



NORTHERN
ENGINEERING

TOWN OF EATON

WATER MASTER PLAN

SEPTEMBER 2022

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FORT COLLINS

GREELEY

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APPENDIX B – WATER SYSTEM CONDITION ASSESSMENT

1.0 INTRODUCTION

The Town of Eaton (Town), incorporated in 1892, is located approximately seven miles north of the City of Greeley along U.S. Highway 85 and is on the mainline of the Union Pacific Railroad. Its location has allowed Eaton to become a major processing and shipping center in Northern Colorado. The Town has experienced moderate growth over the last two decades, mainly from newer residential developments such as Governor's Ranch and Aspen Meadows. Furthermore, the Town is anticipating another substantial development called Brown Farm. Though this development is still in the planning stages, this potential 173.5-acre Planned Unit Development (PUD) is expected to increase the current population by approximately 40 to 47 percent.

1.1 PURPOSE

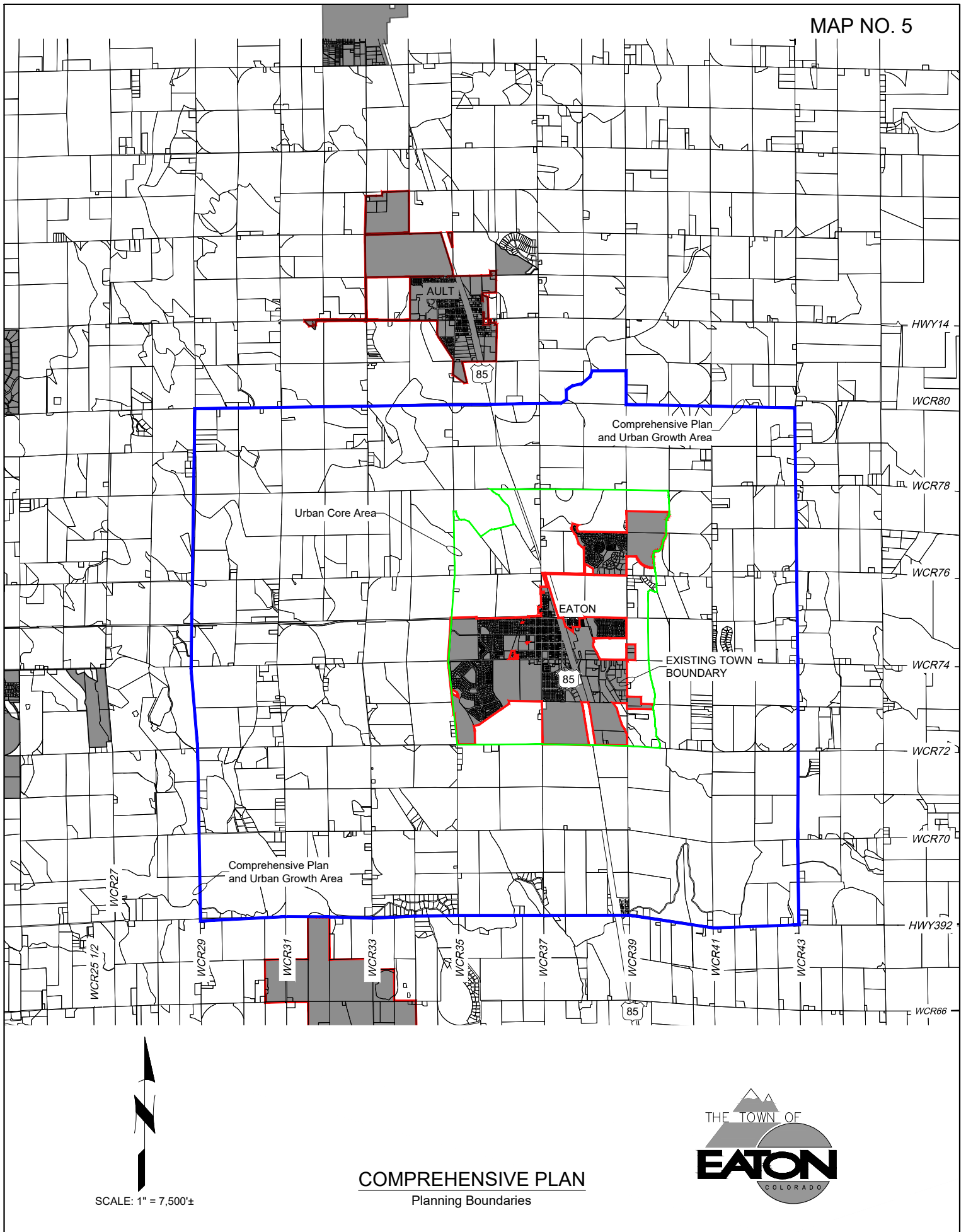
This Water Master Plan (Plan) is intended to be a guiding document for the Town of Eaton to follow as the water system ages and expands to ensure projected water demands are met with high water quality standards. This Plan addresses all critical aspects of the Town's water system, including supply, distribution, and storage, as well as compiling recent studies by various consultants. The scope of work for this Plan, directed by the Town, includes water usage evaluation, population and water demand projections, inventory of existing water facilities, hydraulic modeling, capital improvement planning for rehabilitation and expansion projects, and probable project cost estimates of recommended improvements.

1.2 BACKGROUND OF WATER SYSTEM

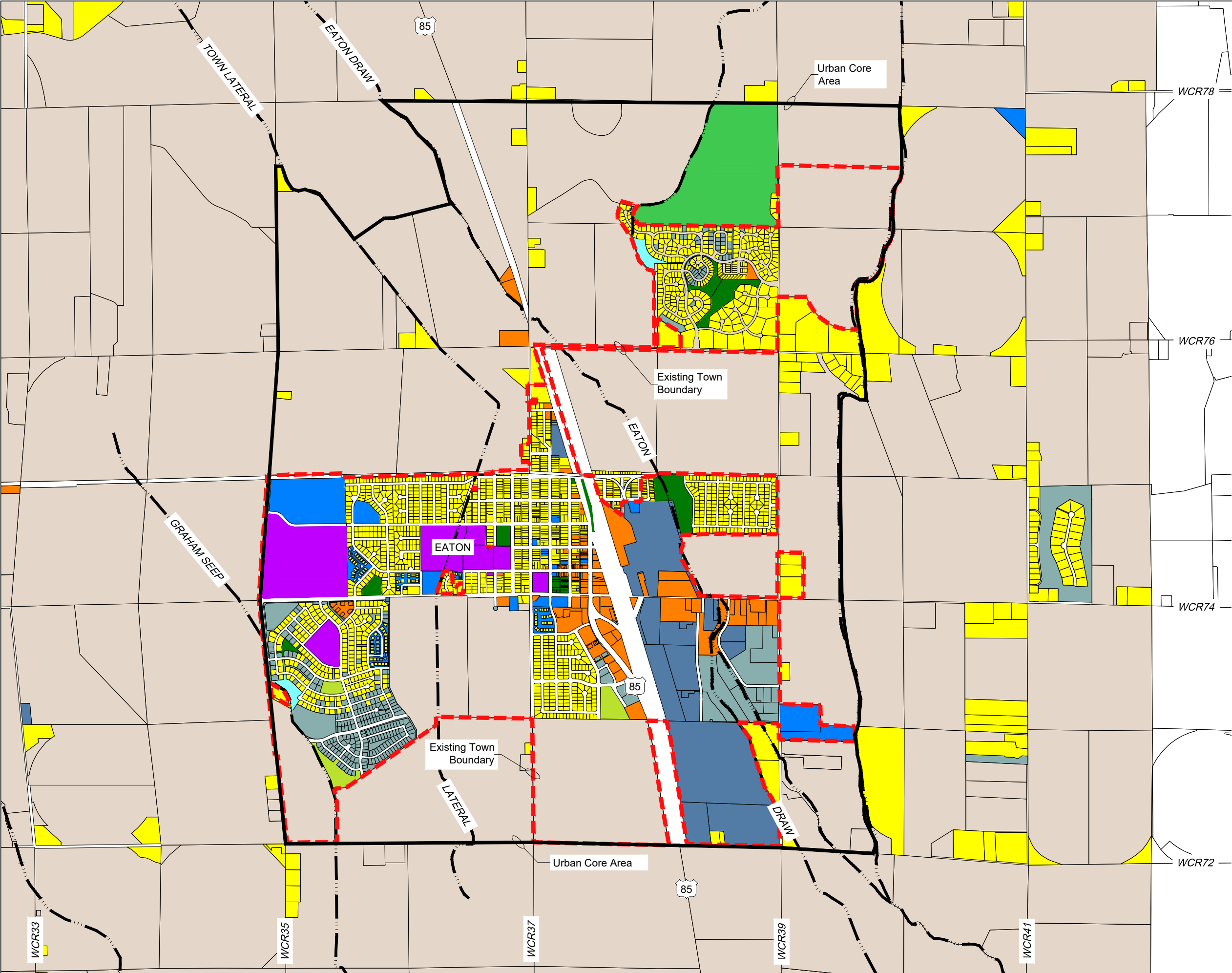
The Town of Eaton provides drinking water to residential (both urban and rural), commercial, and industrial customers located within and adjacent to the Town's incorporated boundary. The existing water service area covers over 2,000 acres (nearly 3.2 square miles) and is anticipated to grow as the Town develops new neighborhoods and businesses. The water service area boundary is approximately the same as the Town limits and is generally bounded by WCR 78 to the north and WCR 72 to the south, with U.S. Highway 85 running through the center. The zoning within the Water Service Area contains residential, commercial, and industrial districts. The residential district is comprised of single-family, light-density, medium-density, and residential mixed-use. The commercial district is comprised of neighborhood, downtown, and highway commercial. The industrial district is comprised of indoor, outdoor, screened planned unit development (PUD), and agricultural uses. The overall comprehensive planning boundary for the Town is provided in Exhibit #1. The current land use and zoning maps for the Town are shown in Exhibits #2 and #3. The Town's water utility service area and Town limits are shown in Exhibit #4. The Town also serves potable water to a small development adjacent to the Town limits and provides a bulk water station for industrial and commercial users to haul water to off-site projects. On average, bulk water users consume 12-16% of the total monthly volumes.

The Town of Eaton currently has a total of 2,399 water service taps. Assuming 2.9 persons per residential tap, the estimated population served is approximately 6,252 people. Not all water service customers have sewer service connections to the Town's sanitary sewer network. Based on current tap counts, the Town currently has approximately 66 more water taps than sewer taps. A detailed breakdown of current water taps is shown in Table 1 below. This summary was determined based on the different development regions defined in the Town's monthly billing registry, so not all taps are geographically bound within these regions.

MAP NO. 5



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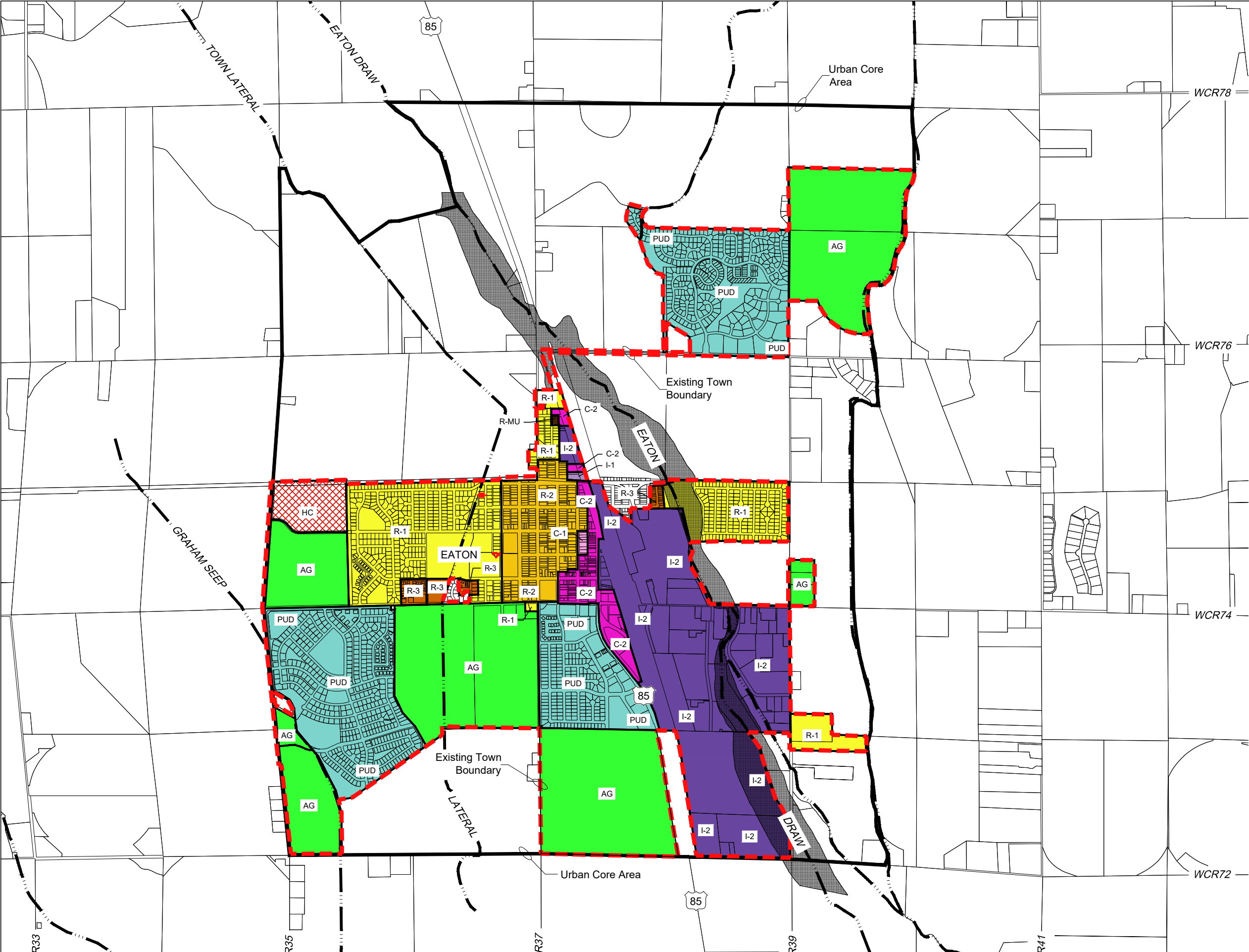
EXISTING LAND USE

	Residential
	Commercial
	Industrial
	Public & Semi-Public
	Agriculture
	Vacant Land
	Detention Pond & Park
	Golf Course
	Park
	School
	Detention Pond

THE TOWN OF
EATON
COLORADO

SCALE: 1" = 2000'±

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OFFICIAL ZONING MAP

June 2018

Residential Districts

- R-1** R-1 Single Family Residential
- R-2** R-2 Light Density Residential
- R-3** R-3 Medium Density Residential
- R-MU** R-MU Residential Mixed Use

Commercial Districts

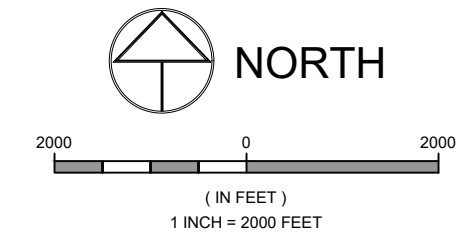
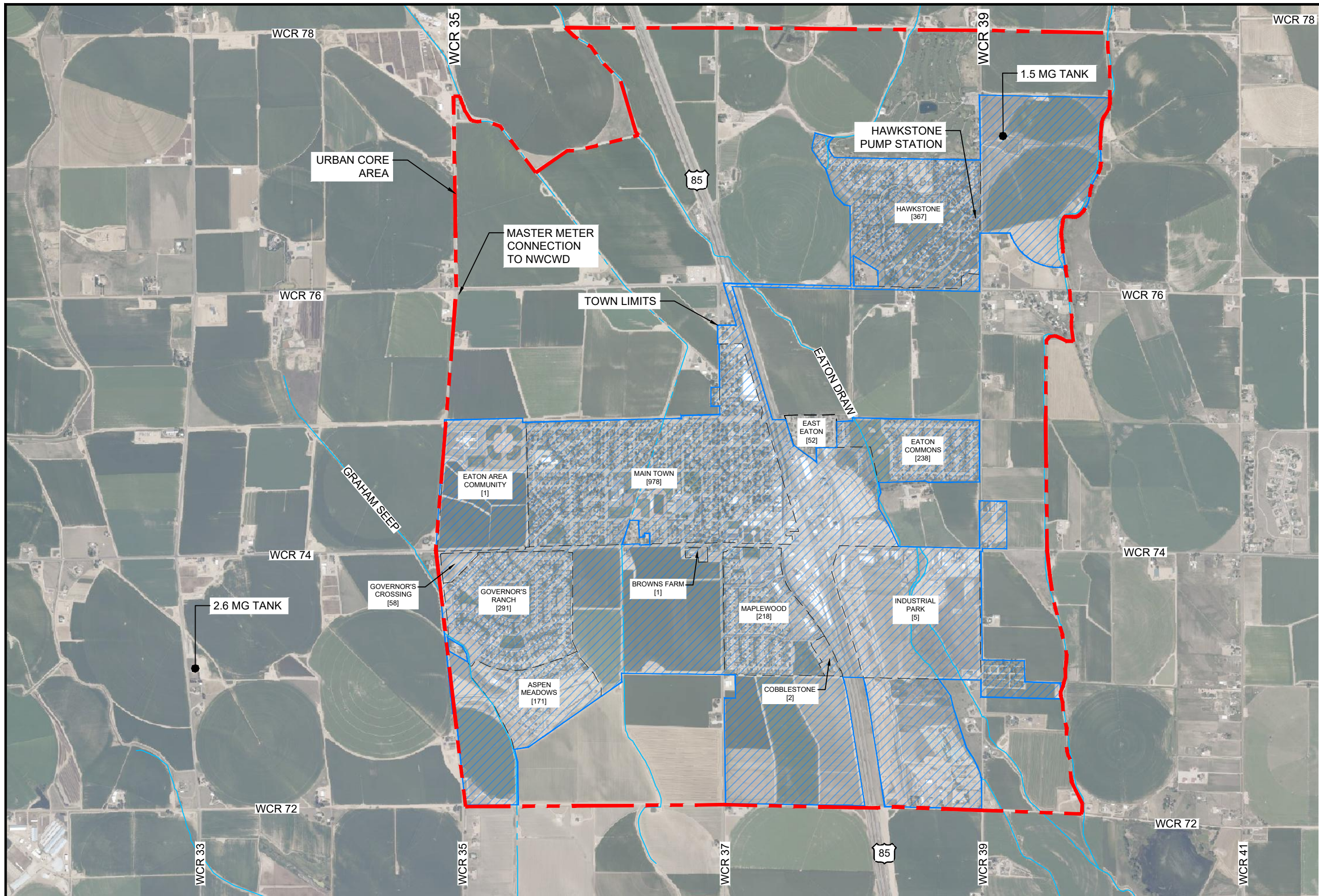
- C-1** C-1 Neighborhood Commercial
- C-2** C-2 Downtown Commercial
- HC** Highway Commercial

Industrial Districts

- I-1** I-1 Industrial - Indoors
- I-2** I-2 Industrial - Outdoors & Screened
- PUD** PUD Planned Unit Development
- AG** AG Agricultural
- 100 Year Flood Plain - Eaton Draw



SCALE: 1" = 2000'±



LEGEND:

URBAN CORE AREA BOUNDARY
SUBDIVISION BOUNDARY
DITCH/ WATERWAY
CURRENT TOWN LIMITS



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EXHIBIT #4 EXISTING WATER SERVICE PLANNING AREA

TOWN OF EATON WATER MASTER PLAN

DRAWN BY: M. Castillo	SHEET NO: Pg. 5
SCALE: 1in=2000ft	
ISSUED: 02.23.2022	

Table 1: Detailed Breakdown of Eaton Water Tap Counts by Development Region and Type

REGION	RESIDENTIAL	SPRINKLERS	COMMERCIAL	INDUSTRIAL	COUNTY	TOTAL
Aspen Meadows	167	0	4	0	0	171
Brown Farm	0	0	1	0	0	1
East Eaton	50	0	2	0	0	52
Eaton Area Community	0	0	1	0	0	1
Eaton Cobblestone	0	0	2	0	0	2
Eaton Commons	232	6	0	0	0	238
Governor's Crossing	62	0	2	0	0	64
Governor's Ranch	283	0	8	0	0	291
Hawkstone	324	43	0	0	0	367
Industrial Park	0	0	2	3	0	5
Main Town	812	31	103	18	25	989
Maplewood	204	0	14	0	0	218
TOTAL	2,134	80	139	21	25	2,399

1.2.1 PREVIOUS STUDIES

Previous studies and reports reviewed and referenced in this Plan are summarized in Table 2.

Table 2: Summary of Previous Studies and Reports Reviewed and Referenced in this Plan

REPORT TITLE	PREPARER	DATE
Water System Master Plan	The Engineering Company (TEC)	December 2002
Report on Well Study	The Engineering Company (TEC)	April 2004
Well Study Update	The Engineering Company (TEC)	April 2005
Municipal Water Efficiency Plan Update	Clear Water Solutions	April 2018
Comprehensive Plan	Town of Eaton Board of Trustees	September 2020
Water, Wastewater, and Irrigation Revenue Sufficiency Analysis	Stantec	November 2020
Water System Leak Survey Report	American Leak Detection	March 2021
Inspection Report for East and West Water Storage Tanks	Inland Potable Services, Inc.	May 2021
Memorandum for Water Supply and Potential Lease Opportunities	Clear Water Solutions	October 2021

1.3 MORATORIUM ON NEW SERVICE CONNECTIONS

In October 2021, the North Weld County Water District (NWCWD) Board of Directors voted to place a moratorium on the sale of new taps and plant investments until at least December 13, 2021. This action resulted from proposed new regulatory language changes being considered by Larimer County that could affect the

permitting process for essential pipelines needed to meet the growing demand within the NWCWD service area. This action does not affect current customers with taps issued. However, those going through the process of having a new tap approved will not be issued a tap during the moratorium period. Those working through the tap application process will not be issued a tap during the moratorium period, nor will developers who have received a signed letter of intent to issue a tap.

As of February 14, 2022, the NWCWD Board of Directors voted to lift this moratorium on new tap sales and plant investments in Zones 1, 2, 7, and 7B of the NWCWD water system. In doing so, the Board of Directors determined to limit the number of water tap and plant investments to 120 per year until additional critical infrastructure can be completed or additional transmission capacity can be acquired. Thus, the Town needs to be aware, NWCWD will allow a limited supply of plant investments and water taps in the coming years, and there is potential for a service moratorium to become reimposed in the future, which can ultimately limit potential future growth for the Town as it relates to the use of this purchased water source.

2.0 CURRENT AND FUTURE WATER DEMANDS

2.1 WATER SUPPLY SOURCES AND CAPACITIES

2.1.1 PURCHASED WATER FROM NWCWD

The Town of Eaton's potable raw water is derived from Colorado Big Thompson Project (CBT) units and North Poudre Irrigation Company (NPIC) shares. The raw water supply is owned by Eaton but is diverted, treated, and delivered to Eaton by the North Weld County Water District (NWCWD). Eaton's potable water supplies yield an average of over 1,800 acre-feet (AF) per year. A summary of the Town's current potable water supplies is shown in Table 3. The current contract with NWCWD, dated October 2019, allows for 323.5 million gallons per year at a maximum rate of 1,419 gpm.

Table 3: Summary of Eaton's Potable Water Supply (Taken from 2021 Water Supply Memorandum)

WATER RIGHT NAME OR SOURCE	NO. OF SHARES OR UNITS OWNED	AVERAGE YEAR YIELD (AC-FT/YEAR)	FIRM OF DRY-YEAR YIELD (AC-FT/YEAR)
C-BT	1,005	704	503
NPIC – C-BT Component	207.5	581	415
TOTAL C-BT	1,212.5	1,285	918
NPIC – Agricultural Component	207.5	519	104
TOTAL WATER SUPPLIES	-	1,804	1,022

A copy of the current contractual agreement with NWCWD, along with an NWCWD service area map, is provided in Appendix A.

2.1.2 OTHER WATER SOURCES

The Town owns the rights to over 2 MGD of non-tributary well water from two (2) existing wells. These wells were initially used as a drinking water source until nitrate levels exceeded the U.S. Environmental Protection Agency (EPA) standards. At that time, the well water was converted to irrigation water, and the Town was connected to the NWCWD system as the sole source of drinking water. In 2005, The Engineering Company (TEC) evaluated

several options to utilize these wells as a supplementary drinking water source and/or an offset irrigation water source for existing customers by constructing a dual non-potable water system. However, all options evaluated were ultimately deemed as unviable solutions. As such, these wells are intended to remain as a non-potable supply used to irrigate community parks and other open space areas.

2.2 CURRENT WATER DEMANDS

Based on monthly usage data gathered from NWCWD at the master meter, Average Daily Demands were determined by averaging monthly demands over the number of days per month. This data is plotted in Figure 1. Average and maximum daily winter usages between November through April were 0.42 MGD and 0.66 MGD, respectively. Summer average and maximum usages between May and October are 0.99 MGD and 1.44 MGD. From this, it can be inferred that summer irrigation demands consume between 37% and 54% of the daily demands during the summer months. Although non-potable irrigation is the second largest water use in the Town after residential uses, evaluating these uses is not included in the scope of this Plan.

