



# CITY OF MILBANK | WATER SYSTEM UPDATE

Presented by Banner Associates | Sara Pankonin and Kristin Bisgard







PROJECT / SHEET TITLE	
EXISTING OVERVIEW	
CITY OF MILBANK WATER SYSTEM	
MILBANK, SOUTH DAKOTA	
DESCRIPTION	
REV	DATE

FOR REVIEW ONLY  
 NOT FOR CONSTRUCTION

JOB No:	23064.00
DATE:	JAN 2023
ENG / ARCH:	SP
DESIGNER:	SP
TECHNICIAN:	AJB







# WELL 3 | NEW WELL IN 2024





# WELL 1 | NEW WELL HOUSE UNDER CONSTRUCTION



Replace  
High  
Service  
Pumps

Scheduled  
for 2025



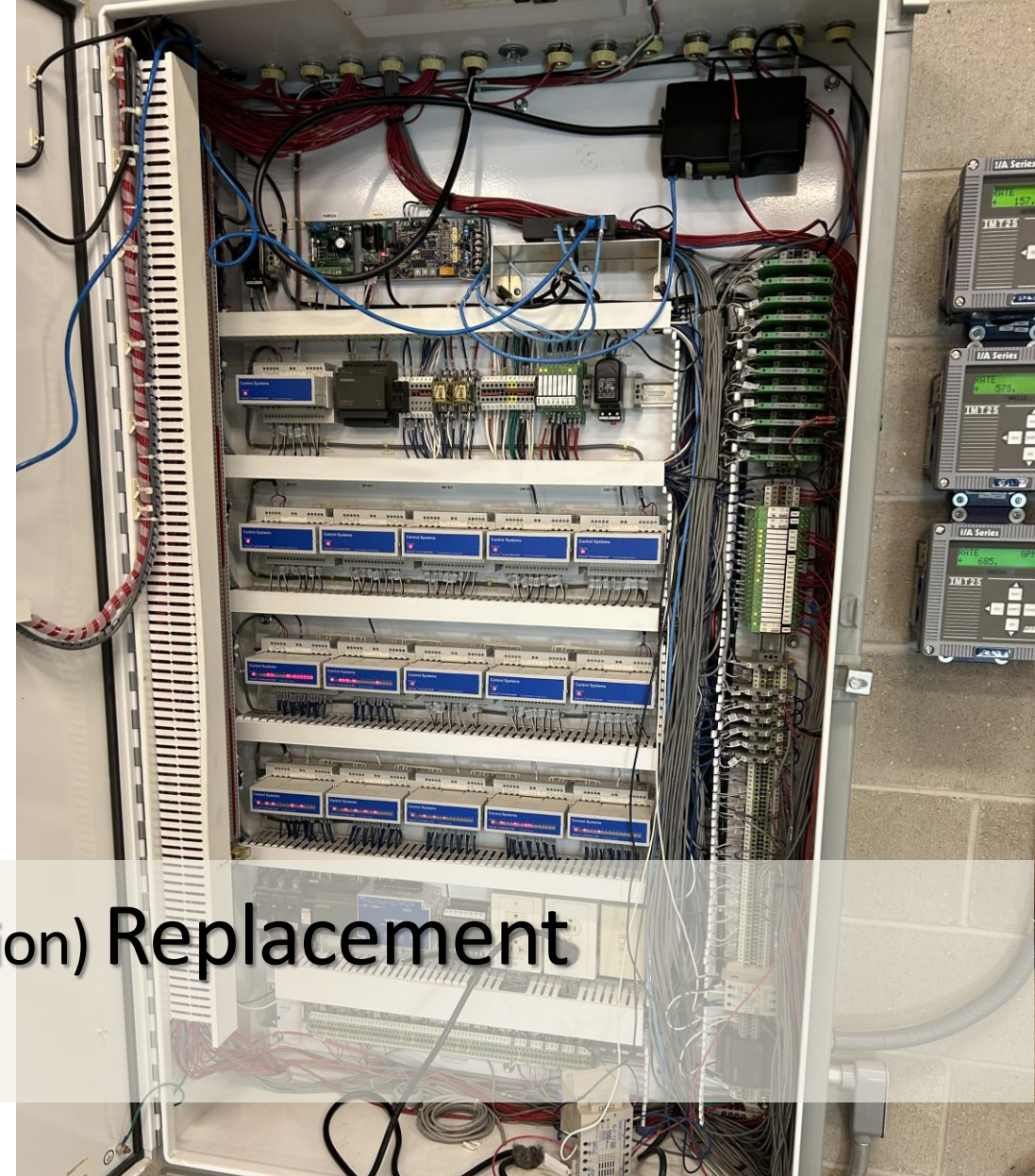
City of Milbank  
Water System Update







# SCADA (Supervisory Control and Data Acquisition) Replacement Planned for 2025







8SME

8-inch borehole  
submersible motor

**HASSLEN CONSTRUCTION**

Reviewed       Revise & Resubmit  
 Accepted       Make Corrections Noted  
 Rejected

Reviewed for general requirements and conformance to protect specifications and drawings. This review shall not relieve the subcontractor of responsibility for conformance to contract documents or for defective work resulting from any errors or omissions.

By: *[Signature]* Date: 8/19/24

**Available Horse Power**

From: 40 HP (30 kW)

To: 175 HP (130 kW)

