



# COUNTY WATER DISTRICT OF BILLINGS HEIGHTS CAPITAL IMPROVEMENTS PLAN (CIP)

TABLE OF CONTENTS

1 EXECUTIVE SUMMARY ..... 1-1

2 IMPLEMENTATION SUMMARY ..... 2-1

2.1 Near-Term Implementation ..... 2-1

3 INTRODUCTION ..... 3-1

3.1 Background ..... 3-1

3.2 Purpose and Scope ..... 3-1

3.3 Report Organization ..... 3-2

3.4 Acknowledgements ..... 3-2

4 METHODOLOGY FOR PROJECT DEVELOPMENT & RANKING ..... 4-1

4.1 Project Development ..... 4-1

4.2 Cost Estimates ..... 4-1

4.3 Project Ranking ..... 4-2

4.4 District/Public Input ..... 4-3

5 POTENTIAL FUNDING SOURCES..... 5-1

5.1 Introduction ..... 5-1

5.2 Grant Sources ..... 5-1

5.2.1 MCEP (Montana Coal Endowment Program)..... 5-1

5.2.2 RRGL (Renewable Resource Grant and Loan Program). ..... 5-2

5.2.3 CDBG (Community Development Block Grant)..... 5-2

5.2.4 WRDA 595 GRANTS. .... 5-3

5.2.5 General Grant Information..... 5-3

5.3 Loan Sources ..... 5-3

5.3.1 INTERCAP..... 5-3

5.3.2 SRF (State Revolving Fund)..... 5-3

5.4 Other Revenue Sources (MCA 7-13-2221) ..... 5-4

5.4.1 Loans: ..... 5-4

5.4.2 Levy special assessments: ..... 5-4

County Water District of Billings Heights  
Capital Improvements Plan

---

6	CURRENT SERVICE AREA, DEMANDS & INFRASTRUCTURE .....	6-1
6.1	Introduction .....	6-1
6.2	Service Area.....	6-1
6.3	Water Demands & Fire Flows.....	6-3
6.4	Existing Infrastructure .....	6-4
6.5	Conditions Assessment .....	6-6
7	FUTURE PLANNING AREA, DEMANDS, & GROWTH PROJECTIONS .....	7-1
7.1	Introduction .....	7-1
7.2	Planning Area .....	7-1
7.3	Zoning Influence, Development, Demands, & Population Trends.....	7-1
7.4	Heights Transportation Corridor Developments.....	7-1
7.5	System Limitations .....	7-1
8	PLANNING.....	8-1
8.1	Introduction .....	8-1
8.2	Funding Sources .....	8-1
8.3	Capital Improvements Schedule .....	8-1
8.4	Tabular Summary – Office Capital Projects Summary Table.....	8-2
8.5	Funding Sources .....	8-2
9	ADMINISTRATIVE SOFTWARE, METER READING SOFTWARE, OTHER OPERATIONAL EQUIPMENT BELOW \$25,000.....	9-1
9.1	Introduction .....	9-1
9.1.1	Asset Management .....	9-1
10	DISTRIBUTION SYSTEM ANALYSIS & CAPITAL PROJECTS.....	10-1
10.1	Introduction .....	10-1
10.2	Reservoirs.....	10-1
10.2.1	Introduction.....	10-1
10.2.2	Capital Needs .....	10-1
10.2.3	Funding Sources .....	10-1
10.2.4	Capital Improvements Summary.....	10-1

County Water District of Billings Heights  
Capital Improvements Plan

---

10.2.5	Tabular Summary – Capital Projects Summary Table .....	10-1
10.3	Pipelines .....	10-2
10.3.1	Introduction.....	10-2
10.3.2	Capital Needs .....	10-2
10.3.3	Funding Sources .....	10-2
10.3.4	Capital Improvements Summary.....	10-2
10.3.5	Tabular Summary – Capital Projects Summary Table .....	10-3
10.4	GIS, Asset Management, SCADA, & Communications .....	10-3
10.4.1	Introduction.....	10-3
10.4.2	Capital Needs .....	10-5
10.4.3	Funding Sources .....	10-5
10.4.4	Capital Improvements Summary.....	10-5
10.4.5	Tabular Summary – Capital Projects Summary Table .....	10-5
10.5	Facilities .....	10-5
10.5.1	Introduction.....	10-5
10.5.2	Capital Needs .....	10-5
10.5.3	Funding Sources .....	10-6
10.5.4	Capital Improvements Summary.....	10-6
10.5.5	Tabular Summary – Capital Projects Summary Table .....	10-6
11	IMPLEMENTATION PLAN .....	11-1
11.1	Introduction .....	11-1
11.2	Near-Term Implementation .....	11-1
11.3	Intermediate-Term Implementation.....	11-1
11.4	Long-Term Implementation .....	11-1
11.5	Funding Plan Overview.....	11-2

## TABLE OF FIGURES

Figure 1 CWDBH Service & Planning Areas Map.....	6-2
Figure 2 CWDBH Water Distribution System Map .....	6-5

Figure 3 GIS Example from ESRI.com ..... 10-4

**TABLE OF TABLES**

Table 1 Project Ranking..... 4-2

Table 2 Priority Indicators ..... 4-3

Table 3 Required Fire Flow for One- & Two-Family Dwellings..... 6-3

Table 4 Planning Capital Projects Summary Table ..... 8-2

Table 5 Reservoirs Capital Projects Summary Table ..... 10-1

Table 6 Pipelines Capital Projects Summary Table ..... 10-3

Table 7 GIS Capital Projects Summary Table..... 10-5

Table 8 Facilities Capital Projects Summary Table ..... 10-6

**APPENDICES**

- A. List of Projects by Priority
- B. List of Projects by Timeline
- C. Capital Improvement Projects



## 1 EXECUTIVE SUMMARY

The County Water District of Billings Heights (CWDBH) board agreed on the need to update the comprehensive Capital Improvements Plan. Last updated in 2008, it has been 14 years since the last plan was developed. The development of this updated 2023 Capital Improvements Plan (CIP) will provide CWDBH a tool for long term planning of capital project needs.

This plan was developed in close coordination with the CWDBH Board and department heads. Department heads were interviewed to identify needs for projects or capital purchases over \$25,000. Department heads ranked identified needs within their department for projects expected to be funded within the next ten (10) years. Department head priorities were discussed with the Board to determine overall District priorities.

Twenty-one (21) projects were ranked for overall priority, totaling just over \$30 million. This plan provides a framework for difficult fiscal decisions that need to be made each year on behalf of the CWDBH residents. This plan also provides an implementation plan that identifies a capital spending plan and projects to be initiated in the next five (5) years.

## 2 IMPLEMENTATION SUMMARY

The identification of the district's capital needs, both short and long-term, is only one part of the CIP. Just as important as identifying capital improvement needs is formulating a plan to implement identified improvements. The implementation must also consider project priorities, logical project phases and order of implementation and expected revenue sources for project funding.

The implementation plan uses the project priorities identified within each department and overall throughout the district and pairs projects with a funding plan to enable implementation of high priority projects. In total, project needs identified in this CIP total about \$30 million. The following sections identify a year-by-year implementation plan for the next ten (10) years that will result in construction or implementation of 21 separate projects.

In some cases, water rate increases are identified as necessary to pay for capital projects. Concurrently, a water rate study is being conducted by CWDBH. The rate study identifies reasonable and just water rates, charges, and classifications necessary to cover operating expenses and capital projects. The rate study is presented for public review and comment prior to CWDBH adoption.

### 2.1 Near-Term Implementation

(0-2 years)

There are three (3) Priority Level-1 CIP projects targeted for implementation for 2023-2024 totaling \$11.5 million. Each project and its funding mechanisms are identified below:

**NW Transmission Main:** This project is the highest priority for the district. At over \$11 million, it is a major commitment by the district to provide service now and into the future.

Funding is being sought through the SRF loan program.

**Comprehensive Water System PER:** Complete a comprehensive Water System Preliminary Engineering Report (PER) that will meet the standards of the “Uniform Preliminary Engineering Report for Montana Public Facility Projects”. The PER will be submitted to the Montana Department of Natural Resources and Conservation (DNRC) water bureau and the Montana Department of Environmental Equality (DEQ) program for review following completion. The PER will identify projects to alleviate deficiencies and maintenance needs for the aging infrastructure within the CWDBH system. The document will further evaluate the existing system’s capacity to accommodate future expansion/ongoing growth.

Funding has not been sought. Partial funding may be available after the 2023 Legislative session from the Montana Coal Endowment Program (MCEP) and the DNRC Renewable Resource Grant and Loan program (RRGL).

**Water Intake Feasibility Study:** Perform a research study to determine preliminary feasibility of CWDBH to construct a Yellowstone River intake as a potential alternate source of potable water to supply the district. This preliminary study would evaluate potential water rights issues, potential intake locations relative to existing upstream Billings WWTP discharge location on the Yellowstone River, and potential environmental permitting requirements. If determined feasible, this project would represent a precursor to a formal Preliminary Engineering Report (PER) for the water intake and a water treatment facility.

Funding has not been sought. Partial funding may be available after the 2023 Legislative session from the Montana Coal Endowment Program (MCEP) and the DNRC Renewable Resource Grant and Loan program (RRGL).

See Appendix A for the full list of projects and the priority rankings.

## 3 INTRODUCTION

### 3.1 Background

The County Water District of Billings Heights (CWDBH) previously created a Capital Improvement Plan (CIP) in 2008. Since that time, the service growth of the district has increased approximately 2% (+/-) each year.

Updating the CIP is in the interest of the current and future residential customers of the district. The overall goals of this CIP are to provide a framework for sound district capital spending and an implementation plan that clearly guides capital spending for the near-term future (the next five years), and the long-term future (the next ten years).

This CIP should not be a static document but should be re-visited each year to ensure conditions have not changed or needs arisen that warrant deviating from the plan. This document should undergo a complete update once every five (5) years.

This CIP is partially funded by the Montana Coal Endowment Program (MCEP). The funds were awarded by the Department of Commerce on November 4, 2021.

### 3.2 Purpose and Scope

The purpose of this document is to identify current and forthcoming capital needs of the district as it pertains to its existing facilities and infrastructure, anticipated growth, and operational and administrative services provided by the district. This document is intended to go beyond just identification of needs; to include an implementation plan that identifies needs, costs, and revenue sources for asset investments and projects anticipated for construction within a 10-year planning horizon, including:

- Ensure the timely repair and replacement of aging infrastructure
- Provide a level of certainty for residents, businesses, and developers regarding the location and timing of public investments
- Identify the most economical means of financing capital improvements
- Provide an opportunity for public input in the budget and finance process
- Eliminate unanticipated, poorly planned, or unnecessary capital expenditures
- Eliminate sharp increases in user fees and debt levels to cover unexpected capital improvements
- Balance desired system improvements with the district's financial resources
- Coordinate District improvements with city, county, and utility companies to minimize disruptions and costs associated with replacement of incidental infrastructure such as paving
- Anticipate and plan for infrastructure needs as a result of growth
- Plan for regulatory agency requirements such as more stringent water quality requirements, increased testing frequency, or implementation of additional programs that result in increased infrastructure costs such as the implementation of an asbestos pipe elimination program.



### 3.3 Report Organization

This CIP is organized into separate sections for each sector of the district such as pipelines, facilities, equipment, and projects. Each one is described, its capital needs are listed, potential funding sources for each capital need are identified, and a prioritized capital improvements schedule is provided.

### 3.4 Acknowledgements

Interstate Engineering, Inc. gratefully acknowledges the assistance and input of the County Water District of Billings Heights board and staff. We want to particularly acknowledge the following individuals:

**Peyton Brookshire, General Manager**

**Josh Simpson, Assistant Manager**

**Ming Cabrera, Board President**

**David Graves, Board Vice President**

**Laura Drager, Board Treasurer**

**Brandon Hurst, Board Member**

**Tom Zurbuchen, Board Member**

## 4 METHODOLOGY FOR PROJECT DEVELOPMENT & RANKING

### 4.1 Project Development

This Capital Improvements Plan (CIP) was developed based on the current needs of the County Water District of Billings Heights (CWDBH). For this CIP, capital improvements are defined as projects that furnish professional services, construct physical infrastructure, or purchase equipment with an estimated cost of \$25,000 or more.

Project development for this CIP update began with identifying improvements to address aging system infrastructure and district growth. Meetings were conducted with the district Board and staff to confirm that past, uncompleted projects should be carried forward. The meetings were also utilized to view and document district assets, identify new projects anticipated, assess potential sources of funding, and to obtain general background information. After needs were identified, the projects were ranked by staff, presented to the board, and priorities were set.

Concurrently, CWDBH is conducting a rates study. The final adopted rates study will provide additional CIP supporting funding information including the following:

- A detailed review of existing water rate structure,
- Adequate and equitable usage and basic charges,
- Review the District's current water connection/System Development Cost and Annexation Fees that would fund Capital Improvement Projects (CIPs) for new service locations and assess its suitability for cost recovery to existing system,
- Long term debt, current and future.

### 4.2 Cost Estimates

Project and purchase costs were estimated in 2021 dollars using various methods and sources. Sources for cost data included:

- Supplier costs of materials and equipment
- Bid tabulations and construction costs from recently completed similar projects
- Previously completed documents

Project costs included in this CIP are concept-level estimates and typically include a 15-20% contingency. As projects approach implementation, it is recommended that estimated costs are refined and updated based on better defined project details and scope. It is also important to note that project costs will escalate over time due to inflation.