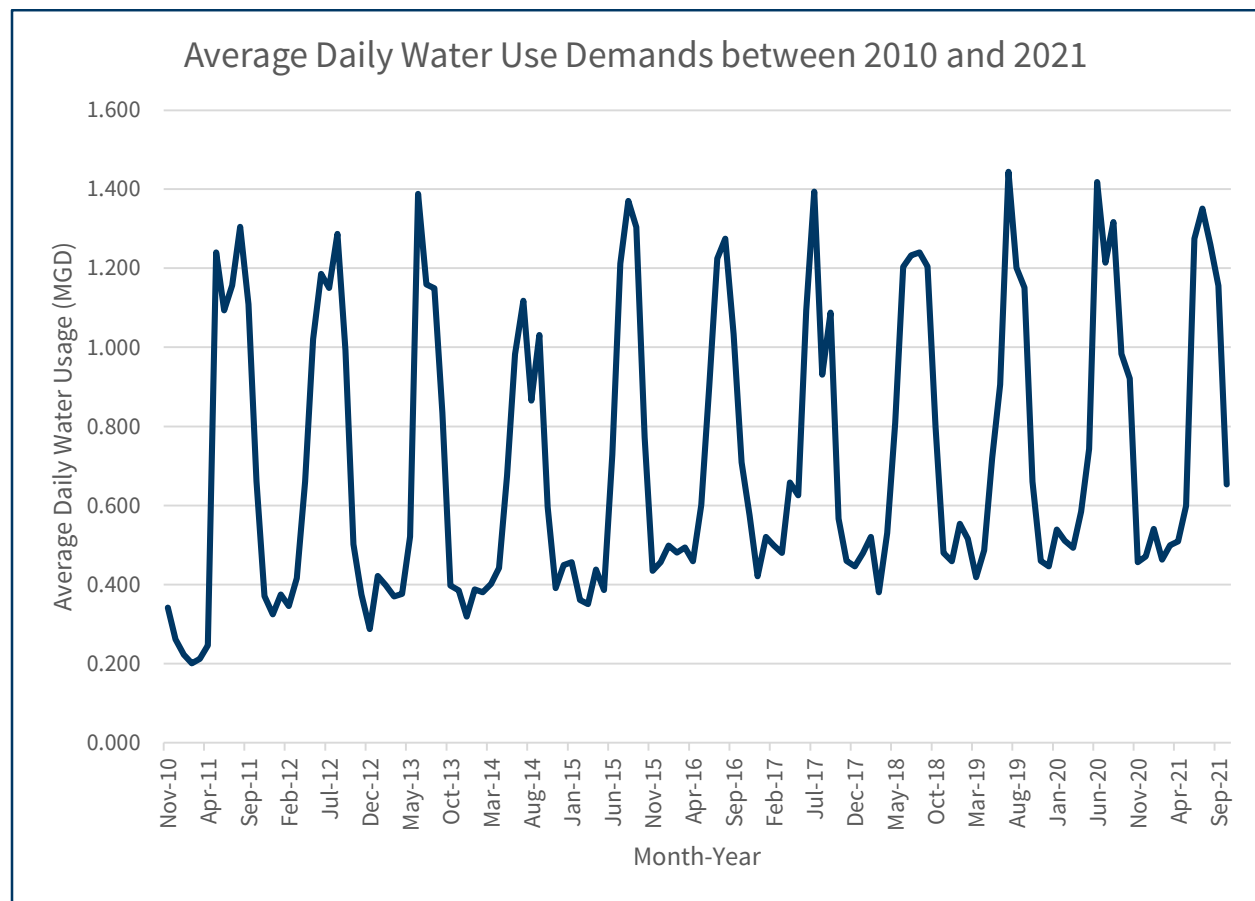


Figure 1: Average Daily Water Use Derived from NWCWD Master Meter Readings from 2013 to 2020

On an annual basis, the average daily water uses are around 0.71 MGD, and the maximum monthly water usage is 1.44 MGD. However, based on plotted trends between 2010 and 2020 indicate there has been a slight, but gradual increase in average daily water usage, which is shown in Figure 2.

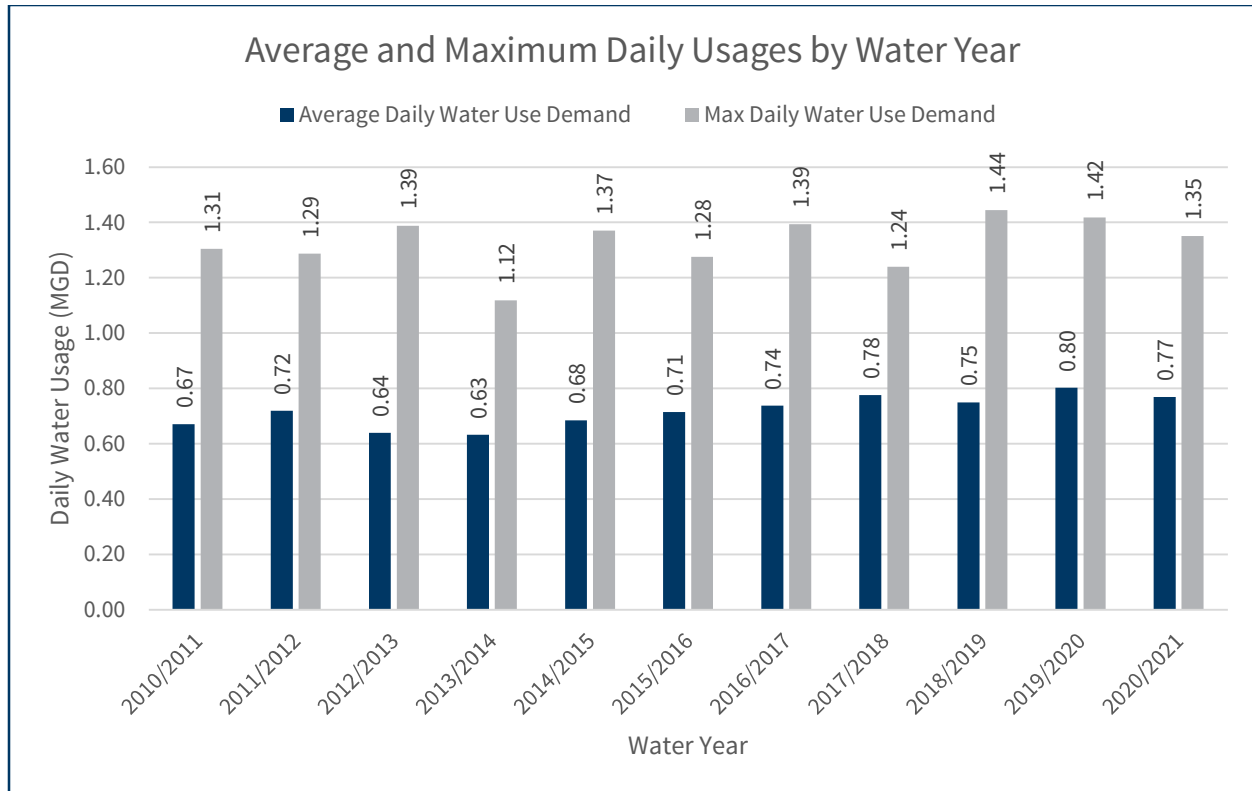


Figure 2: Average and Maximum Daily Water Use by Year Derived from NWCWD Master Meter Readings

2.2.1 AVERAGE AND PEAK WATER DEMANDS

Annual average usages were divided by U.S. Census Population Data to result in average daily demands per capita, which is plotted from 2010 to 2021 in Figure 3. This plot indicates the average daily per capita usage is 139 gpd/capita. Assuming 2.9 persons per unit, results in an average daily demand (ADD) of 403 gpd/unit (0.28 gpm/unit). This average is comparable to other local municipalities in the region. It can also be noted the per capita usage has been gradually decreasing over the past decade, which is largely due to newer developments utilizing non-potable systems. However, based on these 10-year usage averages, taps that utilize non-potable irrigation systems are still considered both indoor and outdoor potable water users.

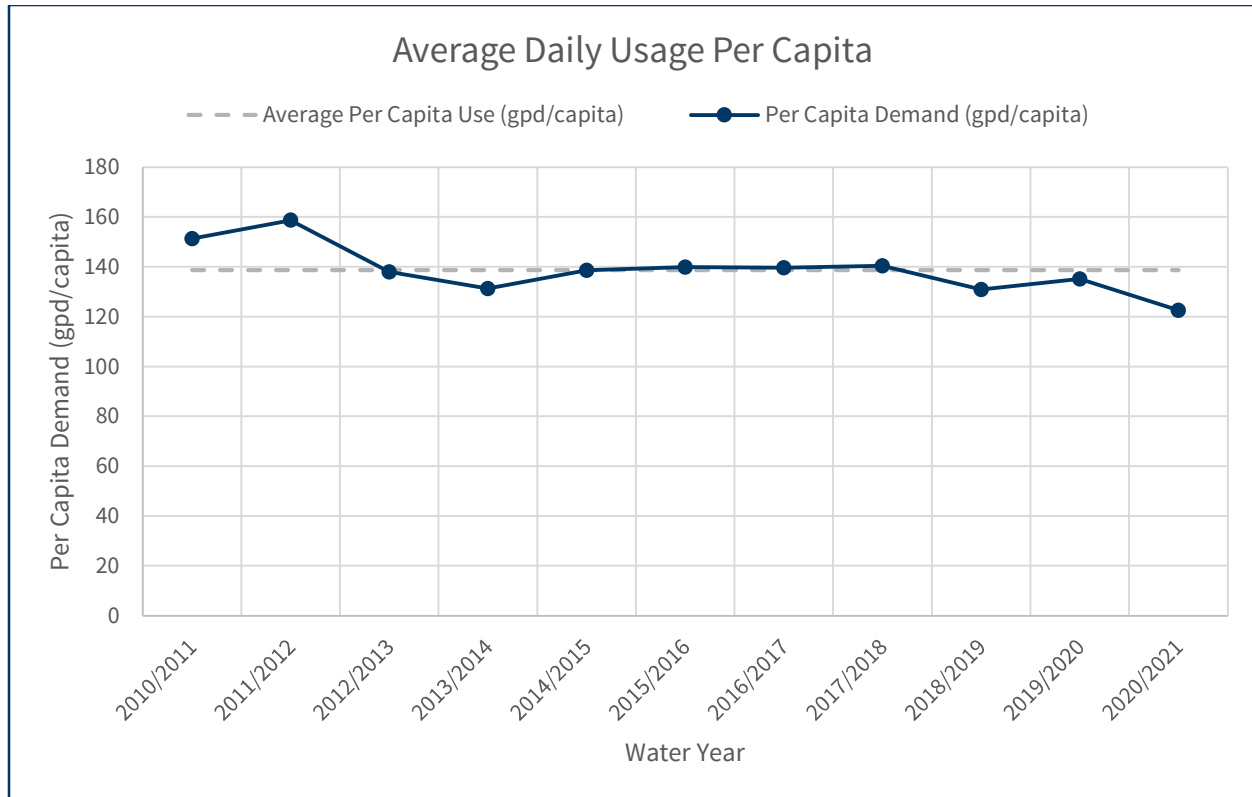


Figure 3: Average Daily Demand per Capita between 2010 and 2020

A peak day flow of 1.58 MGD was derived from the 2021 maximum month tank and meter readings in July 2021. This indicates a Maximum Day Demand (MDD) peaking factor of 2.2. Since hourly flow data is not currently recorded, it is assumed Peak Hour Demands (PHD) will be equal to peak hour flows indicated in NWCWD and City of Greeley Design Standards since Average Day and Maximum Day Demands are closely aligned with these current standards. This value provides a PHD peaking factor of 5.6, which is within typical standards. A comparison of the Average Day, Maximum Day, and Peak Hour Demands are provided in Table 4.

Table 4: Comparison of Water Use Demands between Local Municipalities

DEMAND TYPE	TOWN OF EATON	CITY OF GREELEY	NWCWD	CITY OF LOVELAND
Average Day (ADD)	0.28 gpm/unit	-	0.40 gpm/unit	0.25 gpm/unit
Maximum Day (MDD)	0.62 gpm/unit	-	0.57 gpm/unit	0.63 gpm/unit
Peak Hour (PHD)	1.57 gpm/unit	1.57 gpm/unit	1.57 gpm/unit	1.50 gpm/unit

2.2.2 UNACCOUNTED FOR WATER

Following the Sanitary Survey conducted by the Colorado Department of Public Health and Environment (CDPHE) in April 2021, it was reported that the overall loss of water in the distribution system was estimated to be approximately 30% based on a comparison of the amount of water produced versus the amount used. However, a further investigation between 2019 and 2020 indicates average annual water losses of around 14.7%. The monthly losses are summarized in Table 5 and Figure 4.

Table 5: Comparison of Monthly Water Usage and Billed Consumption for 2019 and 2020

MONTH	2018/2019			2019/2020			2020/2021		
	NWCWD METER (KGAL)	EATON BILLED USAGE (KGAL)	% UNACCOUNTED	NWCWD METER (KGAL)	EATON BILLED USAGE (KGAL)	% UNACCOUNTED	NWCWD METER (KGAL)	EATON BILLED USAGE (KGAL)	% UNACCOUNTED
Nov	14,396	11,880	17.5%	13,795	12,361	10.4%	13,685	10,946	20.0%
Dec	14,231	11,721	17.6%	13,811	12,304	10.9%	14,590	10,881	25.4%
Jan	17,165	13,004	24.2%	16,708	12,525	25.0%	16,766	11,473	31.6%
Feb	14,436	11,271	21.9%	14,805	11,244	24.1%	12,949	10,662	17.7%
Mar	12,957	11,179	13.7%	15,276	12,395	18.9%	15,478	11,871	23.3%
Apr	14,578	15,599	-7.0%	17,540	17,215	1.9%	15,265	12,598	17.5%
May	22,302	17,901	19.7%	23,027	24,567	-6.7%	18,562	14,292	23.0%
Jun	27,178	26,200	3.6%	42,551	36,751	13.6%	38,243	36,437	4.7%
Jul	44,764	40,656	9.2%	37,645	38,676	-2.7%	41,872	37,909	9.5%
Aug	37,246	33,874	9.1%	40,829	31,245	23.5%	39,037	33,298	14.7%
Sep	34,517	28,684	16.9%	29,496	29,919	-1.4%	34,685	31,691	8.6%
Oct	20,476	15,671	23.5%	28,559	19,986	30.0%	20,241	17,020	15.9%
AVG. ANNUAL LOSS		14.2%		12.3%			17.7%		

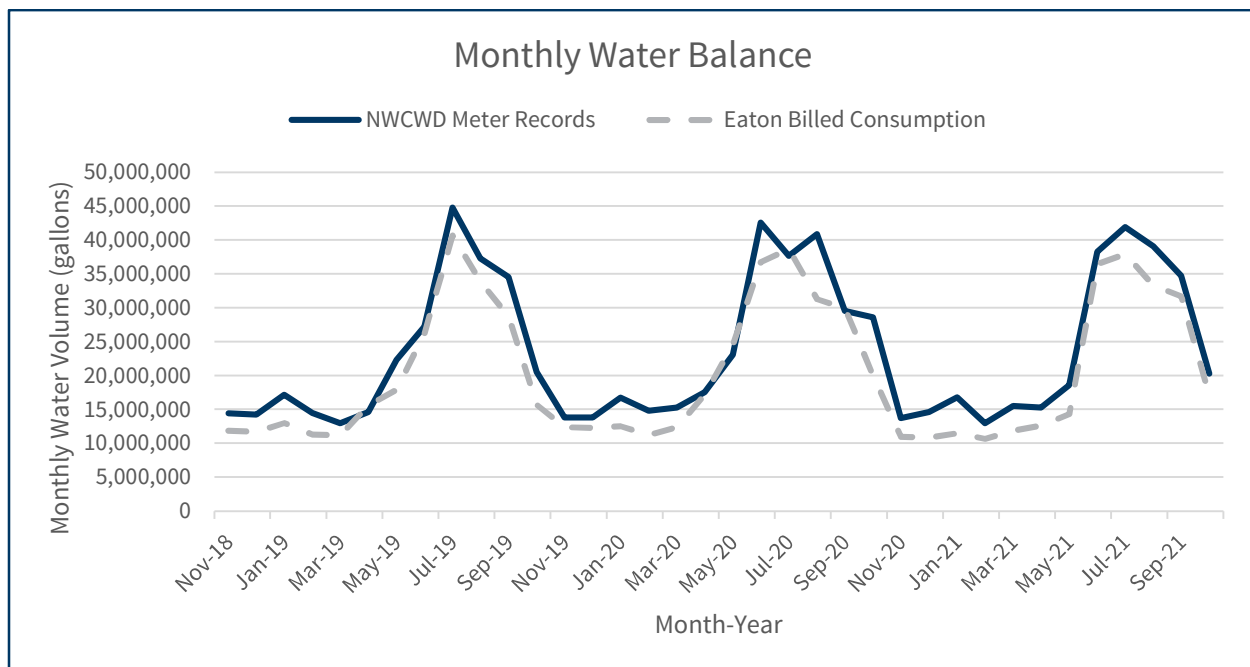


Figure 4: Monthly Water Balance for 2019-2020

According to the EPA, a high quantity of unaccounted-for water, above 15%, indicates either inaccurate meters or excessive leakage. Based on annual average losses between the 2019 and 2021 water years, system losses are trending to surpass this threshold. Thus, it is recommended that the Town and supplier check the meters' calibration to verify that reported system losses are accurate. It is also recommended that the Town develop and implement a fire hydrant inspection and repair program directed by the results of the leak inspection performed in February and March of 2021.

Furthermore, it is recommended the Town consider implementing a program to replace the distribution system piping systematically over time to reduce water loss and provide improved protection of public health. Critical pipes recommended for replacement are identified further in Section 4.2.1.1 of this Plan.

2.2.3 WATER USE TRENDS

As mentioned previously, hourly flow data is not currently recorded for any water system component, so it is assumed that daily water trends follow those defined by the AWWA M32 standard. The Average Day Flow Diurnal Curve is shown in Figure 5.

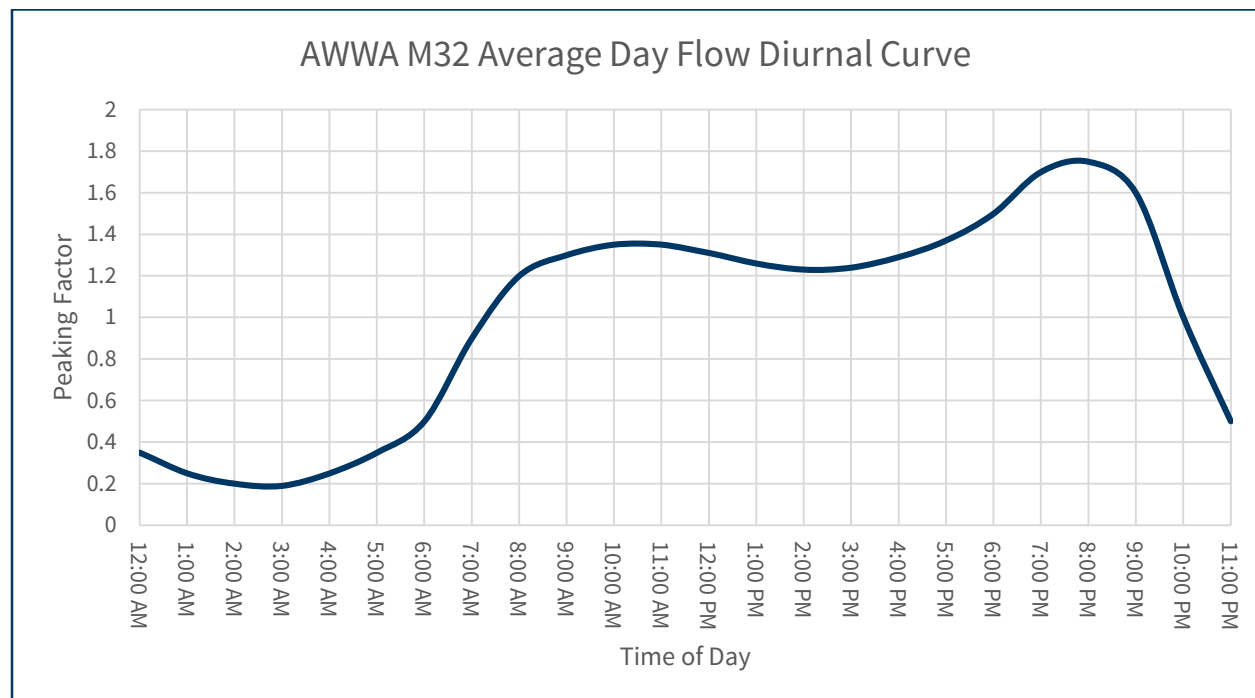
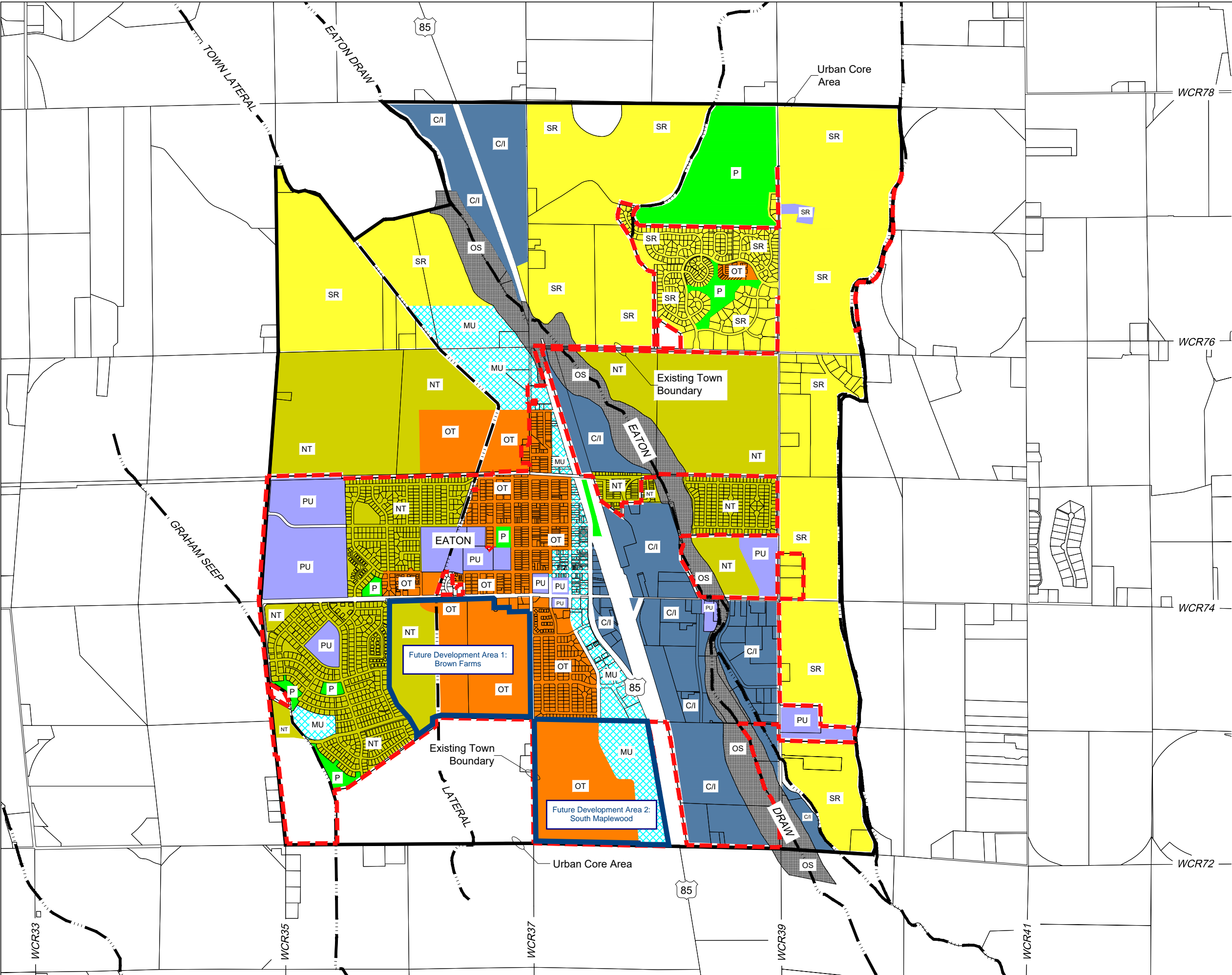


Figure 5: Average Day Diurnal Curve (AWWA M32 Standard)

2.3 FUTURE WATER DEMAND PROJECTIONS

The Town of Eaton's 2020 Comprehensive Plan includes predicted land use areas for residential, commercial, and industrial areas within the Urban Core Area boundary. However, based on conversations with Town Staff, the anticipated development areas within the 20-year time frame of this Master Plan are all within the existing Town boundaries. Brown Farm and an existing agricultural area just south of Maplewood Estates are the two major areas anticipated for development. Population assumptions based on anticipated zoning indicate that the build-out of these two developments will result in a total anticipated population of 12,200 by 2040. Thus, future demand projections will only reflect the addition of these two developments.

Drawing: P:\1127-001\Eaton 2020 Comp Plan Maps\COMPREHENSIVE PLAN LAND USE - 2020.dwg, Saved: Thu, September 03, 2020, 9:27:09am, Drawing Tab: COMP LAND USE - EXHIBIT.



MAP NO. 4

COMPREHENSIVE PLAN

April 2018

Comprehensive Land Use Plan

- SR** Suburban Residential (2.5 Units per Acre)
- NT** New Town Residential (4.5 Units per Acre)
- OT** Original Town Residential (6.5 Units per Acre)
- MU** Mixed Use (Residential/Commercial/Public)
- C/I** Commercial / Industrial
- PU** Schools and Other Public Uses
- P** Parks and Other recreation
- OS** Eaton Draw and Other Open Space



SCALE: 1" = 2000'±

2.3.1 LAND USES AND EXPECTED GROWTH

The 2020 Comprehensive Plan describes all future growth within the Urban Core area, as shown in Exhibit #5. However, based on conversations with Town staff, future growth within the 20-year time frame of this Plan will likely occur in two areas south of Collins Street, which are within existing Town boundaries.

The first anticipated development is Brown Farm, located on a 174-acre lot between the Governor's Ranch and Maplewood subdivisions. Currently, Brown Farm is anticipated to be a mixed-use development that includes single and multi-family residential units, commercial, and public use spaces under a PUD zoning. This development is currently under review but is expected to begin construction by 2023. Based on the current land use criteria defined in the 2020 Comprehensive Plan, the maximum anticipated population added by this development is approximately 2,700 people. However, it is important to note that this is the maximum allowable units by current land use, which is not reflective of the proposed planned development under review.

The second future development is anticipated to occur in a 161-acre area south of the Maplewood Subdivision. The 2020 Comprehensive Plan Map (Exhibit #5) indicates this lot will be majority Original Town (OT) land use with some Mixed Used (MU) areas to the east along the Highway 85 corridor. Assuming the MU areas are strictly commercial areas with few or no permanent residences, the maximum anticipated population for the development of this area is approximately 2,640 people.

