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WATER PRELIMINARY ENGINEERING REPORT

TOWN OF GERALDINE PUBLIC HEARING – APRIL 19, 2022



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WHY ARE WE HERE & OUTLINE

- » Town Identified Water System Needs
- » ARPA Grant Applied
- » Planning Grants Obtained
- » Explain the PER Process
- » Show Water Problems & Alternatives
- » Summarize Environmental Assessment (EA) Potential Impacts
- » Go over Funding and Potential Rate Impacts
- » Take Public Comment





PRELIMINARY ENGINEERING REPORT

- » What is a PER
 - » Technical and Planning
 - » Required by Funding Agencies to Apply for Grants
 - » Defines Current and Future Projects
 - » Looks at Entire System
- » Evaluates Alternatives to Remedy Issues
- » Establishes Costs and Funding Scenarios
- » Develops Implementation Schedule





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PLANNING AREA

- » Study Area:
 - » Source through Distribution





EVALUATION OF EXISTING SEWER SYSTEMPOPULATION

Year	Geraldine	% Annual Increase	Chouteau County	% Annual Increase
1990 ⁽¹⁾	299	-	5,468	-
2000(1)	285	-4.5%	6,062	11.0%
2010(1)	261	-8.4%	5,818	-4.0%
2020(1)	207	-20.7%	5,895	1.4%
2020 ⁽²⁾	61			
Average	-	-11.2%	-	2.8%
2042 ⁽³⁾	231	0.50%	-	-
2042 ⁽⁴⁾	292	-	-	-

- (1) US Census Bureau (In-Town Population)
- (2) Out-of-Town usage population
- (3) Population of Town at Design Year (2042) estimated from 2020 Census at 0.5% Annual Growth
- (4) Design Population of Water System Service Area (In Town plus Out-of-Town)



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EVALUATION OF EXISTING WATER SYSTEM

» Evaluation Methods

- » Site Visits/Investigations
- » Historical Information, As Builts
- » First-Hand Accounts

» History

- » Original Water System, Early 1900s
- » AC Mains/Distribution 1950s
- » Springs Developed, Transmission 1980s
- » Concrete Tank Constructed 2004
- » No Major Capital Project Upgrades Done on Distribution System in Recent History
- » Repairs are Done as Needed
- » Corrective Actions for Disinfection





EVALUATION OF EXISTING WATER SYSTEM – SOURCE (SPRINGS)

WATER RIGHTS AND AGREEMENTS



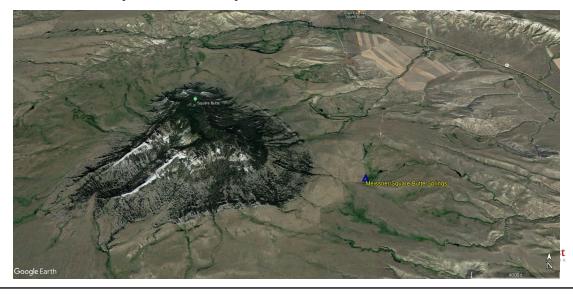


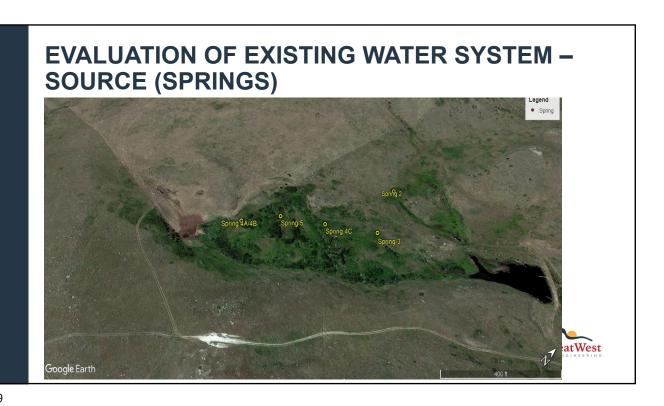
- 1985-1986
- 250 gpm
- 400 acre-feet/year