### 4.3 Project Ranking

ID	Description	Estimated Cost	Listed Priority
CIP-01	Northwest Transmission Main	\$ 11,820,000.00	1
CIP-02	Comprehensive Water System PER	\$ 180,000.00	1
CIP-03	Raw Water Intake Feasibility Study	\$ 80,000.00	1
CIP-04	Bitterroot Loop Across Highway 312	\$ 4,070,000.00	3
CIP-05	Bitterroot from Barrett to Mary	\$ 1,800,000.00	3
CIP-06	Reservoir Management System	\$ 1,370,000.00	3
CIP-07	Assess Condition of Existing Pipelines	\$ 210,000.00	2
CIP-08	Aging Watermain Replacement Program	\$ 4,100,000.00	3
CIP-09	Dedicated Fill Line for Lanier Reservoir	\$ 640,000.00	4
CIP-10	Ultrasonic Meters at Hilltop & Lanier	\$ 130,000.00	4
CIP-11	Update GIS Attributes	\$ 150,000.00	4
CIP-12	GIS: Digital Workflows	\$ 150,000.00	4
CIP-13	GIS Support/Data Workflow Maintenances	\$ 690,000.00	4
CIP-14	Emergency Generation	\$ 75,000.00	4
CIP-15	Equipment Storage Building	\$ 920,000.00	4
CIP-16	Cold-Storage Yard at Ox Bow Tank Site	\$ 70,000.00	3
CIP-17	Shop Addition with 2-Ton Bridge Crane	\$ 370,000.00	4
CIP-18	5 Year Update to CIP	\$ 90,000.00	4
CIP-19	Rate Study	\$ 130,000.00	3
CIP-20	Billings Bypass Planning Area Study	\$ 80,000.00	3
CIP-21	4MG Ox Bow II Reservoir	\$ 8,040,000.00	5

Table 1 Project Ranking

Priority Level	Priority Indicators
<b>1</b>	<p>Project is needed now (Years 0-2) <b>AND</b></p> <p>Project is necessary to eliminate a hazard to public health or safety <b>AND/OR</b></p> <p>Project is necessary to meet state/federal requirements <b>AND/OR</b></p> <p>Project is necessary to meet existing domestic demands or fire flows within current service area.</p>
<b>2</b>	<p>Project is needed now (Years 1-4) <b>AND/OR</b></p> <p>Project is necessary to mitigate risk due to potential emergency situations or aging infrastructure <b>AND/OR</b></p> <p>Project is necessary accommodate growth within the existing <u>service</u> area <b>AND/OR</b></p> <p>Project is necessary to define priority or schedule of other potential Priority 1 or 2 projects.</p>
<b>3</b>	<p>Project is needed in the near future. (Years 3-7)</p> <p>Project is necessary to accommodate growth within the existing service <u>planning</u> area <b>AND/OR</b></p> <p>Project is highly beneficial towards increasing system reliability or operability <b>AND/OR</b></p> <p>Project is highly beneficial towards increasing operational efficiency and productivity.</p>
<b>4</b>	<p>Project will be needed in the foreseeable future. (Years 5-9)</p> <p>Project is proactive towards facilitating long-term growth of the District <b>AND/OR</b></p> <p>Project is contingent upon results or implementation of preceding project <b>AND/OR</b></p> <p>Project is highly desirable, but does not address an urgent need.</p>
<b>5</b>	<p>Project may be needed in the foreseeable future. (Years 8-10+)</p> <p>Project forecasted need is near the end of the 10-year planning horizon of this CIP <b>AND/OR</b></p> <p>Project is proactive towards improving operational efficiency and productivity <b>AND/OR</b></p> <p>Project priority should be revisited during subsequent update of CIP based on observed growth and/or aging infrastructure.</p>

Table 2 Priority Indicators

## 4.4 District/Public Input

The CWDBH Board held a public meeting on December 8, 2022, to which the CIP was presented. The document was then accepted at the February 15, 2023, meeting. Both meetings were publicly noticed, and comment sought.

## 5 POTENTIAL FUNDING SOURCES

### 5.1 Introduction

This section lists and provides short descriptions of outside funding sources that may be available to fund all or part of Capital Improvement projects in the district. Funds' availability is governed by appropriations and by demand. Grants can be extremely competitive and not all requests can be funded. Most loan sources have adequate funds throughout the year. New funding sources become available from time to time, and some current funding sources may not be funded in the future. It is imperative that CWDBH remain current and actively seek new funding programs as they become available.

Two helpful websites for grants are [comdev.mt.gov](http://comdev.mt.gov) (State of Montana) and [grants.gov](http://grants.gov) (federal).

### 5.2 Grant Sources

#### 5.2.1 MCEP (Montana Coal Endowment Program).

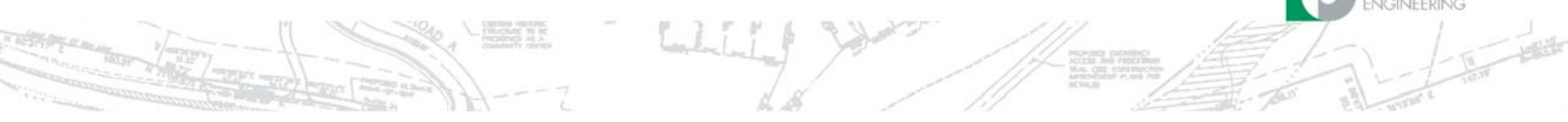
MCEP is a state grant program administered by the Department of Commerce in Helena. Funds are derived from the Coal Severance Tax and amount to \$15 million to \$20 million per biennium. MCEP grant funds can be used for water, wastewater, storm water, and bridge improvements. MCEP has both planning grants for preliminary engineering reports (PER's) or a Capital Improvements Plan (CIP) and construction grants. Both planning and construction grants can be combined with other grants and/or loans. MCEP grant funds are competitive.

Planning grants have a maximum award of \$15,000 and require a 50-50 match. These grants are available in odd years (2023, 2025, etc.) and are available on a first-come, first-served basis after funds are made available. The matching funds cannot be provided by another state grant but can be matched with federal grants. Funds are used to develop a preliminary engineering report (PER) or a Capital Improvements Plan (CIP).

Construction grants have an application deadline in the spring of even years (2024, 2026, etc.). These grants can be used for design and construction and are competitive. The grant application requires a Preliminary Engineering Report and a Uniform Application. These grants require a 50-50 match. The maximum grant is based on the community median household income and the water and wastewater combined residential user rate.

The proposed residential user rate taking into consideration the rate increase from the proposed project must exceed 100% of the target user rate. To be eligible for a \$500,000 MCEP grant, the user rate would need to be 100-125% of the target rate (over \$96.51 per month). To be eligible for a \$625,000 MCEP grant, the user rate would need to be 125-150% of the target rate (over \$120.64 per month). To be eligible for a \$750,000 MCEP grant, the user rate would need to be over 150% of the target rate (over \$144.77 per month).

According to the MCEP Guidelines, "A community's target rate is computed by multiplying the community's MHI by the combined target percentage (2.3%) to measure residential households' ability to pay combined water and wastewater rates (1.4% for water systems plus 0.9% for wastewater systems equals 2.3%). For communities with only one system, 1.4% will be used for water systems and 0.9% will be used for wastewater systems.



For example, if a community has an annual MHI of \$30,000, this figure is multiplied by 2.3%. The sum is then divided by twelve months to determine the community's combined monthly target rate (for water and wastewater) of \$57.50 per month ( $\$30,000 \times 2.3\% = \$690.00$  divided by 12 months = \$57.50 per month). If a community only has a water system and no wastewater system, the target rate would be \$35.00 per month ( $\$30,000 \times 1.4\% = \$420.00$  divided by 12 months). If a community only has a wastewater system and no water system, the target rate would be \$22.50 per month ( $\$30,000 \times 0.9\% = \$270.00$  divided by 12 months)."

### 5.2.2 RRGL (Renewable Resource Grant and Loan Program).

This is a state grant and loan program administered by the Department of Natural Resources and Conservation in Helena. Funds are derived from mineral resources and are appropriated by the Legislature in House Bill 6. Funding generally amounts to about \$800,000 for planning grants and about \$6 million for construction grants. Both planning and construction grants can be combined with other grants and/or loans. Both planning grant and construction grant programs are competitive. The loan program is not normally used by cities and towns because its interest rate is higher than other loan programs that will be discussed later.

Planning grants have a maximum award of \$15,000 and do not require a match. These grants are available in odd years (2023, 2025, etc.) and are normally available on a first-come, first-served basis after funds are made available. Funds are used to develop a Preliminary Engineering Report (PER).

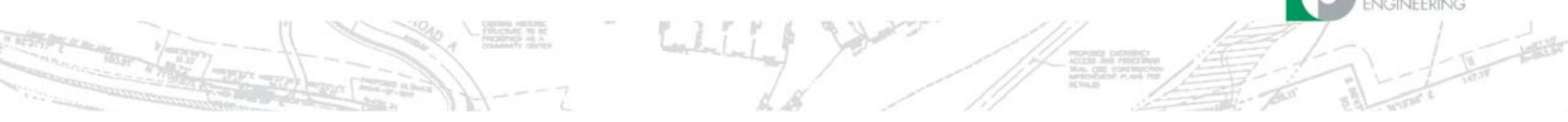
Construction grants have a maximum award of \$125,000 and the application deadline is in the spring of even years (2024, 2026, etc.). These grants can be used for design and construction and are competitive. No matching funds are required. The grant application requires a Preliminary Engineering Report and a Uniform Application. These grants can be used for water, wastewater, and storm water projects.

### 5.2.3 CDBG (Community Development Block Grant).

This grant program is administered by the Department of Commerce in Helena. The program is funded by the US Department of Housing and Urban Development. CDBG has both planning grants and construction grants. Both planning and construction grants can be combined with other grants and/or loans. Grant limits are determined by the federal appropriation and limits set by the State of Montana. Both planning grant and construction grant funds are available on an annual or semi-annual basis and are competitive.

Planning grants normally have a maximum award of \$25,000 to \$30,000 per application. Funds are normally available on a first-come, first-served basis starting in July of every year. A 25% match is required. Grant funds can be used for any public project planning project such as water, wastewater, storm water, streets, public buildings, long range planning, etc.

Construction grants are normally limited to \$400,000-\$450,000, depending on the proposed use of funds. These grants can be used for design and construction and are competitive. A 25%-50% match is required. Most of the grant applications require a Preliminary Engineering Report and a Uniform Application. These grants can be used for water, wastewater, storm water, streets, public buildings, and other public works projects. Over 51% of the affected population must have a low to moderate income. The geography that the grant is to be used in can be specified to meet the low to moderate income guidelines.





#### 5.2.4 WRDA 595 GRANTS.

This is a grant program for water systems only. It is administered by the US Army Corps of Engineers. Funding is limited and requests should be for \$300,000 or less. A 25% match is required. These funds can be used in conjunction with any other funds. Applications are usually due in January and applications are made through the three congressional offices. Funding is competitive and not available every year.

#### 5.2.5 General Grant Information.

Two websites that should be checked frequently for grant applications are:

1. Fundingmt.org
2. Grants.gov (federal)

Grants applications on these websites sometimes have a short application window. Other possible sources of grants are the US Department of Justice, the Montana Department of Justice, and private sources.

### 5.3 Loan Sources

#### 5.3.1 INTERCAP

This low interest rate loan program is administered by the Montana Board of Investments. The present (2022) interest rate is 1.550% with terms up to three (3) years for water districts. The interest rate for INTERCAP loans is variable and can change in February of each year. The rate has averaged 1.95% for the last 10 years. This loan can be used in conjunction with other grants and loans. The loan is usually used for the purchase of personal and real property and infrastructure improvements. Funds can be used for the purchase of new and used equipment and vehicles, water, wastewater, storm water, solid waste projects, energy retrofit projects, public buildings, cemeteries and preliminary engineering and grant writing. INTERCAP does not have a loan limit and they have adequate funds. Turnaround time from application to approval is short.

#### 5.3.2 SRF (State Revolving Fund)

This low interest loan program is administered by the Department of Natural Resources and Conservation in Helena. These funds can be used for planning and construction, including design. The funding is comprised of 80% federal funds and 20% funds that the state borrows. The present interest rate is 2.5% with a 20-year amortized payment. In hardship cases \$500,000 of the loan can be at 2% and the term can be extended to 30 years. Sometimes the federal government adds “green” funds to the appropriation. These funds are for projects that improve the environment. These “green” funds are debt forgiven (grant) and are written off when the project is completed as designed. The loan application requires an engineering report and a Uniform Application. These funds can be used for water, wastewater, and storm water projects. Funds are available on an open cycle annual basis and can be used in conjunction with any grant funds. This loan program does not have a loan limit and has adequate funds. Turnaround time from application to approval is short. Currently, there is federal money available from the Bipartisan Infrastructure Law (BIL) which will be distributed through the SRF program.

## 5.4 Other Revenue Sources (MCA 7-13-2221)

### 5.4.1 Loans:

Borrow money and incur indebtedness and issue bonds or other evidence of indebtedness and refund or retire any indebtedness or lien that may exist against the district or properly of the district;

### 5.4.2 Levy special assessments:

On property located in the district and benefited by any of its improvements, and pledge the collections of the special assessments in whole or in part, with any other revenue of the district, to the payment of bonds issued pursuant; and

Enter into covenants and agreements as to the establishment and maintenance of reasonable rates and charges for the use of its systems or improvements or any part of the systems or improvements as required, in the judgment of the board of directors, for the favorable sale of bonds issued including, without limitation, a covenant to establish and maintain rates and charges sufficient, with the collection of any special assessments, to pay debt service and operating, maintenance, and replacement costs of the system or improvement and fund necessary reserves or a covenant to establish and maintain rates and charges sufficient, with the collection of any special assessments, to pay operating and maintenance costs of the system or improvement, fund necessary reserves for the system or improvement, and pay debt service on bonds and to provide additional funds necessary for the purposes of the system or improvement or to provide assurance to the holders of bonds as to the sufficiency of the revenue.



## 6 CURRENT SERVICE AREA, DEMANDS & INFRASTRUCTURE

### 6.1 Introduction

The County Water District of Billings Heights originated in 1958 to provide water service to a developing area of Yellowstone County northeast and adjacent to the city limits of Billings.

