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WASTEWATER PRELIMINARY ENGINEERING REPORT

TOWN OF SACO
PUBLIC HEARING – APRIL 13, 2022



Matthew Mudd, PE



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WHY ARE WE HERE & OUTLINE

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



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PRELIMINARY ENGINEERING REPORT

» What is a PER

- » Technical and Planning
- » Required by Funding Agencies to Apply for Grants
- » Defines Current and Future Projects

» Evaluates Alternatives

» Establishes Costs and Funding Scenarios

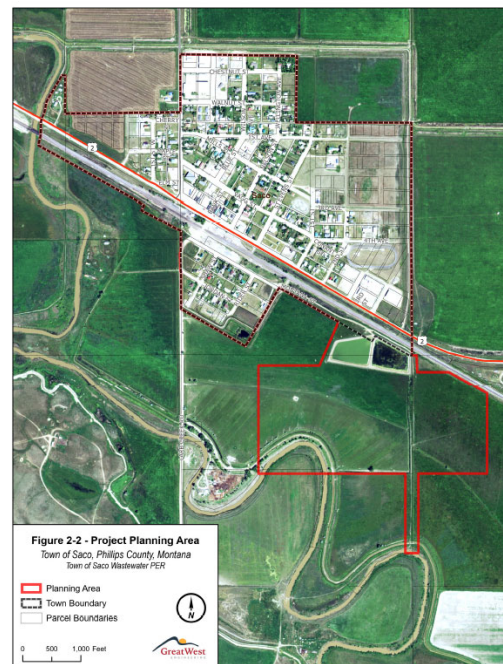
» Develops Implementation Schedule



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PLANNING AREA COLLECTION AND TREATMENT AREAS

» Study Area



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EVALUATION OF EXISTING SEWER SYSTEM POPULATION

Year	Saco ¹	% Annual Increase/Decrease	Phillips County	% Annual Increase/Decrease
1990	261		5,163	
2000	224	-14.2%	4,601	-12.2%
2010	197	-12.1%	4,253	-7.56%
2020	159	-19.2%	4,217	-0.85%
Average		-15.2%		-6.87%
2042	177	0.50%		

(1) US Census Bureau

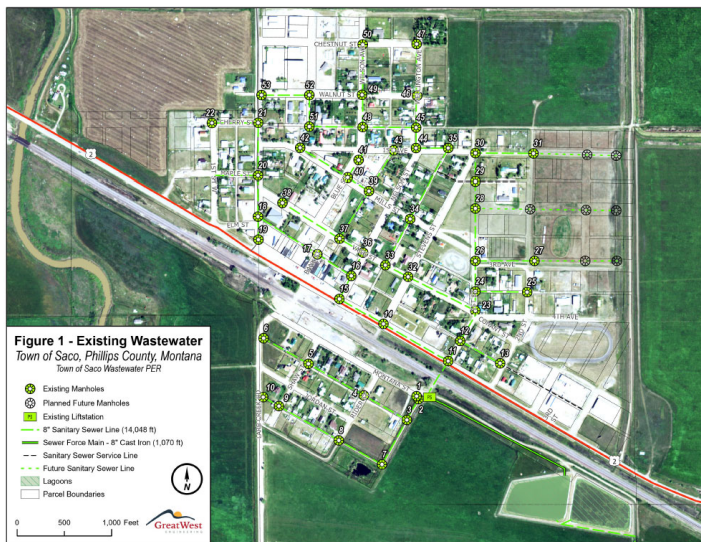
(2) Population of Town at Design Year (2042) estimated from 2020 Census at conservative 0.5% Annual Growth

Original design population=490



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EVALUATION OF EXISTING SEWER SYSTEM - COLLECTION



- Reviews Original Maps
- Over 14,000 8" – mostly Clay
- Some 8" PVC
- Some 4" and 6" extensions
- Future Extensions



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EVALUATION OF EXISTING SEWER SYSTEM - COLLECTION SYSTEM

» Evaluation Methods

- » Sewer Cleaning and Video Reports
- » Site Visits/Investigations
- » Historical Information and Accounts



» History

- » No Major Capital Project Upgrades Done on Collection System
- » Repairs are Done as Needed
- » Town Routinely Cleans Lines



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EVALUATION OF EXISTING SEWER SYSTEM - COLLECTION SYSTEM

» Cleaning and Video Reports



SEWER CLEANING OPERATIONS & VIDEO REPORT

Work performed for: **Lakeville Excavation, Inc.**
 270 Oak Grove Street
 Morris, VT 05651
 (802) 885-8883
www.lakevilleexcavation.com