A summary of the future development areas, land use criteria, and projected populations is provided in Table 6 below.

Table 6: Population Projections for Anticipated Future Development Areas

FUTURE DEVELOPMENT AREA	LAND USE TYPE	ALLOWABLE LAND USE DENSITY	GROSS AREA (ACRES)	MAXIMUM NO. OF UNITS	POPULATION AT FULL BUILD-OUT
Brown Farm	OT	6.5 units/ac	73.8	480	1,392
	NT	4.5 units/ac	99.8	450	1,305
	TOTAL:		173.5	930	2,697
South Maplewood	OT	4.5 units/ac	111.6	725	2,103
	MU*	15 units/ac	48.9	734	532*
	TOTAL:		160.5	1459	2,635

*Assumes 25% of MU population are permanent residences

2.3.2 FUTURE POPULATION AND WATER DEMAND PROJECTIONS

Based on population data gathered from the U.S. Census Bureau, the historical average annual growth rate observed for the Town of Eaton from 2010 to 2020 was 3.3%. However, to account for an anticipated accelerated population growth largely driven by the development of the two areas south of Collins Street, as described previously, future population projections have been derived based on the following assumptions. From discussions with Town staff and planners, the Brown Farm development (currently under review) is expected to reach full build-out by 2028, which translates to annual population growth of 5.3% for the next six years. Additionally, it is anticipated that the South Maplewood development, if the development process has started by 2024-2025, could reach full build-out by 2034, which translates to an annual growth rate of 4.4% between 2028 and 2034. Following the build-out of these two developments, the Town of Eaton does not expect any

other major developments to occur within the timeframe of this Plan. Thus, population growth will likely return to its historical trend of 3.3% between 2034 and 2040. Figure 6 provides a plot of population projections under both historical and planned development-driven annual growth rates.

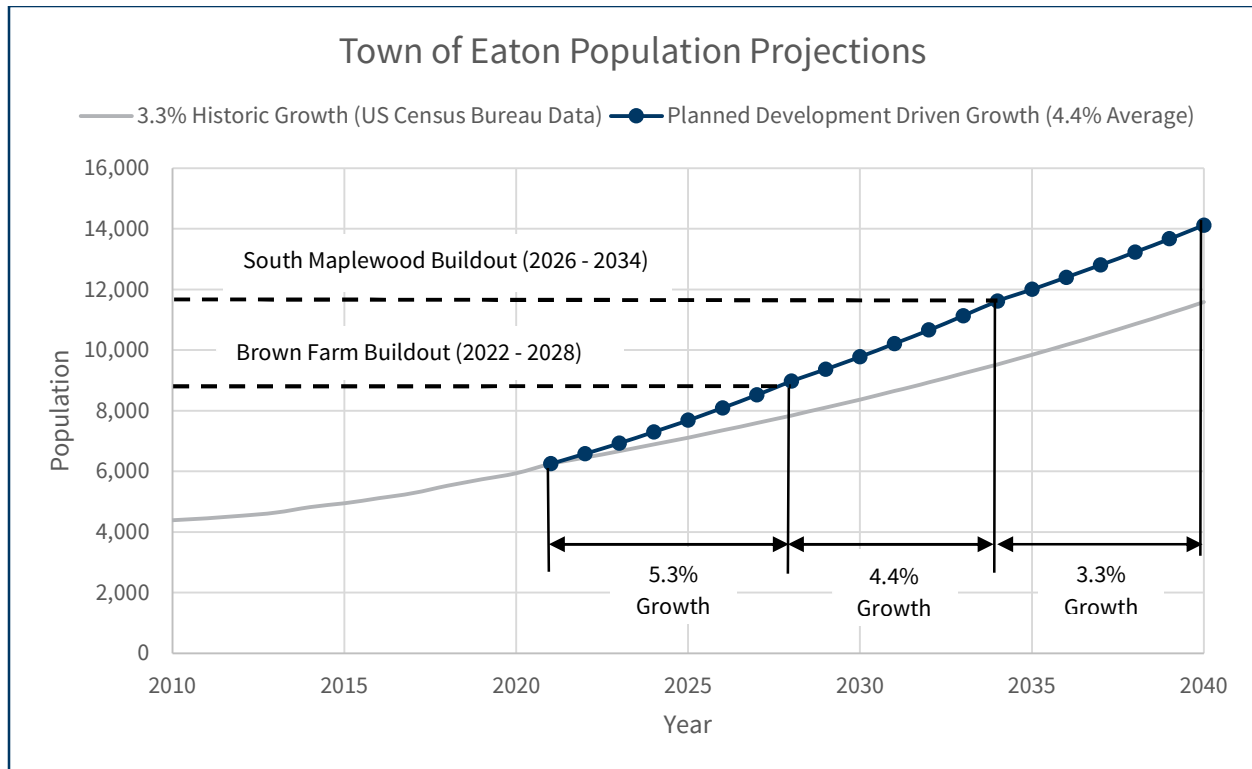


Figure 6: 20-Year Population Projections

Future annual water demand projections derived from average daily water usage per capita and projected yearly population are summarized in Table 7. The predicted annual uses shown are derived from the average per capita usage, but an additional 10% was added to the predicted volume to account for suggested maximum internal system losses. The determined existing water losses in the Town’s system are shown to be over that suggested threshold. Thus, these predictions assume system maintenance related to system losses has been addressed.

Table 7: Projected Annual Water Uses

YEAR	HISTORIC GROWTH (3.3%)			PLANNED DEVELOPMENT GROWTH (4.4% AVERAGE)		
	POPULATION	PREDICTED ANNUAL TREATED WATER USAGE (MG)	WITH 10% INTERNAL SYSTEM LOSSES (MG)	POPULATION	PREDICTED ANNUAL TREATED WATER USAGE (MG)	WITH 10% INTERNAL SYSTEM LOSSES (MG)
2020	5,945	301.0	331.1	5,945	301.0	331.1
2021	6,252	316.6	348.2	6,252	316.6	348.2
2022	6,459	327.0	359.7	6,584	333.3	366.7

YEAR	HISTORIC GROWTH (3.3%)			PLANNED DEVELOPMENT GROWTH (4.4% AVERAGE)		
	POPULATION	PREDICTED ANNUAL TREATED WATER USAGE (MG)	WITH 10% INTERNAL SYSTEM LOSSES (MG)	POPULATION	PREDICTED ANNUAL TREATED WATER USAGE (MG)	WITH 10% INTERNAL SYSTEM LOSSES (MG)
2023	6,672	337.8	371.6	6,933	351.0	386.1
2024	6,892	348.9	383.8	7,300	369.6	406.6
2025	7,119	360.5	396.5	7,687	389.2	428.1
2026	7,354	372.4	409.6	8,094	409.8	450.8
2027	7,597	384.6	423.1	8,523	431.6	474.7
2028	7,848	397.3	437.1	8,975	454.4	499.9
2029	8,107	410.5	451.5	9,370	474.4	521.9
2030	8,374	424.0	466.4	9,782	495.3	544.8
2031	8,651	438.0	481.8	10,213	517.1	568.8
2032	8,936	452.4	497.7	10,662	539.8	593.8
2033	9,231	467.4	514.1	11,131	563.6	619.9
2034	9,536	482.8	531.1	11,621	588.4	647.2
2035	9,850	498.7	548.6	12,005	607.8	668.6
2036	10,175	515.2	566.7	12,401	627.9	690.6
2037	10,511	532.2	585.4	12,810	648.6	713.4
2038	10,858	549.8	604.7	13,233	670.0	737.0
2039	11,216	567.9	624.7	13,669	692.1	761.3
2040	11,587	586.6	645.3	14,121	714.9	786.4

2.3.3 FUTURE WATER SUPPLY CAPACITY

The projected population-based treated water use shown in Table 7 is derived from the ten-year average of indoor and outdoor water uses, which was determined to be 139 gpd/capita or 403 gpd/tap, assuming 2.9 people/tap. This is an overestimation compared to the actual annual volumes used since this value does not account for water users on non-potable systems, which is now a mandate for any large new developments in Eaton. Therefore, the projected water usage reported in Table 7 exceed the NWCWD allotted annual volume of 323.5 MG by 2020, which is not the case.

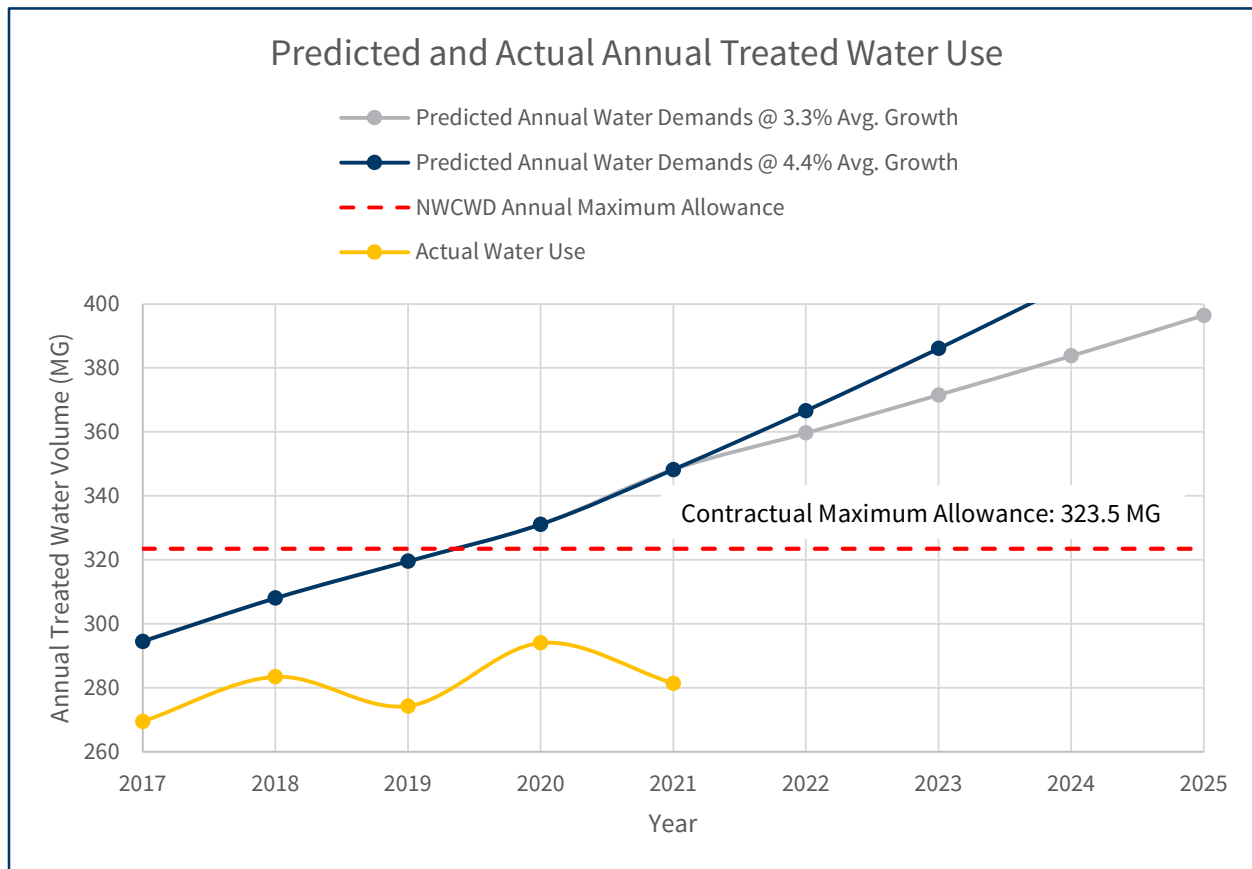


Figure 7: Projected Treated Water Supply

As shown in Figure 7, on average, between 2017 to 2021, the Town had an excess of 40-MG per year of treated water. For an additional safety factor, say 30-MG per year of excess volume. Thus, applying the average 403 gpd/tap usage, the 30-MG annual excess can accommodate approximately 200 new single-family taps under the 323.5-MG maximum annual NWCWD allowance under a 70-80% quota. As such, the Town would need to work with NWCWD to increase the maximum annual allowance to support any additional connections. Nevertheless, based on average use projections, the Town would need to acquire an additional 0.9-MGD to 1.3-MGD of water supply capacity to meet the projected 2040 demands.

2.3.4 FUTURE STORAGE CAPACITY

The Town currently has a total rated water storage volume capacity of 4.1 MG. However, based on current maximum operating levels, the total effective storage capacity is about 3.73 MG. The minimum operating volume required for both tanks to maintain minimum system pressures of 45 psi is about 1.72 MG.

The typical minimum daily storage volume required should meet 25% of the maximum day demand (MDD) plus the maximum fire flow volume for one fire event. The maximum fire flow volume required for a four-hour duration fire at 1,500 gpm is determined to be 360,000 gallons. The summation of minimum operating volumes, fire flow volumes, and future maximum day demand estimations from the projected growth rates result in a minimum required storage volume for each respective year. These projections are plotted in Figure 8.

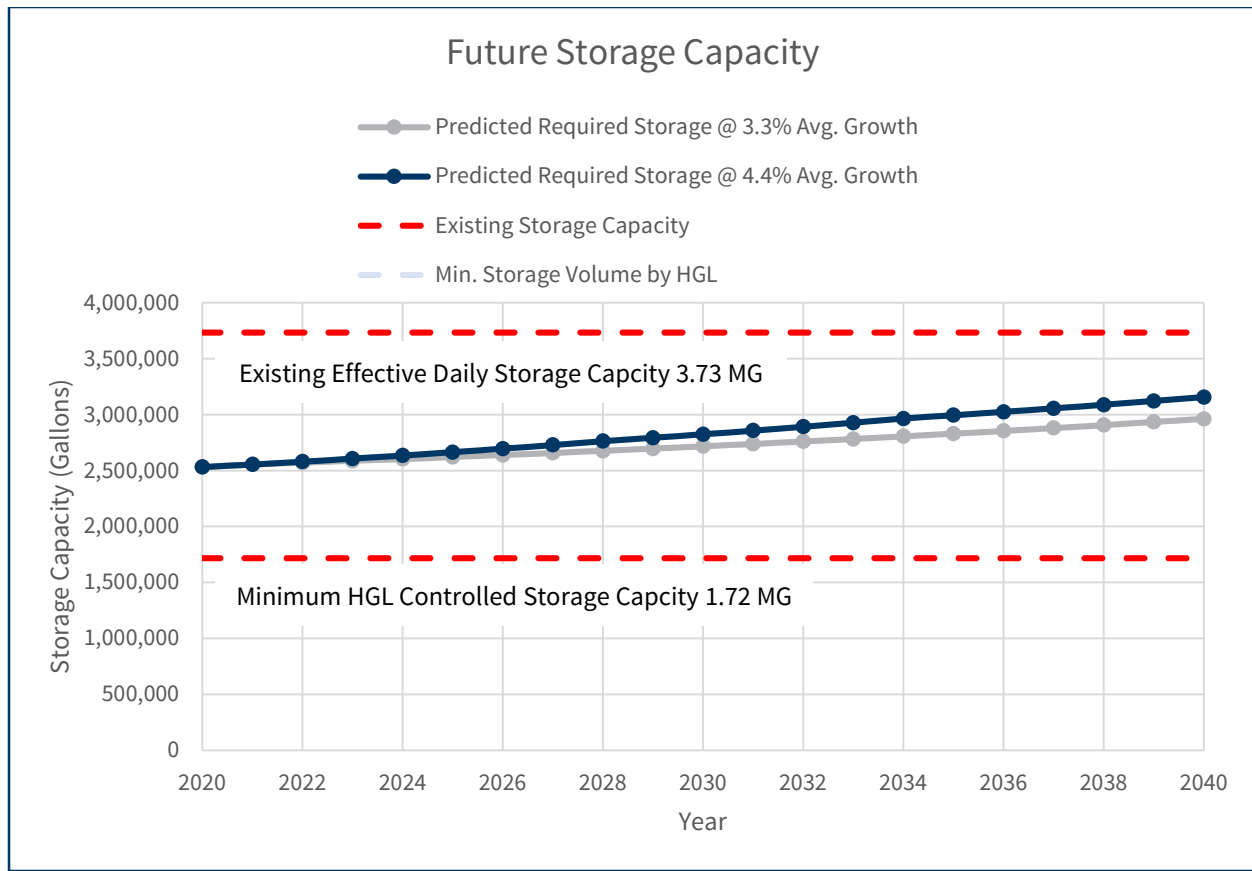


Figure 8: Future Storage Capacities

As shown in Figure 8, the Town's current water storage capacity is more than sufficient to meet predicted future storage needs under either growth scenario.

3.0 EXISTING CONDITIONS AND OPERATIONS OF SYSTEM AND FACILITIES

3.1 EXISTING SYSTEM, FACILITIES, AND OPERATIONS

After treatment at the Soldier Canyon facility in western Fort Collins, NWCWD delivers the potable water through their water system to the Town of Eaton at a single connection point located near the intersection of WCR 76 and WCR 35. Eaton's potable water supply is measured and controlled at a master meter owned and operated by NWCWD. The Town is responsible for operating and maintaining the distribution system and all other major system components downstream of the NWCWD master meter.

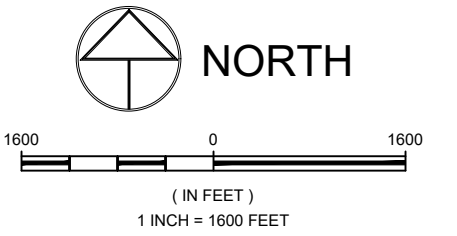
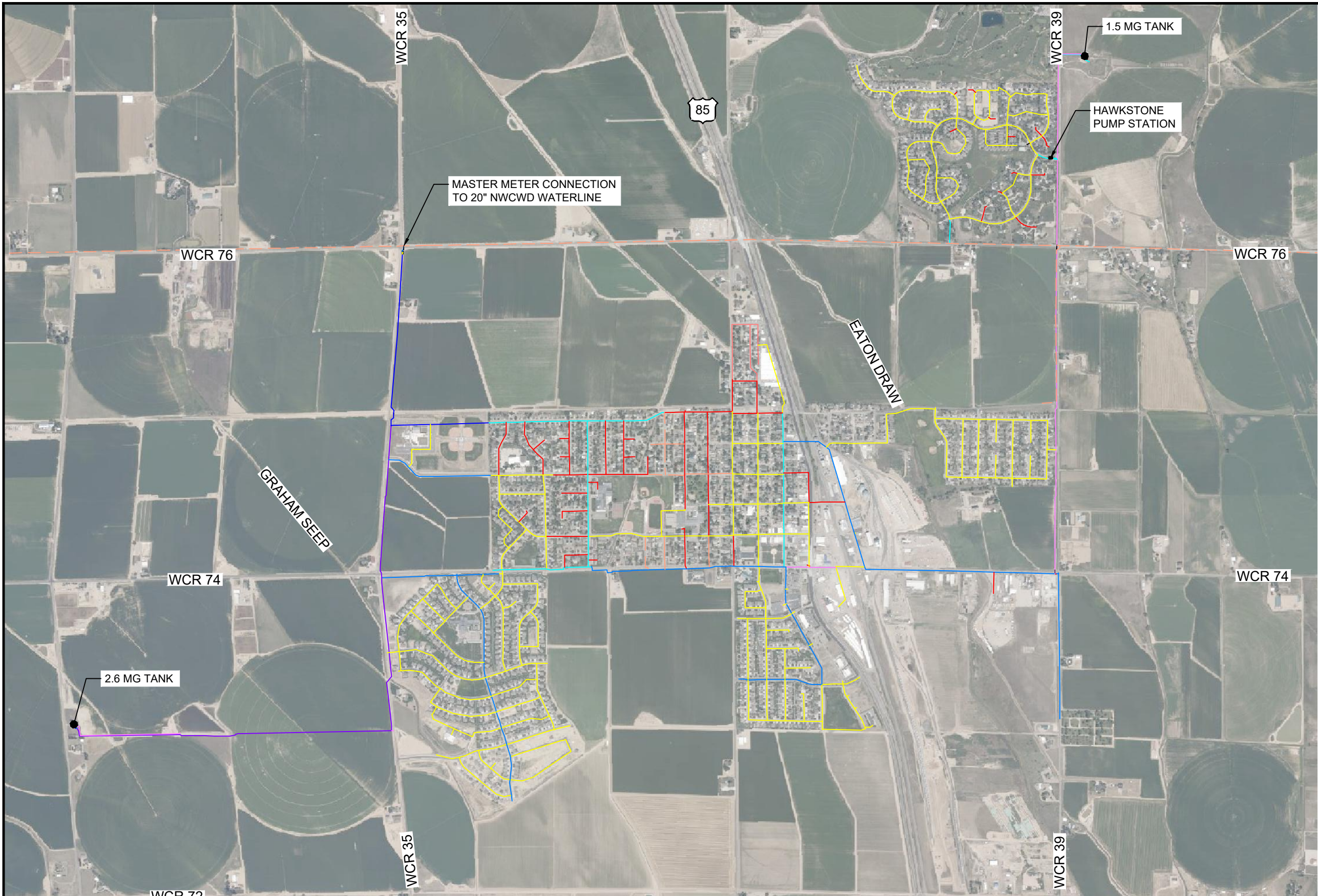
3.1.1 MASTER CONTROL VAULT

A Town-owned and -operated master control vault is located on the southeast corner of WCR 35 and WCR 76. This vault was previously owned and operated by NWCWD but was inherited by the Town when the Town began purchasing water. In general, this vault houses an 8-inch main line and a 6-inch bypass line, as well as control equipment such as CLA-VAL valves, gate valves, and a flowmeter. However, equipment in this vault is rarely operated. All water entering the Town's system is measured and controlled by an NWCWD-owned flowmeter and valve located in a vault inaccessible by the Town directly upstream of the master control vault.

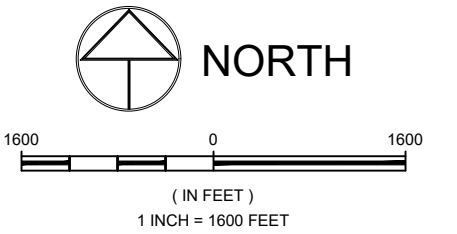
3.1.2 DISTRIBUTION SYSTEM

The Town's potable water distribution system consists of older 4-inch and 6-inch pipes constructed out of cast iron (CI) and ductile iron (DIP) to more recent 8-inch to 12-inch PVC pipes. There are also larger 14-inch, 16-inch, and 24-inch DIP transmission lines that convey water to and from the master meter and storage tanks to the primary distribution network. The age of existing pipes in this system ranges from 120 to one year old, where the majority of the older pipes are within the Main Town area of Eaton. Table 8 provides a summary of pipe characteristics for the existing distribution system, while Figure 9 provides a breakdown of the existing system based on material, size, and age. Inventory maps of the existing Town's water main by size and age are provided in Exhibits #6 and #7, respectively.

The Town also has a non-potable water supply used to irrigate community parks in Eaton's subdivisions using a dual system. Dual systems employ two sources: one treated water system for potable use and another system of untreated raw water for irrigation purposes. There are currently five (5) subdivisions in Eaton that have dual distribution systems. The dual systems for the Governor's Ranch, Hawkstone, Maplewood, and Aspen Meadows subdivisions are operated by the Town, while the system for the Hawkstone Subdivision is operated by both the Homeowners' Association and the Town. Evaluating these systems are beyond the scope of this Plan.