**Available Voltages**

460 Volts - 60 Hertz

380 Volts - 50 Hertz

**Available Speed**

2-Pole

**Available Insulation Class**

Standard: Y

**Available Materials Of Construction**

Standard: Cast Iron Ends with NSF Certified Epoxy

Optional: Complete 316L SS



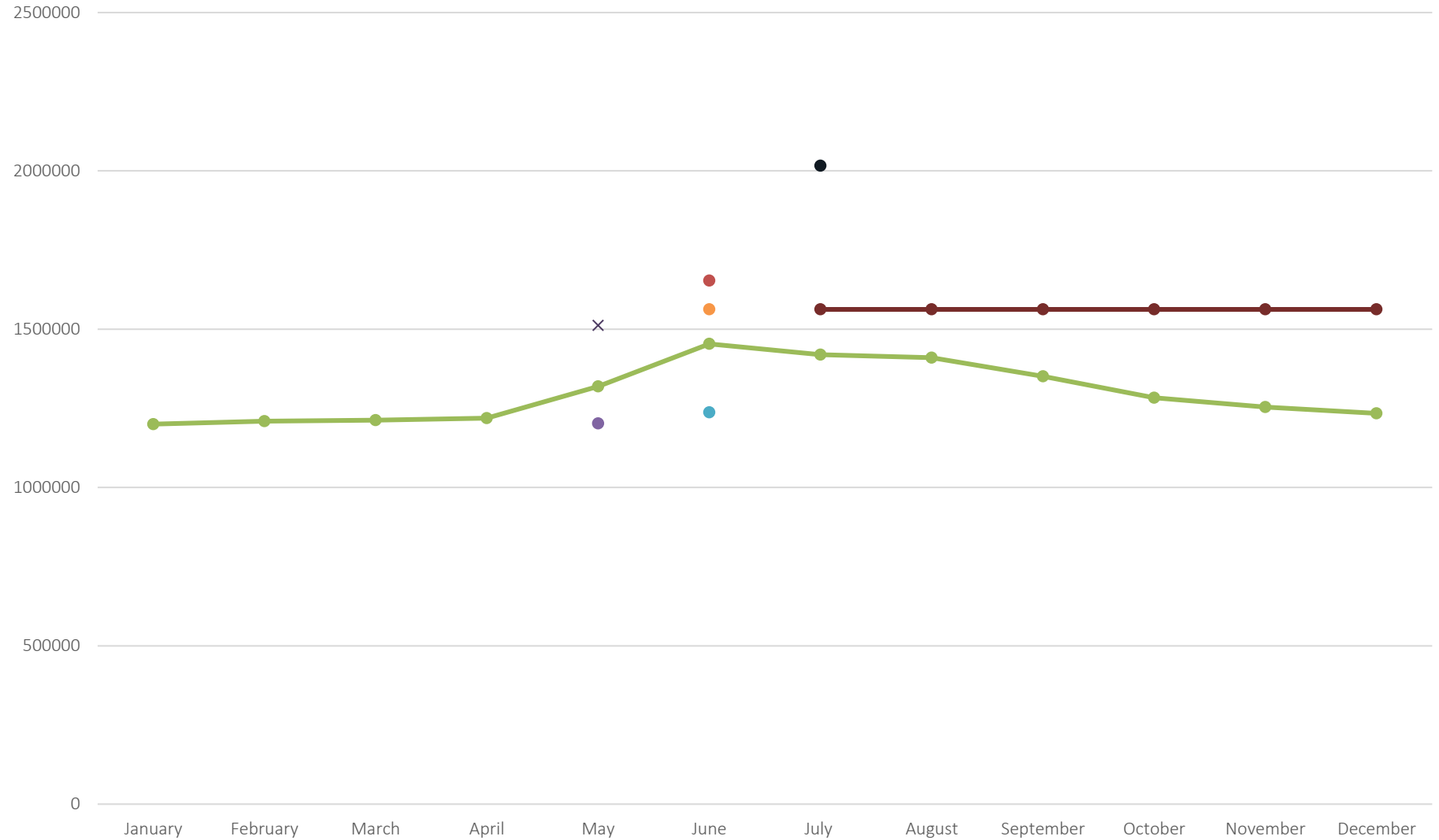
8" SERIES

# New Well Pumps and Motors Planned for Summer 2025

8-INCH BOREHOLE  
SUBMERSIBLE  
ELECTRIC MOTOR



PROJECTED 2025 WATER USE



Projected  
2025 Water  
Use During  
Well Pump  
Replacements



City of Milbank  
Water System Update



# Water Quality Update





**2023 Table of Detected Regulated Contaminants For Milbank (EPA ID 0207)**

**Terms and abbreviations used in this table:**

- \* **Maximum Contaminant Level Goal (MCLG):** the level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.
- \* **Maximum Contaminant Level (MCL):** the highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.
- \* **Action Level (AL):** the concentration of a contaminant which, when exceeded, triggers treatment or other requirements which a water system must follow. For Lead and Copper, 90% of the samples must be below the AL.
- \* **Treatment Technique (TT):** A required process intended to reduce the level of a contaminant in drinking water. For turbidity, 95% of samples must be less than 0.3 NTU
- \* **Running Annual Average (RAA):** Compliance is calculated using the running annual average of samples from designated monitoring locations.

**Units:**

- \* **MFL:** million fibers per liter
- \* **mrem/year:** millirems per year (a measure of radiation absorbed by the body)
- \* **NTU:** Nephelometric Turbidity Units
- \* **pCi:** picocuries per liter (measure of radioactivity)
- \* **ppm:** parts per million, or milligrams per liter (mg/l)
- \* **ppb:** parts per billion, or micrograms per liter (ug/l)
- \* **ppt:** parts per trillion, or nanograms per liter
- \* **ppq:** parts per quadrillion, or picograms per liter
- \* **pspm:** positive samples per month

2023 Table of  
Detected  
**Regulated**  
Contaminants  
for Milbank

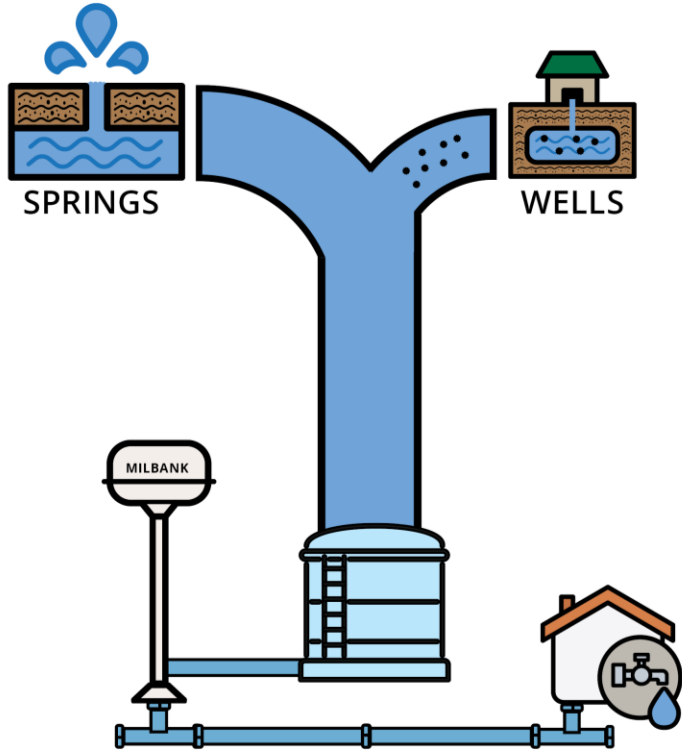
Substance	90% Level	Highest Allowable Level	Major Source of Contaminant
Copper	0.5	1.3 ppm	household plumbing systems; erosion of natural deposits; leaching from vatives.
Lead	0.01	15 ppb	household plumbing systems; erosion of natural deposits.
Barium	0.026	2 ppm	
Chromium	5.3	100 ppm	drilling wastes; discharge from metal refineries; erosion of natural deposits.
Fluoride	0.73	4 ppm	steel and pulp mills; erosion of natural deposits.
Nitrate	2.4	10 ppm	natural deposits; water additive which promotes strong teeth; discharge from aluminum factories.
Selenium	2.2	50 ppb	fertilizer use; leaching from septic tanks, sewage; erosion of natural
Total trihalomethanes	0.72	80 ppb	from petroleum and metal refineries; erosion of natural deposits; discharge water chlorination. Results are reported as a running annual

