2022

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

In 2022, the Council Point Water Purification Plant upgrades were completed to increase the capacity to ten million gallons per day. Upgrades included four raw water wells, three reverse osmosis trains, two ultra-filtration trains, one high service pump, modifications to the pretreatment buildings and a storage building. This project was completed over six years of design and construction. These upgrades will help serve the ever-growing community in the years to come. As construction was nearing completion on the plant the community had the highest pumping year on record. This has been a streak of highest yearly pumping records broken for the last three consecutive years.

Maintaining our facilities and equipment is the Board's foremost priority. In 2022, the Board approved expenditures to paint Sue Johnson Memorial Tank, purchase a dump truck and wheel loader and rehabilitate several pumps around the system. We continue to upgrade our water meters with Automatic Meter Reading Technology. As part of the continued investment in our system the Board is performing studies to place reliable upgrades to the Narrows Purification Plant, which will allow us to reliably use this plant in the upcoming years. Distribution water main replacement projects continued through 2022 including 3rd Avenue from 20th Street to 23rd Street, East Orchard Street, and others. Water main replacement accounted for roughly a third of our total capital improvements program. Of course, the above mentioned projects account for just a portion of our investments in 2022, as constant upkeep and maintenance is an ongoing necessity to meet the water supply needs of our customers.

Even with all of the demands for resources required to maintain our water system the Board is committed to maintaining stable water rates. A well maintained public water system is essential to the community's public health, public safety, economic development, and quality of life. The Board of Water Works Trustees and employees will meet the 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.

Caitlin A. Beresford
Chairperson

Trustees:
Martin L. Brooks
Keith R. Jones
Glennay V. Jundt
Patrick A. Miller

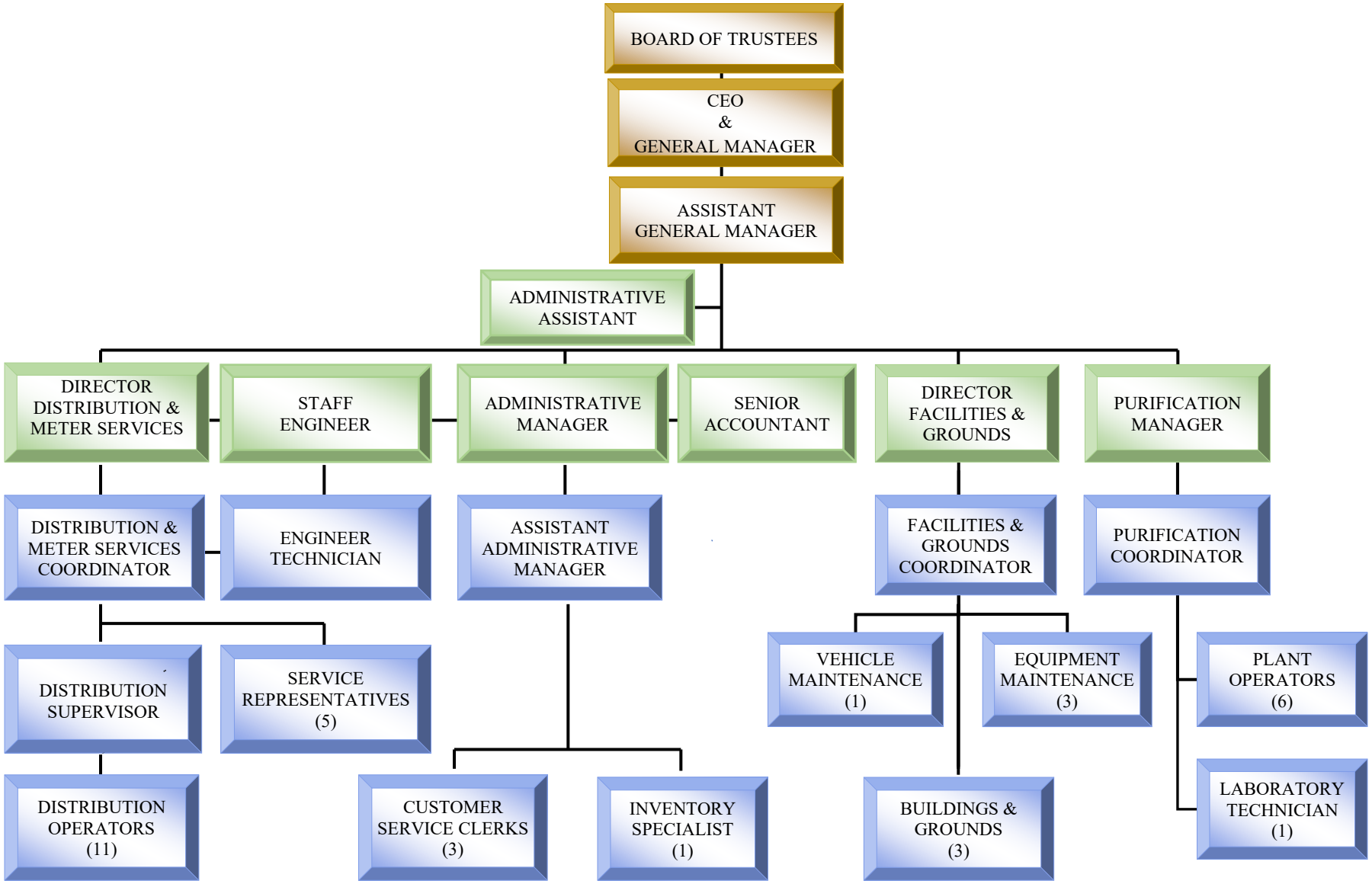
2022
RATE SCHEDULE

Monthly Retail Volume Charges		
	Monthly Billing	
	Inside City ($/CCF)	Outside City ($/CCF)
First 1,500 Cubic Feet	$3.70	$5.55
Next 28,500 Cubic Feet	$2.69	$4.04
Over 30,000 Cubic Feet	$1.70	$2.55

Bi-Monthly Retail Volume Charges		
	Bi-Monthly Billing	
	Inside City ($/CCF)	Outside City ($/CCF)
First 3,000 Cubic Feet	$3.70	$5.55
Next 57,000 Cubic Feet	$2.69	$4.04
Over 60,000 Cubic Feet	$1.70	$2.55

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	Caitlin A. Beresford	term expires June 30, 2024
Trustee	Martin L. Brooks	term expires June 30, 2025
Trustee	Glennay V. Jundt	term expires June 30, 2028
Trustee	Keith R. Jones	term expires June 30, 2027
Trustee	Patrick A. Miller	term expires June 30, 2028