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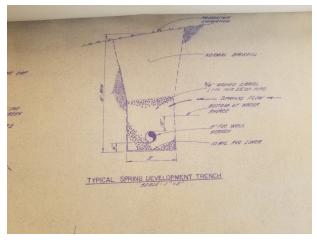
EVALUATION OF EXISTING WATER SYSTEM – SOURCE (SPRINGS)

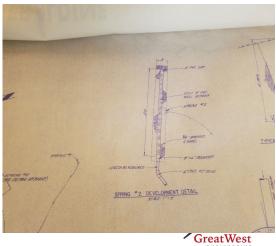






EVALUATION OF EXISTING WATER SYSTEM – SOURCE (SPRINGS)





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EVALUATION OF EXISTING WATER SYSTEM – SOURCE (SPRINGS)





EVALUATION OF EXISTING WATER SYSTEM -SOURCE (SPRINGS)





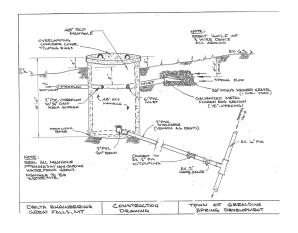
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EVALUATION OF EXISTING WATER SYSTEM -SOURCE (SPRINGS)





EVALUATION OF EXISTING WATER SYSTEM – SOURCE (SPRINGS)

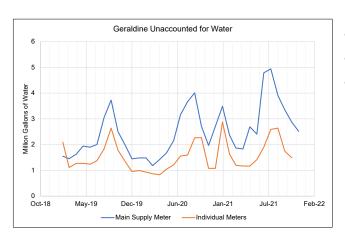






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EVALUATION OF EXISTING WATER SUPPLY – DEMANDS/USAGE

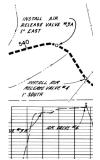


- Average Annual Usage: 82,000 gpd
- 20-60% water loss (38% Avg.)
- Hawarden, Square Butte and Geraldine North can use up to 20-40% of Water Demands



EVALUATION OF EXISTING WATER SYSTEM —
TRANSMISSION
Figure 3-1 Overall We Cholean County, In

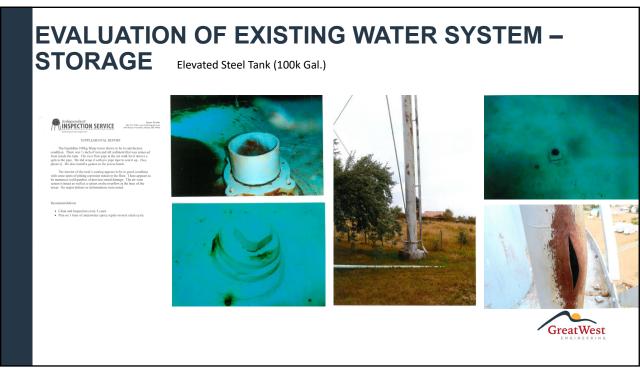
- Over 12 miles of 6" PVC Transmission Mains
- 3 PRV Stations
- Several ARVs
- Connections for Rural Connections (metered)







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EVALUATION OF EXISTING WATER SYSTEM -STORAGE

On Grade Concrete Tank (200k Gal.)







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EVALUATION OF EXISTING WATER SYSTEM -TREATMENT



- 2 Vaults (Confined Space)
- Degrading/Corroded Shed Space





EVALUATION OF EXISTING WATER SYSTEM – DISTRIBUTION

Summary of the Existing Water Mains in					
Geraldine					
Pipe Size and	Approximate Existing Length				
Material	(ft.)				
2" Plastic	1,430				
3" AC	790				
4" AC	11,590				
6" AC	5,350				
8" AC	1,000				
6" PVC	2,000				
8" PVC	1,710				
Total	23,870				