IRON NOT REGULATED



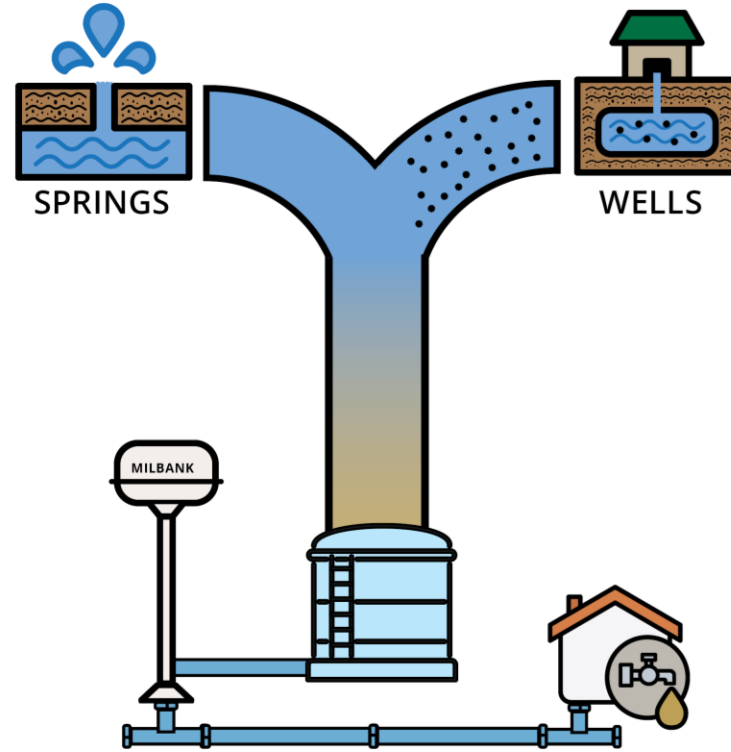


### MOSTLY SPRING WATER



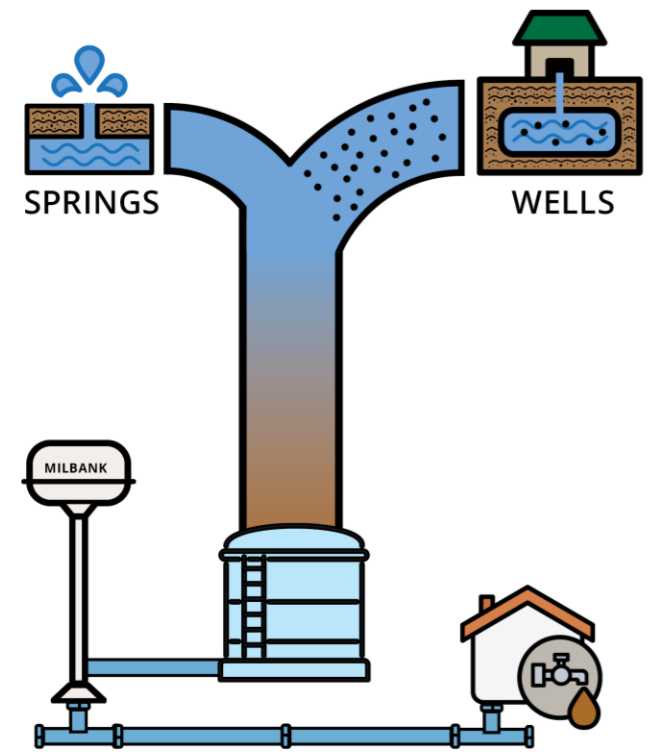
PAST

### BLENDED SPRING & WELL WATER



CURRENT

### MOSTLY WELL WATER



FUTURE

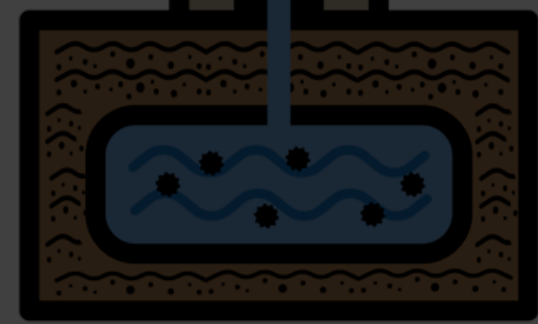
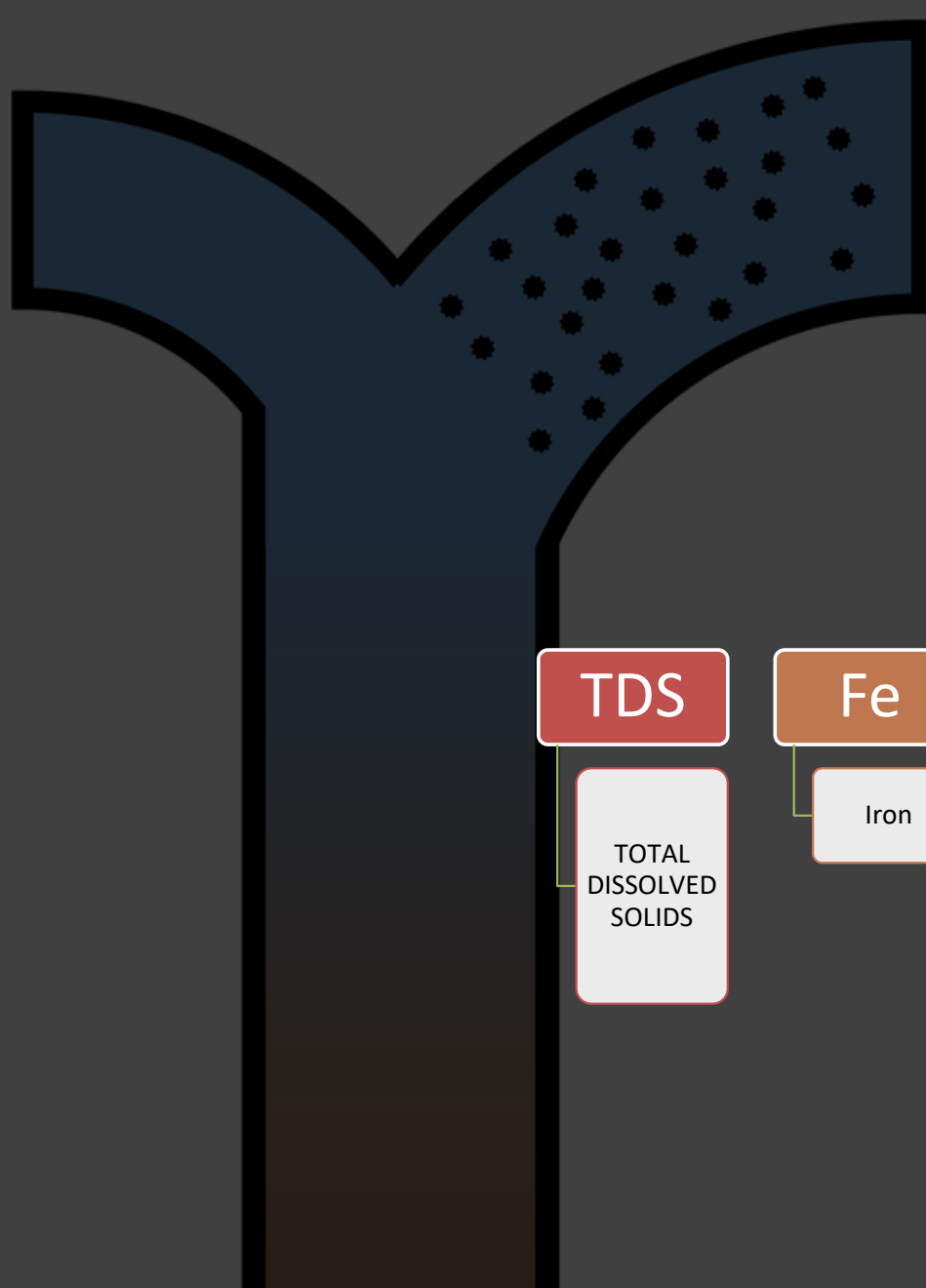