STAFF

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

PURIFICATION DEPARTMENT

Purification Manager:	Timothy C. Parker	Iowa Grade IV Operator
Coordinator:	---	---
Personnel:	Rodney A. Scott	Iowa Grade IV Operator
	Ian J. Cassidy	Iowa Grade III Operator
	Joshua J. Hannan	Iowa Grade II Operator
	Dean W. Redinbaugh	Iowa Grade II Operator
	Chaseton R. Reed	Iowa Grade I Operator
	Christopher A. Anderson	---
	Anthony J. Weinfurtner	---

DISTRIBUTION & METER SERVICES DEPARTMENT

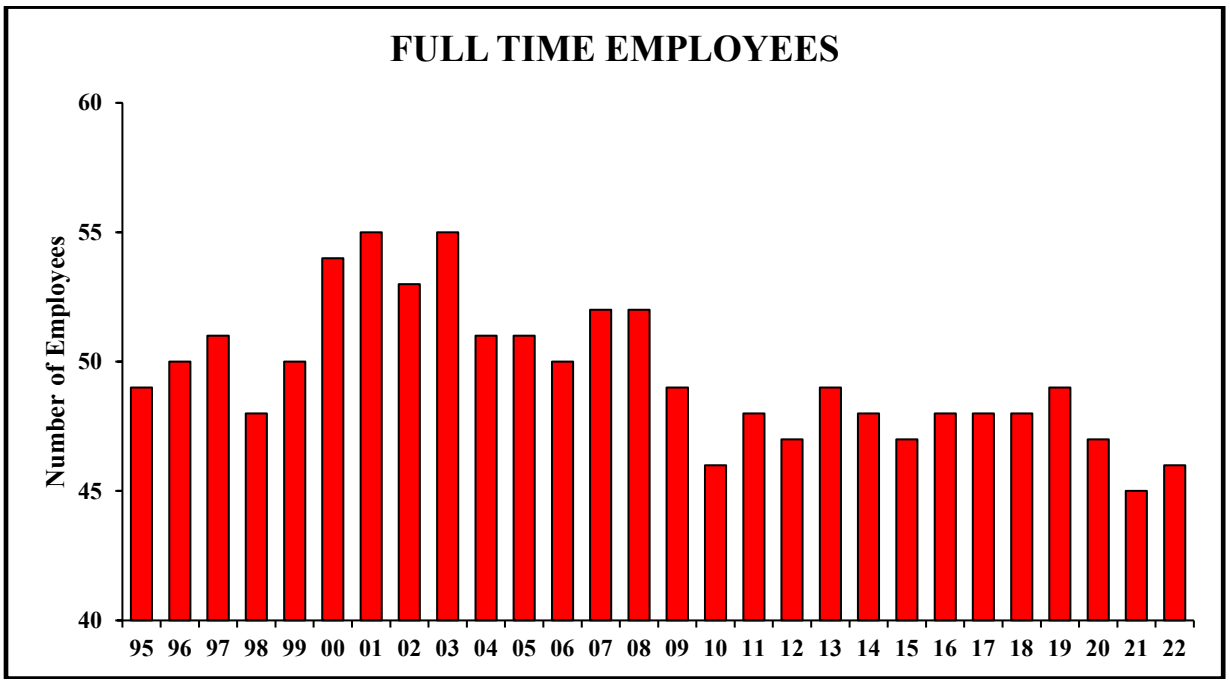
Director:	Douglas L. Adkins	Iowa Grade II Operator
Supervisor:	Kyle W. Newsom	Iowa Grade II Operator
Coordinator:	---	Iowa Grade II Operator
Engineering Technician:	Karen R. Cedeno-Perdue	---
Distribution Personnel:	Jeffry A. Schuster	Iowa Grade II Operator
	Robert D. Hildreth	Iowa Grade II Operator
	Michal J. Tornblom	Iowa Grade II Operator
	Sammy J. McNeal	Iowa Grade I Operator
	Timothy R. Rhoades	Iowa Grade I Operator
	Jeffrey S. Chanley	Iowa Grade I Operator
	Chad D. Underwood	Iowa Grade I Operator
	Tylor L. Story	Iowa Grade I Operator
	Travis M. Black	
	Aaron R. Heard	
	Ricky J. Montalvo	
Meter Personnel:	Russell D. Osbahr	
	Kenny C. McKeighan	
	Chad M. Springer	
	Jordan D. Freeman	
	Dylan W. Campbell	

FACILITIES & GROUNDS DEPARTMENT

Director:	Robert J. Sekera	Iowa Grade I Operator
Coordinator:	Brandon M. Tate	---
Personnel:	James L. Smith Jr. Joseph A. Masker Shane E. Ruckman Matthew B. Truax Cody A. Neighbors Alvin G. Saul Christian J. Jasek	

CUSTOMER SERVICE & ACCOUNTING DEPARTMENT

Administrative Manager:	Karen A. Wisniski
Assistant Administrative Manager:	Hilleary A. Schrage
Personnel:	Travis P. Anderson Lisa A. Hammer Loni N. Neve Alyssia J. Wiebold Araceli G. Navarrete



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 4,625,952,000 gallons of potable water to our customers in 2022. The Narrows Water Purification Plant produced 3,266,079,000 gallons for an average of 8.9 million gallons per day. The Council Point Water Purification Plant produced 1,359,873,000 gallons for an average of 3.7 million gallons per day. In typical fashion, our peak month occurred during the summer in August, when more than 499,583,000 gallons of water was pumped to the system at an average daily flow of 12.7 million gallons of water per day. The peak day occurred on June 30th, when 18,430,000 gallons was pumped to the system.

The Council Bluffs Water Works Certified Bacteriological Laboratory processed a total of 2,610 bacteriological samples in 2022. Of the samples processed, 1,673 were for the Council Bluffs Water Works, 500 for other public water supplies, 112 pool samples, and 325 "Special Purpose" samples which consist of samples taken after water main breaks. The Purification Department collected 128 samples for disinfection by-product analysis and 250 Total Suspended Solid (TSS) samples for NPDES/Sanitary Discharge Compliance.

