Application of Different Technology, Techniques, Materials or Equipment

The CPWTP uses a process which employs the use of semi-permeable membranes (low pressure followed by high pressure) to separate impurities from well water, as shown in Figure 1 below. **While membrane technology is not a new technology, the application of low pressure membranes followed by high pressure membranes is a unique application that is a model for other communities to follow.** This process has very limited application in the United States and is a unique combination of technology that will serve as a model for other Iowa communities.

The CPWTP includes a level of automation that allows remote operation of the facility. Every component of the facility from the raw water supply to the membrane processes and chemical systems is automated, allowing operation from the Narrows WTP through the CBWW SCADA system. The facility is also monitored from the Narrows WTP through CCTV. The processes in operation at the facility can be easily shutdown, started up, and varied, allowing a quick response to system needs. This automation has allowed CBWW to maintain efficient staffing of their treatment facilities, therefore reducing the costs to their customers.

Another unique application of technology is the **on-site chlorine generation**. Salt (very similar to table salt) is delivered to the site and stored as brine solution in large storage tanks. The brine solution is exposed to high level of electrical current in the generators to make a dilute concentration of liquid sodium hypochlorite. The concentration of the chemical is low and the amount generated can be limited to the amount consumed every day or two, so the quantities on site are smaller and the risks from gaseous or liquid chlorine to the employees and neighboring area are greatly reduced.

Figure 1. CPWTP Water Treatment Process





COUNCIL BLUFFS CITY WATER WORKS

FINANCIAL STATEMENTS

DECEMBER 31, 2016 AND 2015

(With Independent Auditors' Report Thereon)