Since the district's formation, CWDBH has and continues to purchase water from the City of Billings. Treated water is pumped from the city's water treatment plant to CWDBH through city owned infrastructure. The point of delivery is at the city owned Walter's Pump Station located along E. Airport Rd. Water is pumped into the CWDBH owned distribution network and connecting reservoirs.

Today, the district has grown to over 5,600 service connections providing potable water to a population base of approximately 13,400 in the Billings Heights vicinity. The district serves properties located both within and outside of city limits.

### 6.2 Service Area

The current CWDBH service area is bordered by the Yellowstone River on the east and sections of Gleneagles Blvd. and Wicks Ln. on the west. The southernmost section is near Main St and E. Airport Rd. The northern sections of the district are a collection of urban subdivisions and rural single residences surrounded by property that is not currently in the service area but is included in the planning area.





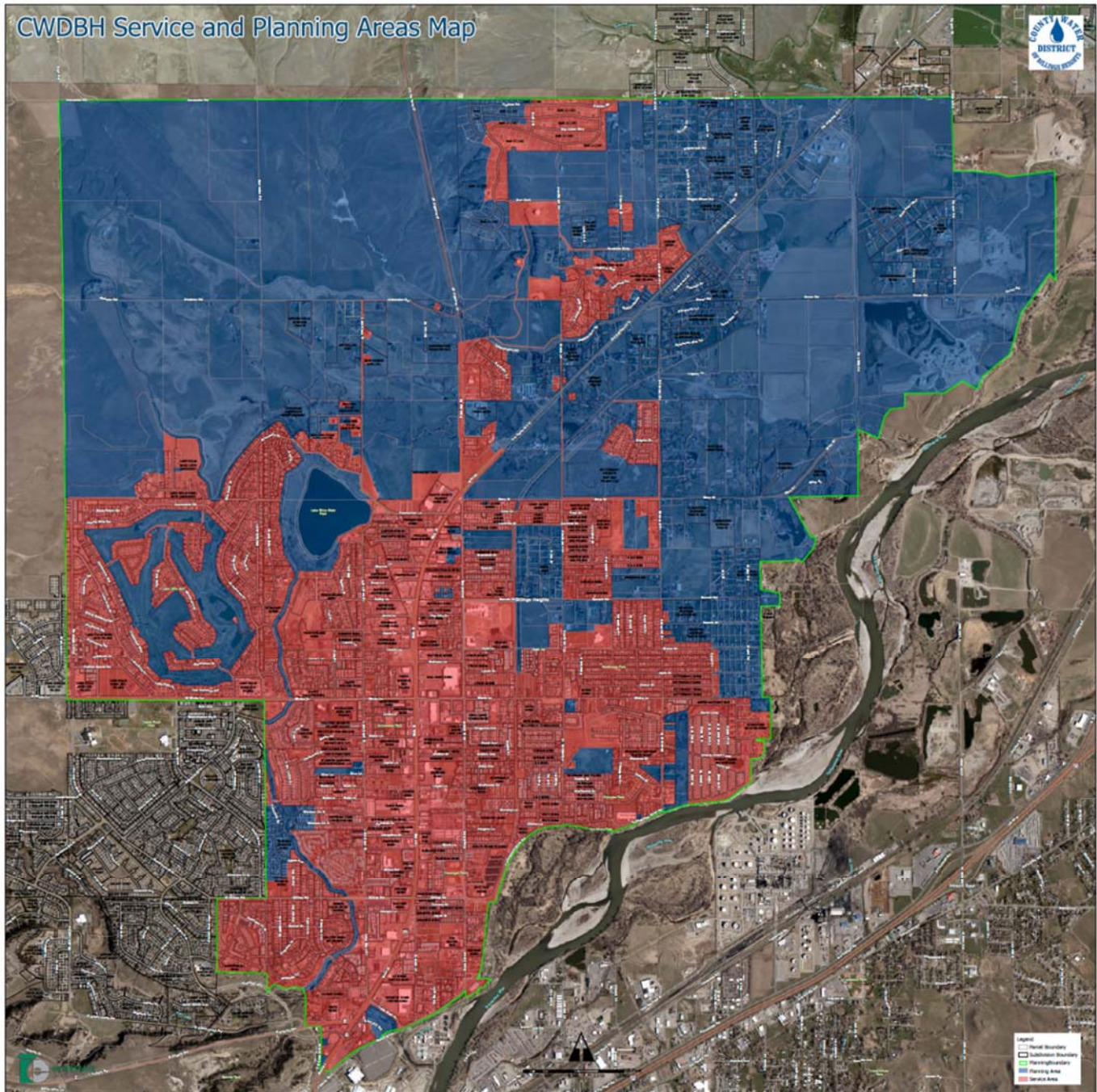


Figure 1 CWDBH Service & Planning Areas Map

### 6.3 Water Demands & Fire Flows

Water supplied from the City of Billings is recorded monthly by a master meter located at Walter’s Pump Station. The master-meter readings are used to establish monthly water purchased by CWDBH from the city.

The total water purchased for CWDBH water-year 2021-2022 (July 2021 – June 2022) was 1,000,745,000 gallons. Dividing the annual water purchased by 365 days gives an average daily water purchased quantity of 2.74 million gallons per day. This quantity does not account for system losses and therefore does not represent water sold to CWDBH consumers. For the same period (July 2021 – June 2022), the average daily water sold by CWDBH to consumers was 2.25 million gallons per day.

Total water purchased from the city has fluctuated from year to year. Several factors including length of irrigation season and drought conditions have contributed to fluctuating demands. However, the total number of service connections has been in a growth trend averaging 2%+/- annually.

CWDBH currently has a working water model of their entire distribution system. This tool has enabled their engineers to monitor growing demands, fire-flow capacity, and the potential hydraulic effects of system expansion. The water model has provided supporting hydraulic data for many of the listed CIP infrastructure projects.

Generally, fire flows and hydrant spacing have steadily improved throughout the past 65 years of the district’s existence. As the district expanded, developments had to construct system extensions to meet Montana Department of Environmental Quality (DEQ) and International Fire Code (IFC) requirements. Additionally, fire hydrants have been added to the system to improve spacing and larger diameter pipes have become the design standard for replacement and/or new installation.

According to the International Code Council, single family homes without a sprinkler system need 1,000 GPM water flow for one hour to effectively fight a fire or higher if the fire is over 3,601 square feet.

**TABLE B105.1(1)**  
**REQUIRED FIRE FLOW FOR ONE- AND TWO-FAMILY DWELLINGS, GROUP R-3 AND R-4 BUILDINGS AND TOWNHOUSES**

FIRE-FLOW CALCULATION AREA (square feet)	AUTOMATIC SPRINKLER SYSTEM (Design Standard)	MINIMUM FIRE FLOW (gallons per minute)	FLOW DURATION (hours)
0–3,600	No automatic sprinkler system	1,000	1
3,601 and greater	No automatic sprinkler system	Value in Table B105.1(2)	Duration in Table B105.1(2) at the required fire-flow rate
0–3,600	Section 903.3.1.3 of the <i>International Fire Code</i> or Section P2904 of the <i>International Residential Code</i>	500	$\frac{1}{2}$
3,601 and greater	Section 903.3.1.3 of the <i>International Fire Code</i> or Section P2904 of the <i>International Residential Code</i>	$\frac{1}{2}$ value in Table B105.1(2)	1

For SI: 1 square foot = 0.0929 m<sup>2</sup>, 1 gallon per minute = 3.785 L/m.

Table 3 Required Fire Flow for One- & Two-Family Dwellings

In Montana, the Administrative Rules of Montana (ARM) adopted the International Fire Code in ARM 23.12.601, which is the same code that the City of Billings uses in the City building code.



The northwest area of the CWDBH distribution system is experiencing poor pressure and fire-flow capacity issues due to undersized piping, higher demands, and topography challenges. With the completion of the CIP-01 project of this CIP (Northwest Transmission Main), adequate flow and pressure can be restored to the northwest area. The project will also provide additional demand capacity to accommodate nominal growth.

Other smaller, isolated areas experiencing pressure issues and/or inadequate fire flow do exist within the CWDBH distribution system. These areas of concern are a result of undersized pipes, inadequate looping, and/or topographical (elevated) challenges. Projects providing upsized pipes and additional looping will improve hydraulic conditions for these areas.

## 6.4 Existing Infrastructure

The system has over 120 miles of distribution pipe, three (3) reservoirs, and seven (7) pump stations. The active service area covers over six square miles with 5,600+ water service connections. The CWDBH Water Distribution System Map displays the variety of waterline sizes from 6 inch to 36 inches.





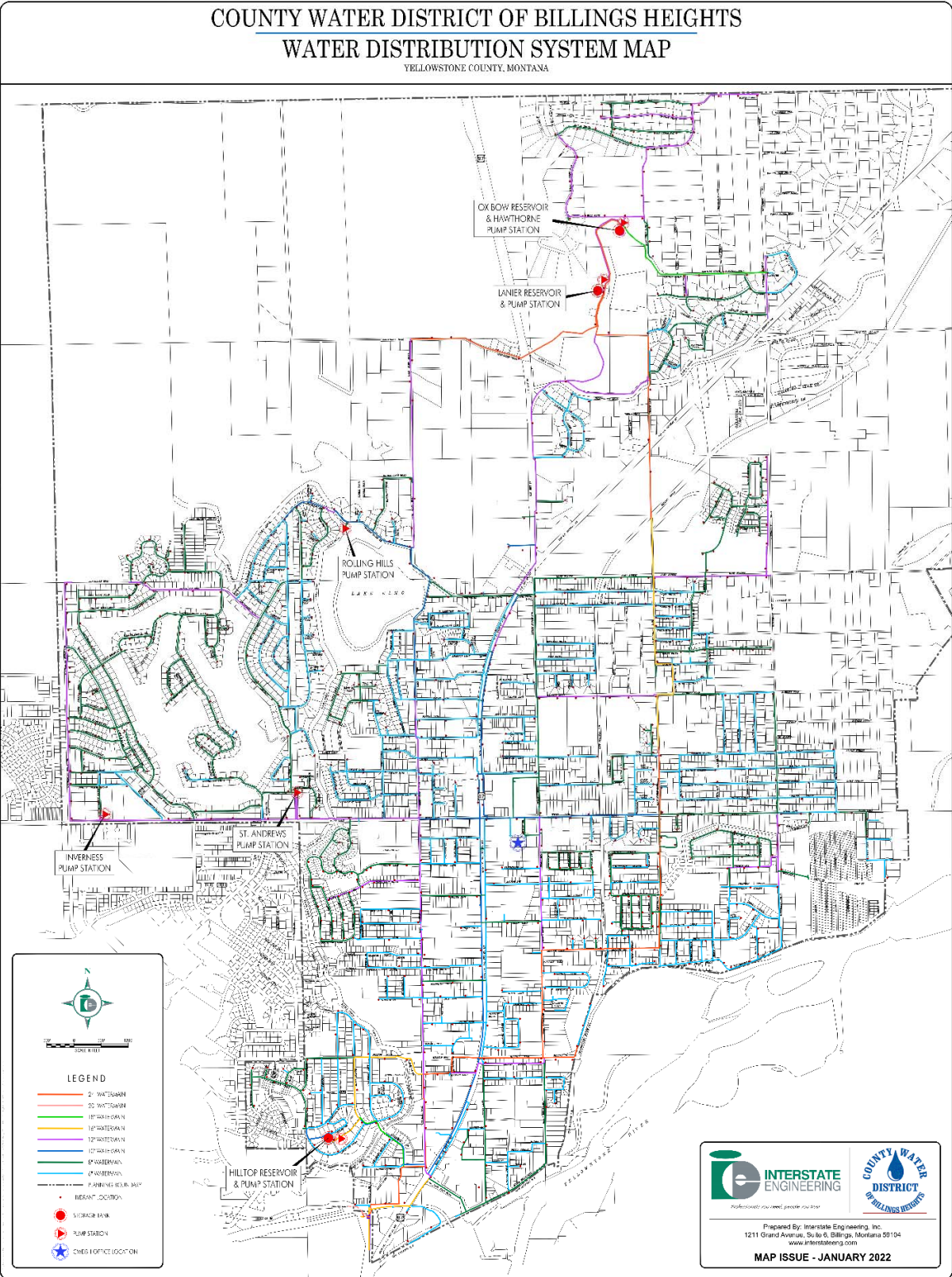


Figure 2 CWDBH Water Distribution System Map

Ground Storage Reservoirs:

Hilltop – built in the 1960s, 2 million gallons

Lanier – built in the 1980s, 2 million gallons

Ox Box – built in 2017, 4 million gallons

Water Pump Station Sites and Operating Status:

Lanier (Active)

Hawthorne (Active)

Hilltop (Active)

Saint Andrews (Active)

Rolling Hills (Standby)

Inverness (Standby)

Oxbow (Retired)

## 6.5 Conditions Assessment

- The existing distribution system contains 120+ miles of pipeline. Over 60 miles of district waterline was put into service between 1958 and 1983. Today, that translates to approximately half of the existing distribution system being 40 – 65 years old. A significant amount of the original pipe network consists of AC pipe material. With an estimated lifespan of 50 – 70 years for most pipe materials of that era, CWDBH will need to begin replacing a significant amount of their distribution system soon before the infrastructure reaches the end of its operational lifespan.
- The reservoirs and booster stations are in good condition. The district practices an active maintenance program to keep all their pump stations in adequate operating condition. All three of the reservoirs are in operation and constructed of reinforced concrete. The district routinely has each reservoir video inspected every three to five years by contracted divers.



## 7 FUTURE PLANNING AREA, DEMANDS, & GROWTH PROJECTIONS

### 7.1 Introduction

The CWDBH serves residents both within and outside of the Billings city limits. Existing zoning within the district includes agriculture, suburban neighborhood, mixed residential, and commercial. Commercial areas are zoned mixed use to heavy commercial. Future planning, such as completion of this CIP, will allow the district to be proactive in providing services to this variety of users. Global water demand and system connection growth over the past decade has steadily increased at about 2%+/- per year.