- 78% AC mains
- 52% 4" and smaller AC





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EVALUATION OF EXISTING WATER SYSTEM – DISTRIBUTION

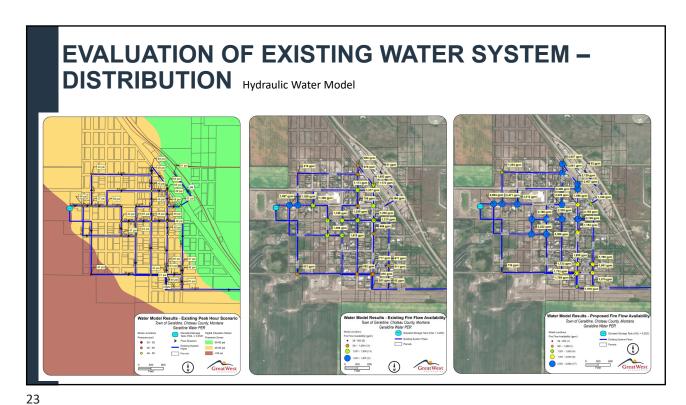






- AC Mains leaking/cracking mains, undersized
- · Lack of functioning valves
- Corroding Fittings
- Diminished Fire Flow
- Low Pressures





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ALTERNATIVES EVALUATION - SPRINGS

PHASE 1

- » MONITOR and measure individual spring flows monthly (no cost)
- » PROTECT spring area by fencing out livestock (\$10-15,000)
 - » Can be done by Town

PHASE 2

- » **RESTORE** Spring 5 collection system (\$110-\$125k)
- » Include Budget in Grant Application (to be available in 2 years)
 - » S-2: Phase 2 Springs Assessment, and Spring 5 Restoration

PHASE 3

- » **PRESERVE** spring collectors (\$125-175k To Be Determined)
 - » Remove topsoil and vegetation
 - » Install protective liner to prevent surface water infiltration
 - » Cap with surface seal (clay and gravel)



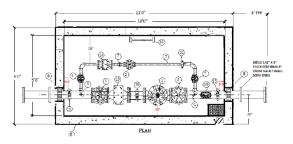
ALTERNATIVES EVALUATION - TRANSMISSION

Total Project Estimates

» R-1: No Action

» R-2: Replace PRVs and ARVs - \$408k

» 3 PRV Stations, 14 ARVs







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ALTERNATIVES EVALUATION - STORAGE

Total Project Estimates

» R-1: No Action

» R-2: Repair Water Tanks - \$186k

» Line conc. tank to full depth, erosion mat/fill at tank, epoxy patch elev. tank

» R-3: New 210,000 gal On-Grade Concrete Storage Tank - \$2.9 mil.

» Considerations: Location, Transmission pipe, Land, Concrete Vs Steel





ALTERNATIVES EVALUATION - TREATMENT

Total Project Estimates

» T-1: No Action

» T-2: New Chlorination Station - \$378k







	BID ITEM	QTY	UNITS	HIN	IIT PRICE 1	TOTAL
1	New Equipment Building	140	SF	\$	425.00	\$ 59.5
2	Sitework & Grading	1	LS	\$	10,000.00	\$ 10,0
3	4" DI Pipe	30	LF	\$	40.00	\$ 1.2
4	6" 90" elbows	4	EA	\$	1,000.00	\$ 4,0
5	6" x 18" Spool	1	EA	\$	1,000.00	\$ 1,0
6	6" x 12" Spool	2	EA	\$	1,000.00	\$ 2,0
7	6" to 3" Reducer	2	EA	\$	1,000.00	\$ 2,0
8	6" Check Valve	1	EA	\$	1,500.00	\$ 1,5
9	6" Gate Valve	2	EA	\$	2,000.00	\$ 4,0
10	11/2" Pressure Relief Valve	1	EA	\$	1,500.00	\$ 1,5
11	T Air Vacuum Valve	1	EA	\$	1,500.00	\$ 1,5
12	Sample Tap	1	EA	\$	500.00	\$ 5
13	4" Flow Meter	1	EA	\$	5,000.00	\$ 5,0
14	Backup Generator & Transfer Swtich	1	EA	\$	40,000.00	\$ 40,0
15	Furnish and Install Chlorination System & Safety Equipment	1	LS	\$	25,000.00	\$ 25,0
16	HVAC	1	LS	\$	5,000.00	\$ 5.0
17	Electrical	1	LS	\$	20.000.00	\$ 20.0
18	System	1	LS	\$	15,000.00	\$ 15,0
	Direct Construction Subtotal			_	,	\$ 199,0
	Mobilization		10%			\$ 20,0
	Construction Subtotal					\$ 219,0
	2024 Construction Cost 2		8.0%			\$ 255,0
	Contingency		20%			\$ 51,0
	Boundary Survey, Easement Services					\$ 8,0
	Basic Engineering Services - Preliminary Design, Final Design, Bidding, Construction, Post Construction		20%			\$ 51,0
	Legal & Administrative		5%			\$ 13,0
	Legal & Administrative		5%			\$ 13, 378.0