Throughout the year, the department ran thousands of tests on water quality parameters to maintain the optimal performance of both the Narrows and Council Point Water Purification Plants. To do so, plant operators carefully adjusted the application of numerous water treatment chemicals, including lime, ferric sulfate, liquid chlorine, soda ash, polymer, powder activated carbon, sodium hydroxide, sodium permanganate, hydrochloric acid, anhydrous ammonia, aqua ammonia, phosphate and fluoride in order to provide our customers the highest quality drinking water.

2022 Water Quality Facts and Figures

Narrows Water Purification Plant

Total Gallons Pumped to System	3,266,079,000	
Average Gallons Pumped to System (daily)	8,948,000	
Maximum Gallons Pumped to System (single day)	14,430,000	
Average Gallons Used Per Person Per Day	203	
Source of Water	Missouri River & Missouri River Alluvium	
Finished Water Chemical Analysis		
pH	9.3	Standard Units
Alkalinity	64	mg/L as $CaCO_3$
Hardness	158	mg/L as $CaCO_3$
Calcium	98	mg/L as $CaCO_3$
Magnesium	61	mg/L as $CaCO_3$
Non-Carbonate Hardness	94	mg/L as $CaCO_3$
Total Chlorine	2.36	mg/L as Cl_2
Fluoride	0.68	mg/L as F^-
Turbidity	0.08	Nephelometric Turbidity Units
Annual Average Temperature (Fahrenheit)	57	degrees

Council Point Water Purification Plant

Total Gallons Pumped to System	1,359,873,000
Average Gallons Pumped to System (daily)	3,726,000

Maximum Gallons Pumped to System (single day)	5,704,000	
Average Gallons Used Per Person Per Day	203	
Source of Water	Missouri River Alluvium	
Finished Water Chemical Analysis		
pH	7.51	Standard Units
Alkalinity	169	mg/L as $CaCO_3$
Hardness	155	mg/L as $CaCO_3$
Calcium	106	mg/L as $CaCO_3$
Magnesium	49	mg/L as $CaCO_3$
Total Chlorine	2.26	mg/L as Cl_2
Fluoride	0.68	mg/L as F^-
Turbidity	0.07	Nephelometric Turbidity Units
Annual Average Temperature (Fahrenheit)	57	Degrees

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

Narrows Water Purification Plant

Water Treatment Chemical	Tons Used	$ Cost
Lime	1,907.83	$ 419,342
Ferric Sulfate	129.09	126,508
Soda Ash	146.04	45,126
Liquid Chlorine	79.19	125,122
Sodium Hexametaphosphate	4.51	13,190
Sodium Silicofluoride	6.32	19,467
Hydrofluosilicic Acid	1.96	1,532
Polymer	13.36	22,713
Potassium Permanganate	7.75	27,746
Anhydrous Ammonia	9.18	19,641
Total Water Treatment Chemical Cost		$820,387

Council Point Water Purification Plant

Water Treatment Chemical	Tons Used	$ Cost
MCI310 Antiscalant	17.52	$ 41,611
Aqueous Ammonia	16.38	9,175
Citric Acid	11.78	43,595
Hydrofluosilicic Acid	17.01	13,267
Hydrochloric Acid	242.66	109,199
Ortho-polyphosphate	6.47	10,739

Anionic Polymer	7.02	33,422
Sodium Bisulfite	17.04	8,520
Sodium Hydroxide 30%	114.39	32,497
Sodium Hydroxide 50%	111.72	49,480
Sodium Permanganate	51.80	8,520
Sodium Chloride	67.69	16,888
Total Water Treatment Chemical Cost		$376,913

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 315.12 miles of water main, 7,289 valves and 3,002 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 2022, 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 163 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 10,922 square yards of Portland Cement Concrete (PCC) paving, and 32 square yards of asphalt overlay was installed by various contractors.

This year the department:

Made 175 small taps, and 9 purification taps
Replaced/Killed 42 lead services
Checked 80 service leaks
Turned on/off 35 services
Repaired 19 service lines and 140 curb boxes
Replaced 46 services from the main to stop box
1 service was moved for construction by Water Works personnel
82 services were connected by contractors
Killed 14 services at the main and 3 at the curb stop
Answered 7,219 requests for service line or main location
Turned 415 large valves, rebuilt 12, replaced 10 and added 2 new valves
Repaired 64 main breaks, moved 2 water mains
Repaired 49 valve boxes
Made 6 large taps (4 inches and above)
Removed 27 fire hydrants from service which were obsolete, damaged or for main replacement
8 hydrants were replaced by Water Works personnel
5,806 hydrants were listened to while performing leak survey
Checked 2,584 hydrants
Repaired 134 hydrants
Relocated 1 hydrant
Flushed 373 hydrants
Thawed out 16 fire hydrants
Flow tested 29 fire hydrants

Observed installation of 10,519 feet of new mains installed by contractors.

Mains installed by the Distribution Department were:

37	feet of 6	– inch main
8	feet of 8	– inch main
9	feet of 4	– inch main
4	feet of 16	– inch main

Mains installed by contractors were:

2,037	feet of 6	– inch main
7,292	feet of 8	– inch main
1,190	feet of 10	– 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 2022, the Meter Department continued to upgrade and exchange 319 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 121 radio read devices to improve meter reading efficiency.

In addition to the meter exchanges this year the department:

Replaced 132 dead meters
Removed 7 meters for demolition
Repaired 27 leaking meters
Replaced 106 frozen meters
5 curb boxes were raised
Installed 142 touch pads
Installed 121 radio reading devices
Exchanged 63 radio reading devices
Exchanged 123 radio reading batteries
Set 68 new addresses with meters
Set 7 new addresses with large meters
Exchanged 113 small meters
Exchanged 14 large meters
319 meters were exchanged for the Meter Exchange Program
There were a variety of 323 non-scheduled orders
109 meters were tested for accuracy or malfunction
Wired 65 new construction homes
Rewired 58 existing customer homes
Monitored 328 new construction homes
Checked 36 homes for low water pressure
Surveyed 311 accounts for leaks
Set and Removed 92 Hydrant Meters
Performed 2,820 final readings
Read 3,074 RMMS (Reading Meter Management System)
Researched 67 high bill orders
Verified 2 meter readings
1,464 notes were left to read the meter
Turned on 417 delinquent accounts for Customer Service
6,407 cards were left for delinquent accounts
Turned on 882 water services
Turned off 738 water services
Pump Stations were inspected 2,922 times
Investigated 3 water main leaks

Investigated 25 service leaks
There were 145,749 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 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.