### 7.2 Planning Area

CWDBH has the potential to expand and add many new service lines as illustrated by the current CWDBH Service & Planning Area Map. The current planning boundary encompasses 9,780 acres (15+ square miles) with about 1/3 of the area currently annexed into the district. Furthermore, with the recent expansion of storage and infrastructure, CWDBH can now serve beyond the mapped planning area boundaries. As Billings Heights continues to expand and existing county residences annex into the district, water demand will consequently increase.

### 7.3 Zoning Influence, Development, Demands, & Population Trends

Zoning in the area is predominantly suburban neighborhood along with some mixed residential, mobile home residential, and commercial areas. Again, this demonstrates a variety of user demands.

Yellowstone County is predicted to be one of the fastest growing counties in Montana, according to the Census and Economic Information Center. There are pockets of high Low Moderate Income (LMI) up to 83% and areas of higher income within the district. The diverse income levels will affect the rate increases that the Board will be able to complete.

### 7.4 Heights Transportation Corridor Developments

With the future Billings Bypass project being constructed, Billings Heights is primed to continue to grow. The project will open an opportunity for more lands to be developed once the project is completed. The bypass project is scheduled to be completed 2025-2026 (Tentative). It is anticipated that the new transportation corridor will also increase CWDBH system water demand as development and utility infrastructure is built along the new route.

### 7.5 System Limitations

- Lower pressures have been a reoccurring issue in the Lake Hills (northwest) area of the district. Existing grid mains that supply the Lake Hills pressure zone are also experiencing capacity issues. Ongoing developments in the northwest area of the system will need to pause and/or new development requests will be denied if immediate improvements are not completed.
- Need better overall system operability and water quality to reduce the risk of non-compliance and/or low chlorine residuals.
- Need a scheduled replacement program for aging and/or asbestos-cement pipe throughout the district.

- Need improved system redundancy, looping, and increased pipe capacity. Transmission-grid mains should be 12" and interior distribution mains should be 8".
- Meter/piping upgrades at Lanier and Hilltop Reservoirs sites are needed to manage flow and water turnover more effectively.
- Upgrades in software and GIS are needed to better manage assets and automate system operations.
- Backup generator in case of extended power outages.
- New future reservoir as needed for growth.



## 8 PLANNING

### 8.1 Introduction

Planning documents help entities create a long-term financial plan to meet system needs, thus ensuring financial stability. It helps entities to implement goals and objectives outlined in their growth policies, helping to ensure that growth occurs in a cost-effective and desirable manner. Planning documents also identify where improvements will be needed over time, rather than waiting for each crisis to occur before acting. It is usually more expensive to make emergency repairs than it is to maintain a system in working order by anticipating problems and making corrections incrementally before there is a total breakdown in the system. Planning is an important investment for the future of CWDBH.

### 8.2 Funding Sources

Planning may be funded through MCEP, SRF, RRGL, INTERCAP and/or many other funding options that may become available.

### 8.3 Capital Improvements Schedule

**Comprehensive Water System PER** – Complete a comprehensive water system Preliminary Engineering Report (PER) that will meet the standards of the “Uniform Preliminary Engineering Report for Montana Public Facility Projects”. The PER will be submitted to the Montana Department of Natural Resources and Conservation (DNRC) water bureau and the Montana Department of Environmental Equality (DEQ) program for review following completion. The PER will identify projects to alleviate deficiencies and maintenance needs for the aging infrastructure within the CWDBH system. The document will further evaluate the existing system’s capacity to accommodate future expansion/ongoing growth. Completion of a comprehensive water PER is a key requirement for state and/or federal funding agencies to qualify for grants and/or loans.

**Rate Study** – Perform a comprehensive rate study and evaluation as a 10-year update to the water rate schedule to address the true cost of supplying water to the district's service area residents. Intermediate rate study updates should also be revisited between comprehensive 10-year updates to assure the plan is maintaining its intended course.

**Billings Bypass Planning Area Study** – Perform a study regarding the potential impact of the new Billings Bypass corridor and projected areas of development on the planning area of the district including existing and future infrastructure. This will provide a preliminary water infrastructure plan for the buildout of undeveloped areas to prevent under sizing and potential operational problems.

**5-Year Update to CIP** – Perform a 5-year update to the Capital Improvements Plan (CIP) to incorporate completed projects, priority adjustments, budgetary considerations, changing forecasts and growth patterns, and evaluate potential future projects.

**Water Intake Feasibility Study** – Perform a due-diligence research study to determine preliminary feasibility of the district to construct a Yellowstone River intake as an alternate source of potable water to supply the district.



This preliminary study would evaluate potential water rights issues, potential intake locations relative to existing WWTP discharge locations on the Yellowstone, permitting requirements, etc. If determined feasible, this project would represent a precursor to a formal Preliminary Engineering Report (PER) for the Water Intake and Treatment Facility.

#### 8.4 Tabular Summary – Office Capital Projects Summary Table

Project ID	Project Title	Priority Level:	Project Category	Subcategory
CIP-02	Comprehensive Water System PER	1	Administration	Overall System
CIP-19	Rate Study	3	Administration	Rate Study
CIP-20	Billings Bypass Planning Area Study	3	Administration	Overall System
CIP-18	5 Year Update to CIP	4	Administration	CIP
CIP-03	Raw Water Intake Feasibility Study	1	Facilities	WTP

*Table 4 Planning Capital Projects Summary Table*

#### 8.5 Funding Sources

Potential funding sources are outlined in Section 5. These projects will rely on a combination of grants and loans. Specifically, Montana Coal Endowment Program (MCEP) construction grants, State revolving fund (SRF), and renewable resource grants (RRGL). MCEP is open every two years to be approved by the legislature. The grant application is due the summer of even years before the legislature meets in odd years. Funding specifically for equipment may be sought through the Coal Board program.



## 9 ADMINISTRATIVE SOFTWARE, METER READING SOFTWARE, OTHER OPERATIONAL EQUIPMENT BELOW \$25,000

### 9.1 Introduction

It is important for the district to keep current the software before billing, meter reading and other administrative functions. Due to its critical function, administrative software and/or operational equipment is worth noting even though costs are typically <\$25,000.

#### 9.1.1 Asset Management

Asset management is dependent on knowing the state of the utility assets.

“An asset management program helps a utility make risk-based decisions by choosing the right project, at the right time, for the right reason (epa.gov)”.

Keeping data up to date is crucial. Asset management software works hand in hand with GIS software. See section 10.4 concerning GIS.

# 10 DISTRIBUTION SYSTEM ANALYSIS & CAPITAL PROJECTS

## 10.1 Introduction

The County Water District of Billings Heights’ water system consists of three (3) water storage facilities, seven (7) pump stations, disinfection treatment, and a distribution system. The water is initially treated by the Billings WTP and purchased from the City of Billings.

## 10.2 Reservoirs

### 10.2.1 Introduction

CWDBH currently owns and operates three (3) concrete potable water storage tanks to serve the existing distribution system. The system operates three (3) pressure zones with the utilization of gravity fed reservoirs and booster pumps. The system has a cumulative maximum storage volume of 8 million gallons.

#### Ground Storage Reservoirs:

Hilltop – built in the 1960s, 2 million gallons

Lanier – built in the 1980s, 2 million gallons

Ox Bow – built in 2017, 4 million gallons

### 10.2.2 Capital Needs

4MG Ox Bow II reservoir - Installation of a new 4MG storage reservoir near the existing Ox Bow reservoir to supplement storage capacity throughout the system.

### 10.2.3 Funding Sources

Storage infrastructure may be funded through SRF, MCEP, and RRGL and/or other funding options that may become available.

### 10.2.4 Capital Improvements Summary

The timeline for Capital Improvements is shown in detail in Appendix B. Experienced and continued growth in the northern portion of the district will require additional storage capacity to maintain domestic demand, fire flow, and adequate system pressures.

### 10.2.5 Tabular Summary – Capital Projects Summary Table

Project ID	Project Title	Priority Level:	Project Category	Subcategory
CIP-21	4MG Ox Bow II Reservoir	5	Facilities	Reservoirs

*Table 5 Reservoirs Capital Projects Summary Table*

## 10.3 Pipelines

### 10.3.1 Introduction

The district has a mixture of transmission mains, distribution mains, and service lines. The first system water mains were installed in the late 1950's. Most of the original distribution main installed utilized asbestos cement (AC) pipe. Cast iron pipe was also installed along Main Street. After the initial district startup, expansion projects utilized AC and ductile iron pipe materials. AC pipe continued to be installed throughout the district until the EPA ban in the late 1970's. AC water pipe has a lifespan of 50 – 70 years depending on several factors including strength class, soil conditions, water chemistry, etc. PVC pipe has become the most common pipe material installed throughout the district in the past 40 years.

### 10.3.2 Capital Needs

- Northwest Transmission Main. Install 24" grid main from the intersection of Alexander/Lake Elmo to the Gleneagles main to complete a major loop in the system.
- Assess Condition of Existing Pipelines. Preliminary assessment of strategically selected locations to determine if additional investigation will aid in the development of an effective replacement schedule.
- Bitterroot Loop Across Highway 312. Construct a new 24"/18" grid main to connect Bitterroot Drive to Grelck Lane across Highway 312 along Bitterroot Drive and Independent Road, forming a major loop within the system.
- Bitterroot Drive from Barrett Drive to Mary Street. Construct a new 12" grid main. Project will remove dead ends and complete a major loop within the system.
- Aging Watermain Replacement Program. Implement a scheduled replacement program for 77,000 LF (estimate) asbestos-cement pipe throughout the district.
- Dedicated Fill Line for Lanier Reservoir. A new configuration will ensure water turnover in the tank and reduce issues associated with water aging.
- Ultrasonic Meters at Hilltop & Lanier. Install non-invasive, ultrasonic flow meters on the discharge lines for the Hilltop and Lanier reservoirs.

### 10.3.3 Funding Sources

Pipelines may be funded through SRF, MCEP, and RRGL and/or other funding options that may become available.

### 10.3.4 Capital Improvements Summary

The priority list for Capital Improvements is shown in Appendix A. There are seven pipeline projects out of 21 listed projects on the CIP priority list. The Northwest Transmission Main project is the highest priority. Funding is currently being sought for this project. Assessing conditions of existing pipelines is the next highest priority. Priority Level 3 projects include the Bitterroot Loop across Hwy 312, Bitterroot from Barrett to Mary, and implementation of an aging water main replacement program.

The final two projects, Priority Level 4, are a dedicated fill line for Lanier Reservoir and ultrasonic meters at Hilltop and Lanier.

### 10.3.5 Tabular Summary – Capital Projects Summary Table

Project ID	Project Title	Priority Level:	Project Category	Subcategory
CIP-01	Northwest Transmission Main	1	Pipelines	Transmission
CIP-07	Assess Condition of Existing Pipelines	2	Pipelines	Distribution
CIP-04	Bitterroot Loop Across Highway 312	3	Pipelines	Transmission
CIP-05	Bitterroot Drive from Barrett Drive to Mary Street	3	Pipelines	Transmission
CIP-08	Aging Watermain Replacement Program	3	Pipelines	Distribution
CIP-09	Dedicated Fill Line for Lanier Reservoir	4	Pipelines	Transmission
CIP-10	Ultrasonic Meters at Hilltop & Lanier	4	Pipelines	Monitoring Equipment

Table 6 Pipelines Capital Projects Summary Table

## 10.4 GIS, Asset Management, SCADA, & Communications

### 10.4.1 Introduction

Geographic Information Systems (GIS) uses data to map information needed for the district. It can be used to “understand patterns, relationships, and geographic context” (ESRI.com). CWDBH has a GIS system, however, many of the attribute fields have no information.

Ongoing efforts are being made to update the spatial and attribute information of the infrastructure the district owns and manages using their SaaS solution coupled with an EOS Arrow Gold GPS. With these two technologies the district field operations staff can update, add, and remove data with high accuracy while the district’s management staff can see the updates in real time on their desktop application.

#### Current State

CWDBH has put some resources into developing a reliable and accurate Geographical Information System, (GIS). The current GIS as of 2021, is functioning using ArcGIS Online, (AGOL), a cloud-based Software as a Service, (SaaS) made by a software company named ESRI. The district is managing their GIS on their own AGOL organizational account.

Ongoing efforts are being made to update the spatial and attribute information of the infrastructure the district owns and manages using their SaaS solution coupled with an EOS Arrow Gold GPS. With these two technologies the district field operations staff can update, add, and remove data with high accuracy information while the district's management staff can see the updates in real time on their desktop application.

#### Future State

The highest and best use of GIS is to leverage its capacity to make workflows digitally streamlined. This makes it a consistent resource for all users as a system of record keeping and tracking as well as a reliable tool for analysis and modeling of future growth efforts. Assets can begin to be managed with digital processes, maintenance or repairs can be tracked with task-based workflows, and inspections done with online forms. From daily routines to long-term planning a mature GIS will bring the district the tools and information needed to operate at its optimum capacity.

#### Recommendations

Looking to the future based on present day knowledge it is recommended that the district take a comprehensive and systematic approach to an intended goal of getting their infrastructure planning, design, construction, maintenance, and repair workflows digitally architected. It is recommended the district gets the present attribute information fully completed and updated. The district should then identify, outline, and document current workflows and processes which support the district's existing asset management functions.

Once compiled and verified the "paper" methods can become conceptual "digital" systems for asset management that can be then built using available AGOL application tools and functions in conjunction with the present GIS infrastructure, creating an Asset Management System, (AMS).