WATERLINE LEGEND:	
4" WATERLINE	—
6" WATERLINE	—
8" WATERLINE	—
10" WATERLINE	—
12" WATERLINE	—
14" WATERLINE	—
16" WATERLINE	—
20" WATERLINE	—
24" WATERLINE	—
NWCWD WATERLINE	---



WATERLINE LEGEND:

100+ YEARS	
60 TO 100 YEARS	
50 TO 60 YEARS	
30 TO 50 YEARS	
30 YEARS OR LESS	



FORT COLLINS: 301 North Howes Street, Suite 100, 80521 970.221.4158
GREELEY: 820 8th Street, 80631 northernengineering.com

EXHIBIT #7
WATER MAIN AGES

TOWN OF EATON
WATER MASTER PLAN

DRAWN BY: M. Castillo	SHEET NO: Pg. 21
SCALE: 1in=1600ft	
ISSUED: 2022-02-23	

Table 8: Summary of Existing Water Main Pipes by Size and Type

PIPE SIZE & MATERIAL	TOTAL LENGTH OF PIPE (MILES)	AVERAGE OF PIPE AGE (YEARS)	MAX. PIPE AGE (YEARS)	MIN. PIPE AGE (YEARS)
4"	1.54	66.1	112	59
CI	1.24	67.6	112	59
DIP	0.30	60.5	61	59
6"	4.04	53.7	120	10
CI	1.62	79.7	120	57
DIP	2.13	44.8	67	16
PVC	0.29	20.0	26	10
8"	19.16	20.4	57	1
CI	0.25	57.0	57	57
DIP	2.43	37.1	57	20
PVC	16.48	17.7	41	1
10"	2.40	39.4	48	14
DIP	2.15	42.7	48	17
PVC	0.25	20.0	26	14
12"	4.30	19.8	43	4
DIP	1.16	38.8	43	18
PVC	3.15	15.6	20	4
14"	0.85	37.0	37	37
DIP	0.85	37.0	37	37
16"	1.85	30.4	37	18
DIP	0.24	23.8	37	18
PVC	1.61	37.0	37	37
24"	1.94	17.0	17	17
DIP	1.94	17.0	17	17
GRAND TOTAL	36.07	29.4	120	1

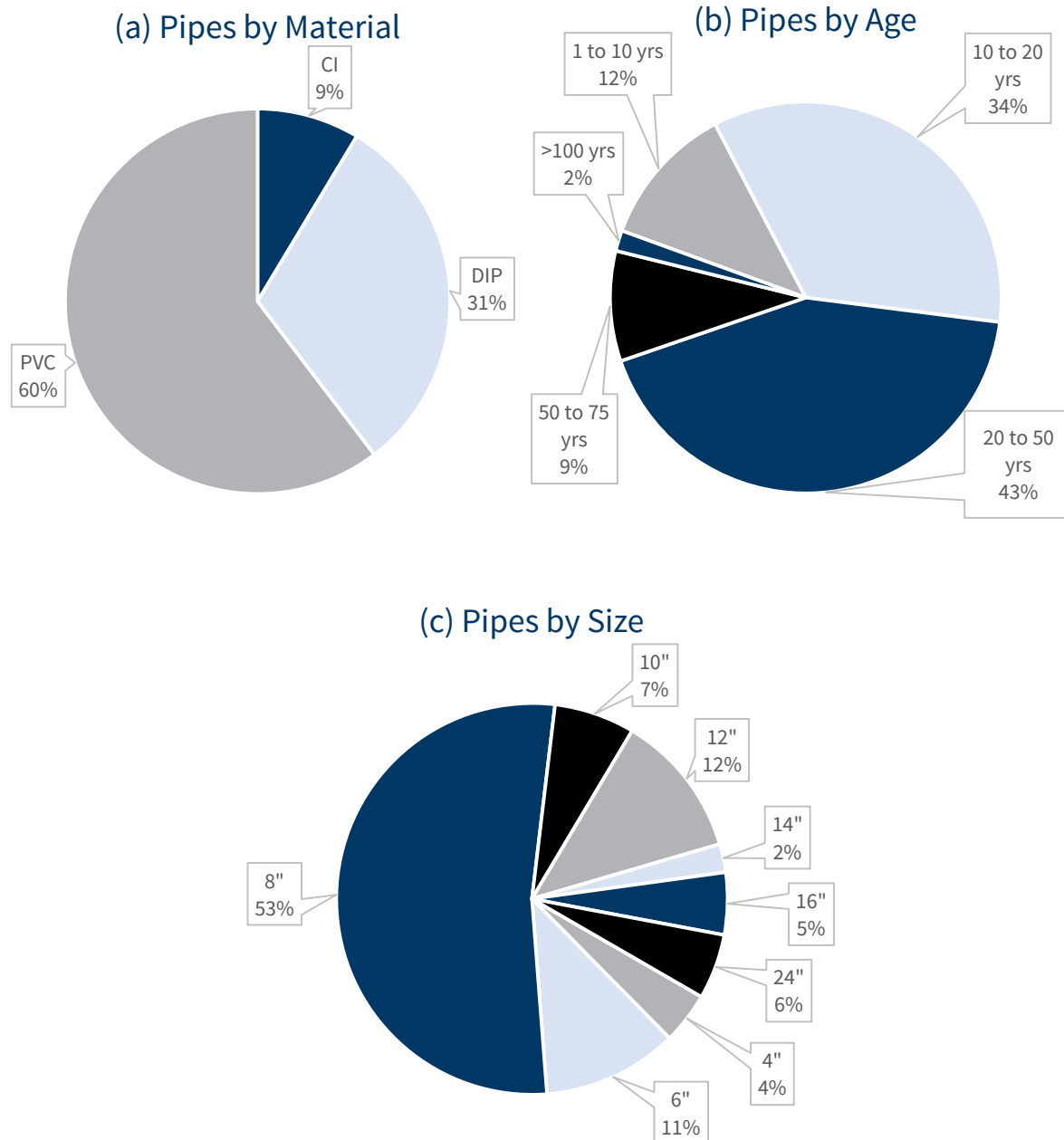


Figure 9: Water System Mains Pipe Distribution Charts by Length for (a) Material, (b) Age, and (c) Size

3.1.3 WATER STORAGE TANKS

Eaton has two (2) water storage tanks: one 1.5 million gallons (MG) in the northeast part of Town and one 2.6 MG tank southwest of Town. The 2.6 MG tank's location was chosen for a future connection with NWCWD as they are proposing a new 30-inch line extending from the south along WCR 72. The tanks allow the Town to reduce peak flow demands. However, it has been noted that the Town's demand has come close to reaching the maximum daily flow on occasion. The Town currently uses the East Tank water level to control the NWCWD master control value that is directly upstream of the Eaton-owned control vault. Once the water level in the East Tank drops below 42 feet, the NWCWD master valve opens, drawing water from the NWCWD system into the Town's system.

The control valve closes once the water level in the East Tank is raised to 48 feet. Table 9 below provides a summary of the existing storage tank parameters.

Table 9: Summary of Existing Water Storage Tank Parameters

TANK NAME	RATED STORAGE VOLUME (MG)	INSIDE DIAMETER (FT)	MAX. WATER SURFACE DEPTH (FT)	NORMAL OPERATING WATER SURFACE DEPTH (FT)	INSTALLATION DATE	CURRENT AGE (YEARS)
East	1.5	68	56.2	42 - 48	1984	37
West	2.6	78	73.6	62 - 68	2005	16.5

3.1.4 BOOSTER PUMP STATIONS

The Town owns and operates one booster pump station located at the east entrance of the Hawkstone Subdivision off WCR 39. This pump station is housed in a vault situated within the median at Hawkstone Drive and contains four (4) horizontal close-coupled end suction pumps. This booster pump station was constructed in 2003 to increase system pressures within the Hawkstone Subdivision. The pumps in this station operate such that Pump 1 is used as a pressure booster to the system, which is only run when no flow demands are drawn. Once flow demands from Hawkstone are drawn, Pump 1 shuts off, and Pump 2 begins operation. Pumps 3 and 4 are set as lag pumps controlled by pressure set points that are measured on the discharge header pipe downstream of the pumps. Pumps 2, 3, and 4 are all equipped with Variable Frequency Drives (VFDs) to enable parallel pump operations and are set to maintain a system pressure of 75 pounds per square inch (psi). The three 25-hp pumps are sized to handle 50% of the demand flow. This allows two pumps to deliver the total flow with a third pump on standby. This pump station also has an automatic 10-inch check valve bypass to eliminate the need for a fire pump since the pressure from the existing East Tank is high enough to provide 1,000 gpm fire flows to the highest point in the Hawkstone Subdivision at a residual pressure of 20 psi. Furthermore, this pump station is powered by an electric service connection to the Town's electric system but does not have an emergency backup power source. Table 9 below provides a summary of the existing pump parameters.

Table 10: Summary of Hawkstone Booster Pump Station Pump Parameters

PUMP ID	RATED CAPACITY	RATED TDH	MOTOR POWER	INSTALLATION DATE	AGE (YEARS)
1	40 gpm	120 ft	5 hp	2003	18
2	325 gpm	120 ft	25 hp	2003	18
3	325 gpm	120 ft	25 hp	2003	18
4	325 gpm	120 ft	25 hp	2003	18

3.2 CONDITION ASSESSMENTS OF MAJOR SYSTEM COMPONENTS

In the Spring and Summer of 2021, Northern Engineering conducted a condition assessment of major water system components with Town staff. The major components inspected included the master control vault, the Hawkstone Booster Pump Station, and the control vaults for the East and West storage tanks. Condition assessments performed on these system components involved identifying and cataloging all major equipment, then performing visual inspections of all cataloged items. During the inspections, condition assessment ratings

were assigned to each major equipment item based on visual inspection and operational history. An average condition rating was produced from ratings assigned by both Northern Engineering and Town staff, which was used to determine the remaining effective life of each equipment item.

Comprehensive inspections were performed in early Spring 2021 on both storage tanks, so conditions for tank exterior and interior components are in reference to each respective inspection report. Condition assessments related to the distribution system are in reference to results from the leakage inspection survey that was also performed in early Spring 2021.

3.2.1 MASTER CONTROL VAULT

Major equipment housed in the master control vault was generally in poor condition. Results gathered from the condition assessment of the major equipment in the master control vault indicate nearly all major equipment in the vault will require replacement within the 20-year time frame of this Plan. Critical items recommended for replacement are summarized in Table 11, along with their respective recommended year of replacement.

Table 11: Master Control Vault Condition Assessment Summary

ASSET NAME	CURRENT AGE (YEARS)	FINAL CONDITION RATING	BMP EXPECTED DESIGN SERVICE LIFE (YEARS)	AGE-BASED REMAINING LIFE (YEARS)	CONDITION-BASED REMAINING SERVICE LIFE (YEARS)	YEAR OF FIRST REPLACEMENT
Compound Water Flow Meter	38	3	12	-26	4	2025
CLA-VAL Valve	38	2	25	-13	5	2026
Strainer	38	2	25	-13	5	2026
8" Gate Valve	38	3.5	25	-13	9	2030
8" Gate Valve	38	3.5	25	-13	9	2030
CLA-VAL Valve (Bypass)	38	4	25	-13	10	2031
CLA-VAL Valve (Bypass)	38	4	25	-13	10	2031
Blow-Off Valve	38	4	25	-13	10	2031
4" Gate Valve	38	4	25	-13	10	2031
Control Panel	38	6	25	-13	15	2036

3.2.2 DISTRIBUTION SYSTEM

In early Spring 2021, a four (4) day leak survey was performed by American Leak Detection on meter services, hydrants, and valves in areas designated for detection by the Town of Eaton water department. Over 1,000 contact points were sounded with a sonic leak survey tool. Results from this survey indicate two (2) major leaks were detected in the system, and eighteen (18) additional potential leaks were identified. These areas are summarized in Table 12 below.

Table 12: Summary of Detected Water System Leaks (Taken from Spring 2021 Leak Survey Report)

DEVICE TYPE	LOCATION	COMMENTS
MAJOR LEAKS		
Valve	Intersection of Park Ave & 5 th St	
Meter	Sinclair Gas Station	A meter test was performed to determine a leak rate of .02 isolated between the meter and the riser
POTENTIAL MINOR LEAKS		
Hydrant	Intersection of Collins and Elm St	
Hydrant	Tower Park	
Hydrant	602 Maple St	
Hydrant	Intersection of 3 rd St and Birch St	
Hydrant	Intersection of Spruce and 5 th St	
Hydrant	815 5th St	
Hydrant	End of Peregrine Point	In the middle of the cul-de-sac
Hydrant	Intersection of Cardinal Ct and S Maple Ave	
Hydrant	Intersection of S. Maple Ave and Prairie Ct	
Hydrant	Middle of S Elm St	
Hydrant	Intersection of Settlers Cove and Settlers Dr	
Hydrant	1561 Benjamin Dr	In church parking lot
Hydrant	1322 Frontier Ct	Also, shut off valve has failed
Hydrant	Intersection of Ponderosa Ave and Ponderosa Ct	Also, shut off valve has failed
Hydrant	150 Juniper St	Also, shut off valve has failed
Hydrant	200 Settlers Cove	Cast-iron debris is covering the valve

3.2.3 WATER STORAGE TANKS

3.2.3.1 EAST WATER STORAGE TANK

From the comprehensive tank inspection report for the East Tank, it generally seems to be in good condition with respect to structural integrity, interior and exterior coatings, vents, and overflow components. However, one critical issue identified in the report is the poor condition of the water level sensor.

Results gathered from the condition assessment of the major equipment in the East Tank control vault indicate replacement of various major equipment items may be needed within the 20-year time frame of this Plan. Critical items recommended for replacement are summarized in Table 13, along with their respective recommended year of replacement.

Table 13: East Water Storage Tank Control Vault Condition Assessment Summary

ASSET NAME	CURRENT AGE (YEARS)	FINAL CONDITION RATING	BMP EXPECTED DESIGN SERVICE LIFE (YEARS)	AGE-BASED REMAINING LIFE (YEARS)	CONDITION-BASED REMAINING SERVICE LIFE (YEARS)	YEAR OF FIRST REPLACEMENT
Kent Turbine Flow Meter	38	3	12	-26	4	2025
10" Gate Valve	38	2	25	-13	5	2026
Altitude Valve	38	3	25	-13	8	2029
Control Panel	38	5	25	-13	13	2034
Interior Surface Coating	38	7	20	-18	14	2035

3.2.3.2 WEST WATER STORAGE TANK

From the comprehensive tank inspection report for the West tank, it generally seems to be in good condition with respect to structural integrity, interior and exterior coatings, vents, and overflow components. No critical issues were identified during the inspection of this tank.

Results gathered from the condition assessment of the major equipment in the West Tank control vault indicate replacement of various major equipment items may be needed within the 20-year time frame of this Plan. Critical items recommended for replacement are summarized in Table 14, along with their respective recommended year of replacement.

Table 14: West Water Storage Tank Control Vault Condition Assessment Summary

ASSET NAME	CURRENT AGE (YEARS)	FINAL CONDITION RATING	BMP EXPECTED DESIGN SERVICE LIFE (YEARS)	AGE-BASED REMAINING LIFE (YEARS)	CONDITION-BASED REMAINING SERVICE LIFE (YEARS)	YEAR OF FIRST REPLACEMENT
Pressure Transducer	16	8	12	-4	10	2031
Sump Pump	16	6	20	4	12	2033
Interior Surface Coating	16	9	20	4	18	2039

3.2.4 BOOSTER PUMP STATIONS

In general, major equipment in the Hawkstone Booster Pump Station has been well maintained and seem to be in good condition. However, results gathered from the condition assessment of the major equipment in this booster pump station indicate replacement of various major equipment items may be needed within the 20-

year time frame of this Plan. Critical items recommended for replacement are summarized in Table 15, along with their respective recommended year of replacement.

Table 15: Hawkstone Booster Pump Station Condition Assessment Summary

ASSET NAME	CURRENT AGE (YEARS)	FINAL CONDITION RATING	BMP EXPECTED DESIGN SERVICE LIFE (YEARS)	AGE-BASED REMAINING LIFE (YEARS)	CONDITION-BASED REMAINING SERVICE LIFE (YEARS)	YEAR OF FIRST REPLACEMENT
VFD for Booster Pump #2	18	8	12	-6	10	2031
VFD for Booster Pump #3	18	8	12	-6	10	2031
VFD for Booster Pump #4	18	8	12	-6	10	2031
Sump Pump #1	18	5	20	2	10	2031
Sump Pump #2	18	5	20	2	10	2031
4" Magnetic Flowmeter	18	8	15	-3	12	2033
5-hp Jockey Pump Motor #1	18	7	25	7	18	2039
25-hp Booster Pump Motor #2	18	7	25	7	18	2039
25-hp Booster Pump Motor #4	6	7	25	19	18	2039

A detailed condition assessment summary of all remaining effective life computations is provided in Appendix B.

3.3 HYDRAULIC MODELING OF SYSTEM PERFORMANCE

3.3.1 DESIGN ASSUMPTIONS AND CRITERIA

H2ONET Analyzer 17 for AutoCAD 2021 by Innovyze® was utilized to model the Town of Eaton's potable water system network. Provided below is a list of general model assumptions used in this analysis.

- Model calculations following Hazen-William method
- Junction elevations are modeled at the existing ground surface
- The existing ground surface is taken from Weld County's two-foot contour GIS data
- The model uses a fixed head reservoir with an HGL of 138.4 feet to simulate 60 psi system pressure at the main connection point to the NWCWD system
- Maximum allowable flow through NWCWD master control valve of 1,419 gpm (2.04 MGD).
- NWCWD master control valve open/close set points:
 - Open when East Tank level falls below 42 feet
 - Closed when East Tank level reaches 48 feet
- Tank operation levels:
 - East Tank: 42 feet to 48 feet

- West Tank: 62 feet to 68 feet
- Hazen-Williams Friction Coefficients:
 - 85 for CI
 - 130 for PVC
 - 140 for DIP
- The maximum velocity in the pipe shall be less than 10 feet per second (ft/s)
- Maximum Headloss in pipes \geq 12-inch: 10 feet/ 1,000 feet
- Maximum pressure of 125 psi and a minimum pressure of 45 psi under normal operating conditions

3.3.2 SYSTEM FLOW CONDITIONS AND ASSUMPTIONS

The primary flow conditions evaluated in the developed hydraulic model of the existing system are as follows:

- Static Conditions (no flow)
- Average Day Demands (ADD) with diurnal curve patterns
- Maximum Day Demands (MDD) with diurnal curve patterns

The following assumptions were used to determine system-wide water demands for each flow condition assessed.

- Demand flows were applied to roughly 370 strategically placed demand nodes throughout the water system model. Each demand node can contain between 1 and 52 taps and may include combinations of all various tap types (residential and non-residential).
- Average Day Demand (ADD) flows of 0.28 gpm/tap (derived in Section 2.2.1) were applied to all existing water taps (residential, commercial, and industrial). This assumption allowed for a more accurate model of daily flow values over an extended simulation run period that agrees with derived values from historical records. Under these assumptions, the total daily demand modeled under the ADD condition is 0.82 MGD.
- Maximum Day Demand (MDD) peaking factor of 2.2 (derived in Section 2.2.1) was applied to all average demand nodes. Under these assumptions, the total daily demand modeled under the MDD condition is 1.90 MGD.
- Hourly diurnal time series patterns for both residential and non-residential demand nodes were applied for Extended Period Simulations (EPS) and Peak Hour Demands (PHD). The diurnal time patterns assigned for residential and non-residential demand nodes are shown in Figure 10.
- Extended Period Simulations (EPS) modeled for each flow condition are assumed to start at 12 AM with both tanks at maximum operating levels and end after 72 hours.
- Since the Town currently lacks real-time data gathering through a SCADA system, no model calibrations were performed.

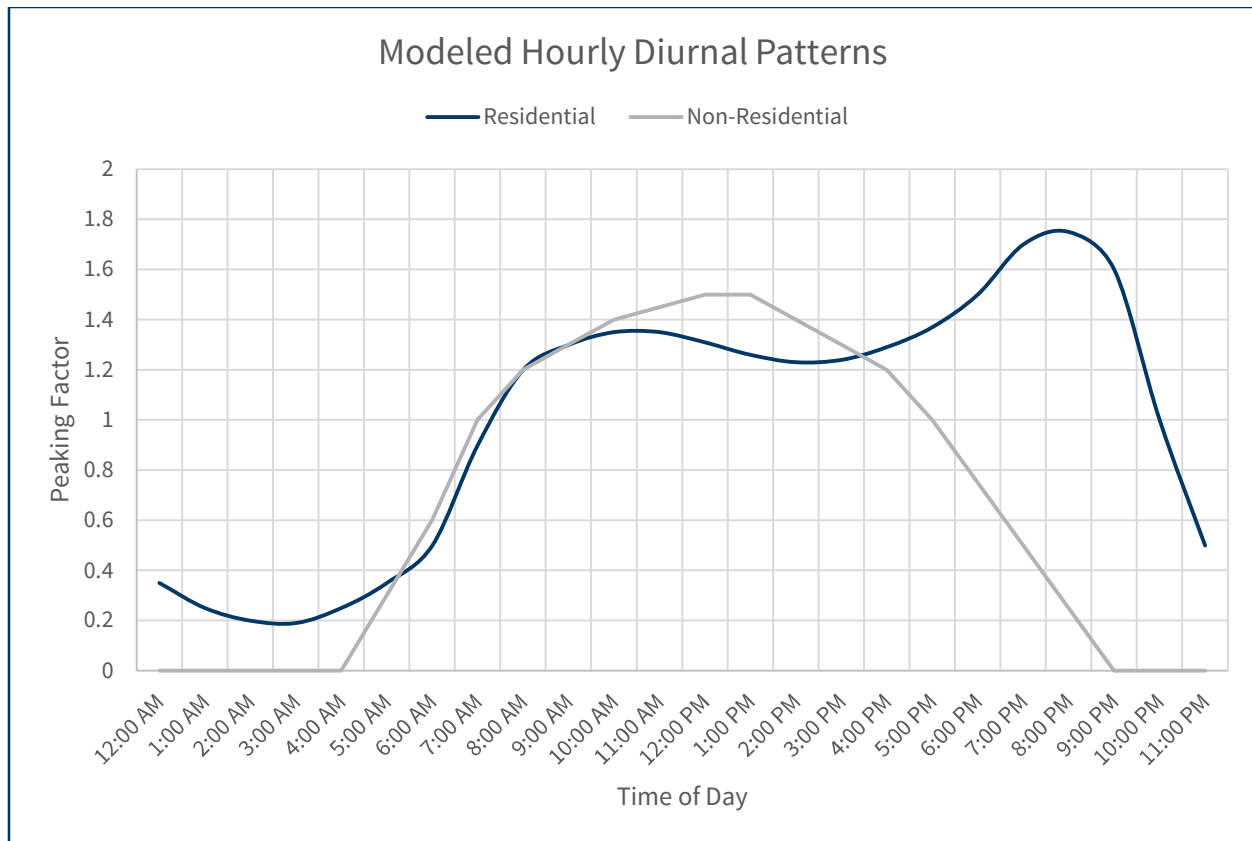


Figure 10: Hourly Diurnal Patterns Applied to Model Demand Nodes

3.3.3 SYSTEM PRESSURE ZONES

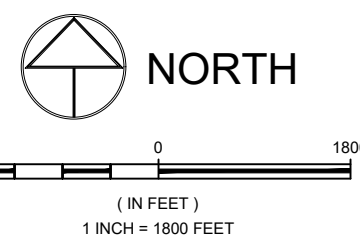
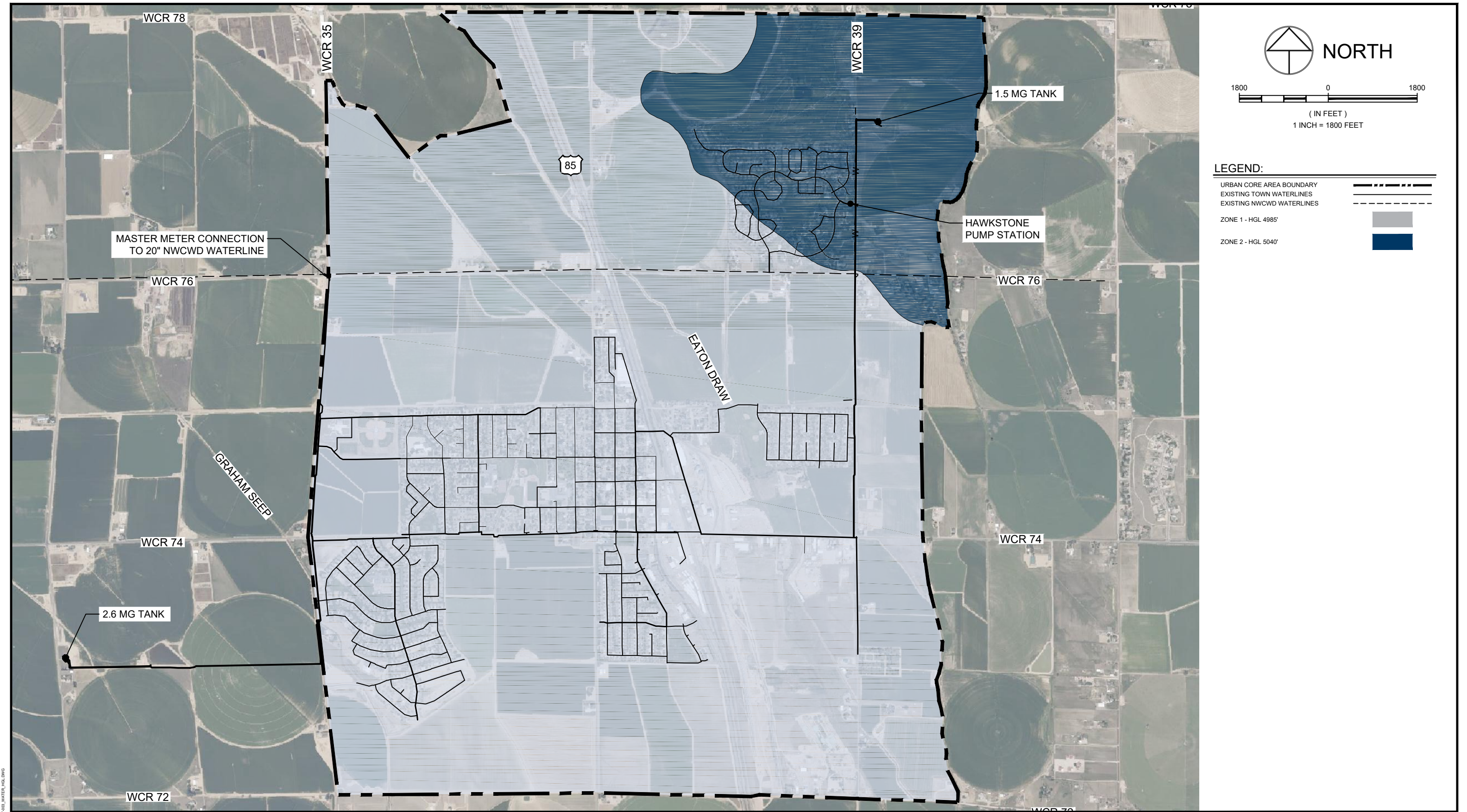
The existing hydraulic grade set by current maximum operating levels for both the East and West Tanks is 4,985.6 feet. Following the criteria outlined in Section 3.3.1, these tanks can provide service up to an elevation of 4,880 feet. Nearly all of the Town's service area is below this elevation except for the Hawkstone Subdivision and the area just east of Hawkstone. Thus, to provide service to Zone 2, a hydraulic grade line (HGL) of 5,040 feet is required to provide 45 psi to the highest point in this zone. Exhibit #8 illustrates the physical location of the theoretical pressure zones in the Town of Eaton. Additionally, the existing Hawkstone Booster Pump Station requires a minimum upstream pressure of 25 psi for the pumps to operate properly. Thus, the hydraulic grade set by the tanks must be a minimum of 4,960 feet to meet this constraint.

3.3.4 MODEL RESULTS OF EXISTING SYSTEM & OPERATIONS

This section will describe the observed and inferred model results of the existing system under existing operating and flow conditions.

3.3.4.1 STATIC CONDITIONS

Based on the East and West water storage tank operational levels described previously and the average elevations of all various developing regions of the Town, on average static system pressures range from 39 psi to 72 psi. A summary of average static pressures for each development region is provided in Table 16.