# SPRINGS

Ca  
Calcium

Mg  
Magnesium



# WELLS

TDS  
TOTAL DISSOLVED SOLIDS

Fe  
Iron

Na  
Sodium

SO4  
Sulphate

NH4  
Ammonia

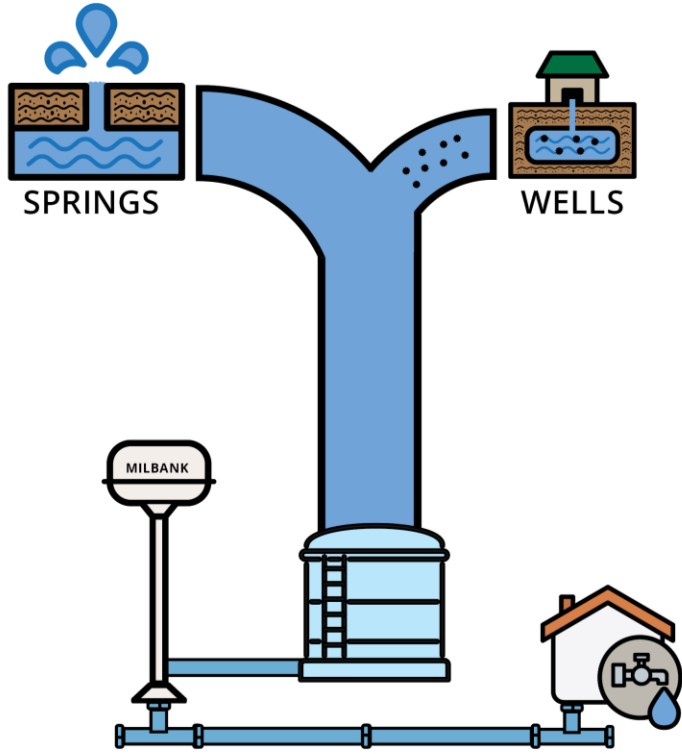
Ca  
Calcium

Mg  
Magnesium



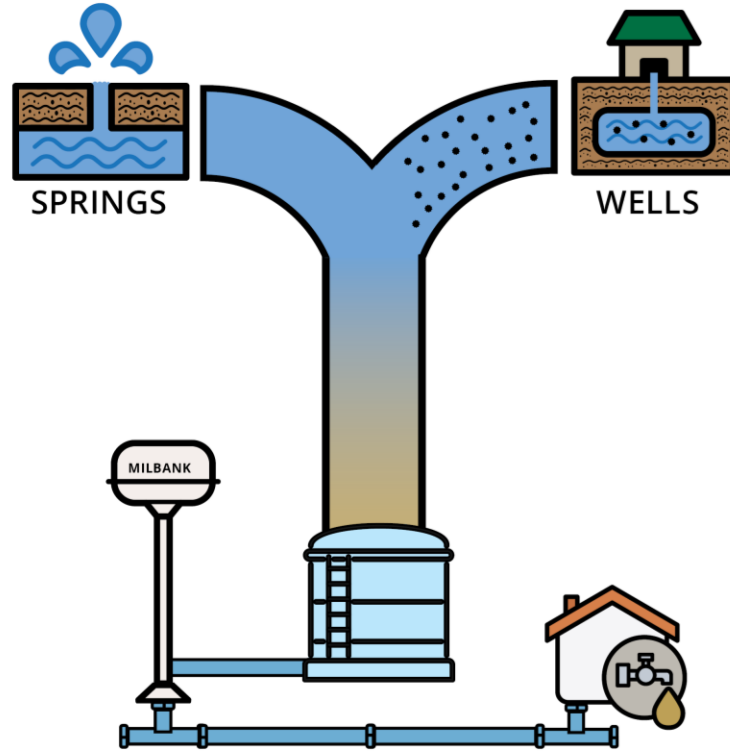


### MOSTLY SPRING WATER



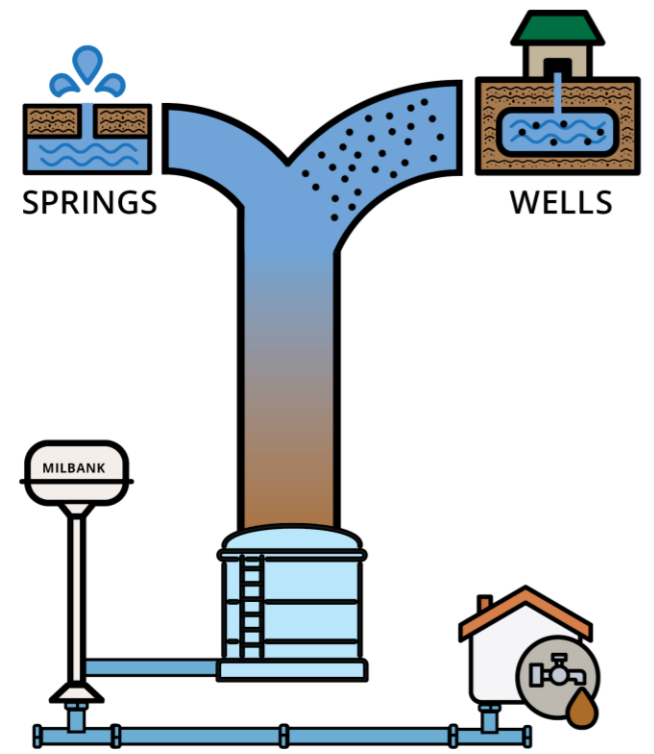
PAST

### BLENDED SPRING & WELL WATER



CURRENT

### MOSTLY WELL WATER



FUTURE



Secondary Drinking Water Regulation are **non-enforceable** Federal guidelines regarding cosmetic effects such as tooth or skin discoloration, or aesthetic effects such as taste, odor, or color of drinking water.





Contaminants that effect odor and taste are Chloride, Iron, Manganese, pH, Sulfate and TDS.



Contaminants that effect color are **Iron**, **Manganese**, **TDS**.

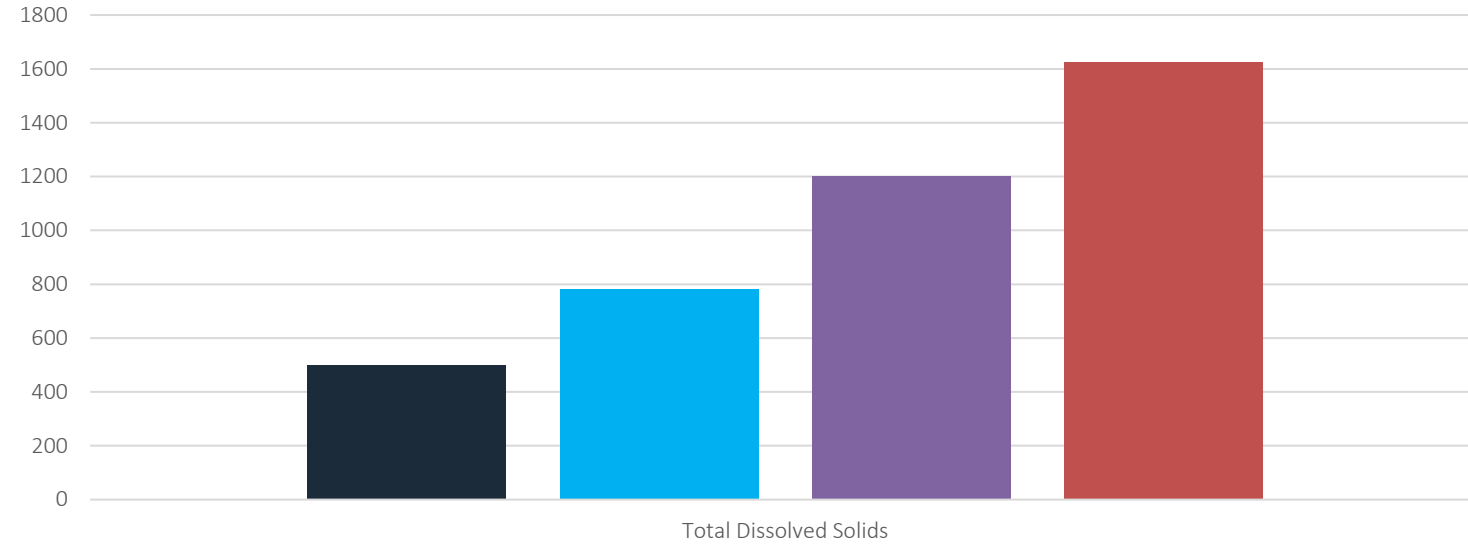


Iron, Manganese, Sodium, Sulfate and TDS are not considered to present a risk to human health at the SMCLs, yet can influence public acceptance of drinking water.

Secondary Maximum Contaminant Levels are currently exceeded when well water is the majority of the water supply and concentration will increase as a higher percentage of well water is used.