Example from  
ESRI.com

Figure 3 GIS Example from ESRI.com

#### 10.4.2 Capital Needs

- Update GIS Attributes. Most of the attribute fields in the GIS database have no information in them. It is recommended the district gets the present attribute information fully completed and updated.
- GIS: Digital Workflows. Current workflows are paper based and siloed in their respective departments.
- GIS Support/Data Workflow Maintenances. The district should have a long-term data maintenance plan that ensures the sustained longevity and useful leveraging of the GIS remains. Continuous data updates, technical software support, and workflow maintenance would be the focus.

#### 10.4.3 Funding Sources

GIS software may be funded through the Montana Coal Board, SRF, MLIA and/or other funding options that may become available.

#### 10.4.4 Capital Improvements Summary

The timeline for Capital Improvements is shown in detail in Appendix B.

#### 10.4.5 Tabular Summary – Capital Projects Summary Table

Project ID	Project Title	Priority Level:	Project Category	Subcategory
CIP-11	Update GIS Attributes	4	Administration	GIS
CIP-12	GIS: Digital Workflows	4	Administration	GIS
CIP-13	GIS Support/Data Workflow Maintenances	4	Administration	GIS

Table 7 GIS Capital Projects Summary Table

### 10.5 Facilities

#### 10.5.1 Introduction

Montana Code Annotated (MCA) defines system facilities as “Adequate county water and/or sewer district facilities means facilities provided by a county water and/or sewer district (...) including “pipeline facilities; aboveground ponds and reservoirs and underground storage reservoirs; aqueducts and diversion dams; or other supporting infrastructure, ...” (leg.mt.gov). There are seven (7) infrastructure projects on the CIP list.

#### 10.5.2 Capital Needs

- Reservoir Management System. Install a means to remotely and automatically monitor and boost chlorine levels in the existing water storage reservoirs (Lanier and Hilltop).
- Cold-Storage Yard at Ox Bow Tank Site. Develop and install security fence around approximately 0.5 acres of the existing Ox Bow Reservoir site as a cold-storage yard for materials and equipment.



- Equipment Storage Building. Additional enclosed storage will provide additional security for the district's vehicles and stored materials.
- Shop Addition with 2-Ton Bridge Crane. Construct an addition onto the rear bay of the existing shop building and install an integral 2-ton bridge crane for material handling purposes.
- Emergency Generation: Procure a mobile, emergency generator capable of powering the jockey pump at Hawthorne pump station or Hilltop booster pump station to be mobilized in the event of grid power failure at either site.

### 10.5.3 Funding Sources

Facilities may be funded through MCEP, SRF, RRGL, INTERCAP and/or other funding options that may become available.

### 10.5.4 Capital Improvements Summary

The Capital Projects in the Facilities category have priority Levels from one to five. The reservoir management system and a cold storage yard at the Oxbow tank site are the highest priorities. Lower priority items are the equipment storage building, a shop addition with a 2-ton bridge crane, and emergency generator.

### 10.5.5 Tabular Summary – Capital Projects Summary Table

Project ID	Project Title	Priority Level	Project Category	Subcategory
CIP-06	Reservoir Management System	3	Facilities	Monitoring Equipment
CIP-16	Cold-Storage Yard at Ox Bow Tank Site	3	Facilities	Buildings
CIP-15	Equipment Storage Building	4	Facilities	Buildings
CIP-17	Shop Addition with 2-Ton Bridge Crane	4	Facilities	Buildings
CIP-14	Emergency Generation	4	Facilities	Equipment

*Table 8 Facilities Capital Projects Summary Table*

## 11 IMPLEMENTATION PLAN

### 11.1 Introduction

CIP projects have been divided into five priority groups. Each priority group has a different timeline for implementation. The schedule should be reviewed annually and updated as needed.

### 11.2 Near-Term Implementation

Priority 1 projects should be started within two years as these are the highest priority. These projects include:

- The Northwest Transmission Main
- Completing a Comprehensive Water System PER
- Water Intake Feasibility Study

### 11.3 Intermediate-Term Implementation

Priorities 2 and 3 would be considered intermediate. Priority 2, which should be started between one to four years and includes one project:

- Assess Condition of Existing Pipelines

Priority 3, to be implemented in three to seven years, includes these projects:

- Billings Bypass Planning Area Study
- Cold-Storage Yard at Oxbow Tank Site
- Aging Watermain Replacement Program
- Reservoir Management System
- Bitterroot from Barrett to Mary
- Bitterroot Loop across Highway 312
- Rate Study

### 11.4 Long-Term Implementation

Priorities 4 and 5 would be considered long-term projects.

Priority 4 projects are needed within five to nine years and are proactive towards long term growth of the district. Projects in this group include:

- Dedicated Fill Line for Lanier Reservoir
- Ultrasonic Meters at Hilltop and Lanier
- Update GIS Attributes
- GIS Digital Workflows
- GIS Support/Data Workflow Maintenance
- Emergency Generation
- Equipment Storage Building
- Shop Addition with 2-Ton Bridge Crane

- Five-year Update to the CIP

Priority level 5 are projects that are needed in the future 8 to 10+ years out:

- 4MG Ox Bow II Reservoir.

## 11.5 Funding Plan Overview

The SRF loan program would be available for the majority funding. Currently, there is federal money available from the Bipartisan Infrastructure Law (BIL) which will be distributed through the SRF program. The MCEP and RRGL programs are available for planning and infrastructure. CDBG may be used for infrastructure for projects that are in lower income areas of the district. Other federal programs may be developed in the future.

## APPENDIX A

### LIST OF PROJECTS BY PRIORITY

ID	Description	Estimated Cost	Listed Priority
CIP-01	Northwest Transmission Main	\$ 11,820,000.00	1
CIP-02	Comprehensive Water System PER	\$ 180,000.00	1
CIP-03	Raw Water Intake Feasibility Study	\$ 80,000.00	1
CIP-04	Bitterroot Loop Across Highway 312	\$ 4,070,000.00	3
CIP-05	Bitterroot from Barrett to Mary	\$ 1,800,000.00	3
CIP-06	Reservoir Management System	\$ 1,370,000.00	3
CIP-07	Assess Condition of Existing Pipelines	\$ 210,000.00	2
CIP-08	Aging Watermain Replacement Program	\$ 4,100,000.00	3
CIP-09	Dedicated Fill Line for Lanier Reservoir	\$ 640,000.00	4
CIP-10	Ultrasonic Meters at Hilltop & Lanier	\$ 130,000.00	4
CIP-11	Update GIS Attributes	\$ 150,000.00	4
CIP-12	GIS: Digital Workflows	\$ 150,000.00	4
CIP-13	GIS Support/Data Workflow Maintenances	\$ 690,000.00	4
CIP-14	Emergency Generation	\$ 75,000.00	4
CIP-15	Equipment Storage Building	\$ 920,000.00	4
CIP-16	Cold-Storage Yard at Ox Bow Tank Site	\$ 70,000.00	3
CIP-17	Shop Addition with 2-Ton Bridge Crane	\$ 370,000.00	4
CIP-18	5 Year Update to CIP	\$ 90,000.00	4
CIP-19	Rate Study	\$ 130,000.00	3
CIP-20	Billings Bypass Planning Area Study	\$ 80,000.00	3
CIP-21	4MG Ox Bow II Reservoir	\$ 8,040,000.00	5

Priority Level	Priority Indicators
<b>1</b>	<p>Project is needed now (Years 0-2) <b>AND</b></p> <p>Project is necessary to eliminate a hazard to public health or safety <b>AND/OR</b></p> <p>Project is necessary to meet state/federal requirements <b>AND/OR</b></p> <p>Project is necessary to meet existing domestic demands or fire flows within current service area.</p>
<b>2</b>	<p>Project is needed now (Years 1-4) <b>AND/OR</b></p> <p>Project is necessary to mitigate risk due to potential emergency situations or aging infrastructure <b>AND/OR</b></p> <p>Project is necessary accommodate growth within the existing <u>service</u> area <b>AND/OR</b></p> <p>Project is necessary to define priority or schedule of other potential Priority 1 or 2 projects.</p>
<b>3</b>	<p>Project is needed in the near future. (Years 3-7)</p> <p>Project is necessary to accommodate growth within the existing service <u>planning</u> area <b>AND/OR</b></p> <p>Project is highly beneficial towards increasing system reliability or operability <b>AND/OR</b></p> <p>Project is highly beneficial towards increasing operational efficiency and productivity.</p>
<b>4</b>	<p>Project will be needed in the foreseeable future. (Years 5-9)</p> <p>Project is proactive towards facilitating long-term growth of the District <b>AND/OR</b></p> <p>Project is contingent upon results or implementation of preceding project <b>AND/OR</b></p> <p>Project is highly desirable but does not address an urgent need.</p>
<b>5</b>	<p>Project may be needed in the foreseeable future. (Years 8-10+)</p> <p>Project forecasted need is near the end of the 10-year planning horizon of this CIP <b>AND/OR</b></p> <p>Project is proactive towards improving operational efficiency and productivity <b>AND/OR</b></p> <p>Project priority should be revisited during subsequent update of CIP based on observed growth and/or aging infrastructure.</p>

## APPENDIX B

### LIST OF PROJECTS BY TIMELINE

Priority Level	Priority Indicators
1	Years 0-2
2	Years 1-4
3	Years 3-7
4	Years 5-9
5	Years 8-10+

Project ID	Project Title	Priority Level:	Project Category	Subcategory	Project Type
CIP-01	Northwest Transmission Main	1	Pipelines	Transmission	New Construction
CIP-02	Comprehensive Water System PER	1	Administration	Overall System	Report or Study
CIP-03	Raw Water Intake Feasibility Study	1	Facilities	WTP	Report or Study
CIP-07	Assess Condition of Existing Pipelines	2	Pipelines	Distribution	Report or Study
CIP-04	Bitterroot Loop Across Highway 312	3	Pipelines	Transmission	New Construction
CIP-05	Bitterroot from Barrett to Mary	3	Pipelines	Transmission	New Construction
CIP-06	Reservoir Management System	3	Facilities	Monitoring Equipment	New Construction
CIP-08	Aging Watermain Replacement Program	3	Pipelines	Distribution	Replacement
CIP-16	Cold-Storage Yard at Ox Bow Tank Site	3	Facilities	Buildings	New Construction



Project ID	Project Title	Priority Level:	Project Category	Subcategory	Project Type
CIP-19	Rate Study	3	Administration	Rate Study	Report or Study
CIP-20	Billings Bypass Planning Area Study	3	Administration	Overall System	Report or Study
CIP-09	Dedicated Fill Line for Lanier Reservoir	4	Pipelines	Transmission	New Construction
CIP-10	Ultrasonic Meters at Hilltop & Lanier	4	Pipelines	Monitoring Equipment	New Construction
CIP-11	Update GIS Attributes	4	Administration	GIS	New Construction
CIP-12	GIS: Digital Workflows	4	Administration	GIS	New Construction
CIP-13	GIS Support/Data Workflow Maintenances	4	Administration	GIS	New Construction
CIP-14	Emergency Generation	4	Facilities	Equipment	New Construction
CIP-15	Equipment Storage Building	4	Facilities	Buildings	New Construction
CIP-17	Shop Addition with 2-Ton Bridge Crane	4	Facilities	Buildings	New Construction
CIP-18	5 Year Update to CIP	4	Administration	CIP	Report or Study
CIP-21	4MG Ox Bow II Reservoir	5	Facilities	Reservoirs	New Construction

APPENDIX C  
CAPITAL IMPROVEMENT PROJECTS



Project Title	Northwest Transmission Main	Project Category	Pipelines
Project ID	CIP-01	Subcategory	Transmission
Estimated Total Project Cost	<b>\$11,820,000</b>	Project Type	New Construction

**Project Description**

Install a redundant, secondary supply main that will connect from an existing stubbed out 24" transmission main and loop 2.5 miles to the northwest corner of the NW pressure zone. The existing 24" transmission main was installed to feed the 12" main that gravity feeds the NW zone.

**Why this project needs to be completed:**

Low pressure readings have been noted in the southwest corner of the Lake Hills area. Existing 12" gravity main from the NE and St. Andrews booster station from the SE are nearing capacity to supply the pressure zone.

**How this project will benefit the District:**

Completion of the NW transmission main loop will allow the Ox Bow tank to gravity feed this area with adequate pressure. Fire flow scenarios will be met. Pump stations located in this area can be decommissioned due to adequate gravity supply.

**Consequences of delaying or eliminating this project:**

Will require continued use existing online booster stations, require activation of two additional pump stations, and continue to see inadequate pressures in the area. Will prohibit growth in the area due to insufficient domestic supply and fire flow capacity.

**Impact on annual operating budget:**

Minimal impact; general maintenance of pipeline and appurtenances. Completion of this transmission main will nearly nullify the need for the St. Andrews pump station which will lead to reduced power consumption.

**Additional Comments:**

Residential growth in this area on pace to exceed water supply infrastructure capacity by 2024. It is assumed that the transmission main will be a combination of 24" and 18" pipe.