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 10,522,013 kWh of electricity at a cost of $734,009.24 to process and distribute over four billion gallons of water. We also used 16,812 gallons of lead free gasoline at a cost of $53,842.16 and used 11,078 gallons of red diesel fuel at a cost of $41,976.34 to fuel the Water Works fleet. We used 43,242 thousand cubic feet (MCF) of natural gas at a cost of $36,883.40 to heat our buildings and structures.

CUSTOMER SERVICE & ACCOUNTING DEPARTMENT

Customer Service

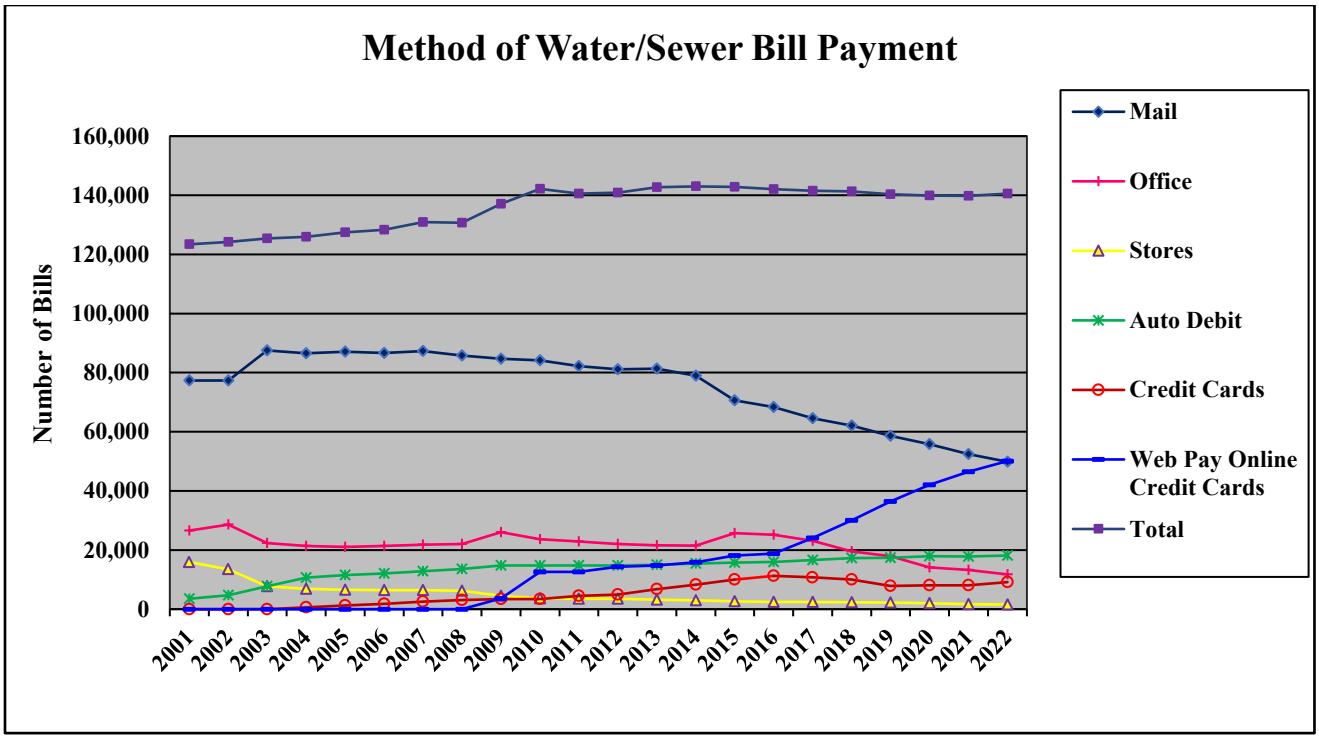
Our Customer Service Representatives do an excellent job assisting Water Works customers with their questions concerning their bills, turning on/off services, signing up for service and paying bills whether it is by telephone or in person. If Customer Service is requested to send a Service Representative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

In 2022, the department mailed out 142,123 water bills, and sent 36,201 reminder notices and 19,497 shut-off notices to customers. There were 140,533 payments processed. There were 18,156 automatic bank payments. There were 6,168 service orders processed for final readings, high bills, dead meters, or to install new meters. There were 745 meters installed or replaced. Customer Service Representative made 710 payment arrangements with customers. 235 water bills were paid on the day of shut-off and 619 services were discontinued for non-payment. There were 164 returned checks that had to be collected from customers. 2,813 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 9,109 credit card payments and 50,101 online web credit card payments.

The Accounting Department processed $23,381,836.91 in receipts and payments in 2022, 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.

Department personnel oversee the daily operations of the storeroom 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 $1,736,130.47.



GENERAL INFORMATION

The Council Bluffs Water Works has 22,319 active service accounts: 20,452 residential; 1,867 are commercial or industrial.

Last year, total production was 4,625,952,000 gallons.

Residential customers consumed 1,022,836,144 gallons in 2022. The average residential customer used 50,012 gallons at a cost of $283.21 per year or $23.60 per month.

Our top ten customers consumed 2,041,585,964 gallons, 44% total production.

SERVICES PROVIDED OUTSIDE THE CITY OF COUNCIL BLUFFS, IOWA

666 outside-City customers paid $440,878.24 for 71,854,376 gallons of water.

The City of Crescent paid $81,222.65 for 25,392,356 gallons of water.

Regional Water paid $217,777.95 for 62,228,364 gallons of water.

In total, outside City Customers paid $790,785.97 for 174,628,080 gallons of water. This represents 5.7% of metered water sales and 3.8% of total water production.

SERVICES PROVIDED TO THE CITY OF COUNCIL BLUFFS, IOWA

The Council Bluffs Water Works provided 47,587,012 gallons of water to the City free of charge, having a value of $193,991.94. Also, on behalf of the City, the Council Bluffs Water Works collected $8,186,371.34 in sewer use fees.