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ALTERNATIVES EVALUATION - DISTRIBUTION

Locations & Phasing
Total Project Estimates

» D-1: No Action

» D-2: Phase 1 - \$2.66 mil.

» D-3: Phase 2 - \$2.5 mil.

» D-4: Phase 3 - \$2.65 mil





ALTERNATIVES – PRIORITY RANKINGS – PREFERRED ALTERNATIVE

	Project Priority List					
Priority	Alternative	Total Project Cost	Funding/Const. Date			
1	D-2: Phase 1 – Replacement of Problematic 4" AC and 6" AC in contaminated soils	\$2,660,000	ARPA/2023			
2	D-3: Phase 2 – Replacement of Remaining 4" AC	\$2,503,000	2022 Grant			
3	S-2 Phase 2 Springs Assessment, Spring 5 Rehab	\$121,000	Apps/2024			
4	R-3: New 210,000 Concrete On Grade Storage Tank	\$2,879,000	Pending			
5	T-2: Construction of a New Chlorination Station	\$378,000	Application			
6	D-5: Replacement of Pressure Reducing Valves and Air Release Valves	\$408,000	Dates			
7	R-2: Repairing the Existing Concrete and Steel Tanks	\$186,000				
8	D-4: Phase 3 – Replacement of Remaining Pipe in Town	\$2,656,000				
9	D-6: Replacing System Control and Data Acquisition (SCADA) System	\$30,000				



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ENVIRONMENTAL ASSESSMENT

What is an Environmental Assessment (EA)?

» Public document analyzing environmental issues

Draft EA has been completed

- » State and federal agencies have been contacted
- » Many responses have been received
- » Public comments solicited









ENVIRONMENTAL ASSESSMENT

No Substantive Comments or Assessments

- » Some Mitigated Impacts
 - » Leaking Underground Tank Areas and Mitigation
 - » Storm Water
 - » Temporary Traffic, Noise, Dust

Decision:

- » Environmental Assessment is Acceptable
- » Environmental Impact Statement (EIS) is not necessary





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PROJECT FUNDING STRATEGY

Funding Sources Being Considered

- » MCEP Montana Coal Endowment Program
- » DNRC Department of Natural Resources and Conservation
- » CDBG Community Development Block Grant
- » SRF State Revolving Fund
- » RD U.S. Department of Agriculture Rural Development
- » ARPA American Rescue Plan Act















PROJECT FUNDING STRATEGY

Target Rate Analysis for Grant Eligibility

» Using 2015-2019 American Communities Survey (Department of Commerce)

Medium Household Income (MHI)

=\$39,583

Department of Commerce Target Rate Threshold:

(Target Rate is 2.3% for combined water/wastewater)

SS & Water Target Rate =\$75.87/MO

Current Combined Base Rate (\$33 Sewer, \$36.04 Water) =\$69.04/MO base + Usage

Percent Poverty =9.5%

Low & Moderate Income (LMI) =77%

- Town is eligible for RD,CDBG Grants, SRF Loan w/ Forgiveness
- · MCEP combined rate to be at least Target Rate by end of Project
- (Note need to determine average water usage fee to include)