**Potential Funding Sources:**

Drinking Water State Revolving Fund (DWSRF)


Renewable Resource Grant & Loan Program

**Priority Level:**

**1**



Estimated Project Costs				
FY	Engineering, Planning, Design	Construction	Other	Total
2023	\$850,000		\$120,000	\$970,000
2024	\$850,000	\$10,000,000		\$10,850,000
2025				
2026				
2027				
2028				
2029				
2030				
2031				
2032				
<b>Total</b>	<b>\$1,700,000</b>	<b>\$10,000,000</b>	<b>\$120,000</b>	<b>\$11,820,000</b>

Project Title	Comprehensive Water System PER	Project Category	Administration																																																																	
Project ID	CIP-02	Subcategory	Overall System																																																																	
Estimated Total Project Cost	<b>\$180,000</b>	Project Type	Report or Study																																																																	
Project Description																																																																				
Complete a comprehensive Water System Preliminary Engineering Report (PER) that will meet the standards of the “Uniform Preliminary Engineering Report for Montana Public Facility Projects”. The PER will be submitted to the Montana Department of Natural Resources and Conservation (DNRC) water bureau and the Montana Department of Environmental Equality (DEQ) program for review following completion. The PER will identify projects to alleviate deficiencies and maintenance needs for the aging infrastructure within the CWDBH system. The document will further evaluate the existing system’s capacity to accommodate future expansion/ongoing growth.																																																																				
Why this project needs to be completed:																																																																				
The previous comprehensive PER is outdated (completed in 2008). The 2008 document is no longer recognized by applicable grant/loan funding agencies and DEQ reviewing authority including the Municipal Facilities Exclusion (MFE) process.																																																																				
How this project will benefit the District:																																																																				
The PER will be used as a supporting document for each upcoming design project subject to DEQ and/or MFE review. The PER will also fulfill the requirements of applicable funding agencies (including SRF) that issue project grants and loans.																																																																				
Consequences of delaying or eliminating this project:																																																																				
Possibility for reactive (instead of proactive) installations of necessary infrastructure and would have the potential to inflate the price of these installations due to reduced time to budget, plan, and/or take advantage of market situations or concurrent projects (e.g., street rehabs).		<table border="1"> <tr> <th colspan="5">Estimated Project Costs</th> </tr> <tr> <th>FY</th> <th>Engineering, Planning, Design</th> <th>Construction</th> <th>Other</th> <th>Total</th> </tr> <tr> <td>2023</td> <td>\$180,000</td> <td></td> <td></td> <td>\$180,000</td> </tr> <tr> <td>2024</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>2025</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>2026</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>2027</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>2028</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>2029</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>2030</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>2031</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>2032</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td><b>Total</b></td> <td><b>\$180,000</b></td> <td></td> <td></td> <td><b>\$180,000</b></td> </tr> </table>		Estimated Project Costs					FY	Engineering, Planning, Design	Construction	Other	Total	2023	\$180,000			\$180,000	2024					2025					2026					2027					2028					2029					2030					2031					2032					<b>Total</b>	<b>\$180,000</b>			<b>\$180,000</b>
Estimated Project Costs																																																																				
FY	Engineering, Planning, Design			Construction	Other	Total																																																														
2023	\$180,000					\$180,000																																																														
2024																																																																				
2025																																																																				
2026																																																																				
2027																																																																				
2028																																																																				
2029																																																																				
2030																																																																				
2031																																																																				
2032																																																																				
<b>Total</b>	<b>\$180,000</b>			<b>\$180,000</b>																																																																
Impact on annual operating budget:																																																																				
Without the completion of an updated PER, the District could be ineligible for preferred funding sources including grants, loan forgiveness and/or low interest loan options. Increased project borrowing costs and/or delays for upcoming projects could occur without the completed PER.																																																																				
Additional Comments:																																																																				
Additional supporting PER information will become necessary for agency review on upcoming projects.																																																																				
Potential Funding Sources:	Priority Level:																																																																			
	<b>1</b>																																																																			

Project Title	Raw Water Intake Feasibility Study	Project Category	Facilities
Project ID	CIP-03	Subcategory	WTP
Estimated Total Project Cost	<b>\$80,000</b>	Project Type	Report or Study

**Project Description**

Perform a feasibility research study to determine preliminary feasibility of the District (or a developed Regional Authority) to construct a Yellowstone River intake and water treatment facility as an alternate source of potable water to supply the District. This preliminary study would evaluate potential water rights issues, potential intake locations relative to existing WWTP discharge locations on the Yellowstone, permitting requirements, etc. If determined feasible, this project would represent a precursor to a formal Preliminary Engineering Report (PER) for the Water Intake and Treatment Facility.

**Why this project needs to be completed:**

Front-end research and planning is required to ensure appropriate steps are taken and prevent unnecessary spending if project reaches a point of infeasibility.

**How this project will benefit the District:**

This project represents the first step towards the District augmenting its current water supply or establishing independence regarding its source of potable water.

**Consequences of delaying or eliminating this project:**

Continued reliance on City of Billings supplied potable water for the foreseeable future.

**Impact on annual operating budget:**

This portion of the overarching project will not have an impact on the annual operating budget.

**Additional Comments:**

N/A

<b>Potential Funding Sources:</b>	<b>Priority Level:</b>
	<b>1</b>



Estimated Project Costs				
FY	Engineering, Planning, Design	Construction	Other	Total
2023				
2024	\$80,000			\$80,000
2025				
2026				
2027				
2028				
2029				
2030				
2031				
2032				
<b>Total</b>	<b>\$80,000</b>			<b>\$80,000</b>



Project Title	Bitterroot Loop Across Highway 312	Project Category	Pipelines
Project ID	CIP-04	Subcategory	Transmission
Estimated Total Project Cost	<b>\$4,070,000</b>	Project Type	New Construction

**Project Description**

Construct a new 24"/18" grid main to connect Bitterroot Drive to Grellck Lane across Highway 312 along Bitterroot Drive and Independent Road, forming a major loop within the system.

**Why this project needs to be completed:**

Project will remove dead ends and complete a major loop within the system.

**How this project will benefit the District:**

Better overall system operability, water quality, and increase capability for growth near the future Billings Bypass corridor. Loop will also provide nearby existing neighborhoods a direct opportunity to be annexed into the CWDBH.

**Consequences of delaying or eliminating this project:**

Lack of preparedness for growth near new Billings Bypass corridor. Continued dead-end of major grid main in Bitterroot Drive.

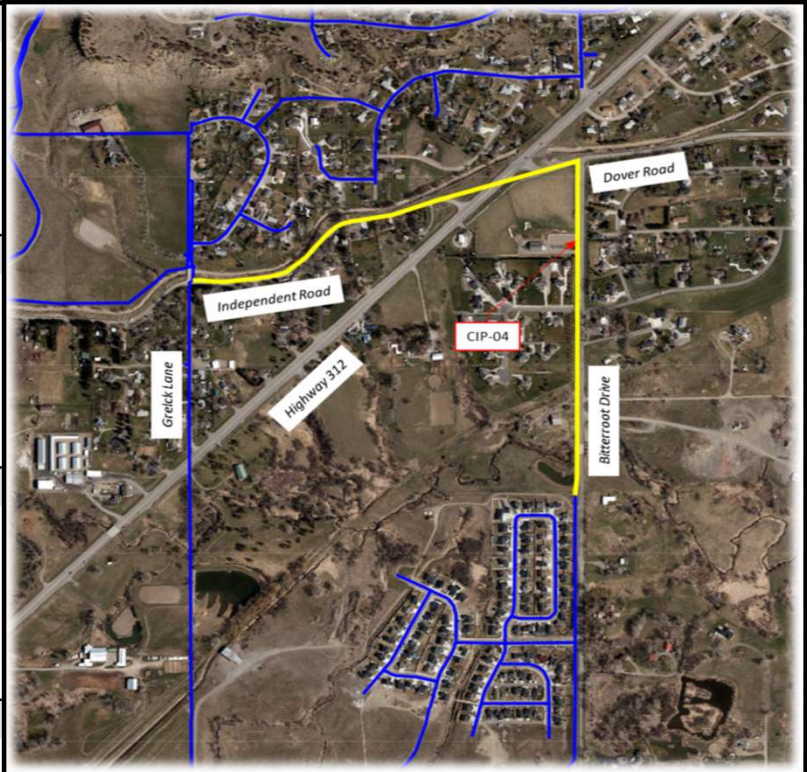
**Impact on annual operating budget:**

Minimal impact; general maintenance of pipeline and appurtenances.

**Additional Comments:**

N/A

<b>Potential Funding Sources:</b>	<b>Priority Level:</b>
Drinking Water State Revolving Fund (DWSRF)	<b>3</b>



Estimated Project Costs				
FY	Engineering, Planning, Design	Construction	Other	Total
2023				
2024				
2025				
2026				
2027				
2028	\$330,000			\$330,000
2029	\$340,000	\$3,400,000		\$3,740,000
2030				
2031				
2032				
<b>Total</b>	<b>\$670,000</b>	<b>\$3,400,000</b>		<b>\$4,070,000</b>



Project Title	Bitterroot from Barrett to Mary	Project Category	Pipelines
Project ID	CIP-05	Subcategory	Transmission
Estimated Total Project Cost	<b>\$1,800,000</b>	Project Type	New Construction

**Project Description**

Construct a new 12" grid main along Bitterroot Drive between Barrett Road and Mary Street, forming a major loop within the system.

**Why this project needs to be completed:**

Project will remove dead ends and complete a major loop within the system.

**How this project will benefit the District:**

Better overall system operability, water quality, and increase capability for growth near the future Billings Bypass corridor. Loop will also provide nearby existing neighborhoods a direct opportunity to be annexed into the CWDBH.

**Consequences of delaying or eliminating this project:**

Lack of preparedness for growth near new Billings Bypass corridor. Continued dead-ends of grid mains in system.

**Impact on annual operating budget:**

Minimal impact; general maintenance of pipeline and appurtenances.


**Additional Comments:**


N/A

<b>Potential Funding Sources:</b>	<b>Priority Level:</b>
Drinking Water State Revolving Fund (DWSRF)	<b>3</b>



Estimated Project Costs				
FY	Engineering, Planning, Design	Construction	Other	Total
2023				
2024				
2025				
2026	\$150,000			\$150,000
2027	\$150,000	\$1,500,000		\$1,650,000
2028				
2029				
2030				
2031				
2032				
<b>Total</b>	<b>\$300,000</b>	<b>\$1,500,000</b>		<b>\$1,800,000</b>

Project Title		Reservoir Management System		Project Category		Facilities	
Project ID		CIP-06		Subcategory		Monitoring Equipment	
Estimated Total Project Cost		\$1,370,000		Project Type		New Construction	
Project Description							
Install a means to remotely and automatically monitor and boost chlorine levels in the existing water storage reservoirs (Lanier and Hilltop).							
Why this project needs to be completed:							
The ability to chlorinate at each reservoir will provide the system with additional protection against low-chlorine residuals, increased monitoring or system, operational flexibility in periods of low usage.							
How this project will benefit the District:							
Reduce the risk of non-compliance due to low chlorine residuals and eliminate the need for manual chlorination procedures if low residuals are detected.							
Consequences of delaying or eliminating this project:							
Continued risk of low chlorine residuals during low usage periods or in the event of chlorine injection failure in the supplied water from the City of Billings.							
Impact on annual operating budget:							
Power consumption will increase at the reservoir facilities to power the equipment. Regular deliveries of bulk sodium hypochlorite will be required for injection, as necessary.							
Additional Comments:				Estimated Project Costs			
This project is an expansion upon the existing reservoir management system program as initiated at the Ox Bow reservoir. A similar configuration will be used at the Hilltop and Lanier. This may be completed as a single project, or broken up to install at Hilltop first, then Lanier.							
Potential Funding Sources:		Priority Level:					
Drinking Water State Revolving Fund (DWSRF)		3					
				</			

Project Title		Assess Condition of Existing Pipelines		Project Category		Pipelines																																																																		
Project ID		CIP-07		Subcategory		Distribution																																																																		
Estimated Total Project Cost		\$210,000		Project Type		Report or Study																																																																		
Project Description																																																																								
Perform a targeted, preliminary study of a sampling of the District's existing pipeline infrastructure to determine potential problem areas to guide future improvement scopes, schedules, and budgets. Utilization of acoustic sensor technology (such as Mueller ePulse) will provide pipeline wall condition while simultaneously checking for leaks. This technology can assess the condition of asbestos cement and metallic pipe materials. This project represents a preliminary assessment of strategically selected locations to determine if specific areas require additional investigation and/or results will aid in the development of an effective replacement schedule.																																																																								
Why this project needs to be completed:																																																																								
Aging pipelines throughout the District have unknown conditions and present potential issues in the near future.																																																																								
How this project will benefit the District:																																																																								
Assessment of pipeline condition will provide basis for schedule and priority for replacement to efficiently utilize funds slated for annual replacement.																																																																								
Consequences of delaying or eliminating this project:																																																																								
Failure to complete conditions assessment may result in lower priority pipelines being replaced before the end of their useful life.				<table><tr><th colspan="5">Estimated Project Costs</th></tr><tr><th>FY</th><th>Engineering, Planning, Design</th><th>Construction</th><th>Other</th><th>Total</th></tr><tr><td>2023</td><td></td><td></td><td></td><td></td></tr><tr><td>2024</td><td></td><td></td><td></td><td></td></tr><tr><td>2025</td><td>\$60,000</td><td>\$150,000</td><td></td><td>\$210,000</td></tr><tr><td>2026</td><td></td><td></td><td></td><td></td></tr><tr><td>2027</td><td></td><td></td><td></td><td></td></tr><tr><td>2028</td><td></td><td></td><td></td><td></td></tr><tr><td>2029</td><td></td><td></td><td></td><td></td></tr><tr><td>2030</td><td></td><td></td><td></td><td></td></tr><tr><td>2031</td><td></td><td></td><td></td><td></td></tr><tr><td>2032</td><td></td><td></td><td></td><td></td></tr><tr><td>Total</td><td>\$60,000</td><td>\$150,000</td><td></td><td>\$210,000</td></tr></table>				Estimated Project Costs					FY	Engineering, Planning, Design	Construction	Other	Total	2023					2024					2025	\$60,000	\$150,000		\$210,000	2026					2027					2028					2029					2030					2031					2032					Total	\$60,000	\$150,000		\$210,000
Estimated Project Costs																																																																								
FY	Engineering, Planning, Design	Construction	Other					Total																																																																
2023																																																																								
2024																																																																								
2025	\$60,000	\$150,000		\$210,000																																																																				
2026																																																																								
2027																																																																								
2028																																																																								
2029																																																																								
2030																																																																								
2031																																																																								
2032																																																																								
Total	\$60,000	\$150,000		\$210,000																																																																				
Impact on annual operating budget:																																																																								
No direct impact. Results-driven pipe replacement may reduce future maintenance costs.																																																																								
Additional Comments:																																																																								
Estimated Project Cost is based on testing approximately 30,000 LF of piping throughout the District.																																																																								
Potential Funding Sources:		Priority Level:		<div>2</div>																																																																				
Drinking Water State Revolving Fund (DWSRF)																																																																								



Project Title	Aging Watermain Replacement Program	Project Category	Pipelines
Project ID	CIP-08	Subcategory	Distribution
Estimated Total Project Cost	<b>\$4,100,000</b>	Project Type	Replacement

**Project Description**

Implement a scheduled replacement program for asbestos-cement pipe throughout the District. The District's current GIS information depicts approximately 77,000 LF of AC pipe throughout the system; additional AC pipe length may be identified through a Atlas and GIS update. This project summary (and associated cost) assumes a 50-year program duration. This equates to 2-percent of the AC pipe to be replaced year-to-year.