TOP TEN CUSTOMERS

	2022 Rank	2021 Rank
1.	Google, Inc. (Council Bluffs)	1
2.	ConAgra Frozen Foods	2
3.	Tyson Foods, Inc.	3
4.	Plumrose USA, Inc.	4
5.	MidAmerican Energy	6
6.	Tetra, LLC	5
7.	City of Council Bluffs	7
8.	Regional Water	8
9.	Iowa Western Community College	9
10.	Bunge	unranked

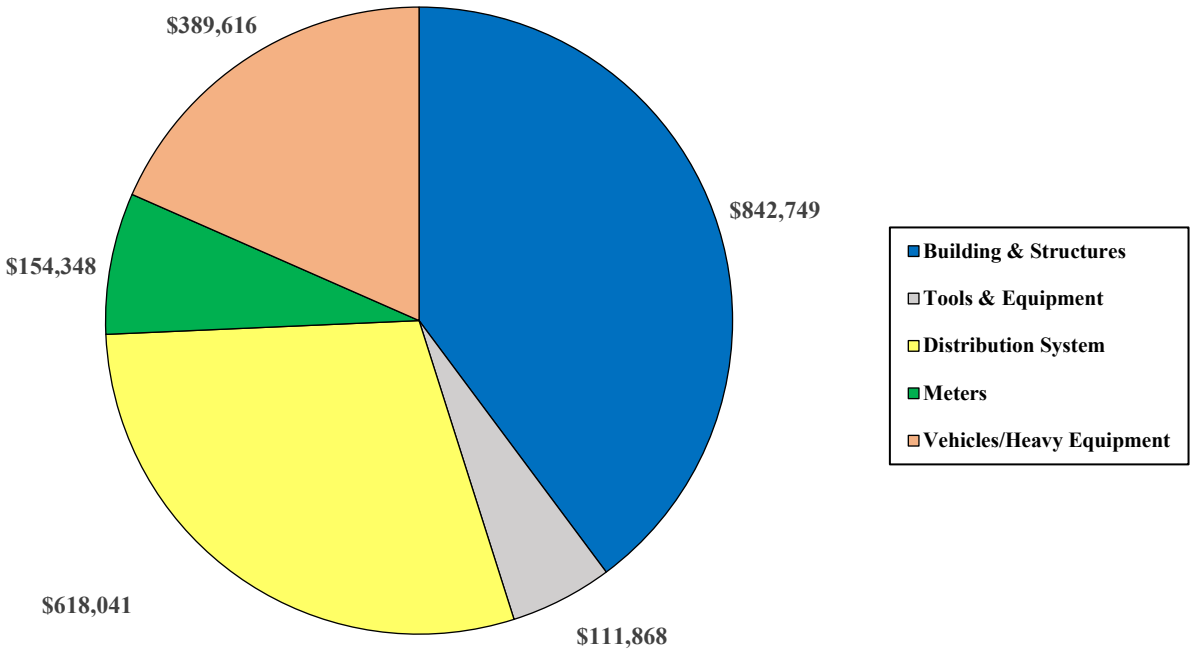
The Council Bluffs Water Works has 315.12 miles of water mains consisting of:

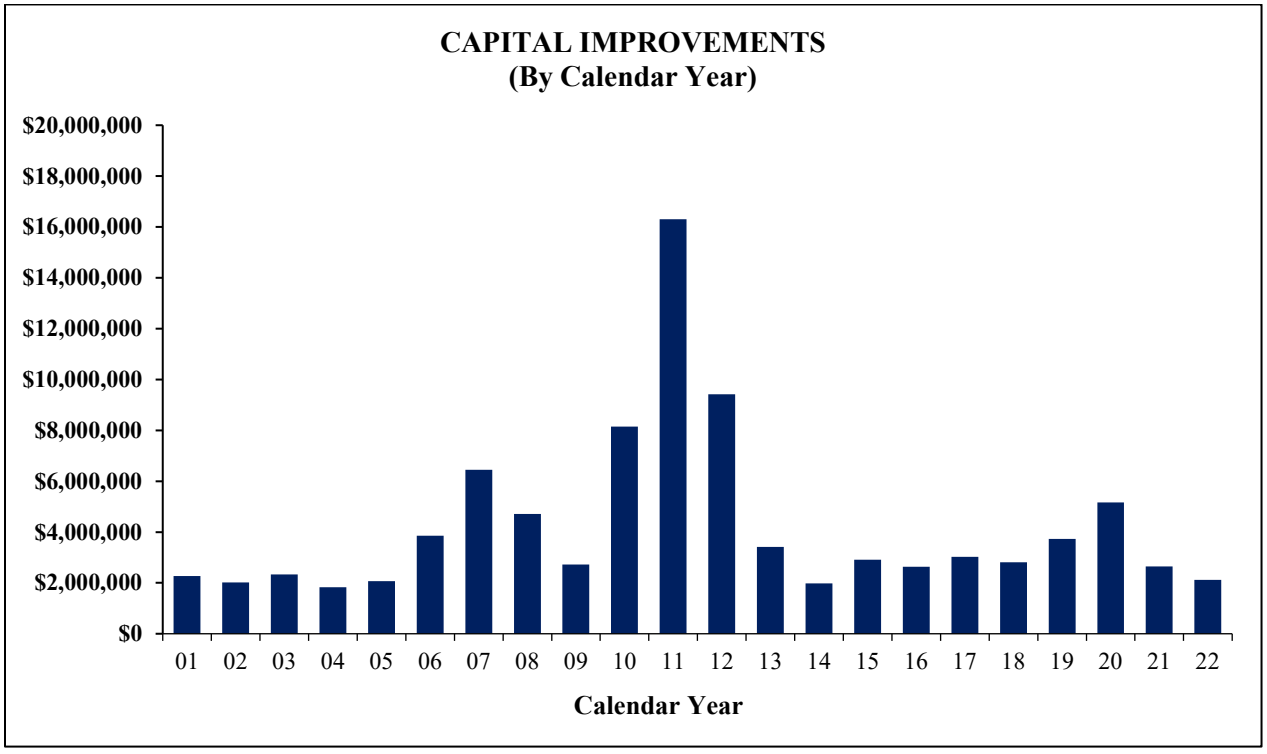
1-inch main	788	feet
1 ½ -inch main	139	feet
2-inch main	1,224	feet
3-inch main	67	feet
4-inch main	37,130	feet
6-inch main	569,791	feet
8-inch main	391,927	feet
10-inch main	167,522	feet
12-inch main	248,476	feet
16-inch main	172,784	feet
18-inch main	99	feet
20-inch main	7,957	feet
24-inch main	21,925	feet
30-inch main	14,707	feet
36-inch main	29,294	feet