### Total Dissolved Solids (TDS)

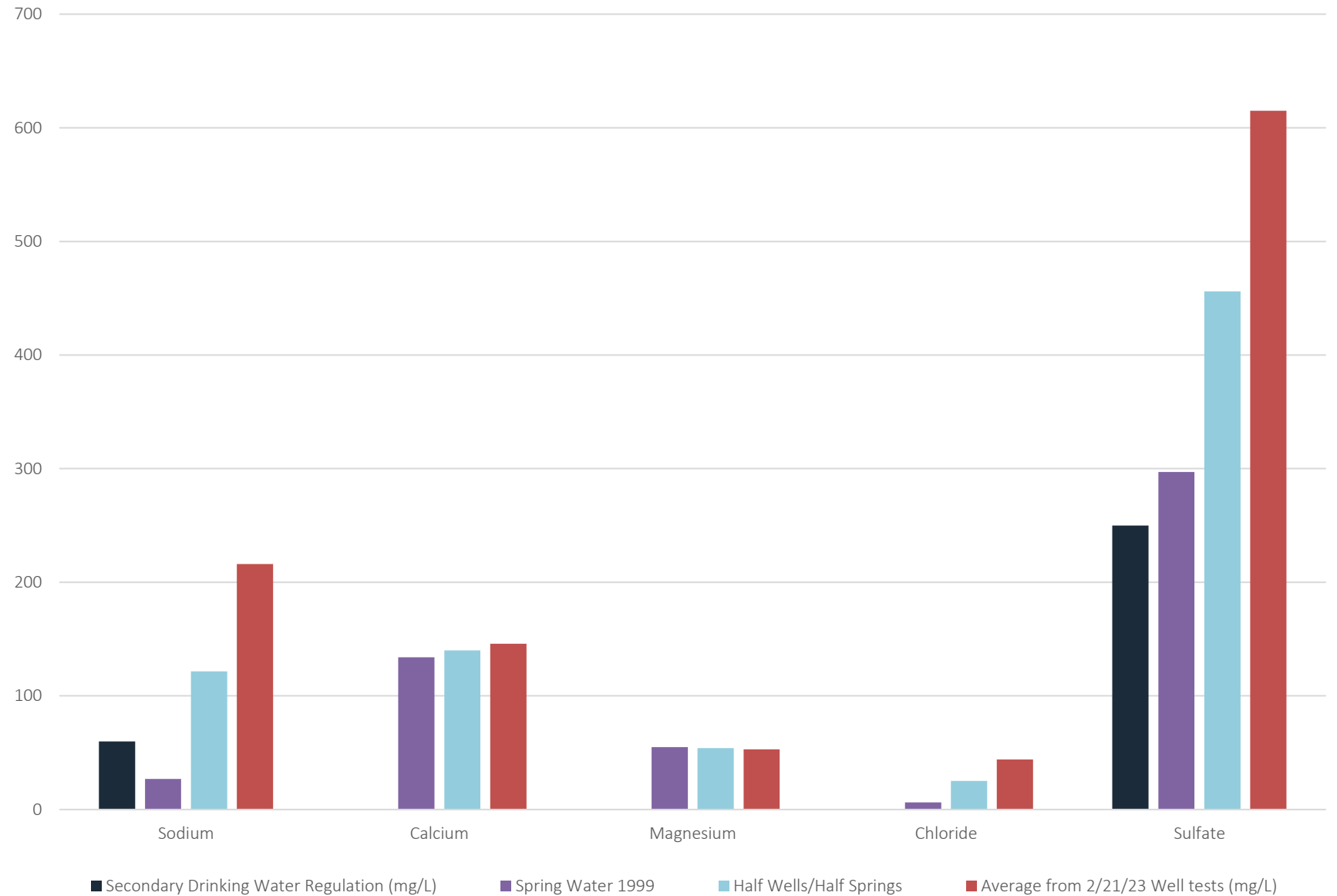


■ Secondary Drinking Water Regulation (mg/L) ■ Spring Water 1999 ■ Half Wells/Half Springs ■ Average from 2/21/23 Well tests (mg/L)