**Why this project needs to be completed:**

Aging asbestos-cement pipe located within the District is approaching the end of its useful life. Replacement of all AC pipe throughout the District will likely be required within the next 50 years.

**How this project will benefit the District:**

By implementing a proactive replacement program, problematic pipe can be replaced gradually prior to major issues surfacing throughout the District.

**Consequences of delaying or eliminating this project:**

Delaying implementation of this program will result in additional lengths of pipe that need to be replaced year to year prior to the end of the useful life. Future regulations for the replacement of AC pipe may become more restrictive; resulting in significant additional costs.

**Impact on annual operating budget:**

Due to the size and nature of this project, a yearly budget allocation should be assigned to this program.

**Additional Comments:**

A yearly budget allocation will allow for quick action if road/street construction presents an opportunity for concurrent replacement.

Note: The total estimated cost represents 5 years of amortized replacement costs at ~1,500 LF/year.

<b>Potential Funding Sources:</b>	<b>Priority Level:</b>
Drinking Water State Revolving Fund (DWSRF)	<b>3</b>



Estimated Project Costs				
FY	Engineering, Planning, Design	Construction	Other	Total
2023				
2024				
2025				
2026				
2027				
2028	\$120,000	\$700,000		\$820,000
2029	\$120,000	\$700,000		\$820,000
2030	\$120,000	\$700,000		\$820,000
2031	\$120,000	\$700,000		\$820,000
2032	\$120,000	\$700,000		\$820,000
<b>Total</b>	<b>\$600,000</b>	<b>\$3,500,000</b>		<b>\$4,100,000</b>

Project Title	Dedicated Fill Line for Lanier Reservoir	Project Category	Pipelines
Project ID	CIP-09	Subcategory	Transmission
Estimated Total Project Cost	<b>\$640,000</b>	Project Type	New Construction

**Project Description**

Add a tee, gate valve, and check valve to the existing inlet line to the Lanier reservoir to configure dedicated fill and discharge lines from the tank. Reconfigure suction line from the Lanier Pump Station to draw from upstream of the new check valve to ensure water turnover in the tank.

**Why this project needs to be completed:**

New configuration will ensure water turnover in the tank and reduce issues associated with water aging.

**How this project will benefit the District:**

Project will help maintain chlorine residuals and reduce water aging issues by ensuring proper flow through the tank.

**Consequences of delaying or eliminating this project:**

Potential water aging and low chlorine residuals if water in tank is not turned over adequately.

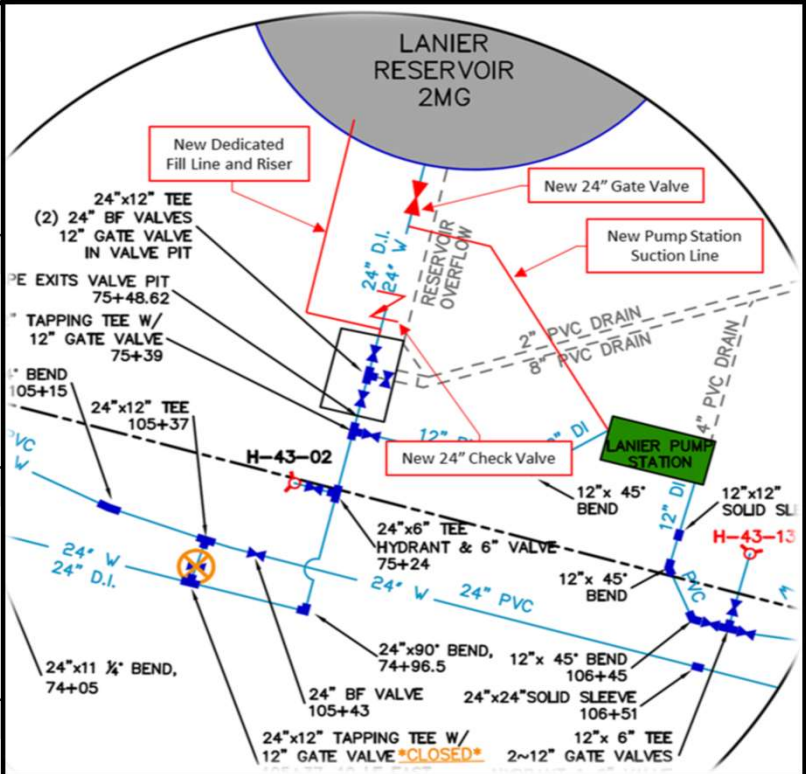
**Impact on annual operating budget:**

Minimal impact; general maintenance of additional valves and power consumption associated with heat tracing of external fill line.

**Additional Comments:**

N/A

<b>Potential Funding Sources:</b>	<b>Priority Level:</b>
Drinking Water State Revolving Fund (DWSRF)	4



Estimated Project Costs				
FY	Engineering, Planning, Design	Construction	Other	Total
2023				
2024				
2025				
2026				
2027	\$140,000	\$500,000		\$640,000
2028				
2029				
2030				
2031				
2032				
<b>Total</b>	<b>\$140,000</b>	<b>\$500,000</b>		<b>\$640,000</b>

Project Title	Ultrasonic Meters at Hilltop & Lanier	Project Category	Pipelines
Project ID	CIP-10	Subcategory	Monitoring Equipment
Estimated Total Project Cost	<b>\$130,000</b>	Project Type	New Construction

**Project Description**

Install non-invasive, ultrasonic flow meters on the discharge lines for the Hilltop and Lanier reservoirs.

**Why this project needs to be completed:**

Addition of flow meters will provide better system monitoring of outflows from the District's existing reservoirs.

**How this project will benefit the District:**

Constant flow monitoring will provide valuable water use tracking information for future distribution network improvements and verify system operations.

**Consequences of delaying or eliminating this project:**

Continued lack of meaningful data usage from these two tanks.

**Impact on annual operating budget:**

Minimal impact; general maintenance of system components.

**Additional Comments:**


N/A

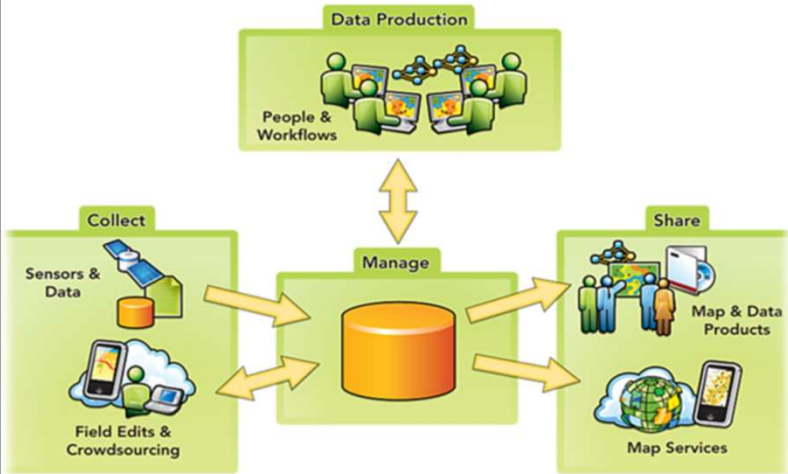
<b>Potential Funding Sources:</b>	<b>Priority Level:</b>
	<b>4</b>




Estimated Project Costs				
FY	Engineering, Planning, Design	Construction	Other	Total
2023				
2024				
2025				
2026				
2027				
2028				
2029	\$20,000	\$110,000		\$130,000
2030				
2031				
2032				
<b>Total</b>	<b>\$20,000</b>	<b>\$110,000</b>		<b>\$130,000</b>



Project Title		Update GIS Attributes		Project Category		Administration		
Project ID		CIP-11		Subcategory		GIS		
Estimated Total Project Cost		\$150,000		Project Type		New Construction		
Project Description								
Add and update current infrastructure attributes in existing Geographical Information System (GIS) database. Information collected from as-built files and record drawing information as well as field observations should be collected and added to the GIS database. The current GIS as of 2021, is functioning using ArcGIS Online, (AGOL), a cloud-based Software as a Service, (SaaS) made by a software company named ESRI. The District is managing their GIS on their own AGOL organizational account.								
Why this project needs to be completed:								
Most of the attribute fields in the GIS database have no information in them. It is recommended the District gets the present attribute information fully completed and updated.								
How this project will benefit the District:								
Significantly increase the effectiveness of the existing GIS database into which the District has already dedicated substantial time and resources. Useful as a tool to manage the Districts' assets by tracking maintenance and inspection histories.								
Consequences of delaying or eliminating this project:								
Only 50% of the effectiveness of the GIS will be realized.								
Impact on annual operating budget:				Estimated Project Costs				
Any estimated annual cost increases would be minimal and likely be superseded by the efficiency savings.								
Additional Comments: Ongoing efforts are being made to update the spatial and attribute information of the infrastructure the District owns and manages using their SaaS solution coupled with an EOS Arrow Gold GPS. With these two technologies the District field operations staff can update, add, and remove data with high accuracy while the District's management staff can see the updates in real time on their desktop application.				FY	Engineering, Planning, Design	Construction	Other	Total
				2023				
				2024				
				2025				
				2026				
				2027	\$150,000			\$150,000
				2028				
				2029				
				2030				
				2031				
2032								
Potential Funding Sources:		Priority Level:		Total	\$150,000			\$150,000
		4						

Project Title		GIS: Digital Workflows		Project Category		Administration																																																																		
Project ID		CIP-12		Subcategory		GIS																																																																		
Estimated Total Project Cost		\$150,000		Project Type		New Construction																																																																		
Project Description																																																																								
Identify, outline, and document current workflows and processes which support the District’s existing asset management functions. Once compiled and verified the “paper” methods can become conceptual “digital” systems for asset management that can be then built using available AGOL application tools and functions in conjunction with the present GIS infrastructure, creating an Asset Management System, (AMS). Assets can begin to be managed with digital processes, maintenances or repairs can be tracked with task-based workflows, and inspections done with online forms.																																																																								
Why this project needs to be completed:																																																																								
Current workflows are paper based and siloed in their respective departments.																																																																								
How this project will benefit the District:																																																																								
Workflows that are migrated to digital methods standardize processes, automate mundane procedures, and keep field and office staff integrated. Standardized processes have less errors and are more efficient. Automated procedures support efficiency and simplicity. Integrated staff helps the overall business operations stay in sync.																																																																								
Consequences of delaying or eliminating this project:																																																																								
The lack of an effective staff knowledge transfer and succession process will increase overhead by 25%																																																																								
Impact on annual operating budget:				<table><tr><th colspan="5">Estimated Project Costs</th></tr><tr><th>FY</th><th>Engineering, Planning, Design</th><th>Construction</th><th>Other</th><th>Total</th></tr><tr><td>2023</td><td></td><td></td><td></td><td></td></tr><tr><td>2024</td><td></td><td></td><td></td><td></td></tr><tr><td>2025</td><td></td><td></td><td></td><td></td></tr><tr><td>2026</td><td></td><td></td><td></td><td></td></tr><tr><td>2027</td><td></td><td></td><td></td><td></td></tr><tr><td>2028</td><td></td><td></td><td></td><td></td></tr><tr><td>2029</td><td>\$150,000</td><td></td><td></td><td>\$150,000</td></tr><tr><td>2030</td><td></td><td></td><td></td><td></td></tr><tr><td>2031</td><td></td><td></td><td></td><td></td></tr><tr><td>2032</td><td></td><td></td><td></td><td></td></tr><tr><td>Total</td><td>\$150,000</td><td></td><td></td><td>\$150,000</td></tr></table>				Estimated Project Costs					FY	Engineering, Planning, Design	Construction	Other	Total	2023					2024					2025					2026					2027					2028					2029	\$150,000			\$150,000	2030					2031					2032					Total	\$150,000			\$150,000
Estimated Project Costs																																																																								
FY	Engineering, Planning, Design	Construction	Other					Total																																																																
2023																																																																								
2024																																																																								
2025																																																																								
2026																																																																								
2027																																																																								
2028																																																																								
2029	\$150,000			\$150,000																																																																				
2030																																																																								
2031																																																																								
2032																																																																								
Total	\$150,000			\$150,000																																																																				
Any estimated annual cost increases would be minimal and likely be superseded by the efficiency savings.																																																																								
Additional Comments:																																																																								
The highest and best use of GIS is to leverage its capacity to make workflows digitally streamlined. This makes it a consistent resource for all users as a system of record keeping and tracking as well as a reliable tool for analysis and modeling of future growth efforts.																																																																								
Potential Funding Sources:		Priority Level:		4																																																																				

Project Title	GIS Support/Data Workflow Maintenances	Project Category	Administration
Project ID	CIP-13	Subcategory	GIS
Estimated Total Project Cost	\$690,000	Project Type	New Construction
Project Description			
The District should have a long-term data maintenance plan that ensures the sustained longevity and useful leveraging of the GIS remains. Continuous data updates, technical software support, and workflow maintenances would be the focus.			
Why this project needs to be completed:			
A long-term data maintenance solution doesn't currently exist.			
How this project will benefit the District:			
Having reliable support and maintenance ensures the day-to-day operations of the District continue to move consistently and dependably. The District can rely on having skilled professionals to keep them running smoothly and resourcefully.			
Consequences of delaying or eliminating this project:			
The lack of long-term data maintenances planning will undermine current investments and sabotage long-term success.			
Impact on annual operating budget:		Estimated Project Costs	
An estimated annual cost increases would be minimal.			
Additional Comments:			
From daily routines to long-term planning a mature GIS will bring the District the tools and information needed to operate at its optimum capacity. Looking to the future based on present day knowledge it is recommended that the District take a comprehensive and systematic approach to an intended goal of getting their workflows digitally architected.			
Potential Funding Sources:	Priority Level:		
	4		
		</	

Project Title	Emergency Generation	Project Category	Facilities
Project ID	CIP-14	Subcategory	Equipment
Estimated Total Project Cost	<b>\$75,000</b>	Project Type	New Construction

**Project Description**

Procure a mobile, emergency generator capable of powering the jockey pump at Hawthorne pump station or Hilltop booster pump station to be mobilized in the event of grid power failure at either site.