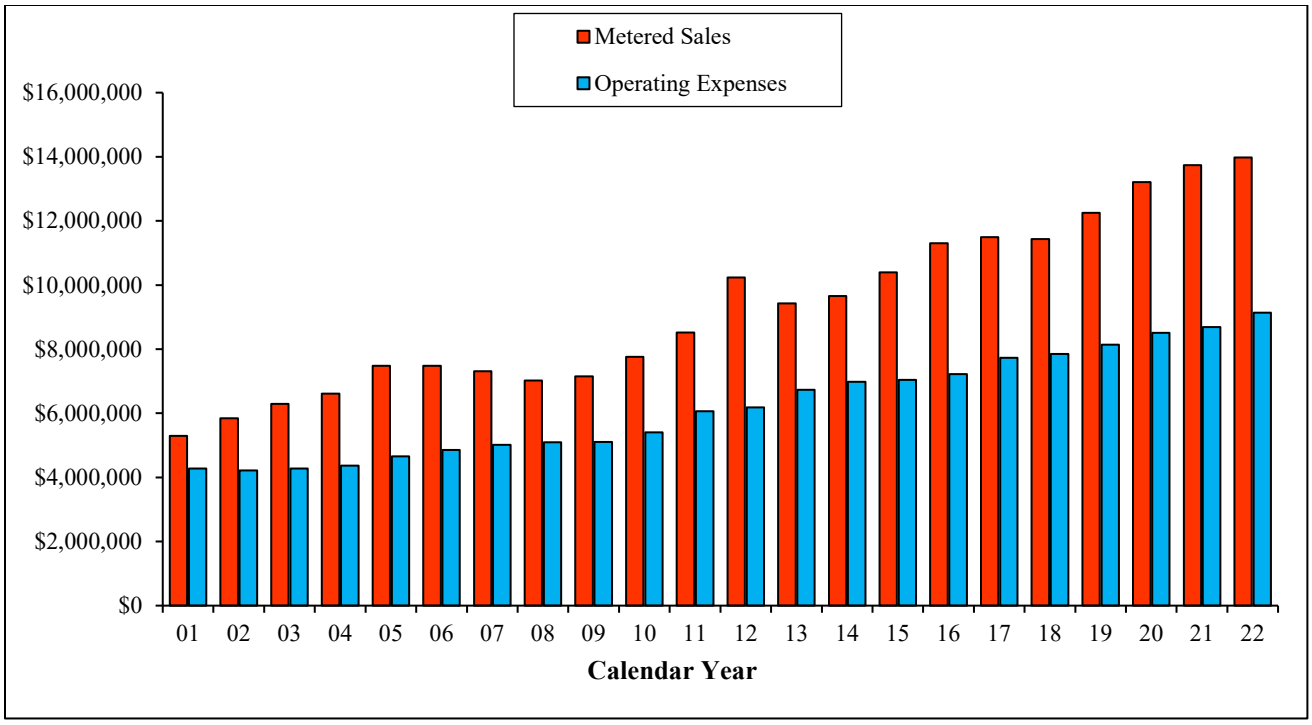
Number of Hydrants: 3,002

Number of Valves: 7,289

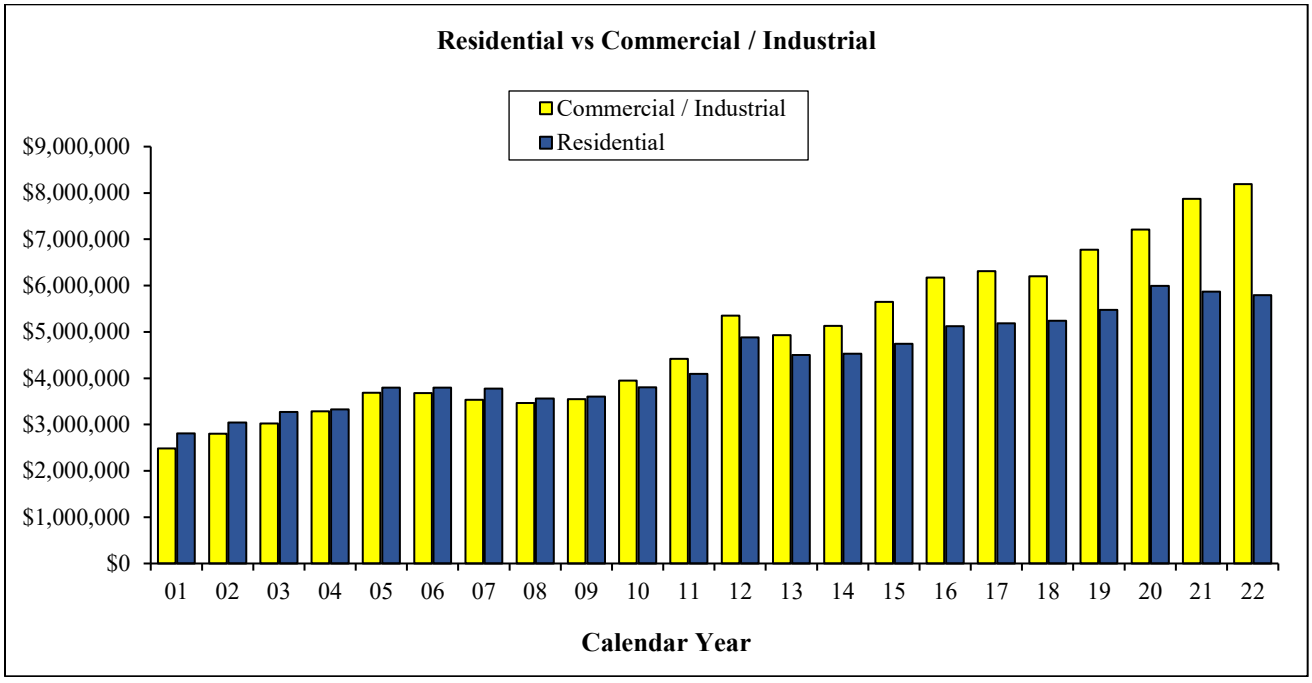
2022 CAPITAL IMPROVEMENTS
TOTAL $2,116,622