LEGEND:

URBAN CORE AREA BOUNDARY	
EXISTING TOWN WATERLINES	
EXISTING NWCWD WATERLINES	
ZONE 1 - HGL 4985'	
ZONE 2 - HGL 5040'	

**NORTHERN
ENGINEERING**

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GREELEY: 820 8th Street, 80631

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northernengineering.com

EXHIBIT #8
THEORETICAL PRESSURE ZONES

**TOWN OF EATON
WATER MASTER PLAN**

DRAWN BY: M. Castillo	SHEET NO: Pg. 31
SCALE: 1in=1800ft	
ISSUED: 02.21.2022	

Table 16: Summary of Static System Pressures by Development Region

REGION	AVERAGE REGION ELEVATION	MAXIMUM STATIC PRESSURE ¹	MINIMUM STATIC PRESSURE ¹	AVERAGE STATIC PRESSURE
Aspen Meadows	4822.5 ft	70.6 psi	68.0 psi	69.3 psi
Brown Farm	4825 ft	69.5 psi	66.9 psi	68.2 psi
East Eaton	4832.5 ft	66.3 psi	63.7 psi	65.0 psi
Eaton Area Community	4850 ft	58.7 psi	56.1 psi	57.4 psi
Eaton Cobblestone	4815 ft	73.9 psi	71.3 psi	72.6 psi
Eaton Commons	4832.5 ft	66.3 psi	63.7 psi	65.0 psi
Governor's Crossing	4832.5 ft	66.3 psi	63.7 psi	65.0 psi
Governor's Ranch	4827.5 ft	68.5 psi	65.9 psi	67.2 psi
Hawkstone	4892.5 ft	40.3 psi	37.7 psi	39.0 psi
Industrial Park	4827.5 ft	68.5 psi	65.9 psi	67.2 psi
Main Town	4837.5 ft	64.1 psi	61.5 psi	62.8 psi
Maplewood	4820 ft	71.7 psi	69.1 psi	70.4 psi

¹East and West storage tanks are at maximum operating water surface levels.

²East and West storage tanks are at minimum operating water surface levels.

3.3.4.2 AVERAGE DAY DEMAND (ADD) CONDITIONS

Under the average day demand conditions, model results observed indicate the following.

- No pipes in the system exceed maximum velocity criteria at any time throughout the 48-hour simulation period.
- No pipes in the system greater than 12-inches exceed maximum headloss criteria at any time throughout the 48-hour simulation period.
- All average day demands in each development region can be met with adequate pressures above 45 psi.
- From Figure 11(a), model results indicate water is drawn from the NWCWD master control valve for a duration of 9 hours, from 7 PM to 4 AM. The equivalent volume drawn from NWCWD during this period is 766,260 gallons.
- From Figure 11(b), model results indicate the minimum water level in the East Tank is about 41 feet, which occurs around 9 PM on the first day, and is refilled by 5 AM on the second day.
- From Figure 11(c), model results indicate that the minimum water level in the West Tank is about 55 feet, which occurs around 6 PM on the first day, and is refilled to 66 feet by 5 AM on the second day.

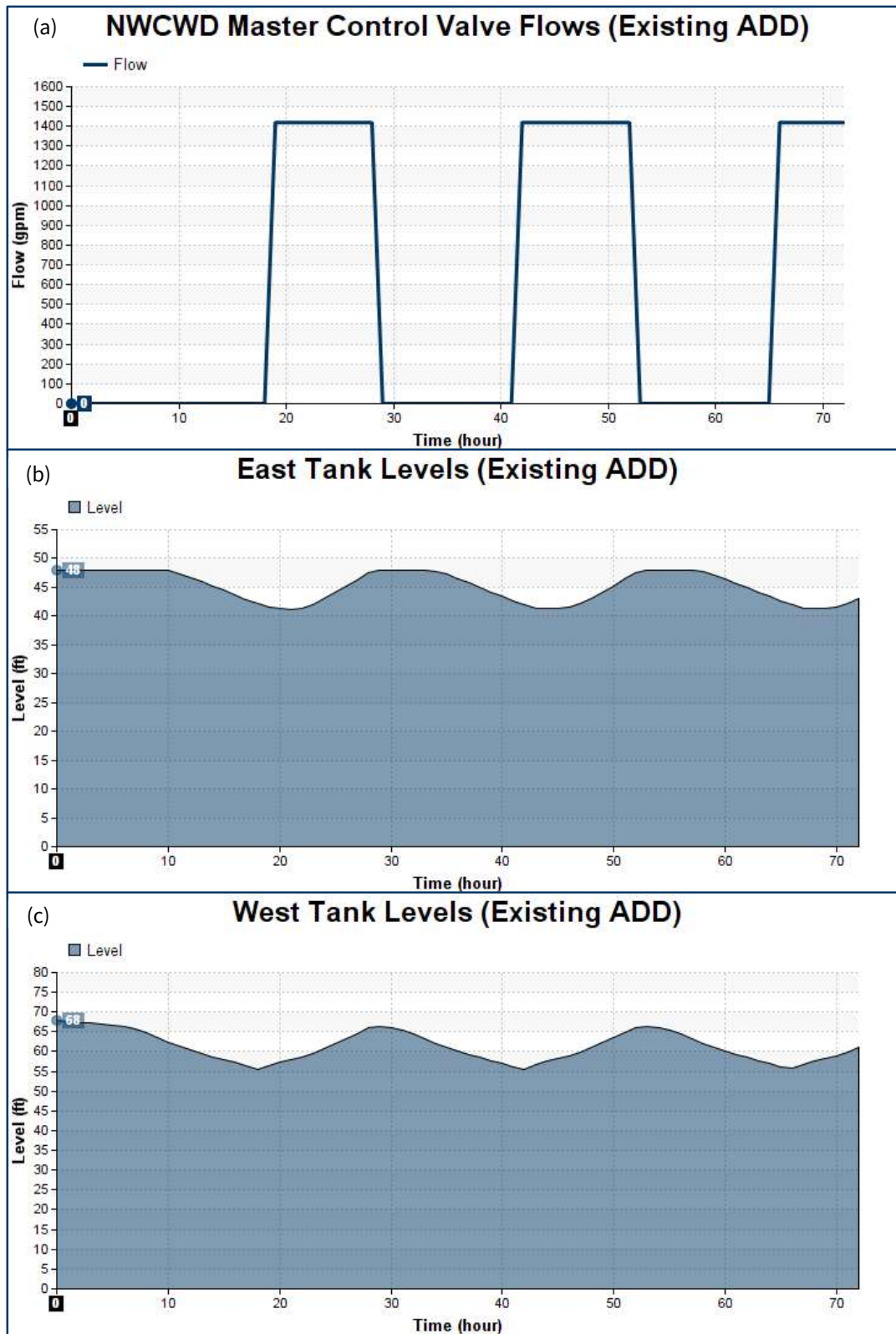


Figure 11: Model Operations of Existing System under ADD Conditions. (a) NWCWD Control Vault Flows, (b) East Tank Water Levels, and (c) West Tank Water Levels

3.3.4.3 MAXIMUM DAY DEMAND (MDD) CONDITIONS

Under the maximum day demand conditions, model results observed indicate the following.

- No pipes in the system exceed maximum velocity criteria at any time throughout the 72-hour simulation period.
- No pipes in the system greater than 12-inches exceed maximum headloss criteria at any time throughout the 72-hour simulation period.
- All maximum day demands in each development region can be met with adequate pressures above 45 psi.
- From Figure 12(a), model results indicate a duration of 61 hours over the 72-hour simulation period. This means once the valve opens at 12 PM on the first day, it continuously remains open. The equivalent volume drawn from NWCWD during this 61-hour period is 5.2 MG. This equivalates to 1.73 MGD, nearly 90% of the total maximum day water demands.
- From Figure 12(b), model results indicate that the minimum water level in the East Tank is about 34 feet, which occurs around 10 PM on the first day, and reaches a maximum refill level of about 42 feet but never completely refills in the 72-hour simulation.
- From Figure 12(c), model results indicate that the minimum water level in the West Tank is about 52 feet, which occurs around 10 PM on the first day, and reaches a maximum refill level of about 61 feet but never completely refills in the 72-hour simulation.

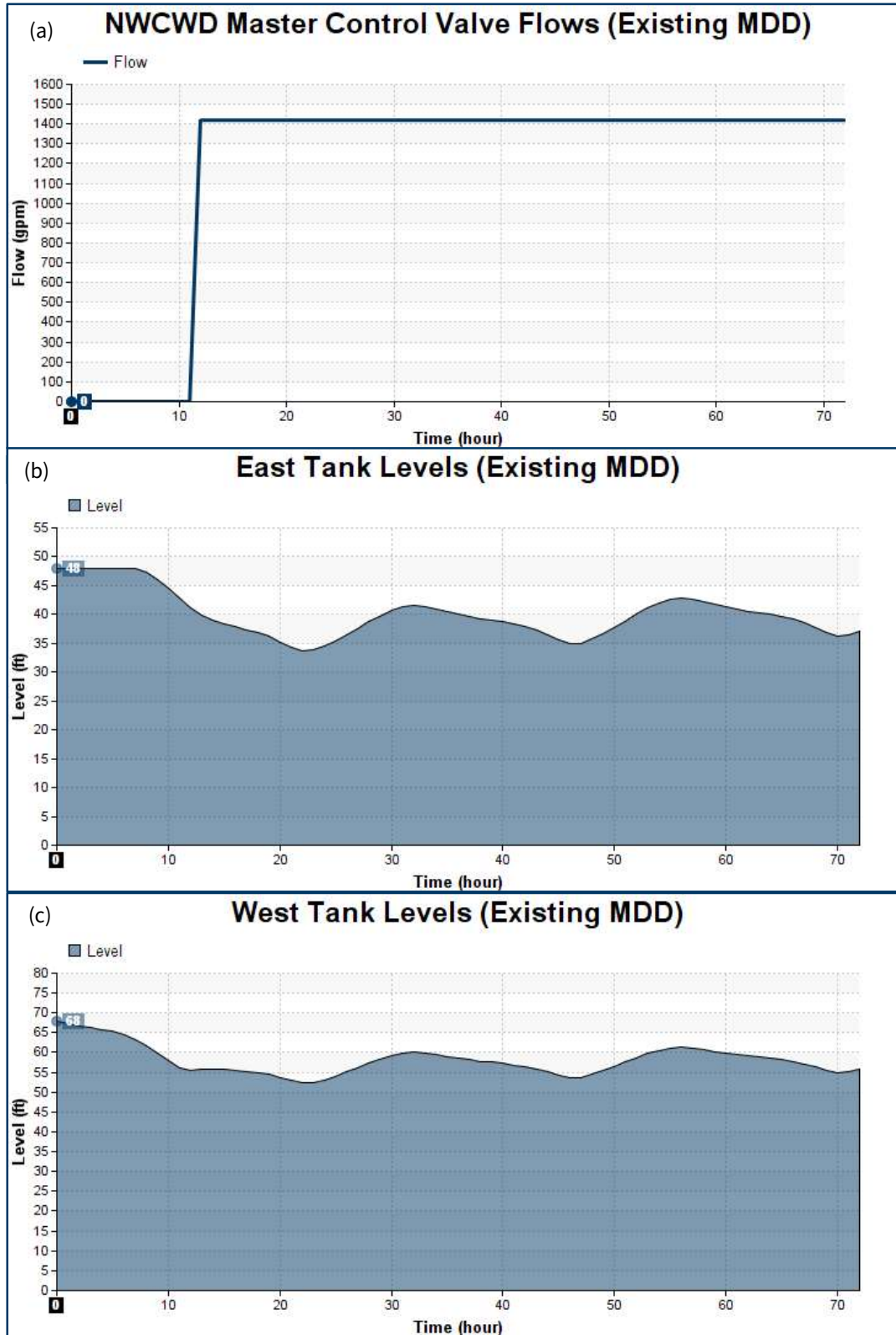


Figure 12: Model Operations of Existing System under MDD Conditions. (a) NWCWD Control Vault Flows, (b) East Tank Water Levels, and (c) West Tank Water Levels

3.3.4.4 KEY FINDINGS OF MODEL RESULTS FOR EXISTING CONDITIONS

- The 8-inch line through the existing Town meter vault is the only pipe in the system near maximum pipe velocity under current average day and maximum day demand conditions.
- The East Tank level cannot fall below 20 feet, and the West Tank water level cannot fall below 33 feet to meet minimum system pressures.
- The maximum utilizable volume from the existing tanks is limited by the minimum pressure head of the system.

Under MDD conditions, neither the storage tank can be filled. Thus, the NWCWD valve remains open after 12 PM on the first day.

Since no designated transmission line provides a direct connection from the NWCWD valve to the controlling East Storage Tank, water drawn from NWCWD must first travel through the Main Town water network before reaching the 16-inch line on WCR 39 that feeds the East Storage Tank. Thus, when water is being drawn from the NWCWD system, much of the volume is directly consumed by customer taps before reaching the tank. This increases the tank fill duration, resulting in more water being drawn from NWCWD and less stored water being utilized.

3.3.5 MODEL RESULTS OF POTENTIAL SYSTEM IMPROVEMENT ALTERNATIVES

This section will describe the observed and inferred model results of various alternatives for potential future improvements to the existing system under future operating and flow conditions. Running these model alternatives will help to identify critical system expansion and/or operational needs to meet future projected demand growth.

3.3.5.1 NO SYSTEM IMPROVEMENTS

The first alternative model was to examine the existing system's performance under future flow conditions. The model results observed are as follows.

- Under the future ADD flow condition, the system performance resulted in similar operations to the existing MDD condition where flows to neither storage tank can be adequately filled, causing the NWCWD valve to continuously remain open after 12 PM on the first day.
- Under future MDD flow conditions, the system could not properly perform since the existing flow from the NWCWD valve could not sustain minimum HGL water levels in either tank. Thus, leaving little to no pressure in the system.

3.3.5.2 EAST TANK TRANSMISSION LINE

The second alternative model is the addition of a 16-inch transmission line that provides a direct connection from the NWCWD valve to the controlling East Tank along WCR 76. It was believed the addition of this direct tank fill line would reduce the amount of water drawn from NWCWD and increase the water volume utilized from each tank. The model results observed are as follows.

- Under ADD conditions, the added transmission line to the East Tank caused more volume to be drawn from the West Tank and less volume drawn from the East Tank; however, this did not affect the total volume drawn from the NWCWD valve, nor did it affect the duration that the valve was open.

- Under future MDD flow conditions, the system could not properly perform since the existing flow from the NWCWD valve could not sustain minimum HGL water levels in either tank. Thus, leaving little to no pressure in the system.

3.3.5.3 INCREASED FLOW FROM NWCWD

The next alternative investigated was increasing the maximum allowable flow from the NWCWD valve without any additional improvements to the existing system. This was broken up into two (2) phases driven by anticipated developments of Brown Farm and South Maplewood. The model results observed are as follows.

- The minimum flow needed to support future MDD conditions with the addition of the Brown Farm development is 1,725 gpm.
- The minimum flow needed to support future MDD conditions with the addition of the South Maplewood development is 2,720 gpm.
- The minimum flow needed to support future MDD conditions with the addition of both anticipated developments is 4,445 gpm.
- These reported minimum flows are required to perform similar operations of the existing system under current ADD and MDD flow conditions.

3.3.6 KEY FINDINGS OF MODEL RESULTS FOR IMPROVEMENT ALTERNATIVES

- The existing system will not be able to sustain flows and pressures under future MDD operating conditions.
- The addition of a designated fill line to the controlling East Tank has minimal effect on the performance of the overall system. Thus, it is not a recommended alternative to support future operating conditions.
- Without providing any other system improvements, except for upsizing the Town-owned meter and control vault, increasing the flow rate from NWCWD can support future ADD and MDD flow conditions.

4.0 CAPITAL IMPROVEMENT PLANNING

4.1 POTENTIAL ADDITIONAL WATER SOURCES

4.1.1 SURFACE WATER

The Town is currently in the process of acquiring additional raw water shares from the Northern Integrated Supply Project (NISP) for an anticipated annual projected yield of 1,300 acre-feet. Currently, the NISP project is underway and anticipates beginning to deliver water by 2028. However, given the overall project history, it is uncertain when this water source will become available for Town use. Thus, utilizing this supply will not be considered within the timeframe of this Plan.

4.1.1.1 POTENTIAL REGIONAL WATER TREATMENT FACILITY

The Town is currently engaged in long-term future planning efforts with other neighboring municipalities for a regional water treatment facility that will be intended to treat the newly acquired NISP water supply, once made available. However, this is still in the early stages of planning, so implementation of this additional water source has yet to be determined.

4.1.2 GROUNDWATER

As mentioned in previous sections, in 2005, TEC evaluated several options to utilize Town owned non-tributary wells as a supplementary drinking water source and/or an offset irrigation water source for existing customers by constructing a dual water system. However, all options evaluated were ultimately deemed as unviable solutions. Thus, utilizing groundwater from the existing wells will not be considered as a potential future water source within the timeframe of this Plan.

4.1.3 ADDITIONAL SOURCE WATER OPTIONS

The evaluation of additional source water options is beyond the scope of this Master Plan document and will not be presented. However, the Town has already made efforts to contract with an outside consultant to prepare a detailed plan to address these future supply needs.

4.2 WATER SYSTEM CAPITAL IMPROVEMENT RECOMMENDATIONS

The water system recommended Capital Improvement Projects (CIP) described in this section involve both rehabilitation and maintenance-related projects, as well as expansion-type improvements that were determined as critical improvements and/or high-cost items that the Town should be mindful of in moving forward further Town growth. Exhibit #9 provides a conceptual illustration of the recommended improvements described herein.

4.2.1 WATER SYSTEM REHABILITATION AND MAINTENANCE PROJECTS

4.2.1.1 WATERLINE REPLACEMENTS

From the age-based assessment in Section 3.1.2, water mains that have exceeded or are approaching typical design life have been identified for recommended replacement. Typical design life expectancies for pipes are summarized in Table 17, and a list of recommended water main replacements within the 20-year time frame of this Plan is described in Table 18. It is also recommended that the pipes identified are replaced with 8-inch C900 PVC pipe at a minimum. A map of the water main ages is provided in Exhibit #7. Of the water mains recommended for replacement, there are some specific segments where an additional upsized is recommended. These upsized pipe segments are identified in Exhibit #9.

Table 17: Typical Water Pipe Design Life Expectancy by Material

PIPE MATERIAL	DESIGN LIFE EXPECTANCY (YEARS)
Cast Iron (CI)	80 – 100
Ductile Iron (DI)	75 – 100
Plastic (PVC/HDPE)	50
Concrete	50 – 75
Clay	100+

Table 18: Summary of Identified Water Mains Recommended for Replacement

LOCATION	SIZE AND TYPE	APPROXIMATE LENGTH	INSTALL DATE	RECOMMEND REPLACEMENT YEAR
Cottonwood Ave Between 5th St and High School	6" CI	1575 LF	1909	2022
Cottonwood Ave Between Collins St and High School	6" CI	705 LF	1909	2022
3 rd St Between Cottonwood Ave and Park Ave	4" CI	380 LF	1909	2022
2 nd St Between Oak Ave to Eastside of Hwy 85	6" CI	590 LF	1901	2022
5 th St Between Birch Ave and Cheyenne Ave	6" DIP	1100 LF	1954	2028
Cheyenne Ave Between 6 th St and 7 th St	4" CI	900 LF	1953	2033
7 th St Between Cheyenne Ave and A&W Alleyway	4" CI	420 LF	1953	2033
A&W Alleyway From 7 th St going South	4" CI	650 LF	1953	2033
Maple Ave Between 6 th St and 7 th St	4" CI	965 LF	1953	2033
5 th St Between Cheyenne Ave and Elm Ave	6" CI	825 LF	1954	2034
4 th St Between Cottonwood Ave and End of 4 th St	4" DIP	550 LF	1960	2035
Birch Ave Between 3 rd St and 4 th St	4" DIP	500 LF	1960	2035
Park Ave Between 5 th St and Collins St	6" CI	2545 LF	1957	2037
Birch Ave Between 1 st St and Collins St	4" CI	540 LF	1957	2037
3 rd St Between Park Ave and Cheyenne Ave	4" CI	395 LF	1957	2037
3 rd St Between Ash Ct and Cottonwood Ave	4" CI	320 LF	1960	2040

In addition, it is recommended the Town perform all necessary maintenance of identified leaks in the system mentioned in Section 3.2.2.

4.2.1.2 OUTSIDE METER PITS

From the age-based assessment, nearly one-quarter of the Town's water meters are within existing homes and structures, which may have exceeded or are approaching typical design life. It is recommended that the meters identified be replaced and relocated to outside meter pits at a

minimum. Placement of meters outside of structures allows for increased monitoring, meter reading, operations, and maintenance for the Town while also reducing the potential for unknown tampering or inaccessibility.

4.2.1.3 EAST WATER STORAGE TANK

Considering the old age and poor condition of the major equipment within the East Tank control vault it is recommended that all process control equipment and associated piping be replaced. In addition, it is recommended regular inspection and maintenance be performed on the tank level sensor to ensure proper function. This is especially important since this level sensor is the primary device used to control new water entering the system from NWCWD.

4.2.1.4 WEST WATER STORAGE TANK

Other than keeping up with the replacement of major equipment items described in Section 3.2.3.2, it is recommended the Town also perform regular inspection and maintenance on major process control equipment such as tank level sensors, control valves, and flowmeters.

4.2.1.5 BOOSTER PUMP STATIONS

Other than keeping up with the replacement of major equipment items described in Section 3.2.4, it is recommended the Town also perform regular maintenance on pumps, motors, and valves, as described in the Operation & Maintenance Manual, prepared for the Hawkstone Booster Pump Station. In addition, it is strongly recommended that a backup power source be implemented for this pump station.

4.2.1.6 HAWKSTONE SYSTEM IMPROVEMENTS

Originally, the water system for the Hawkstone Subdivision had two main supply connection points. One connection was to a Town-owned line in WCR 39, and a second connection to the NWCWD-owned line in WCR 76. However, this second connection to the NWCWD system has since been abandoned, according to NWCWD records. Thus, the Hawkstone water system is currently only supported by one connection point to the Town's system. Based on best management practices, it is recommended to have at least two (2) connection points to provide a looped system for redundancy in emergency situations and to improve water quality related to water age. Thus, the recommendations for addressing these issues associated with redundancy and water age are as follows. The first two recommendations presented are more near-term solutions that can be easily implemented, while the final recommendation should be considered as a long-term permanent solution.

Water System Flushing

It is recommended the Town implement a more frequent water system flushing schedule to address water quality issues in the existing Hawkstone Subdivision water system. Currently, the Town does not perform regular system flushes on existing mains, so it is first recommended the Town implement an annual system flushing schedule. Typically, these annual flushes should begin in early spring. Additionally, it is recommended that, at minimum, one additional flush of the Hawkstone system be performed in late fall or early winter if weather permits. However, once a redundant system connection is made to the Town's water system, the flushing schedule for this area can return to an annual basis.

Emergency Connection to NWCWD

Since the Hawkstone water system is not supplied pressure by the existing booster pump station under fire flow conditions, minimum residual pressures required are heavily dependent on the East Tank level. So, if a fire event were to occur under maximum day demand conditions, there is a potential minimum residual pressures cannot be met. Thus, it is recommended the Town re-establish the connection to the NWCWD system for emergency fire flow scenarios. This connection should be made at the previously abandoned connection to the NWCWD 16-inch line that exists at the south entrance of the subdivision within the intersection of Hawkstone Drive and WCR 76. This emergency connection can be abandoned once a new connection to the Town water system is made.

Future Looped System

A more permanent solution that addresses both the water quality and redundancy issues in the Hawkstone water system is to achieve a proper looped system. Thus, it is recommended an additional connection point to the Hawkstone water system be made to the potential future Town water main near the NWCWD connection point. This is considered a long-term planned improvement since the new water main along WCR 76 will not be constructed until further development begins to occur west of Hawkstone. These recommended improvements are illustrated in Exhibit #9. However, since the Hawkstone Subdivision pressures are supported by an existing pump station, any additional connections to the Town's system would require a check valve and pressure regulating valve (PRV) assembly to restrict the flow direction and maintain system pressures in that region.

4.2.2 NEAR-TERM WATER SYSTEM IMPROVEMENTS AND EXPANSIONS PROJECTS

The near-term expansion projects presented in this section are recommended projects that will likely be needed within the 20-year timeframe of this Plan, specifically in regard to the anticipated Brown Farm and South Maplewood developments.

4.2.2.1 INCREASED MAXIMUM ALLOTMENT FROM NWCWD

Under the current conditions and operations of the existing water system, the contractual peak allowance from the NWCWD control valve is not sufficient for the system to meet projected future demands. Thus, it is recommended the Town renegotiate a new contract with NWCWD to increase both the maximum annual allowance as well as the peak allowance. The minimum peak allowance needed to support future demands outlined in this report is 4,445 gpm. Based on the most recent 2019 contract between NWCWD and the Town, 30 additional Plant Investment Taps were purchased for \$272,250, which equivalates to \$9,075 per tap. In 2022, NWCWD has increased the cost of Plant Investments Taps to approximately \$15,000. Thus, the additional 1,301 Plant Investment Taps required are estimated to cost around \$19.5M. However, this will largely be driven by the rate of new development and what NWCWD will be able to provide until such time additional water sources are secured.

Phase 1 – Brown Farm Development

For the existing system and operations to support projected demands from the anticipated Brown Farm development, the minimum required allowance from NWCWD is 1,725 gpm. This requires the Town to purchase an additional 306 Plant Investment Taps from NWCWD. Based on the cost per Plant Investment Tap derived previously, this is estimated to cost around \$4.59M.

Phase 2 – South Maplewood Development

For the existing system and operations to support projected demands from the anticipated South Maplewood development, the minimum required allowance from NWCWD is 2,720 gpm. This requires the Town to purchase an additional 995 Plant Investment Taps from NWCWD. Based on the cost per Plant Investment Tap derived previously, this is estimated to cost around \$14.93M.

4.2.2.2 MASTER CONTROL VAULT

This is the abandoned NWCWD master meter vault but still is functional immediately downstream of the new NWCWD Master Meter. It is recommended a new vault be constructed downstream of the existing vault to accommodate increased future flow rates, considering the poor condition and old age of nearly all the major equipment in this vault. It is also recommended the Town install a flow meter that communicates and logs flow data into the newly implemented SCADA system. Given the water loss discrepancies observed and the history of miscalibration of the NWCWD flowmeter, it would be in the Town's best interest to track flows independently to validate any future discrepancies with NWCWD. However, since this is the only connection point for the system to receive water from NWCWD, an extended shutdown duration to accomplish removing and replacing all equipment could prove as problematic. Thus, it is recommended a new vault be constructed downstream of the existing vault. Constructing a new master control vault would eliminate major time constraints of shutdown time since all construction can occur while the existing vault remains in operation. Once completed, connections can be switched over to the new vault, and the existing vault can be abandoned in place.