# TOTAL DISSOLVED SOLIDS (TDS)



Cations and Anions

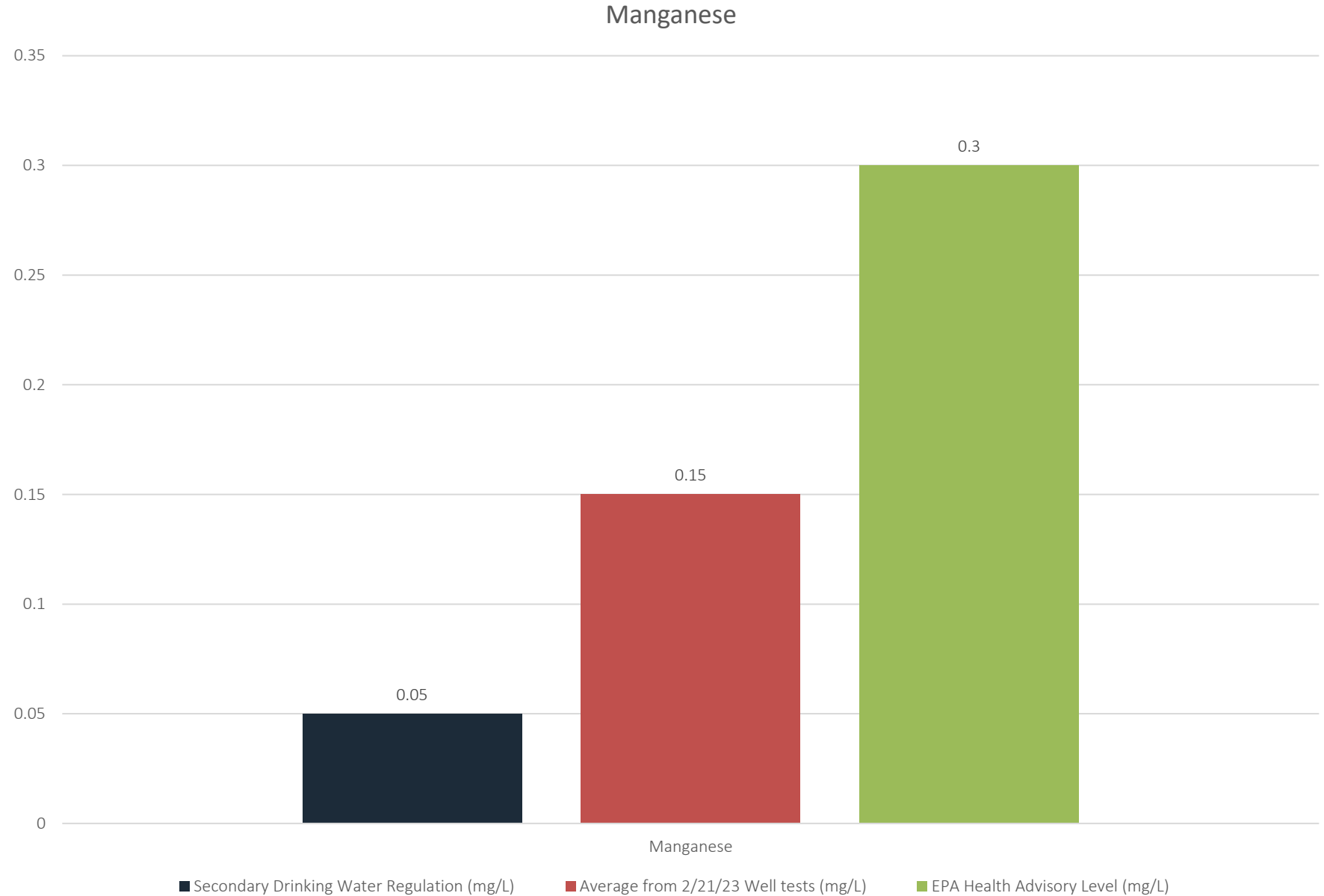


# Cations and Anions

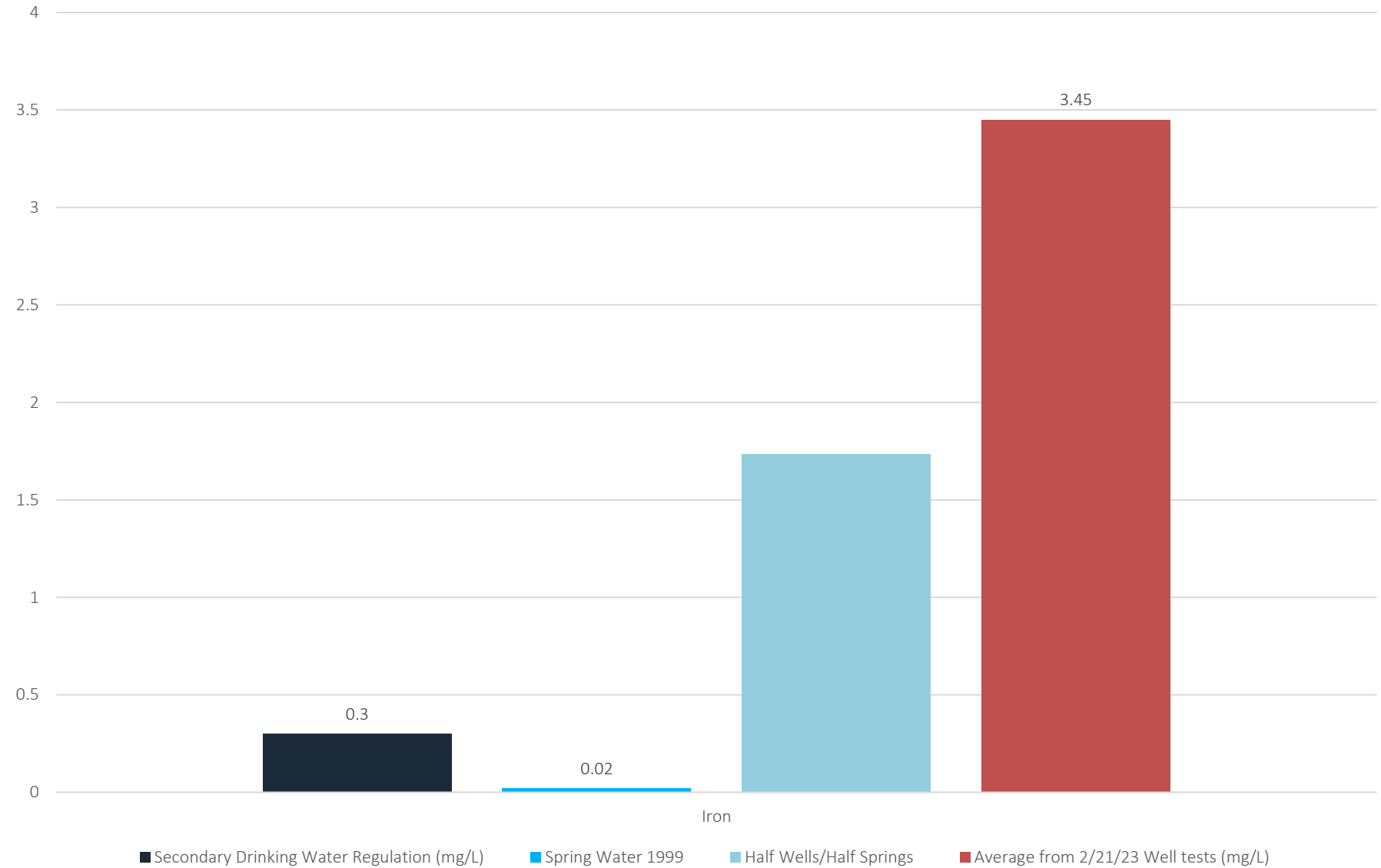




# Manganese



### Iron



# Iron





Table 4-4: City of Milbank Historical Raw Water Characteristics

Parameter	Well Water			Spring Water	
	06/30/81	07/27/83	2/21/23	06/22/99	12/18/95
pH (pH units)	7.29	7.10	7.53	7.46	7.69
Iron (mg/l)	0.78	1.02	3.45	0.02	0.06
Manganese (mg/l)	0.08	0.15	0.15	0.02	0.02
TDS (mg/l)	1220	1340	1624	781	993
Conductivity	1664	1924	1750	1030	1320
"M" Alk (mg/l HCO <sub>3</sub> <sup>-</sup> )	330	355	383	279	310
"P" Alk (mg/l HCO <sub>3</sub> <sup>-</sup> )	0	0	0	0	0
Calcium (mg/l CaCO <sub>3</sub> )	118	126	147	134	172
Magnesium (mg/l CaCO <sub>3</sub> )	43.9	44.6	53	55.0	71.0
Total Hard. (mg/l CaCO <sub>3</sub> )	475	498	585	561	722
Chloride (mg/l)	41.2	66.1	44	6.2	9.5
Sulfate (mg/l)	478	615	615	297	451
Sodium (mg/l)	189	272	216	27	28
Potassium (mg/l)	8.5	10.0	10.5	5.1	5.5
Nitrate (mg/l)	0.6	1.7	0.49	0.9	0.9

Iron  
increased  
in wells  
from 1981  
to 2023



HOW MANY  
USERS HAVE  
WATER  
SOFTENERS?

HOW MUCH  
SPENT PER  
MONTH ON  
SOFTENER  
SALT?