METERED SALES vs OPERATING EXPENSES



WATER REVENUE

COUNCIL BLUFFS WATER WORKS

PUMPAGE & METERED CONSUMPTION
(1,000's Gallons)
2022

MONTH	PUMPAGE TOTAL	METERED CONSUMPTION TOTAL	CONSUMPTION COMMERCIAL & INDUSTRIAL	RESIDENTIAL
January	300,409	242,053	168,179	73,874
February	286,541	263,871	187,482	76,389
March	332,522	274,227	210,112	64,115
April	346,498	283,141	218,193	64,948
May	403,138	302,111	234,983	67,128
June	459,542	404,298	319,192	85,106
July	497,275	389,837	297,666	92,171
August	499,583	465,013	332,648	132,365
September	442,303	386,561	280,409	106,152
October	405,464	368,944	262,877	106,067
November	324,915	299,510	217,117	82,393
December	327,762	241,672	169,543	72,129
Totals 2022	4,625,952	3,921,238	2,898,401	1,022,837
Ratio		84.8%	62.7%	22.1%
Totals 2021	4,374,272	3,897,288	2,817,465	1,079,823
Ratio		89.1%	64.4%	24.7%
Totals 2012	4,272,231	3,651,637	2,401,338	1,250,299
Ratio		85.5%	56.2%	29.3%

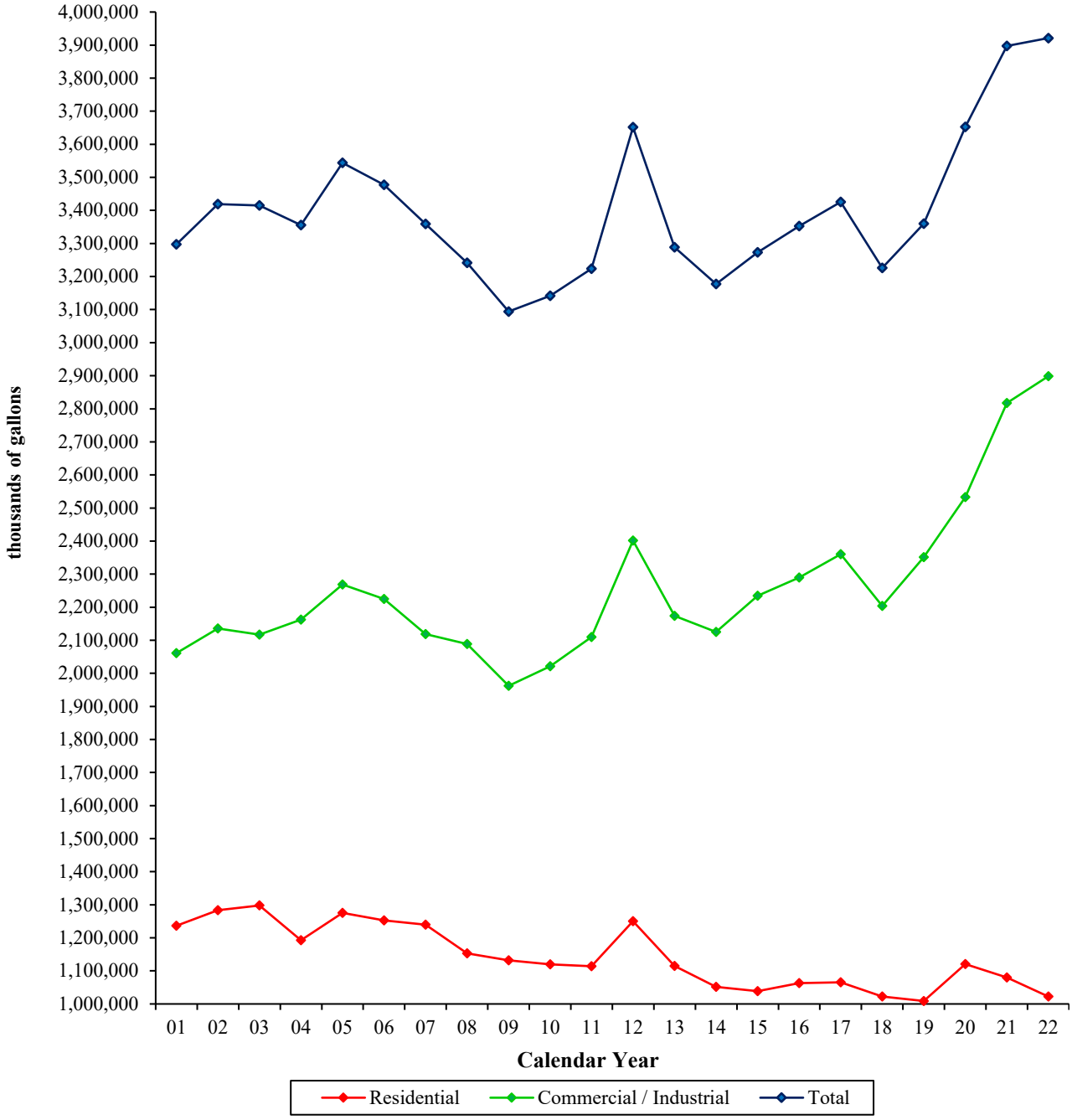
COUNCIL BLUFFS WATER WORKS

METERED SALES ($)
2022

MONTH	TOTAL	COMMERCIAL & INDUSTRIAL	RESIDENTIAL
January	$ 902,353	$ 485,160	$ 417,193
February	964,984	527,170	437,814
March	1,004,868	597,299	407,569
April	1,018,868	597,461	421,407
May	1,087,862	672,130	415,732
June	1,365,599	860,879	504,720
July	1,378,953	861,625	517,328
August	1,579,193	902,673	676,520
September	1,374,624	822,565	552,059
October	1,299,660	731,592	568,068
November	1,058,188	605,492	452,696
December	945,197	524,071	421,126
Totals 2022	$ 13,980,349	$ 8,188,117	$ 5,792,232
Ratio		58.6%	41.4%
Totals 2021	$ 13,741,804	$ 7,871,698	$ 5,870,106
Ratio		57.3%	42.7%
Totals 2012	$ 10,230,602	$ 5,350,237	$ 4,880,365
Ratio		52.3%	47.7%

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 nine 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 four 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.