4.2.2.3 DISTRIBUTION SYSTEM EXPANSIONS PROJECTS

The recommended near-term water main additions are primarily focused on improving system performance to support the anticipated development of the Brown Farm and South Maplewood areas.

Brown Farm Development

From the submitted utility plans and hydraulic report provided in 2020-2021 for the Brown Farm PUD, the proposed water main sizes and layouts are agreeable. Thus, there are no other further recommendations outside of the proposed improvements. The proposed water mains for the Brown Farm development are shown in Exhibit #9. Since all the proposed lines will be at the cost of the developer, no additional costs will be required by the Town.

South Maplewood Development

South Lateral – To support development in the South Maplewood area, it is recommended a new 12-inch line be constructed south along WCR 37. This line should connect to the existing 12-inch line at the intersection of Colorado Parkway and WCR 76 and terminate just north of WCR 72. This will allow for improved system pressures in this area. In addition, as development in this area occurs, it is recommended the Town require a looped system connection to the existing 8-inch line of the Maplewood Subdivision located at the south end of S. Elm Avenue.

South System Loop – It is also recommended once the water main is constructed along WCR 37, the Town consider constructing a 12-inch main along WCR 72 to create a system loop at the existing dead-end waterline east of the Eaton Cemetery along WCR 39. Though this is not a critical improvement to system performance, it still offers enhancements to water quality and system redundancy.

4.2.3 LONG-TERM WATER SYSTEM IMPROVEMENTS AND EXPANSIONS PROJECTS

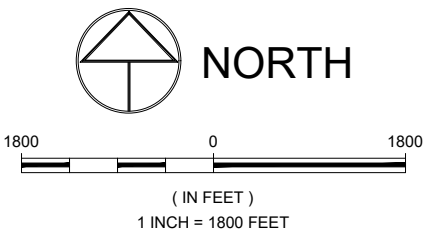
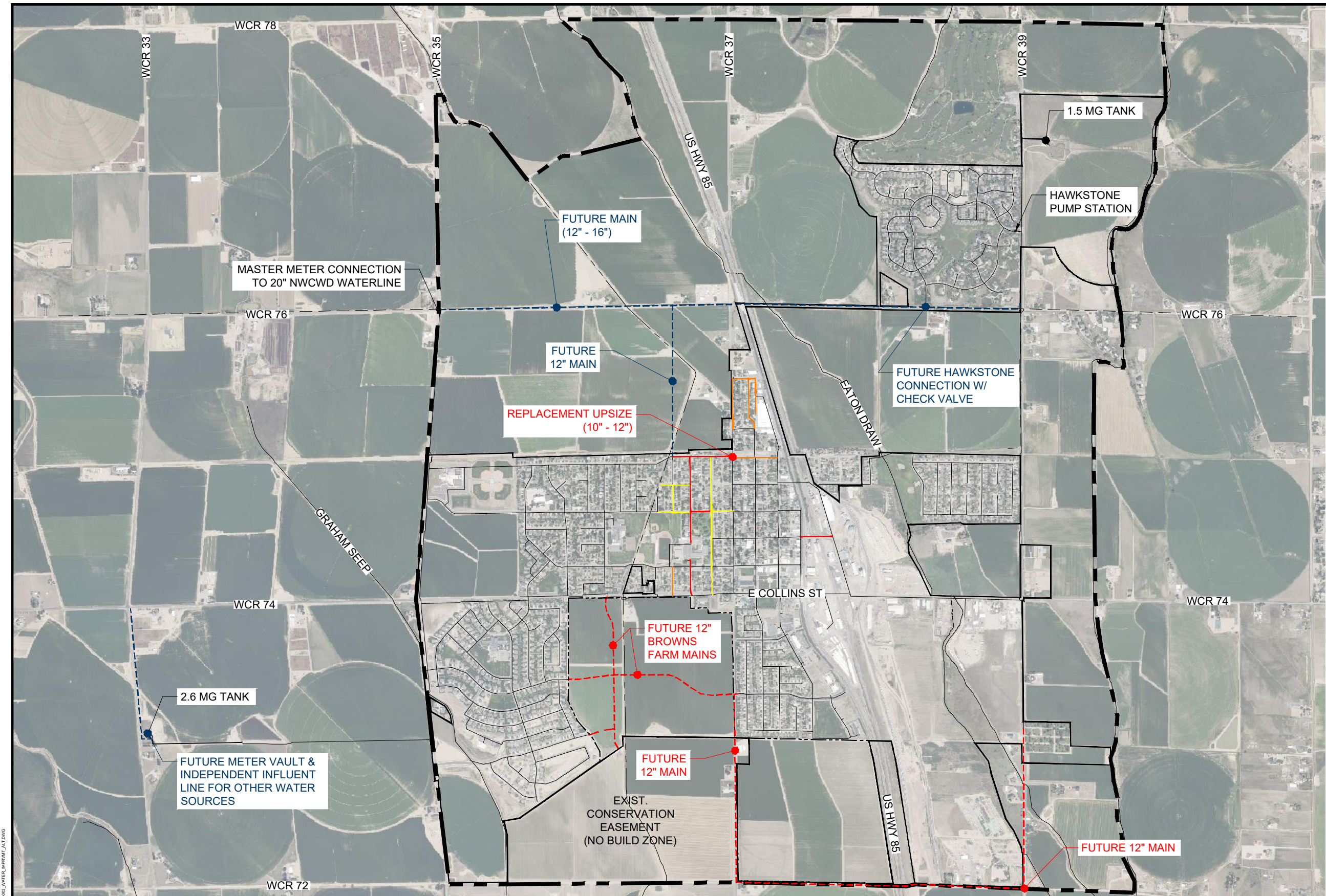
The long-term expansion projects presented in this section are recommended projects that will likely be needed beyond the 20-year timeframe of this Plan and/or if any unanticipated developments occur outside the planned areas of Brown Farm and South Maplewood.

4.2.3.1 BOOSTER PUMP STATIONS

Since the Hawkstone Subdivision is nearly at full build-out, and no further growth is anticipated in this area, which will need to be served by the Hawkstone Booster Pump Station, there are no recommendations for expansion improvement of this booster pump station within the 20-year time frame of this Plan. However, if any unanticipated development were to occur within Pressure Zone 2 (see Exhibit #7), said development would require an additional booster pump station or an upsizing of the existing Hawkstone Pump Station.

4.2.3.2 WEST WATER STORAGE TANK TRANSMISSION AND METER VAULT

Similar to the East Tank system, the 24-inch transmission line connected to the West Storage Tank is a bi-directional line that feeds the tank as well as draws from the tank. Thus, water drawn from NWCWD to fill the tank is first directly consumed by customer taps before reaching the tank, which increases the total fill duration and, in turn, results in less stored water being utilized. Thus, it is recommended that any additional future water sources be fed directly into the West Tank with a new designated intake line. Additionally, it is also recommended a new meter, and control vault be constructed within the existing tank property to allow for independent metering of other future water sources outside of NWCWD.



WATERLINE LEGEND:	
PLANNING BOUNDARY	
TOWN BOUNDARY	
NEAR-TERM SYSTEM IMPROVEMENTS	
LONG-TERM SYSTEM IMPROVEMENTS	
WATERMAIN REPLACEMENTS:	
PHASE I	
PHASE II	
PHASE III	

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NORTHERN
ENGINEERING

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EXHIBIT #9
WATER SYSTEM IMPROVEMENTS

TOWN OF EATON
WATER MASTER PLAN

DRAWN BY: M. Castillo	SHEET NO: Pg. 44
SCALE: 1in=1800ft	
ISSUED: 02.23.2022	

5.0 PROJECT COST ESTIMATIONS AND IMPLEMENTATION SCHEDULES

5.1 OPINION OF PROBABLE CONSTRUCTION COSTS DISCLAIMER

In consideration of current supply-chain challenges causing extreme market volatility and unpredictability in terms of manufacturing and supply costs, the opinion of probable construction costs presented in this section for both rehabilitation and expansion projects are strictly intended to provide a high-level estimate for planning and budgeting purposes. However, all project costs should be re-assessed in further detail once said projects are in the early stages of implementation.

5.2 COST ESTIMATIONS AND SCHEDULING FOR REHABILITATION AND O&M PROJECTS

Cost estimates presented in this section are generally focused on maintenance and rehabilitation projects that are considerably expensive and may exceed the typical annual budget for normal operations and maintenance (O&M) efforts.

5.2.1 WATER SYSTEM STRUCTURES REHABILITATION PROJECTS

The estimated construction costs to provide an emergency backup generator for the existing Hawkstone Booster Pump Station are based on the average costs from a project of similar size and scope. These costs include the procurement and installation of a standby generator, a concrete pad, and various conduits, wires, and other miscellaneous materials.

Cost estimations for the rehabilitation of the existing East Tank control vault are based on average costs from projects similar in size and scope. These construction costs include the procurement and installation of all major parts, such as housing structure, valves, and interior piping, as well as associated general site work.

Total estimates of the probable construction cost for water structure-related rehabilitation projects are provided in Table 19. Design costs and construction administration costs are excluded from these cost estimates.

Table 19: Cost Estimations for Water System Structures Rehabilitation and O&M Improvements

IMPROVEMENT DESCRIPTION	LOCATION DESCRIPTION	RECOMMENDED IMPLEMENTATION YEAR	ESTIMATED COST
Outside Water Meter Pit Conversion	Town-wide	2023-2025	\$900,000
Hawkstone Pump Station Emergency Power	Near Intersection of Hawkstone Dr and WCR 39	2023	\$98,500
East Tank Control Vault Rebuild	SW Corner of WCR 35 and WCR 76	2025	\$75,000

5.2.2 WATERLINE REPLACEMENT PROGRAM

The estimated construction costs for each recommended replacement are based on average unit costs per linear foot of PVC pipe from previous contractor bids for 2020 waterline replacement for water mains. In general, these costs include demolition/abandonment of existing infrastructure, installation of pipes and associated

appurtenances, and general site work. However, items such as street and/or sidewalk improvements (mill and overlay, ADA ramp improvements), design costs, and construction administration costs are excluded from these cost estimates.

A recommended program phasing schedule has also been developed that prioritizes lines recommended for replacement based on age and/or current conditions. The estimated costs and recommended phasing schedule for the waterline replacement program are summarized in Table 20.

Table 20: Estimated Construction Costs and Recommended Phasing Schedule for Waterline Replacement Program

REPLACEMENT PHASE	LOCATION	LOCATION DESCRIPTION	APPROXIMATE LENGTH	SIZE AND TYPE	ESTIMATED COST	TOTAL ESTIMATED PHASE COST
Phase I (2022-2028)	Cottonwood Ave	Between 5th St and High School	1575 LF	8" PVC	\$337,750	\$956,419
	Cottonwood Ave	Between Collins St and High School	705 LF	8" PVC	\$151,180	
	3rd St	Between Cottonwood Ave and Park Ave	380 LF	8" PVC	\$81,490	
	2nd St	Between Oak Ave to Eastside of HWY 85	590 LF	8" PVC	\$126,520	
	5th St	Between Birch Ave and Cheyenne Ave	1100 LF	10" PVC	\$259,479	
Phase II (2029-2034)	Cheyenne Ave	Between 6th St and 7th St	900 LF	8" PVC	\$193,000	\$824,012
	7th St	Between Cheyenne Ave and A&W Alleyway	420 LF	8" PVC	\$90,070	
	A&W Alleyway	From 7th St going South	650 LF	8" PVC	\$139,390	
	Maple Ave	Between 6th St and 7th St	965 LF	8" PVC	\$206,940	
	5th St	Between Cheyenne Ave and Elm Ave	825 LF	10" PVC	\$194,612	
Phase III (2035-2040)	4th St	Between Cottonwood Ave and End of 4th St	550 LF	8" PVC	\$117,950	\$1,040,060

REPLACEMENT PHASE	LOCATION	LOCATION DESCRIPTION	APPROXIMATE LENGTH	SIZE AND TYPE	ESTIMATED COST	TOTAL ESTIMATED PHASE COST
	Birch Ave	Between 3rd St and 4th St	500 LF	8" PVC	\$107,220	
	Park Ave	Between 5th St and Collins St	2545 LF	8" PVC	\$545,750	
	Birch Ave	Between 1st St and Collins St	540 LF	8" PVC	\$115,800	
	3rd St	Between Park Ave and Cheyenne Ave	395 LF	8" PVC	\$84,710	
	3rd St	Between Ash Ct and Cottonwood Ave	320 LF	8" PVC	\$68,630	
TOTAL REPLACEMENT PROGRAM COST:						\$2,820,491

5.3 COST ESTIMATIONS & SCHEDULING FOR NEAR-TERM EXPANSION PROJECTS

Cost estimates presented in this section are generally focused on the expansion of system capacity and/or system long-term system-wide improvement projects.

5.3.1 INCREASED MAXIMUM FLOW FROM NWCWD

Based on the Cost per Plant Investment Tap derived previously in Section 4.2.2.1, the estimated cost to increase maximum flow from NWCWD, in addition to a recommended schedule for implementation, are presented in Table 21. Based on the Cost per Plant Investment Tap of approximately \$15,000 in mid-2022, the estimated costs to increase maximum flow from NWCWD to support the near-term developments are shown. The recommended implementation schedules are without further analysis from NWCWD, which may hold additional restrictions on the projected developments. Since development will largely impact the additional water demand and capacity needs, the costs to the Town should be limited.

Table 21: Estimated Costs and Schedules for Increased Maximum Flows from NWCWD

PHASE	RECOMMENDED IMPLEMENTATION YEAR	MINIMUM REQUIRED PEAK FLOW	REQUIRED PLAN INVESTMENT TAPS	ESTIMATED COST
Phase 1 - Brown Farm	2023-2026	1,725 gpm	306	\$4,590,000
Phase 2 – South Maplewood	2026-2035	2,720 gpm	995	\$14,925,000
TOTALS:		4,445 gpm	1301	\$19,515,000

5.3.2 NEAR-TERM WATER SYSTEM STRUCTURES EXPANSION PROJECTS

Cost estimations provided in Table 22 are based on average costs from projects similar in size and scope. These construction costs include the procurement and installation of all major parts, such as housing structure,

valves, and interior piping, as well as associated general site work. Design costs and construction administration costs are excluded from these cost estimates.

Table 22: Estimated Construction Cost and Schedules for Near-Term Water Structure Related Expansion Projects

IMPROVEMENT DESCRIPTION	LOCATION DESCRIPTION	RECOMMENDED IMPLEMENTATION YEAR	ESTIMATED COST
New Concrete 12" Meter & Control Vault	SW Corner of WCR 35 and WCR 76	2023	\$87,500

5.3.3 NEAR-TERM DISTRIBUTION SYSTEM EXPANSION PROJECTS

The estimated construction costs for each recommended improvement are based on average unit costs per linear foot of PVC pipe from previous contractor bids for 2020 waterline replacement for water mains. In general, these costs include demolition/abandonment of existing infrastructure, installation of pipes and associated appurtenances, and general site work. The added cost associated with the major crossing at Highway 85 and/or Union Pacific Railroad is also accounted for where applicable. However, items such as street and/or sidewalk improvements (mill and overlay, ADA ramp improvements), design costs, and construction administration costs are excluded from these project estimates.

Table 23: Estimated Construction Cost and Schedules for Near-Term Water Main Related Expansion Projects

IMPROVEMENT DESCRIPTION	LOCATION DESCRIPTION	SIZE AND TYPE	APPROXIMATE LENGTH	RECOMMENDED IMPLEMENTATION YEAR	ESTIMATED COST
South 12" Lateral	From Maplewood to WCR 72	12" PVC	3,460 LF	2030	\$779,100
South 12" System Loop	From South 12" Lateral to Eaton Cemetery	12" PVC	8,200 LF	2035	\$2,400,300
TOTAL WATER MAIN EXPANSION PROGRAM COST:					\$3,179,400

5.3.3.1 POTENTIAL COST SHARING FOR WATER MAIN EXPANSION PROJECTS

Some recommended projects presented that are related to system expansion with additional water mains are largely development driven, so there are potential opportunities for cost sharing as developments occur.

6.0 FUTURE REPORTS

6.1 FINANCIAL RATES RESTRUCTURE REPORT

Financial planning to support the costs and schedules of the recommended capital improvement projects are beyond the scope of this Master Plan and will not be presented. However, the Town has already made efforts to contract with Northern Engineering to prepare a separate document that will address these financial planning elements.

6.2 FUTURE WATER SUPPLY SOURCES

Costs estimates and planning schedules for increasing supply capacity are outside of the scope of this Master Plan and will not be presented. However, the Town has already made efforts to contract with an outside consultant to prepare a detailed plan to address these future supply needs.



APPENDIX A

NWCWD CONTRACTUAL AGREEMENT
AND SERVICE AREA MAP

AMENDED AND RESTATED
WATER SERVICE AGREEMENT
(Town of Eaton)

THIS AMENDED AND RESTATED WATER SERVICE AGREEMENT ("Restated Agreement") is made and entered into effective as of the 17th day of October, 2019 ("Effective Date"), by and between the NORTH WELD COUNTY WATER DISTRICT, acting by and through the North Weld County Water District Enterprise (hereinafter "District"), and the TOWN OF EATON, acting through its Water Utilities Enterprise pursuant to Chapter IX of the Town of Eaton Municipal Code (hereinafter "Town").

RECITALS

A. The District is a statutory special district formed under the Laws of the State of Colorado and is a quasi-municipal corporation.

B. The District Enterprise and the Water Utilities Enterprise were created by the District and the Town, respectively, in compliance with the provisions of Section 20, Article X of the Colorado Constitution and Article 45.1 of Title 37 of the Colorado Revised Statutes, as applicable.

C. The District (individually or in cooperation with others) maintains and operates a system for the treatment, storage and distribution of potable water within Weld County and Larimer County, Colorado.

D. The Town owns, maintains and operates a separate and independent system for the storage of and distribution of potable water to its residents and customers.

E. With regard to the establishment of rates, fees and charges, the District, as a quasi-municipal corporation and statutory special district, must establish and provide water rates to cover maintenance, operation, depreciation, replacement and appropriate funding of capital costs of the District.

F. The District and the Town previously entered into a Water Service Agreement dated as of March 15, 2001, in which the Town agreed to purchase and receive, and the District agreed to furnish potable water for the operation of the Town's water system upon the terms and conditions more fully set forth therein ("Original Water Service Agreement").

G. For convenience of reference, the Original Water Service Agreement, together with all amendments thereto, if any, are hereinafter collectively referred to as the "Original Agreement."

H. As of the Effective Date set forth above, the District and the Town desire to amend and restate the Original Agreement in its entirety as more fully set forth below for the purpose of defining the respective rights, duties, obligations and interests of the parties from and after the Effective Date.

NOW, THEREFORE, in consideration of the premises and the covenants and agreements hereinafter set forth, it is agreed by and between the District and the Town as follows:

ARTICLE 1
AMENDMENT AND RESTATEMENT

This Restated Agreement amends, restates and supersedes in its entirety the Original Agreement. From and after the Effective Date, the terms and provisions of this Restated Agreement shall exclusively govern the rights, duties and obligations of the parties with respect to the Town's purchase and receipt of water from the District and the District's obligation to furnish such water to the Town.

ARTICLE 2
INTERGOVERNMENTAL AGREEMENT

It is the intention of the parties that this Restated Agreement shall be considered a mutually binding and enforceable agreement between the parties pursuant to the provisions of the Colorado Constitution; the Colorado Special District Act set forth in C.R.S. 32-1-101, et seq.; the Local Government Land Use Enabling Act set forth in C.R.S. 29-20-101, et seq.; and the powers inherently granted to the District and the Town by the State of Colorado.

ARTICLE 3
DEFINITIONS

3.1 "Base Fee" shall mean that portion of the Plant Investment Fee established by the District from time to time excluding only the Distance Fee portion of the Plant Investment Fee.

3.2 "Cash in Lieu of Water Fee" shall mean the value as determined solely by the District for an allocation of seventy percent (70%) of an acre-foot of water (i.e., 228,000 gallons) representing the average delivery of water delivered by the Northern Colorado Water Conservancy District for one (1) unit of contractual ownership of the waters of the Northern Colorado Water Conservancy District.

3.3 "Commitment" shall mean the District's obligation to Furnish water as set forth in Section 4.1.

3.4 "Conservation Plan" shall refer to a plan created by the Town in accordance with Section 4.8 hereinbelow.

3.5 "Delivery Point(s)" shall mean point(s) at which the District delivers water to the Town's system through a master meter.

3.6 "Distance Fee" shall mean the fee per mile per water tap charged by the District computed from the District's Tank 1 Facilities to the Delivery Point(s) with a minimum Distance Fee based upon a minimum of twelve (12) miles from the Tank 1 Facilities.

3.7 "Eaton Service Area" shall mean the area described and depicted on Exhibit C attached hereto and incorporated herein by reference as hereafter modified pursuant to Section 11.3 of this Restated Agreement.

3.8 "Extraordinary Water Usage Event" shall mean an unpredictable event of limited duration that causes unusually high water usage by the Town in excess of the Minimum Town Storage Tank Volume set forth on Exhibit A, for not more than seventy-two (72) continuous hours, such as a water line break, unusual water demand for fire suppression, or similar unanticipated and random accidents or temporary emergencies.

3.9 "Furnish" when used with regard to the District's Commitment shall mean to acquire and furnish and includes all of the intermediate steps necessary to provide water at the Delivery Point(s) but does not include the obligation to construct localized storage, pumping, transmission or distribution facilities downstream of the master meter which may be constructed by the Town as part of the Town's facilities.

3.10 "Impossible" shall mean a circumstance in which the District is prevented from performing under the terms and provision of this Restated Agreement. Such a circumstance must be beyond the control of the District and must not be created by any actions of the District.

3.11 "Maximum Day Demand" shall mean the volume of water used during the twenty-four (24) hour period with the highest consumption during the Water Year.

3.12 "Minimum Raw Water Obligations" shall mean one hundred ten percent (110%) of the total measured potable water usage measured at the master meter for the previous Water Year plus any anticipated increases in usage.

3.13 "Peak Hour Demand" shall mean the volume of water used during the 60-minute period with the highest consumption during the Water Year.

3.14 "Plant Investment Fee" shall mean the amount paid to the District for the right to receive delivery of water allocated to one Standard Plant Investment Tap and shall consist of both a Base Fee and a Distance Fee.

3.15 "Raw Water Fee" shall mean the amount paid to the District for the right to receive delivery of water equivalent allocated to one Standard Water Tap.

3.16 "Raw Water Requirement" shall mean the annual amount of raw water provided by the District to the Town which is capable of treatment and delivery by the District, in the amount of one hundred ten percent (110%) of the total measured potable water usage by the Town at the master meter(s) for the previous Water Year, plus any anticipated increases in the Town's use of potable water for the ensuing Water Year.

3.17 "Raw Water Surcharge" shall mean the additional fee charged by the District for use of District-owned raw water when the customer's annual usage in any Water Year exceeds the Raw Water Requirement provided to the Town as more fully set forth in Section 10.2 below.

3.18 "Standard Plant Investment Tap" shall mean the right to use the District's water system assets to deliver a maximum of 70% of 1.000 acre-foot of water (i.e., 228,000 gallons or 1 gallon per minute (gpm)) on a peak flow basis.

3.19 "Standard Water Tap" shall mean a 3/4-inch residential water tap or equivalent to which is allocated 228,000 gallons of District-owned water during each Water Year, which volume of water is based upon the historic delivery of seventy percent (70%) of an acre-foot of water for each contract unit of water from the Northern Colorado Water Conservancy District.

3.20 "Tank 1 Facilities" shall mean and refer to the District's water storage facilities located near the intersection of Colorado State Highway 257 and Highway 14.

3.21 "Usage Charge" shall mean the amount charged by the District to the Town based upon the volume of potable water used by the Town and measured at the Town's Master Meter.

3.22 "Water Supply" shall include, but not be limited to, water resulting from existing water supplies, future water supply projects and development of existing and after-acquired water rights.

3.23 "Water Year" shall mean the period of time commencing on November 1 of each year and terminating on October 31 of the next succeeding year.

3.24 "Wholesale Discount Rate" shall mean the percentage applied to the District's retail Usage Charge to recognize the District's cost savings in providing water to the Town as a wholesale customer which provides its own internal water system storage tanks to meet Peak Hour Demands.

ARTICLE 4 WATER SUPPLY

4.1 The District shall Furnish, and the Town shall purchase and receive from the District, water for the operation of the Town's water system in the minimum annual amount in millions of gallons (MG), maximum annual amount in MG, peak demands in gallons per minute (gpm), and minimum and maximum pressures in pounds per square inch (psi), all as are more fully set forth in Exhibit A attached hereto ("Water Requirements"). The Water Requirements may be modified by mutual agreement of the parties upon execution of a written supplement which makes specific reference to this Restated Agreement and Exhibit A attached hereto. The Town shall not serve users or property outside the limits of the Northern Colorado Water Conservancy District.

4.2 The Town agrees that all water for operation of the Town's water system shall be obtained exclusively from the District from the Minimum to the Maximum Annual Amount. Water in excess of the Maximum Annual Amount may be obtained from third party sources other than the District.

4.3 The water to be Furnished by the District to the Town at the Delivery Point shall be potable water, which complies with the Federal Safe Drinking Water Act and all other applicable drinking water regulations. The District shall have no responsibility for maintaining the quality of water within the Town's water distribution system located downstream of the Delivery Point and the Town shall assume sole responsibility for such water quality within the Town's water distribution system located downstream of the Delivery Point. The District shall make arrangements for all testing necessary to assure that the water Furnished under this Restated Agreement complies with Federal and State drinking water standards at the Delivery Point. No promise or guarantee of pressure is made by the District or is to be implied from anything contained herein, except as set forth in Exhibit A.

4.4 The District's Commitment shall be limited only by the occurrence of factors which make it impossible or impractical for the District to meet the Commitment.