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PROJECT FUNDING STRATEGY – FINANCIAL POSITION

Town of Geraldine's Water Loans						
Loan	Date Issued	Interest Rate	Term of Years	Loan Amount	Annual Payment	Outstanding
Water Loan #1	7/1/2003	4.250%	40	\$140,200.00	\$7,380.00	\$100,472.64
Water Loan #2	6/15/2005	4.250%	20	\$103,500.00	\$7,704.00	\$17,954.08
Water Loan #3	4/5/2006	4.375%	40	\$95,000.00	\$5,040.00	\$32,989.82
Totals				\$338,700.00	\$20,124.00	\$151,416.54

Existing Water System Revenues and Expenses								
Line Item	2018	2019	2020					
Revenues (\$)								
Metered Sales	87,898.00	88,355.00	92,347.00					
Bulk Water Sales	2,340.00	2,386.00	2,418.00					
Installation Charges		120.00	110.00					
Miscellaneous Revenue	6,923.00	1,754.00	1,737.00					
Total Revenues	97,161.00	92,615.00	96,612.00					
Expenses (\$)								
Materials and Services	36,147.00	26,414.19	30,699.62					
Employee Wages	29,406.14	27,856.57	23,399.70					
Debt Payment	20,124.00	20,124.00	20,124.00					
Total Expenses	85,677.14	74,394.76	74,223.32					
Net Reserve	11,483.86	18,220.24	22,388.68					



PROJECT FUNDING STRATEGY

PROJECT FUNDING SCENARIOS (\$2.58 Mil Project)

» Scenario #1

- » \$500,000 MCEP Grant
- » \$125,000 DNRC Grant
- » \$600,000 CDBG Grant
- » \$677,000 SRF Loan (2.5% 20 years) with 50% SRF forgiveness (\$678k)
- » \$8-10 per month rate increase

» Scenario #2

- » \$500,000 MCEP Grant
- » \$125,000 DNRC Grant
- » \$600,000 CDBG Grant
- » \$610,000 RD Grant (Assume 45%)
- » \$754,000 RD Loan (1.5%, 40 years)
- » \$5-7 per month rate increase

» Scenario #3

- » \$500,000 MCEP Grant
- » \$125,000 DNRC Grant
- » \$570,000 RD Grant (Assume 45%)
- » \$1,079,000 RD Loan (1.5%, 40 years)
- » \$9-11 per month rate increase
- » (Example without a CDBG Grant)

Note – Very Preliminary, Subject to change. Assumes existing rates, debt, O&M, grants

Note – RD has on past projects kept loan fixed and added grant for additional phases. (i.e. Sewer Project)



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IMPLEMENTATION SCHEDULE

Action	Date		
Public Hearing on Draft PER & EA, Adopt by Resolution	4/19/22		
Apply for DNRC Grants	May 15, 2022		
Apply for TSEP Grants	May 19, 2022		
Apply for CDBG Grants	Fall, 2022		
Apply for RD Grants o	Fall, 2022		
MCEP Award and Contracting	June/July, 2023		
Finalize Grant Financing and Budget	June/July, 2023		
Contracting for Engineering Begin Design	June/July, 2023		
Begin Design	July/August ,2023		
Submit Design Plans and Specifications to MDEQ	November, 2023		
MDEQ Review & Approval	January, 2024		
Bidding Process	February/March, 2024		
Finalize RD Loan Financing	April, 2024		
Start Construction	May/June 2024		
Complete Collection and Treatment System Construction	By November 2024		

Note – The Phase 1 (ARPA Funded) Pipe Project is on a different schedule track and could start design in Fall of 2022 for 2023 Construction





WHERE TO GO FROM HERE

- » Public Opinion
 - » Is there support for the project?
 - » Make a comment
- » MCEP and DNRC Applications May 2022
- » CDBG and RD Applications Fall 2022 (One per County per time)
- » Phase 1 Project ARPA award, startup, start design



QUESTIONS OR COMMENTS?