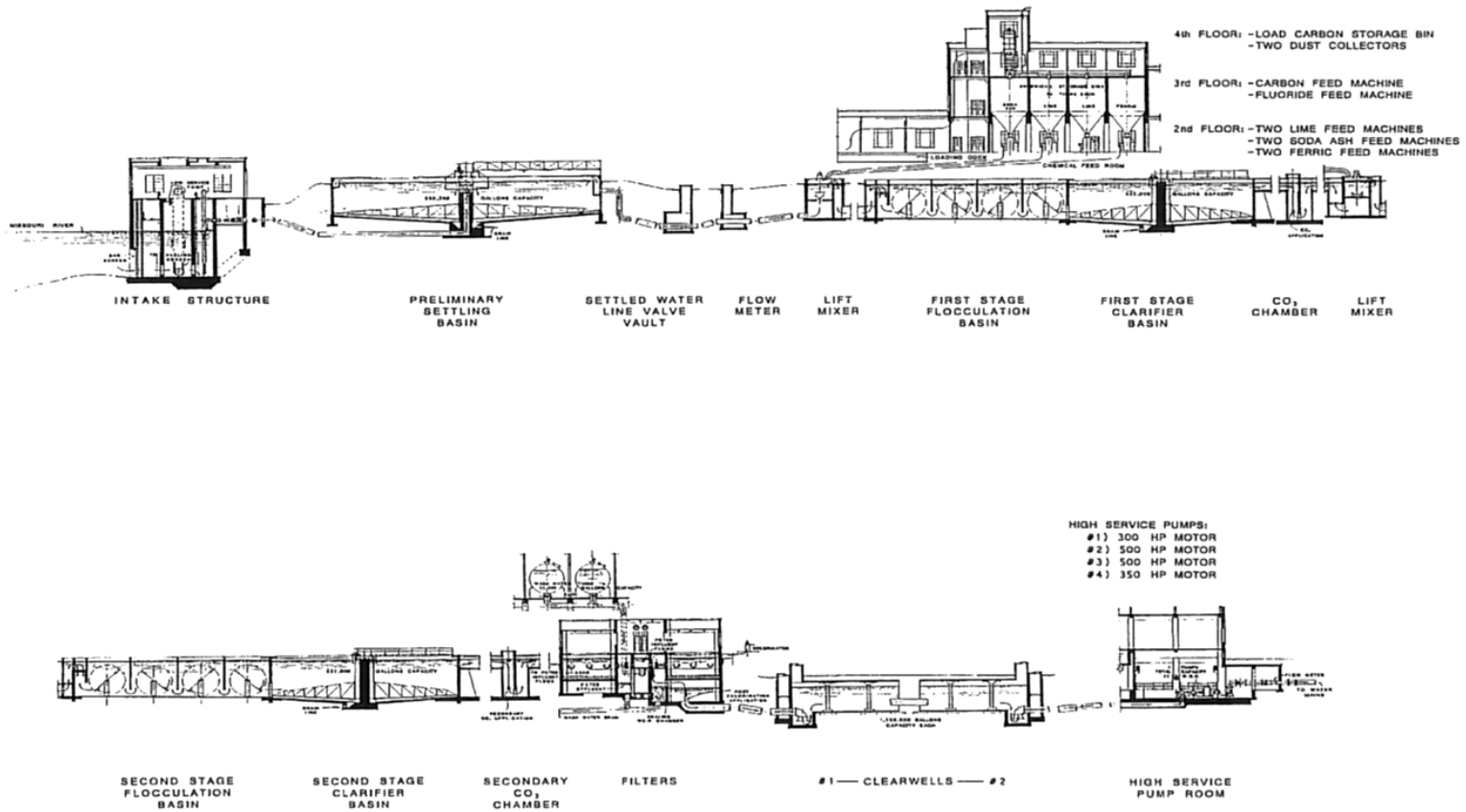
The distribution system has three pressure zones. The first zone is the flat (western and southern) sections of the city and is served by three 2 million gallon reservoirs and one 3-million gallon reservoir. Three of the reservoirs are located downtown and one is located in the southeastern part of the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



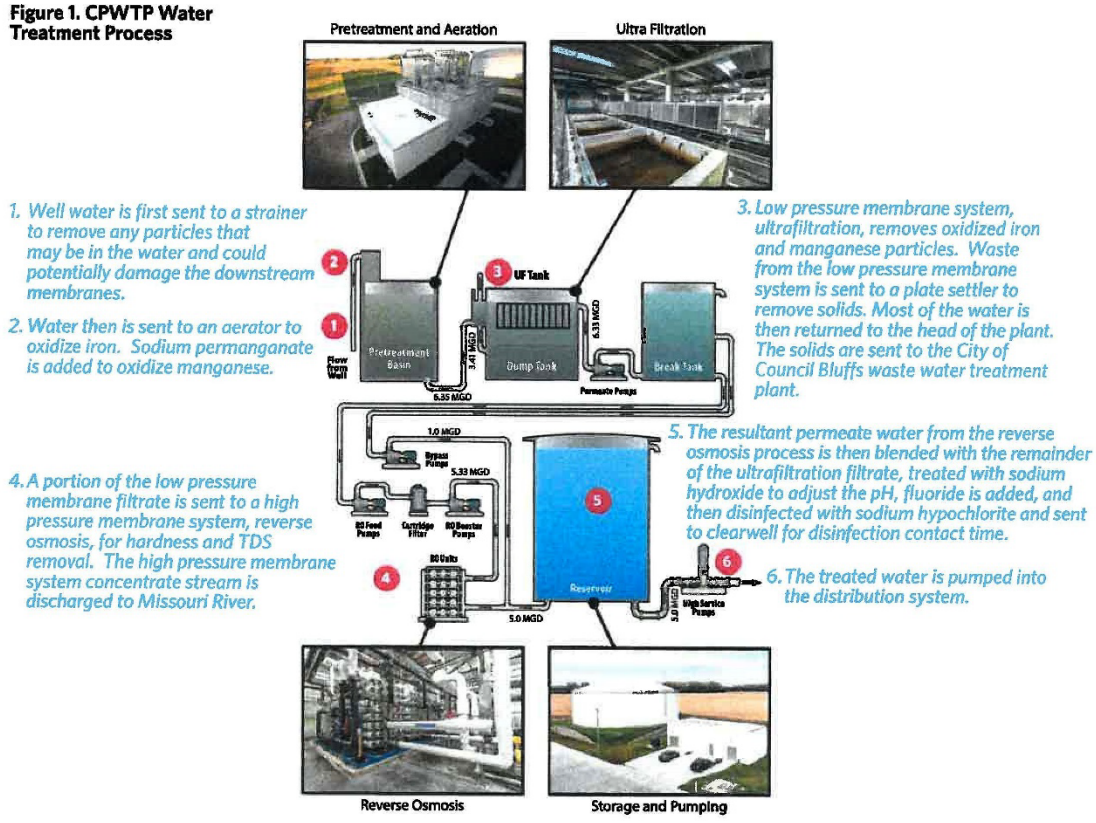
Unique Application of Different Technology, Techniques, Materials or Equipment

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, 2022 AND 2021

(With Independent Auditors' Report Thereon)