4.5 At any time, the Town may purchase or otherwise acquire surface, raw water rights and/or other non-potable waters for transfer to the District if such water rights (i) are capable of being delivered to and treated by the water treatment system utilized by the District, and (ii) are usable in the District's water supply system. The District agrees to accept such water rights and, subject to the other provisions of this Restated Agreement, including the Maximum Annual Amount of water to be Furnished to the Town, Furnish to the Town an additional amount of treated water. In such instance, the parties shall execute a written supplement to this Restated Agreement. The amount of additional treated water shall be equivalent to the firm annual yield of the conveyed water rights, as determined by the District, using the same annual yield methodology used by the District in the operation and management of its water rights and water system, less water losses due to treatment and conveyance of water through the District's delivery system.

4.6 The minimum and maximum pressures to be provided by the District are shown on Exhibit A and shall be satisfied at the Delivery Point(s) only. The Town shall be responsible for regulating water pressures and maintaining the potable water quality within the Town's system after the Delivery Point(s).

4.7 Both parties to this Restated Agreement recognize that the District's Water Supply is dependent upon natural water resources that are variable in quantity of supply from year to year. The District shall not be liable to accurately anticipate availability of the District's Water Supply or for an actual failure of the District's Water Supply due to inadequate run-off or other occurrence beyond the reasonable control of the District. In times of such shortage or failure, water use may be curtailed in a manner to be determined by the District; provided, however, that such curtailment on use shall be applied generally in a uniform manner both inside and outside the Town.

4.8 The Town has created and will continue to implement a Conservation Plan for the efficient and wise use of water throughout the Eaton Service Area. A copy of this Conservation

Plan and any future amended Conservation Plans shall be submitted to the District for review in order to allow the District to integrate the Town's Conservation Plan with any Conservation Plans adopted by the District. Said Conservation Plan provides for the adoption and continuance of such policies or the taking of such action as may be required of the Town as a recipient of water from the District by Federal and/or State law.

4.9 The District shall use reasonable diligence to provide a constant and uninterrupted supply of water except for interruption or reductions due to: (1) Uncontrollable Forces, as defined in Section 4.10; (2) operations or devices installed for water system protection; and (3) maintenance, repair, replacement, installation of equipment, or investigation and inspection of the water system, which interruption or reductions are temporary, and in the opinion of the District, necessary. Except in the case of an emergency, the Town will be given reasonable advance notice of such interruptions.

4.10 Neither party shall be considered in default under this Restated Agreement if prevented from fulfilling any obligations by reason of Uncontrollable Forces. The term "Uncontrollable Forces" shall mean any cause beyond the control of the obligated party, including, but not limited to, failure of facilities, flood, earthquake, storm, lightning, fire, epidemic, riot, civil disturbance, labor disturbance, sabotage, acts of terrorism, breach of construction contract by a third party or restraint by court or public authority, which by due diligence and foresight, such party could not have reasonably been expected to avoid. The term "Uncontrollable Forces" shall not include the failure to make any payment required by either party under the terms of this Restated Agreement. A party rendered unable to fulfill its obligation by reason of Uncontrollable Forces shall exercise due diligence to remove such inability with all reasonable dispatch.

ARTICLE 5 RAW WATER

5.1 The Town shall annually provide the Raw Water Requirement for treatment and delivery by the District, in the amount of one hundred ten percent (110%) of the total measured potable water usage by the Town at the master meter(s) for the previous Water Year, plus any anticipated increases in the Town's use for the ensuing Water Year. Raw water provided to the District shall be provided on an actual gallon basis as measured at the intake station at the Soldier Canyon Filter Plant. This Raw Water Requirement is in lieu of the payment of the Raw Water Fee which would be required for the purchase of a Raw Water Tap. The requirement for the transfer of one hundred ten percent (110%) of the measured potable water usage by the Town is equal to one hundred percent (100%) of actual water usage plus an additional allowance of ten percent (10%) to cover estimated shrinkage in the volume of water delivered from the Soldier Canyon Filter Plant to the Delivery Point(s) at the master meter(s).

5.2 The Raw Water Requirement shall be provided from the Colorado Big Thompson Project ("CBT"), the Windy Gap Project ("WG"), North Poudre Irrigation Company ("NPIC"), or from any other source reasonably acceptable to the District which is at least as usable to the District as CBT or WG water at the District's sole discretion. In addition, water provided by The Water Supply and Storage Company ("WS&S") which is (i) transferred to the District, (ii) adjudicated for municipal usage, and (iii) capable of being treated at the Soldier Canyon Filter Plant shall be

deemed acceptable to satisfy the Raw Water Requirement. In the event WS&S water is used to satisfy the Raw Water Requirement, the Town acknowledges that water shares must be transferred into the name of the District. In the event the Town ceases to obtain water service from the District pursuant to this Restated Agreement, as amended, the District shall re-transfer to the Town the WS&S water previously transferred to the District.

5.3 The District shall have no obligation to acquire, rent or own any additional raw water necessary to meet the Town's Raw Water Requirement. The Town shall be solely liable to make arrangements for the transfer of all raw water necessary to meet the Raw Water Requirement.

5.4 In the event the Town does not provide sufficient raw water to the District to meet its Raw Water Requirement, the District shall give the Town written notice of such insufficiency, as nearly as possible at least thirty (30) days prior to the time when such additional raw water will be necessary. If, after such notice, the Town fails or refuses to provide sufficient additional raw water, the District may, in its sole discretion, provide such raw water as more fully provided in Section 10.2 below.

ARTICLE 6 DISTRICT FACILITIES

6.1 The District shall be responsible, at its expense, to take such actions and make such connections between the Town's system and the District's system as are necessary to supply water service to the Town as provided pursuant to this Restated Agreement.

6.2 The District has installed and will maintain the necessary metering equipment and master meter vault(s). The District has designed the master meter vault(s) and flow control devices, in accordance with the specification of the District. The Town shall reimburse the District for all reasonable costs and expenses, including design, location, construction and installation of all equipment and vault(s) replaced or added after the date of this Restated Agreement that benefit the Town and are required for the District to satisfy the terms of this Restated Agreement. The Town shall be consulted and approve the design, location and expenses for said equipment and vault(s), which approval shall not be unreasonably withheld. The District acknowledges payment or reimbursement by the Town for all equipment and vault(s) installed for the Town by the District as of the Effective Date of this Restated Agreement.

6.3 The District has installed, owns, operates and will maintain flow-restricting device(s) at the existing metering vault(s). Said device(s) shall be capable of controlling the flow rate to the Town within the rates provided on Exhibit A. The Town shall not be responsible for charges based on deliveries at flow rates greater than the flow rates directed by the Town in writing or as stated in this Restated Agreement.

6.4 The District shall own and maintain the District's water system, including any interconnection facilities, water line, pump station and treatment plant facilities necessary to serve the Town as required by this Restated Agreement, up to the Delivery Points. The District shall own the master meter(s), meter vault(s), and flow and pressure control facilities, which shall be managed, administered, operated and maintained exclusively by the District. For the purpose of

determining operations and maintenance responsibility, the Town shall be responsible for all maintenance and operations from the master meter vault outlet valve on the Town's side.

ARTICLE 7 TOWN FACILITIES

7.1 At the current time, the Town is served through facilities installed, operated and owned by the District. The Town has previously installed at its expense one (1) master meter vault. The master meter vault is located at approximately the intersection of Weld County Roads 35 and 76 (the "Delivery Vault"). The Delivery Vault shall continue to be owned and operated by the Town. Any future meter vaults deemed appropriate and necessary by the Town and the District shall be installed in accordance with Article 6 at the sole expense of the Town.

7.2 The Town owns and will continue to be responsible for construction, operation and maintenance of its distribution lines and other system facilities on the Town's side of the Delivery Points. The Town shall undertake all proper steps to prevent connections to the Town's water system which would in any way permit water produced in or by the Town to enter the District's distribution system by back-flow, back-pressure or otherwise, so as to prevent the quality of water in the District's transmission system from being affected by water produced in or by the Town.

7.3 The District will deliver water to meet the Town's Maximum Day Demands. The Town agrees that it will maintain water storage tanks on the Town's side of the Delivery Point to meet the volume requirements between the Maximum Day Demand and Peak Hour Demand. The minimum volume of such storage tank facilities will be not less than the past Water Year's maximum day volume as measured at the Delivery Point excluding, however, water usage resulting from an Extraordinary Water Usage Event. The District reserves the right to change the Usage Charge, as defined in Exhibit B, by adjusting the Wholesale Discount Rate applied to the District's retail Usage Charge if the Town fails to maintain the minimum tank volume and, within two (2) years of such failure, fails to construct and operate additional storage tank facilities sufficient to maintain the required minimum tank volume.

7.4 The Town agrees to maintain its facilities in good repair at all times and to make such replacements as may be necessary to keep the facilities in proper operating condition at all times.

7.5 Subject to the minimum pressure and minimum supply provisions of this Restated Agreement, the Town agrees that it will, at all times, operate the water distribution system so as not to unreasonably interfere with service to others dependent upon the District for a supply of water. Specifically, the Town agrees that it will operate its facilities, especially any pumping or storage facilities, in coordination with operation of District facilities and will install and use such devices, including telemetry, as are necessary to effectuate such coordination; provided, however, that the Town shall not be required to pay for the installation of any physical changes to its water distribution system required only to benefit others outside the Eaton Service Area.

ARTICLE 8
MASTER METER(S)

8.1 The District shall read the master meter(s) at monthly intervals, under its own meter reading schedule. If requested by the Town, the District shall give the Town notice of any master meter reading and allow a Town representative to be present and observe.

8.2 Once every five (5) years, the District shall test and calibrate the master meter(s) at the District's cost. At any time, upon the Town's written request, the District shall make or cause to be made a special meter test at the Town's cost. The District shall notify the Town in advance of any master meter test and allow a Town representative to be present.

8.3 The readings of any master meter which shall have been disclosed by tests, conducted pursuant to American Water Works Association standards, to be inaccurate shall be corrected from the beginning of the monthly billing period immediately preceding the billing period during which the tests are made in accordance with the percentage of inaccuracy found by such tests, provided that no correction shall be made for a longer period than such inaccuracy may be determined by the District to have existed.

8.4 If any meter shall fail to register for any period, the Town and the District shall agree as to the amount of water Furnished during such period and the District shall render a bill therefor. If no agreement can be reached, the billing shall be based upon historical usage data.

8.5 If at any time the Town desires to change the location of any master meter vault, the District will attempt to accommodate such request if, in the sole and reasonable opinion of the District, such relocation will not detrimentally affect the District's water system in any manner and only upon the condition that the Town shall be responsible for any and all costs and expenses, of any type or kind, thereof.

ARTICLE 9
RATES AND CHARGES

9.1 For the use of water provided by the District hereunder, the District shall be paid by the Town a Usage Charge and a Plant Investment Fee as more fully set forth on Exhibit B attached hereto and incorporated herein by reference. The initial Usage Charge and Plant Investment Fee set forth on Exhibit B shall remain in full force and effect until the District applies an annual percentage increase and/or revises the same pursuant to a rate study commissioned by the District, performed by an independent professional contractor specializing in rate studies ("Rate Study"). Upon adoption by the Board of Directors of the District, the Rate Study, together with any percentage increases associated therewith, shall establish the rates to be charged for water service, including among other items, a Usage Charge, a Plant Investment Fee, including a Distance Fee, and any periodic percentage increases to the foregoing (collectively, "Applicable Fees"). The Applicable Fees shall remain in full force and effect until adoption by the Board of Directors of revised fees, charges and percentage increases pursuant to a subsequent updated Rate Study. In addition to any other rate or charge herein provided, the Town shall pay or cause to be paid all applicable Plant Investment Fees, and such other rates, fees, charges or combinations thereof,

together with periodic percentage increases, as the District may, from time to time, in the exercise of its lawful authority impose. The Town will not pay a Raw Water Fee to the District but will instead provide the Raw Water Requirement for treatment and delivery as set forth in Article 5.

9.2 The parties acknowledge and agree that the District will adopt water service rates and other charges sufficient to totally and fully reimburse the District for all costs of Furnishing water under this Restated Agreement in accordance with the Rate Study as revised and adopted by the Board of Directors of the District from time to time. The Town and the District agree that the duration of this Restated Agreement is such that the passage of time will require changes in the rates and charges to be made for the use of water hereunder.

9.3 Upon request of the Town, the District will provide to the Town a copy of the Rate Study upon which the District has based its Applicable Fees. Upon adoption of revised Applicable Fees by the District as provided herein, the revised Applicable Fees shall be deemed to be substituted for the original Applicable Fees provided herein and the Town agrees to pay such revised Applicable Fees for potable water delivered after the effective date of such rate revisions.

9.4 The District shall provide written notice to the Town when it is anticipated that the Applicable Fees will change or any projected operation, maintenance or capital improvement cost will affect the Applicable Fees to be paid by the Town provided that:

- a. The District shall notify the Town at least thirty (30) days prior to the District Board meeting at which: (i) hearings are held relative to a proposal for an increase in Applicable Fees and (ii) prior to scheduling any formal action by the District Board with respect to such proposal to increase Applicable Fees.
- b. The District shall notify the Town of new Applicable Fees within ten (10) days after the District has adopted them.
- c. The new Applicable Fees shall not become effective sooner than thirty (30) days after they have been adopted.

9.5 Billing for each month shall be made on or about the last day of the month and payment made on or before the twentieth (20th) day of the following month. Any bill not paid by the twentieth (20th) day of the month following billing shall be delinquent and the Town shall pay an additional delinquent fee of ten percent (10%) of the unpaid monthly billing which delinquent fee shall be effective as of the Effective Date of this Restated Agreement. However, in no event shall the delinquent fee be less than One Thousand Dollars (\$1,000.00) per month. Additionally, if the Town refuses or fails to pay any bill by the due date, the District may discontinue delivery of potable water hereunder upon ninety (90) days' written notice to the Town of its intention to do so.

9.6 The parties agree that Applicable Fees charged to the Town shall be based primarily upon a Rate Study performed by the District as may be modified as fairly determined by the District. The Town further specifically agrees that Applicable Fees for water service provided under this Restated Agreement shall be governed by the provisions of this Restated Agreement, any State or Federal statutes to the contrary notwithstanding, except that the District shall be required to comply with all State and Federal drinking water laws and regulations.

ARTICLE 10 RAW WATER EXPENSES

10.1 In addition to payment of the Applicable Fees, the Town shall pay for all costs associated with acquisition of raw water by the Town and temporary transfer of the same to the District, and any periodic charges or assessments related to such raw water. The Town shall be responsible for all costs and/or expenses involved in changing the District's operations to facilitate use of the Town's raw water from a provider other than the Northern Colorado Water Conservancy District.

10.2 The Town shall pay an additional fee as determined by the District for any potable water furnished to the Town, for which the District provided raw water to meet the Town's Minimum Raw Water Obligation (see Section 5.4). This fee shall be referred to as a "Raw Water Surcharge." Such fee shall constitute a surcharge to the Town in addition to the Applicable Fees and shall be for the purpose of compensating the District for the use of the District's raw water to satisfy the Town's Minimum Raw Water Obligation. This additional fee or surcharge is due thirty (30) days after the end of the Northern Colorado Water Conservancy District's "water year" which is October 31 of each year. This additional fee or surcharge shall be an amount equal to ten percent (10%) of the District's then applicable Cash in Lieu of Water Fee. The District shall promptly notify the Town of any change in the determination of such charge.

For the purpose of illustrating the manner in which the Raw Water Surcharge is computed and using an assumed Cash in Lieu of Water Fee of \$47,500.00, which amount will be modified from time to time, the following example is provided:

Raw Water Surcharge = water used by the Town in excess of the Raw Water Requirement provided by the Town \div ¹ 228,000 \times [(Cash in Lieu of Water Fee \times 10%)]

Surcharge = ² 8,000,000 \div 228,000 [³ \$47,500.00 \times 10%]

Surcharge = 35.08772 (\$4,750.00)

Surcharge = \$166,666.67

¹ Average CBT delivery rate.

² Fictional amount of 8 million gallons.

³ Assume Cash in Lieu of Water Fee in the amount of \$47,500.00 for a unit of raw water for a 3/4-inch tap.

ARTICLE 11
EATON SERVICE AREA AND INCREASES IN SERVICE

11.1 The parties recognize that it is the intent of the Plant Investment Fee to pay for system enhancements needed by the District to supply expanded usage by the Town. So long as the Town's demand stays within the annual delivery volume or peak demand specified on Exhibit A, the District will Furnish the new service and no additional Plant Investment Fees will be required from the Town.

11.2 Should the Town request additional demand above the annual delivery volume or peak demand specified on Exhibit A, the Town shall make written request to the District for such additional potable water service. Upon receipt of written request, the District shall have thirty (30) days within which to notify the Town in writing whether it is willing to provide such additional potable water service and the terms upon which it is to be supplied. If the District agrees to provide such additional potable water service, the District will require payment of one Plant Investment Fee for each 228,000 gallons per Water Year above the maximum annual delivery volume or one (1) gallon per minute (1 gpm) beyond the peak demand specified in Exhibit A. The parties shall enter into an Amendment to this Restated Agreement modifying Exhibit A accordingly.

11.3 Section 3.7 makes reference to this Section 11.3. The "Eaton Service Area" as used in this Restated Agreement shall consist, collectively, of the following:

- (1) The real property identified on the map attached hereto and incorporated herein by this reference as Exhibit C.
- (2) Any additional property which is annexed into the Town, provided that the following conditions are satisfied with respect to such newly annexed property:
 - a. The Town notifies the District in writing of the filing of a petition for annexation and the Town ultimately approves the annexation of such property into the Town; and
 - b. At the time of the filing of the petition for annexation, the property proposed for annexation is not then receiving water service from the District and such property is not then included within the boundaries of the District.
- (3) Any additional property which is included within the Eaton Service Area pursuant to adjustments mutually agreed to by the District and the Town and set forth in a written supplement to this Restated Agreement. The parties agree to meet from time to time but not less frequently than once every five (5) years for the purpose of determining whether any such additional adjustments to the Eaton Service Area should be made.

11.4 It is understood and agreed that the Town shall have the responsibility for serving new water service customers within the Eaton Service Area, and that the District will not serve customers within the Eaton Service Area without the express written consent of the Town and under the terms and conditions hereinafter set forth.

- a. It is the intention of the parties, and it is understood and agreed between them, that new water service customers within the Eaton Service Area shall first be required to make application to the Town for service. The District has and will continue to refer any requests that it receives for water service within the Eaton Service Area to the Town.
- b. As to any new taps applied for within the Eaton Service Area that can be serviced by the Town, the Town agrees to provide such service and receive payment for such service in accordance with all fees and charges for the taps as if the taps were within the Town limits of the Town.
- c. It is further understood and agreed that at the time an application for new service is made, there may be certain areas within the Eaton Service Area that cannot be served by the Town. In such event, the District may provide service to new customers subject to the conditions hereinafter set forth, including notice to the Town and an opportunity for the Town to decline to provide the service.
- d. Upon a request to serve an applicant within the Eaton Service Area, the District may deny any such request or, with the approval of the Town, approve any such request for service.

In the event the District elects to provide service to an applicant within the Eaton Service Area as aforesaid, such service shall be provided only upon the following requirements being fulfilled by the applicant:

- (i) Payment of all fees, costs, charges and/or dedication of raw water as may be required by the District and the Town.
- (ii) Written assurance from the applicant that at such time as the District receives notice from the Town that it is prepared to serve the applicant, the applicant will voluntarily connect to and pay all costs of connecting to the Town's system.
- e. At such time as the applicant's transfer from the District system to the Town's system has been accomplished, the Town shall be credited with one Standard Plant Investment Tap, as is more fully provided in Section 11.2 hereinabove. In the event the tap size exceeds a Standard Water Tap, any increase in size will result in a credit of the tap count in proportion to the increased tap size. For tap sizes above a Standard Water Tap size, the increase in the tap count would be provided if the District has also received the additional Raw Water Requirement or Plant Investment Fees, as the case may be.

- f. The parties acknowledge and agree that at the time of a transfer of a tap within the Eaton Service Area from the District system to the Town's system, the provisions of Section 11.4 hereinabove may become effective, requiring the Town to fairly compensate the District for services and facilities taken over by the Town from the District and/or abandoned by the District. The parties further agree that the provisions of said Section 11.4 as well as C.R.S. 32-1-502(2)(c) shall govern such compensation for the transfer of taps within the Eaton Service Area. Nothing in this Restated Agreement shall be interpreted as preventing the Town from collecting any such compensation from third parties through separate agreements, including, but not limited to, annexation agreements or subdivision improvement agreements.
- g. Additional provisions are provided in Exhibit D.

11.5 The District shall have the unrestricted right to issue water taps and serve customers anywhere outside the Eaton Service Area as defined in Section 11.3 above. The Town agrees that it shall not request or seek transfer of water service to any customers located outside the Eaton Service Area subsequent to the Effective Date of this Restated Agreement, including the assertion of any such right under C.R.S. 32-1-502 or otherwise, unless the Eaton Service Area is modified pursuant to Section 11.3 to include property owned by such customers. Except as set forth in Article 11 of this Restated Agreement, the District shall have the unrestricted right to issue water taps and provide water service to customers applying to the District for water service.

ARTICLE 12

TERM

12.1 This Restated Agreement shall be effective on the Effective Date set forth above and remain in effect on a perpetual basis unless terminated as provided in Sections 12.2, 12.3 and 12.4.

12.2 Except as set forth in Section 9.5 above with respect to non-payment for water service, in the event of a material breach of any provision of this Restated Agreement by any party which is not corrected within one (1) year from the date of notice of the breach, the non-defaulting party may terminate this Restated Agreement. However, if this Restated Agreement is terminated by the District due to a material breach by the Town for reasons other than non-payment for water service, the District will not cease water service to the Town until after two (2) years from the written date of notice of the breach.

12.3 Either party hereto may also seek specific performance of this Restated Agreement and specific performance shall not be considered to be an election of the only available remedy.

12.4 In the event the Town wishes to terminate this Restated Agreement, it shall give written notice to the District of such intent in accordance with the notice provisions of this Restated Agreement. Upon the giving of such notice, this Restated Agreement shall terminate ten (10) years thereafter. At the end of this period, the District will not be required to refund any portion of previously paid Plant Investment Fees. During this ten (10) year period, the Town shall be obligated to take and pay for, or in the alternative, pay for the maximum annual amount of water set

forth on Exhibit A computed in accordance with the formula set forth therein. Nothing herein shall be construed as limiting the Town's right to take and pay for an amount of water in excess of the amount determined during the ten (10) year period following termination by the Town, subject only to the peak demand limitations otherwise set forth in this Restated Agreement. If the Town has transferred any water rights to the District for purposes of this Restated Agreement, the District shall, upon termination, re-transfer such water rights to the Town.

ARTICLE 13 MISCELLANEOUS PROVISIONS

13.1 The Town agrees to adopt and enforce within the Eaton Service Area rules and regulations reasonably compatible with those of the District related to the delivery and use of potable water. The Town, for itself and for all of its users, agrees to abide by all fees, rules and regulations of the District.

13.2 No later than September 1 of each year, the Town will supply the District with estimates of its projected maximum day and average day needs for the following Water Year.

13.3 All prior agreements between the District and the Town with respect to the provision of water service are null and void as of the Effective Date of this Restated Agreement and this Restated Agreement shall represent the complete agreement between the parties with respect thereto as of the Effective Date of this Restated Agreement.

13.4 The parties shall assist each other in acquiring any easements and other permits or approvals necessary to accomplish and place into effect this Restated Agreement and for the construction of any necessary facilities.

13.5 The invalidity or unenforceability of any provision of this Restated Agreement shall not affect or impair any other provision of this Restated Agreement unless material to the performance of either party.

13.6 The parties agree that, in addition to any other remedies allowed by law, the provisions of this Restated Agreement may be specifically enforced in a Court of competent jurisdiction and, in any judicial action, the non-prevailing party, to the extent permitted by law, agrees to pay all costs of such action as actually incurred by the prevailing party, including attorneys' fees. Venue for any legal action shall be in the District Court of Weld County, State of Colorado.

13.7 Except as otherwise provided herein, if either party shall be in default or breach in performance of any term, covenant or condition of this Restated Agreement, the party not in default or breach shall give the defaulting or breaching party prompt written notice of such default or breach. If the default or breach is not cured within thirty (30) days following notice, the party that is not in default or breach may seek remedies provided for herein.

13.8 The waiver by either party of any default or breach of any term, covenant or condition of this Restated Agreement shall not operate as a waiver of any default or breach of any other term, covenant or condition, or subsequent default or breach of the same.

13.9 Neither party may assign or transfer all or any part of this Restated Agreement without the prior written consent of the non-assigning party, although such consent shall not be unreasonably withheld.

13.10 All notices, statements, demands, requirements, or other communications and documents required or permitted to be given, served, or delivered by or to either party or any intended recipient hereunder shall be in writing and shall be deemed to have been duly given (i) on the date and at the time of delivery if delivered personally to the party to whom notice is given at the address specified below; or (ii) on the date and at the time of delivery or refusal of acceptance of delivery if delivered or attempted to be delivered by an overnight courier service to the party to whom notice is given at the address specified below; or (iii) on the date of delivery or attempted delivery shown on the return receipt if mailed to the party to whom notice is to be given by first-class mail, sent by registered or certified mail, return receipt requested, postage prepaid and properly addressed as specified below; or (iv) on the date and at the time shown on the electronic mail message if sent electronically to the address specified below and receipt of such electronic mail message is acknowledged by the intended recipient thereof:

If to the District, to:

North Weld County Water District
Attention: District Manager
32825 Weld CR 39
P.O. Box 56
Lucerne, CO 80646
Telephone: (970) 356-3020
E-mail: ericr@nwcwd.org

If to the Town, to:

Town of Eaton
Attention: Jeff Schreier
223 First Street
Eaton, CO 80615
Telephone: 970-454-3338
E-mail: Jeff@eatonco.org

The addresses may be changed at any time by similar notice. Any requirement to give written notice shall be deemed satisfied by compliance with notice delivered in accordance with the provisions of this Section 13.10.

13.11 Neither party shall, by reason of this Restated Agreement, or the use of water thereunder, or otherwise, acquire vested or adverse right or future right, in law or equity, in the water rights owned by the other party.

13.12 It shall be understood between the parties hereto that each party owns its own water distribution system and each is a separate and independent system from the other.