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WATER



WASTEWATER  
TREATMENT  
FACILITY



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2023 WELL WATER CALCULATED CONDUCTIVITY 1,590  
TO 1,960 BEFORE SOFTENERS AND PRIVATE FILTERS



WASTEWATER DISCHARGE  
PERMIT MONITORING  
HAS BEEN RANGING 2,800 TO  
3,600 (EXTENDED PERMIT  
SINCE 2009)

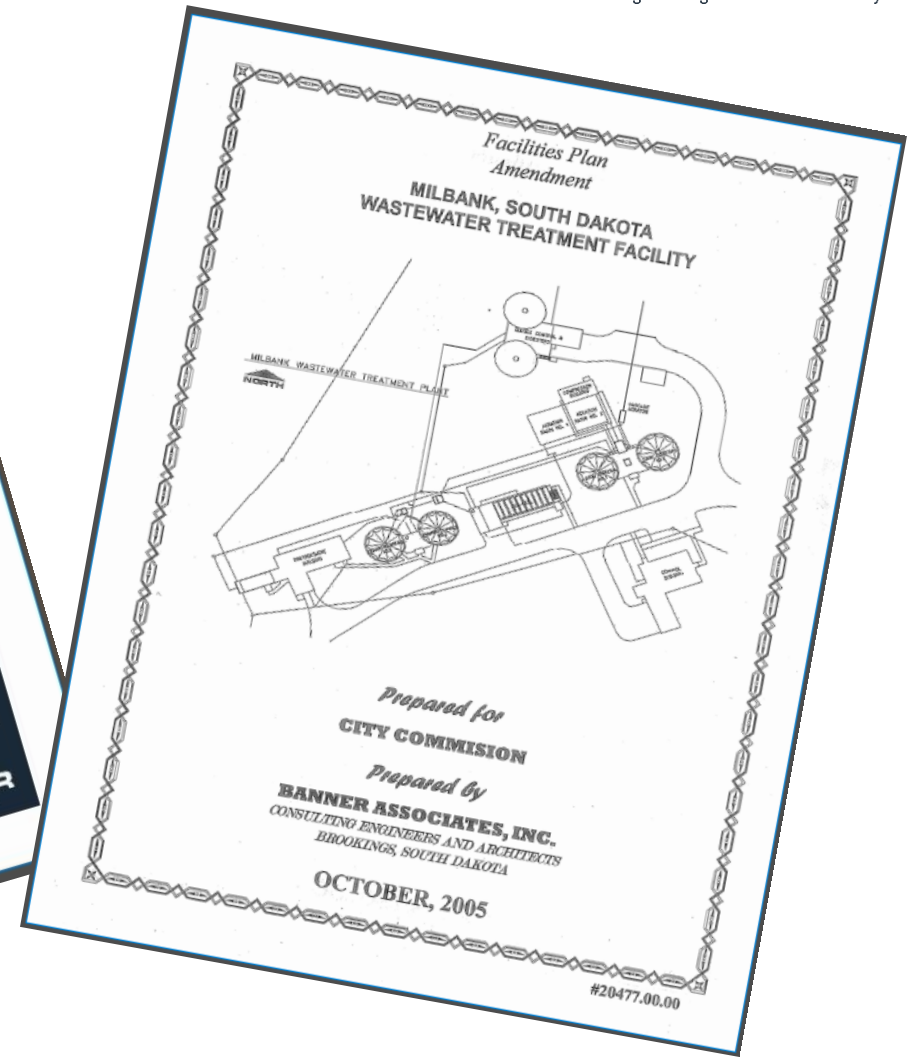
BENEFICIAL USES OF SURFACE  
WATERS CONDUCTIVITY  
RANGE 2,500/4,375  
(Irrigation) 4,000/7,000 (Fish  
& Wildlife)  
(ARSD 74:51:01)



WATER



WASTEWATER



WATER TREATMENT STUDY - FEBRUARY 10, 2025

WASTEWATER TREATMENT FACILITIES PLAN – MARCH 2025



**THANK YOU** for your time  
**QUESTIONS?**





**Priority Criteria**

(1) Occurrences of nitrates, fecal coliform, or E. Coli bacteria in samples within the past three years have exceeded the allowable limits as defined in chapter [74:04:12](#), and this project will address the suspected cause of these occurrences;

or  
occurrences of an emerging contaminant in samples within the past three years, and this project will address the suspected cause of these occurrences or provide an alternative water source to replace a source or sources contaminated with an emerging contaminant;

or  
occurrences of chronic primary drinking water contaminants in samples within the past three years have exceeded the allowable limits as defined in chapter [74:04:12](#) or the system is in violation of a treatment technique, and this project will address the suspected cause of these occurrences or correct the treatment technique violation;

An occurrence of nitrate = 150 points.

Milbank would gather 2 points per contaminate, up to a maximum of 10 points.

(4) Occurrences of secondary drinking water contaminants in samples within the past three years have exceeded the guidelines, and this project will address the suspected cause of these occurrences. The specific contaminants and the maximum contaminant level are:

chloride	250 mg/L
color	15 color units
fluoride	2.0 mg/L
foaming agents	0.5 mg/L
iron	0.3 mg/L
manganese	0.05 mg/L
odor	3 threshold odor number
pH	range: 6.5 to 8.5
silver	0.1 mg/L
sulfate	250 mg/L
total dissolved solids	500 mg/L
zinc	5 mg/L

2 points per contaminant (up to a maximum of 10 points)

Milbank might have between 65 – 215 points by next year.

**Priority Points**

150 points

100 points

100 points  
(Maximum Points = 150)

- (5) Occurrences of total coliform in samples within the past three years have exceeded the allowable limits, and this project will address the suspected cause of these occurrences; 25 points
- (6) Rehabilitation of contaminated drinking water sources or development of sources to replace contaminated sources; 25 points
- (7) Development of sources if existing sources are unable to supply the peak day demand or unable to supply the peak day demand with the largest source out of service; 15 points
- (8) Installation of water meters if:
  - (a) The meters are being installed on services that were previously not metered; 50 points
  - or
  - (b) The meters being installed are replacing existing meters; 10 points
- (9) Replacement of transmission lines for the following reasons (points are additive as they apply):
  - (a) Removal of lead piping; 30 points
  - (b) Decrease in water loss volume by 10% or more; 15 points
  - (c) Looping of lines that will result in improved water quality; 10 points
  - (d) Eliminating cast iron or asbestos cement pipe; 5 points
- (10) Construction of storage for a system with capacity less than an average day demand or to address low pressure problems within the system, where low pressure is defined as less than twenty pounds per square inch at ground level at any point in the distribution system under all conditions of flow; 15 points

Water Treatment Plant = 50 points.

(11) The construction, upgrade, or replacement of a water treatment plant or its components to assure compliance with upcoming or existing regulations; 50 points

(12) Population points according to the following schedule based on the population of the applicant as reported by the 2020 census as prepared by the Bureau of Census, Department of Commerce:

1 to 200 persons	2 points
201 to 500 persons	3 points
501 to 1,000 persons	4 points
1,001 to 2,500 persons	5 points
2,501 to 5,000 persons	6 points
5,001 to 10,000 persons	7 points
10,001 to 30,000 persons	8 points
30,001 and greater	10 points.

Population = 6 points.