**Why this project needs to be completed:**

Several booster stations located throughout the District are necessary to maintain adequate pressures to certain neighborhoods in the service area. A wide-sweeping and extended power outage could result in low pressures in the system in such an event.

**How this project will benefit the District:**

Supplementing the District's auxilliary power fleet will provide additional protections against extented power outages within the service area; potentially preventing necessary boil-orders as a result of low pressures in the distribution system.

**Consequences of delaying or eliminating this project:**

Continued risk of low-pressure scenarios in the event of a large-scale power outage.

**Impact on annual operating budget:**

Minimal impact. Regular maintenance on the equipment will be required. Minor additional fuel costs.



**Additional Comments:**

N/A

**Potential Funding Sources:**

**Priority Level:**

**4**

Estimated Project Costs				
FY	Engineering, Planning, Design	Construction	Other	Total
2023				
2024				
2025				
2026				
2027				
2028			\$75,000	\$75,000
2029				
2030				
2031				
2032				
<b>Total</b>			\$75,000	\$75,000

Project Title	Equipment Storage Building	Project Category	Facilities
Project ID	CIP-15	Subcategory	<i>Buildings</i>
Estimated Total Project Cost	<b><i>\$920,000</i></b>	Project Type	New Construction

**Project Description**

Construct a new 4,000 SF equipment and material storage building on the District's office property. This will also require relocation of stored materials to a new offsite cold-storage area.

**Why this project needs to be completed:**  
 Due to a limited number of usable bays in the existing facility, several vehicles are required to be stored outside in the elements. As the District's fleet grows, additional enclosed storage will be required for diesel equipment and other materials.

**How this project will benefit the District:**  
 Additional enclosed storage will provide additional security for the District's vehicles and stored materials.

**Consequences of delaying or eliminating this project:**  
 Continued exposure of equipment to weather leading to faster degradation and hard-starting of diesel engines.

**Impact on annual operating budget:**  
 Minimal impact; additional heating and power consumption costs for the additional building.

**Additional Comments:**  
 Reference **CIP-14** for information regarding new cold-storage location.

<b>Potential Funding Sources:</b>	<b>Priority Level:</b>
	<b>4</b>



Estimated Project Costs				
FY	Engineering, Planning, Design	Construction	Other	Total
2023				
2024				
2025				
2026				
2027	\$120,000	\$800,000		\$920,000
2028				
2029				
2030				
2031				
2032				
<b>Total</b>	<b>\$120,000</b>	<b>\$800,000</b>		<b>\$920,000</b>



Project Title	Cold-Storage Yard at Ox Bow Tank Site	Project Category	Facilities
Project ID	CIP-16	Subcategory	<i>Buildings</i>
Estimated Total Project Cost	<b>\$70,000</b>	Project Type	New Construction

**Project Description**

Develop and install security fence around approximately 0.5 acres of the existing Ox Bow Reservoir site as a cold-storage yard for materials and equipment.

**Why this project needs to be completed:**

Adding cold-storage space at this location will allow for materials to be removed from the main shop yard and free up area for additional improvements at that location.

**How this project will benefit the District:**

Moving long-term stored materials to a secure, offsite location will free up space and allow for more productive use of the of main facility property.

**Consequences of delaying or eliminating this project:**

Continued storage of materials at main facility location resulting in less space for improvements.

**Impact on annual operating budget:**

Minimal impact to operating budget. Maintenance of yard surfacing may be required periodically.

**Additional Comments:**

N/A

<b>Potential Funding Sources:</b>	<b>Priority Level:</b>
	<b>3</b>



Estimated Project Costs				
FY	Engineering, Planning, Design	Construction	Other	Total
2023				
2024				
2025	\$20,000	\$50,000		\$70,000
2026				
2027				
2028				
2029				
2030				
2031				
2032				
<b>Total</b>	<b>\$20,000</b>	<b>\$50,000</b>		<b>\$70,000</b>



Project Title	Shop Addition with 2-Ton Bridge Crane	Project Category	Facilities
Project ID	CIP-17	Subcategory	<i>Buildings</i>
Estimated Total Project Cost	<b><i>\$370,000</i></b>	Project Type	New Construction

Project Description
Construct an addition onto the rear bay of the existing shop building and install an integral 2-ton bridge crane for material handling purposes.

Why this project needs to be completed:
The current final bay in the existing shop building is nearly unusable for equipment or material storage due to the partition wall that separates the rest of the shop. Adding additional space to that bay will create a much more usable space for protected storage.
How this project will benefit the District:
Increased interior storage space will prolong the life of equipment and materials, keep equipment warm during winter months, and add a level of security in the prevention of vandalism and theft. Addition of a bridge crane will lead to greater productivity.
Consequences of delaying or eliminating this project:
Continued sub-optimal use of interior space within the existing shop.
Impact on annual operating budget:
Minimal impact; increased heated storage area may result in slightly higher heating bills at the main facility.



in slightly higher heating bills at the main facility.		Estimated Project Costs				
		FY	Engineering, Planning, Design	Construction	Other	Total
		2023				
		2024				
		2025				
		2026				
		2027				
		2028				
		2029				
		2030	\$50,000	\$320,000		\$370,000
2031						
2032						
Additional Comments: N/A		Total	\$50,000	\$320,000		\$370,000
Potential Funding Sources:	Priority Level:  4					

Project Title	5 Year Update to CIP	Project Category	Administration
Project ID	CIP-18	Subcategory	CIP
Estimated Total Project Cost	<b>\$90,000</b>	Project Type	Report or Study

Project Description
Perform a 5-year update to the Capital Improvements Plan (CIP) to incorporate completed projects, priority adjustments, budgetary considerations, changing forecasts and growth patterns, and evaluate potential future projects.

Why this project needs to be completed:
The CIP should be a living document with regular updates to accommodate changing conditions or projections regarding the service area and goals of the District.

How this project will benefit the District:
Maintaining a current and relevant CIP will provide the District's leadership with guidance for planning and budgeting relative to the District's growth. A current CIP may also be used, and sometimes required, in grant or loan funding applications.

Consequences of delaying or eliminating this project:
As CIP's age and due to changing conditions, there is potential for projects to require priority status change or become a sub-optimal solution to a given challenge. Regular updates will provide an opportunity to re-evaluate and add projects as the need arises.

Impact on annual operating budget:
No impact.

Additional Comments:
N/A

Potential Funding Sources:	Priority Level:
Montana Coal Endowment Program	4



Estimated Project Costs				
FY	Engineering, Planning, Design	Construction	Other	Total
2023				
2024				
2025				
2026				
2027				
2028	\$90,000			\$90,000
2029				
2030				
2031				
2032				
Total	\$90,000			\$90,000

Project Title	Rate Study	Project Category	Administration
Project ID	CIP-19	Subcategory	Rate Study
Estimated Total Project Cost	<b>\$130,000</b>	Project Type	Report or Study

**Project Description**

Perform a comprehensive rate study and evaluation as a 10-year update to the water rate schedule to address the true cost of supplying water to the District's service area residents.

**Why this project needs to be completed:**

Aging water and service rates without regular evaluation or updates can result in operating at a financial deficit due to costs associated with purchasing water, maintaining the District's assets, and many other considerations.

**How this project will benefit the District:**

Regular evaluation and updates to the water and service rates will ensure that the District's cost basis for operation is covered and mitigate the risk of required major rate hikes from year to year.

**Consequences of delaying or eliminating this project:**

The greater the time interval between rate studies increases the risk that operating costs are not being covered and can prevent potential growth and lead to inadequate service to existing residents.

**Impact on annual operating budget:**

No impact.

**Additional Comments:**

N/A

<b>Potential Funding Sources:</b>	<b>Priority Level:</b>
	<b>3</b>



Estimated Project Costs				
FY	Engineering, Planning, Design	Construction	Other	Total
2023				
2024				
2025				
2026				
2027	\$130,000			\$130,000
2028				
2029				
2030				
2031				
2032				
<b>Total</b>	<b>\$130,000</b>			<b>\$130,000</b>

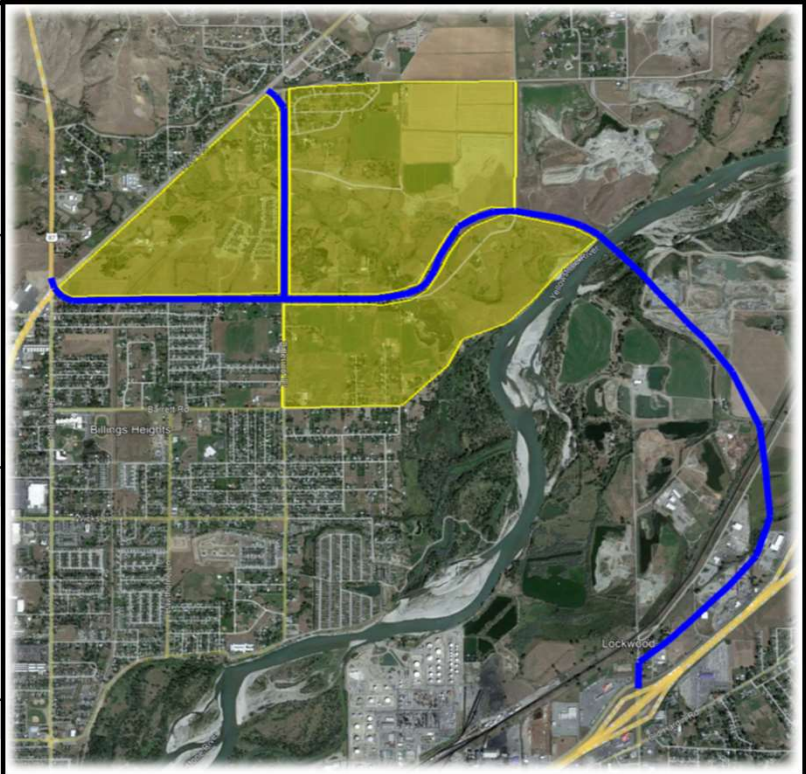
Project Title	Billings Bypass Planning Area Study	Project Category	Administration
Project ID	CIP-20	Subcategory	Overall System
Estimated Total Project Cost	<b>\$80,000</b>	Project Type	Report or Study

Project Description
Perform a comprehensive study regarding the potential impact of the new Billings Bypass corridor and projected areas of development on the planning area of the District including existing and future infrastructure.

Why this project needs to be completed:
With the upcoming completion of the Billings Bypass connector between the Heights and Lockwood, this corridor will assuredly experience heavy growth in the near future. Forecasting and preparing for growth will be necessary to ensure adequate water service is provided.
How this project will benefit the District:
Preparedness for the forecasted growth and projected impacts will allow the District to properly budget and plan required installations to accommodate expansion along the corridor and play an integral part in promoting growth in the area.
Consequences of delaying or eliminating this project:
Failure to properly plan for growth may lead to budgetary constraints and limit or delay service to potential residential or commercial customers and/or may inhibit growth of the corridor due to lack of water services.
Impact on annual operating budget:
No direct impact; however, study results and associated planning and implementation measures are likely to result in long-term cost savings regarding adequate sizing of infrastructure and appropriate rate structure to accommodate future development.

Additional Comments:
N/A

Potential Funding Sources:	Priority Level:
	3



Estimated Project Costs				
FY	Engineering, Planning, Design	Construction	Other	Total
2023				
2024				
2025	\$80,000			\$80,000
2026				
2027				
2028				
2029				
2030				
2031				
2032				
Total	\$80,000			\$80,000



Project Title	4MG Ox Bow II Reservoir	Project Category	Facilities
Project ID	CIP-21	Subcategory	Reservoirs
Estimated Total Project Cost	<b>\$8,040,000</b>	Project Type	New Construction

**Project Description**

Installation of a new 4MG storage reservoir near the existing Ox Bow reservoir to supplement storage capacity throughout the system.

**Why this project needs to be completed:**

Experienced and continued growth in the northern portion of the District will require additional storage capacity to maintain domestic demand, fire flow, and adequate system pressures.

**How this project will benefit the District:**

Additional and redundant storage will accommodate demand growth, provide adequate fire flow/emergency storage, and increase reliability of the system overall.

**Consequences of delaying or eliminating this project:**

Will prohibit growth within the District due to insufficient supply and ability to meet domestic demands, fire flow, and emergency storage capacity.

**Impact on annual operating budget:**

Minimal impact; periodic tank inspections and general maintenance will be required.

**Additional Comments:**

N/A

**Potential Funding Sources:**

Drinking Water State Revolving Fund (DWSRF)

**Priority Level:**

**5**



Estimated Project Costs				
FY	Engineering, Planning, Design	Construction	Other	Total
2023				
2024				
2025				
2026				
2027				
2028				
2029				
2030				
2031	\$340,000			\$340,000
2032	\$700,000	\$7,000,000		\$7,700,000
<b>Total</b>	<b>\$1,040,000</b>	<b>\$7,000,000</b>		<b>\$8,040,000</b>