13.13 Until paid, all rates, fees or charges shall constitute a perpetual lien on and against all property and water facilities and water rights of the Town, and any such lien may be foreclosed in the same manner as provided by the laws of the State of Colorado for the foreclosure of mechanic's liens. Subject to the provisions of Section 9.5 regarding non-payment for water service and Section 12.2 regarding non-monetary defaults, the District shall shut off or discontinue service for account delinquencies or other violations of the District's Rules and Regulations, or for other violations of this Restated Agreement.

13.14 No assignment by either party of its rights under this Restated Agreement shall be binding on the other unless the other party shall have assented to such assignment in writing.

13.15 No party shall waive its rights hereunder by failing to exercise its rights; any such failure shall not affect the right of such party to exercise at some future time the rights not previously exercised.

13.16 None of the remedies provided for under this Restated Agreement need to be exhausted or exercised as a prerequisite to either party's pursuit of further relief to which it may be entitled.

13.17 Except as specifically provided herein, neither party is granted any exclusive right or privilege under this Restated Agreement.

13.18 This Restated Agreement shall remain in force until terminated by agreement or pursuant to the provisions hereof.

13.19 The Town and the District agree that this Restated Agreement shall be construed and enforced as the fully integrated expression of their contract with respect to the matters addressed herein. No express or implied covenants not specifically set forth shall be deemed to be a part of this Restated Agreement. The parties expressly agree that no representations other than those specifically set forth in this Restated Agreement have been relied upon by either party to induce it to enter into this Restated Agreement.

13.20 Additional provisions to this Restated Agreement are set forth on Exhibit D which is incorporated herein and made a part hereof by reference.

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IN WITNESS WHEREOF, the parties have executed this Restated Agreement as of the Effective Date first above written.

NORTH WELD COUNTY WATER
DISTRICT, acting by and through the
North Weld County Water District Enterprise

By 
Name: Eric Reupert
Title: District Manager

"District"

TOWN OF EATON, acting through its Water
Utilities Enterprise pursuant to Section IX of the
Town of Eaton Municipal Code

By 
Name: Jeff Schreier
Title: Town Administrator

"Town"

EXHIBIT A
SUMMARY OF AGREEMENT TERMS

Delivery Location: Master meter vault located near intersection of Weld County Roads 35 and 76

Plant Investment Tap Summary:

Plant Investment Taps Purchased Prior to the Effective Date of the Restated Agreement: 1,389

Additional Plant Investment Taps to be Purchased Pursuant to the Terms of

the Restated Agreement and Paid by the Town in the

Amount of \$272,250.00 on or before December 15, 2019: 30

Total Plant Investment Taps Previously Purchased and to be Purchased by

the Town (i.e., 1,389 + 30): 1,419

Maximum Delivery:

Maximum Annual Delivery Volume per Plant Investment Tap: 228,000 gallons (gal)

Total Maximum Annual Delivery Volume: (Plant Investment Taps) X 228,000 gal/Plant

Investment Tap = 1,419 X (228,000/1,000,000) = 323.5 Million

Gallons (MG)

Peak Demand Flow per Plant Investment Tap: 1 gallon per minute (gpm)

Peak Demand Flow Total: (Plant Investment Taps) x 1 gpm/Plant Investment Tap = 1,419 gpm

Minimum Purchase Amount:

Minimum Annual Amount: 90% X (Average Annual Use for Three Previous Water Years)

Initial Minimum Annual Amount: 90% X (264.9 MG + 266.8 MG + 284.5 MG)/3 = 244.9 MG

Minimum Town Storage Tank Volume:

Requirement: Volume of Maximum Day of Previous Water Year Excluding Excess Resulting

from Extraordinary Water Usage Event

Initial Requirement based on 2018: 2.00 MG

Delivery Pressures at the Master Meter:

Maximum Pressure: 105 psi

Minimum Pressure: 50 psi

EXHIBIT B
USAGE CHARGES AND FEE SCHEDULE

Initial Usage Charge and Plant Investment Fees:

The initial Usage Charge and Plant Investment Fee will apply until an adjustment is made and adopted by the Board of Directors of the District. The initial Usage Charge and Plant Investment Fees are as follows:

Usage Charge: Wholesale Discount Rate Percentage X Retail Usage Charge

Wholesale Discount Rate = 75%

Initial District Retail Usage Charge = \$3.39 per 1,000 gallons

Initial Town Usage Charge = \$2.54 per 1,000 gallons

Plant Investment Fee:

Initial Base Fee: \$8,500.00 per Standard Plant Investment Tap

Initial Distance Fee: \$300.00 per mile per Standard Water Tap from the District's Tank 1 Facilities with a minimum Distance Fee of 12 miles or \$3,600.00 per Standard Plant Investment Tap

Future Usage Charges:

The retail Usage Charge shall be determined from a percentage increase authorized by the Board of Directors of the District or from a Rate Study performed by an independent professional consultant and adopted by the Board of Directors of the District from time to time during the term of the Restated Agreement as set forth in Article 9. The Usage Charge shall be charged per 1,000 gallons of water delivered through the meter. The Wholesale Discount Rate shall be subject to change per Section 7.3.

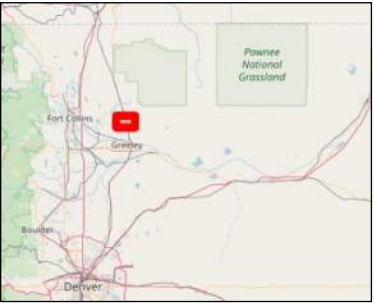
Future Plant Investment Fee:

The Plant Investment Fee shall consist of a Base Fee and a Distance Fee. The Plant Investment Fee shall be determined on an annual basis based on a periodic percentage increase adopted by the Board of Directors of the District or in accordance with a Rate Study or revised Rate Study adopted by the Board of Directors of the District from time to time in accordance with Article 9 of this Restated Agreement. As of the Effective Date of this Restated Agreement, the Plant Investment Fee is charged for each Standard Plant Investment Tap to the Town for each one 228,000 gallons of annual volume or each gallon per minute (1 gpm) peak demand above the specified maximum amounts set forth on Exhibit A, whichever is greater.

The Base Portion of the Plant Investment Fee is determined primarily from the estimated costs for constructing additional filter plant capacity, storage facilities and transmission lines which deliver water to the Tank 1 Facilities of the District.

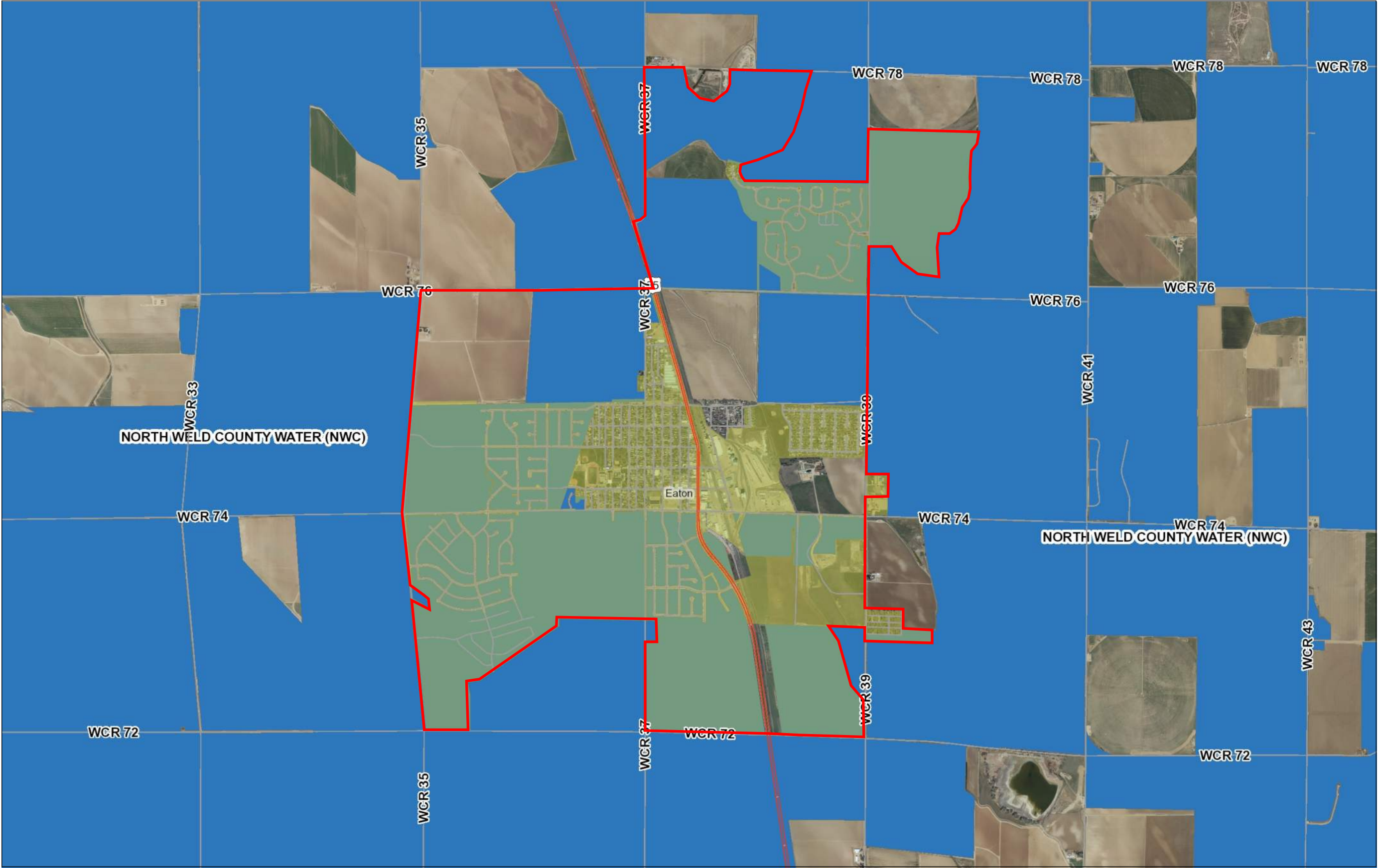
The Distance Portion of the Plant Investment Fee is determined primarily from the estimated costs for constructing additional service facilities to deliver water from the Tank 1 Facilities located at the intersection of Colorado State Highways 257 & 14 to the customer. This portion of the Plant Investment Fee is calculated for the customer with a proportional relationship to the distance from the customer's meter location to the Tank 1 Facilities.

EATON SERVICE AREA



Legend

- Parcels
 - Highway
 - Road
 - County Boundary
 - Weld County
-
- TOWN OF EATON
 - NORTH WELD COUNTY WATER



4,576.6 0 2,288.31 4,576.6 Feet

WGS_1984_Web_Mercator_Auxiliary_Sphere
© Weld County Colorado

EXHIBIT C

This map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.
THIS MAP IS NOT TO BE USED FOR NAVIGATION

1: 27,460



Notes

EXHIBIT D

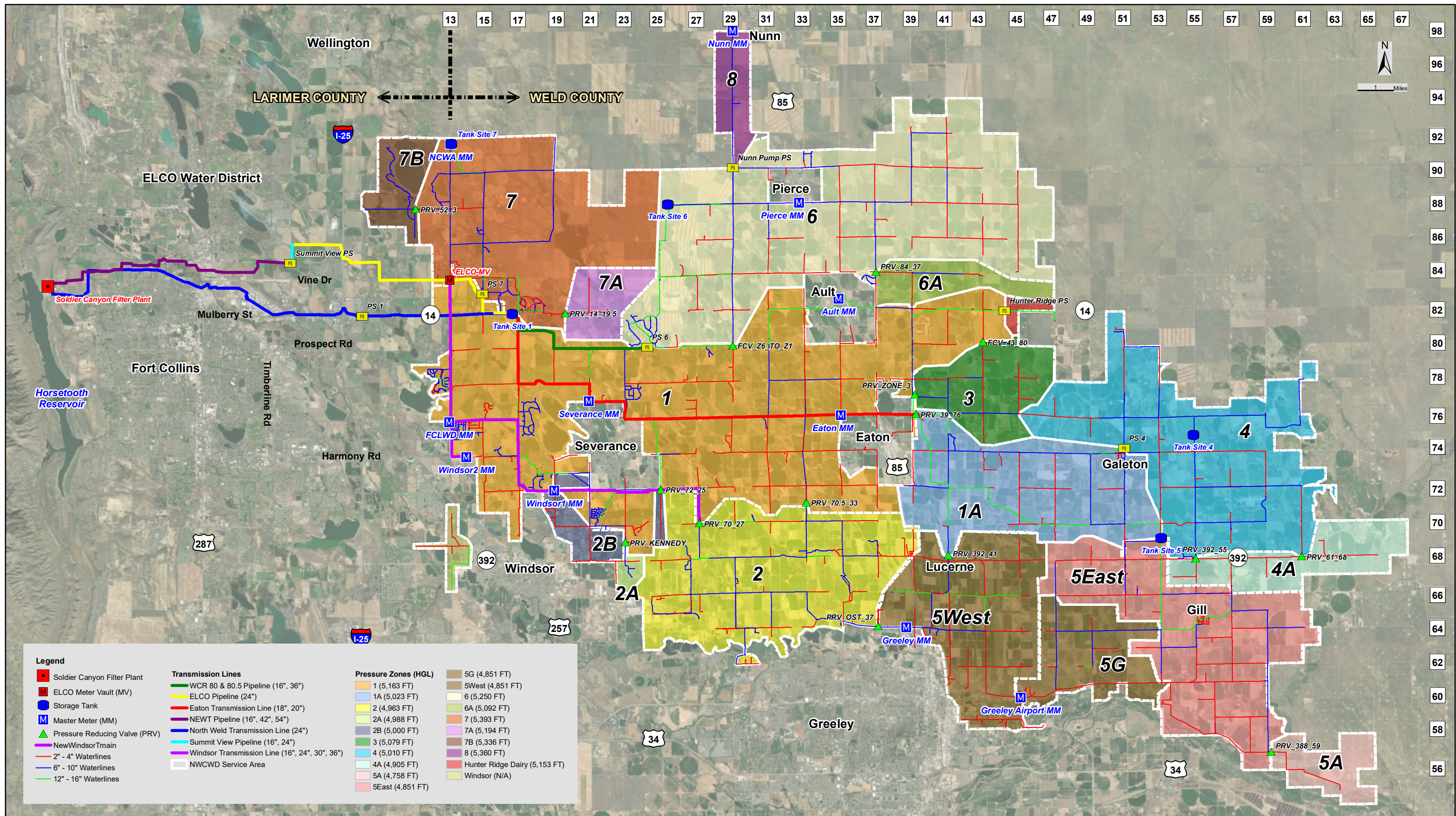
a. Pursuant to the terms of Section 11.4 concerning water service provided by the District within the Eaton Service Area, the District will not collect any Plant Investment Fee or other charges or sums assessed directly by the Town against its customers. The District will charge and collect its Plant Investment Fee as may be amended from time to time and other allocable charges from the Town for such customers and will not collect or share the same with the Town. The Town shall have the right to establish such fees, charges or expenses in excess of those charged by the District pursuant to the terms of any annexation agreement, subdivision improvement agreement, or any other agreement entered into between the property owner, developer and the Town.

b. The Town shall not pay any fees for existing infrastructure already installed by the District as of the Effective Date, except those fees and sums as provided in this Restated Agreement.

c. The Town, to the best of its ability, shall, on an annual basis, inform the District of the contemplated number of new taps expected to be installed by the Town in the Eaton Service Area for the upcoming year. Both parties recognize that this is only an estimate, but such information is necessary to facilitate planning and scheduling by both the Town and the District.

d. The Town and the District understand and agree that the District has certain water lines within the Town limits, some of which serve Town residents and some of which do not serve Town residents. The Town agrees that for any repairs, maintenance or replacement to any such facilities or infrastructure, the District shall not be required to have a permit or pay any type of fee to the Town for any such repairs, maintenance or replacements within the Town limits, but, except for emergencies, the District shall be required to provide the Town with 72 hours advance notice prior to the commencement of the work. The District shall, however, be required to restore any property disturbed to the same condition it was before any such repair, maintenance or replacement.

e. It is agreed that if, in the future, the Town should annex property outside the existing Eaton Service Area which is then receiving domestic water service from the District, the District may continue to provide water service to such property and the Town will take no action to restrict, terminate or otherwise prohibit the continued water service to such property by the District as more fully provided in Section 11.5 of the Restated Agreement.



**NORTH WELD COUNTY WATER DISTRICT
EXISTING WATER SYSTEM AND PRESSURE ZONES MAP**

Figure 1

APPENDIX B

WATER SYSTEM CONDITION ASSESSMENT

Water System Condition Assessment

Client: Town of Eaton
Date: Nov-21

Current Year:		2021												
No.	Asset ID	Asset Name	Asset Class	Install Year	Refurb Year	Current Age (years)	NE Condition Rating	Eaton Condition Rating	Final Condition Rating	BMP Expected Design Service Life (years)	Age Based Remaining Life (years)	Condition Based Remaining Service Life (years)	Year of First Replacement	Year of Second Replacement
Hawkstone Booster Pump Station Major Equipment														
1	SP-1	Jockey Pump #1	Pumps - All others, centr.	2003		18	8	8	8	27	9	22	2043	2070
2	SP-2	Booster Pump #2	Pumps - All others, centr.	2003		18	8	8	8	27	9	22	2043	2070
3	SP-3	Booster Pump #3	Pumps - All others, centr.	2003		18	8	8	8	27	9	22	2043	2070
4	SP-4	Booster Pump #4	Pumps - All others, centr.	2003		18	8	8	8	27	9	22	2043	2070
5	SP-MTR-1	5-hp Jockey Pump Motor #1	Motor - Greater than 5 HP	2003		18	7	7	7	25	7	18	2039	2064
6	SP-MTR-2	25-hp Booster Pump Motor #2	Motor - Greater than 5 HP	2003		18	7	7	7	25	7	18	2039	2064
	SP-MTR-3	25-hp Booster Pump Motor #3	Motor - Greater than 5 HP	2003	2015	6	8	8	8	25	19	20	2041	2066
7	SP-MTR-4	25-hp Booster Pump Motor #4	Motor - Greater than 5 HP	2003		18	7	7	7	25	7	18	2039	2064
8	MCP-01	H-O-A Pump Motor Control Panel #1	Panel - Local control	2003		18	8	8	8	25	7	20	2041	2066
9	MCP-02	H-O-A Pump Motor Control Panel #2	Panel - Local control	2003		18	8	8	8	25	7	20	2041	2066
10	MCP-03	H-O-A Pump Motor Control Panel #3	Panel - Local control	2003		18	8	8	8	25	7	20	2041	2066
11	MCP-04	H-O-A Pump Motor Control Panel #4	Panel - Local control	2003		18	8	8	8	25	7	20	2041	2066
12	VFD-01	VFD for Booster Pump #2	Variable Frequency Drive	2003		18	8	8	8	12	-6	10	2031	2043
13	VFD-02	VFD for Booster Pump #3	Variable Frequency Drive	2003		18	8	8	8	12	-6	10	2031	2043
14	VFD-03	VFD for Booster Pump #4	Variable Frequency Drive	2003		18	8	8	8	12	-6	10	2031	2043
15	FM-01	4" Magnetic Flowmeter	Flowmeter - Magnetic	2003		18	8	8	8	15	-3	12	2033	2048
16	BFV-01	6" Butterfly Valve	Valves - 4" and larger	2003		18	8	8	8	25	7	20	2041	2066
17	BFV-02	6" Butterfly Valve	Valves - 4" and larger	2003		18	8	8	8	25	7	20	2041	2066
18	BFV-03	6" Butterfly Valve	Valves - 4" and larger	2003		18	8	8	8	25	7	20	2041	2066
19	BFV-04	6" Butterfly Valve	Valves - 4" and larger	2003		18	8	8	8	25	7	20	2041	2066
20	BFV-05	6" Butterfly Valve	Valves - 4" and larger	2003		18	8	8	8	25	7	20	2041	2066
21	BFV-06	6" Butterfly Valve	Valves - 4" and larger	2003		18	8	8	8	25	7	20	2041	2066
22	BFV-07	2" Butterfly Valve	Valves - 4" and smaller	2003		18	8	8	8	25	7	20	2041	2066
23	BFV-08	2" Butterfly Valve	Valves - 4" and smaller	2003		18	8	8	8	25	7	20	2041	2066
24	BFV-09	3" Butterfly Valve	Valves - 4" and smaller	2003		18	8	8	8	25	7	20	2041	2066
25	BFV-10	3" Butterfly Valve	Valves - 4" and smaller	2003		18	8	8	8	25	7	20	2041	2066
26	CKV-01	6" Check Valve	Valves - 4" and larger	2003		18	8	8	8	25	7	20	2041	2066
27	CKV-02	6" Check Valve	Valves - 4" and larger	2003		18	8	8	8	25	7	20	2041	2066
28	CKV-03	6" Check Valve	Valves - 4" and larger	2003		18	8	8	8	25	7	20	2041	2066
29	CKV-04	2" Check Valve	Valves - 4" and smaller	2003		18	8	8	8	25	7	20	2041	2066
30	GV-01	4" Gatve Valve	Valves - 4" and larger	2003		18	8	8	8	25	7	20	2041	2066
31	CV-01	3" Control Valve	Control Valve	2003		18	8	8	8	25	7	20	2041	2066
32	ARV-01	1" Air Release Valve	Valves - 4" and smaller	2003		18	8	8	8	25	7	20	2041	2066
33	SP-01	Sump Pump #1	Pump - Sump, 5 HP or Less	2003		18	5	5	5	20	2	10	2031	2051
34	SP-02	Sump Pump #2	Pump - Sump, 5 HP or Less	2003		18	5	5	5	20	2	10	2031	2051
35	AHU-01	Space Heater	Air Handling Unit - Small wall mounted	2003		18	8	8	8	25	7	20	2041	2066
36	AHU-02	Space Heater	Air Handling Unit - Small wall mounted	2003		18	8	8	8	25	7	20	2041	2066
37	AHU-03	Exhaust Fan	Air Handling Unit - Large (Supply, exhaust)	2003		18	8	8	8	25	7	20	2041	2066
38	PLC-01	Control Panel	Panel - Local control	2003		18	8	8	8	25	7	20	2041	2066
East Tank Major Equipment														
1	WST-01	Steel Water Storage Tank - Interior Surface Coating	Tank Coating - Interior	1983		38	7	7	7	20	-18	14	2035	2055
2	WST-02	Steel Water Storage Tank - Exterior Surface Coating	Tank Coating - Exterior	1983		38	7	7	7	30	-8	21	2042	2072
3	FM-01	Kent Turbine Flow Meter	Flowmeter	1983		38	3	3	3	12	-26	4	2025	2037
4	CV-01	Altitude Valve	Control Valve	1983		38	3	3	3	25	-13	8	2029	2054
5	GV-01	10" Gate Valve	Valves - 4" and larger	1983		38	2	2	2	25	-13	5	2026	2051
6	PLC-01	Control Panel	Panel - Local control	1983		38	5	5	5	25	-13	13	2034	2059

Water System Condition Assessment

Client: Town of Eaton
Date: Nov-21

Current Year:		2021												
No.	Asset ID	Asset Name	Asset Class	Install Year	Refurb Year	Current Age (years)	NE Condition Rating	Eaton Condition Rating	Final Condition Rating	BMP Expected Design Service Life (years)	Age Based Remaining Life (years)	Condition Based Remaining Service Life (years)	Year of First Replacement	Year of Second Replacement
West Tank Major Equipment														
1	WST-01	Steel Water Storage Tank - Interior Surface Coating	Tank Coating - Interior	2005		16	9	9	9	20	4	18	2039	2059
2	WST-02	Steel Water Storage Tank - Exterior Surface Coating	Tank Coating - Exterior	2005		16	8	8	8	30	14	24	2045	2075
3	GV-01	12" Gate Valve	Valves - 4" and larger	2005		16	8	8	8	25	9	20	2041	2066
4	CV-01	12" Altitude Valve	Control Valve	2005		16	8	8	8	25	9	20	2041	2066
5	CKV-01	16" Check Valve	Valves - 4" and larger	2005		16	8	8	8	25	9	20	2041	2066
6	BFV-01	16" Butterfly Valv e	Valves - 4" and larger	2005		16	8	8	8	25	9	20	2041	2066
7	SP-01	Sump Pump	Pump - Sump, 5 HP or Less	2005		16	6	6	6	20	4	12	2033	2053
8	PT-01	Pressure Transducer	Transmitter - Pressure	2005		16	8	8	8	12	-4	10	2031	2043
9	AHU-01	Space Heater	Air Handling Unit - Small wall mounted	2005		16	8	8	8	25	9	20	2041	2066
10	AHU-02	Dehumidifier	Air Handling Unit - Small wall mounted	2005		16	8	8	8	25	9	20	2041	2066
11	AHU-03	Exhaust Fan	Air Handling Unit - Large (Supply, exhaust)	2005		16	8	8	8	25	9	20	2041	2066
12	PLC-01	Control Panel	Panel - Local control	2005		16	8	8	8	25	9	20	2041	2066
Master Meter Vault Major Equipment														
1	CV-01	CLA-VAL Valve	Control Valve	1983		38	3	1	2	25	-13	5	2026	2051
2	CV-02	CLA-VAL Valve (Bypass)	Control Valve	1983		38	4	4	4	25	-13	10	2031	2056
3	CV-03	CLA-VAL Valve (Bypass)	Control Valve	1983		38	4	4	4	25	-13	10	2031	2056
4	ST-01	Strainer	Strainer - Water	1983		38	3	1	2	25	-13	5	2026	2051
5	BO-01	Blow-Off Valve	Valves - 4" and larger	1983		38	4	4	4	25	-13	10	2031	2056
6	FM-01	Compound Water Flow Meter	Flowmeter	1983		38	3	3	3	12	-26	4	2025	2037
7	GV-01	8" Gate Valve	Valves - 4" and larger	1983		38	4	3	3.5	25	-13	9	2030	2055
8	GV-02	8" Gate Valve	Valves - 4" and larger	1983		38	4	3	3.5	25	-13	9	2030	2055
9	GV-03	4" Gate Valve	Valves - 4" and larger	1983		38	4	4	4	25	-13	10	2031	2056
10	GV-04	6" Gate Valve	Valves - 4" and larger	2018		3	9	9	9	25	22	23	2044	2069
11	PLC-01	Control Panel	Panel - Local control	1983		38	6	6	6	25	-13	15	2036	2061