Work completed on: **7/20/2021**

Client: **THOMPSON, JAMES**

Project Name: **SEWER CLEANING**

Location: **1000 S. MAIN ST.**

City: **MORRIS, VT**

State: **VT**

Zip: **05651**

Contract Number: **1000 S. MAIN ST.**

Job Number: **211022**

Job Date: **7/20/2021**

Job Time: **8:00 AM - 4:00 PM**

Job Status: **Completed**

Job Type: **Sewer Cleaning**

Job Description: **SEWER CLEANING**

Job Notes: **1000 S. MAIN ST.**

Job Address: **1000 S. MAIN ST.**

Job City: **MORRIS, VT**

Job State: **VT**

Job Zip: **05651**

Job Contact: **JAMES THOMPSON**

Job Phone: **(802) 885-8883**

Job Email: **james@lakevilleexcavation.com**

Job Website: **www.lakevilleexcavation.com**

Location of Mile: **0.0000 - 0.0000** July 20, 21

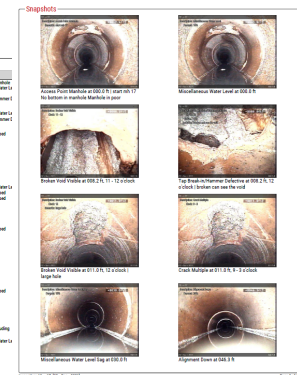
Condition of line and cover: **Good**

Water flow direction: **North to South**

Notes: **1000 S. MAIN ST. - HALF 2**

Comments: **1000 S. MAIN ST. - HALF 2**

Station	Pipe Size	Depth	Material	Condition	Notes
1000+0.00	12"	1.0'	MC	Good	
1000+10.00	12"	1.0'	MC	Good	
1000+20.00	12"	1.0'	MC	Good	
1000+30.00	12"	1.0'	MC	Good	
1000+40.00	12"	1.0'	MC	Good	
1000+50.00	12"	1.0'	MC	Good	
1000+60.00	12"	1.0'	MC	Good	
1000+70.00	12"	1.0'	MC	Good	
1000+80.00	12"	1.0'	MC	Good	
1000+90.00	12"	1.0'	MC	Good	
1000+100.00	12"	1.0'	MC	Good	
1000+110.00	12"	1.0'	MC	Good	
1000+120.00	12"	1.0'	MC	Good	
1000+130.00	12"	1.0'	MC	Good	
1000+140.00	12"	1.0'	MC	Good	
1000+150.00	12"	1.0'	MC	Good	
1000+160.00	12"	1.0'	MC	Good	
1000+170.00	12"	1.0'	MC	Good	
1000+180.00	12"	1.0'	MC	Good	
1000+190.00	12"	1.0'	MC	Good	
1000+200.00	12"	1.0'	MC	Good	



- » 4,200 Cleaned, 2,800 Video'd
- » More Planned



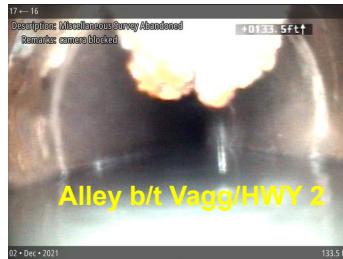
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EVALUATION OF EXISTING SEWER SYSTEM - COLLECTION SYSTEM

» Video Snapshots



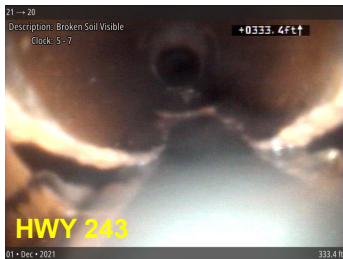
Nelson, N of Alley



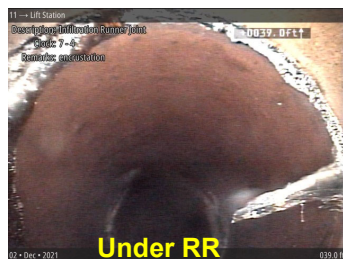
Alley b/t Vaggi/HWY 2



Along HWY 2



HWY 243



Under RR



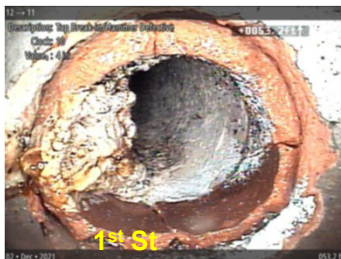
1st and Alley



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EVALUATION OF EXISTING SEWER SYSTEM - COLLECTION SYSTEM

» Video Snapshots



1st St



Nelson N. o Alley



Along HWY 2



HWY 243



HWY 2



HWY 243

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EVALUATION OF EXISTING SEWER SYSTEM - COLLECTION SYSTEM

» Manholes



HWY 243



Alley b/t Vagg/HWY 2



1st St/HWY 2



Vagg/Nelson

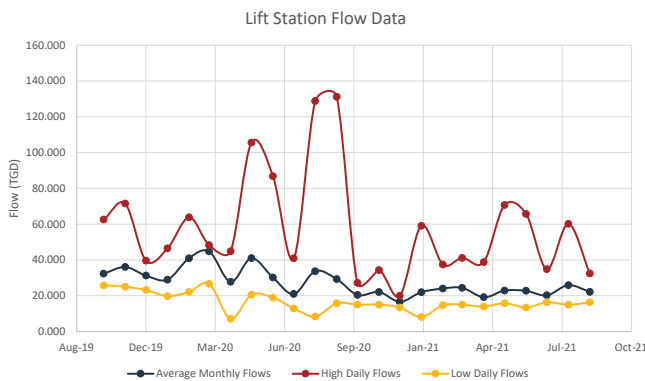
Note: Some Manholes are Under the Levee (South of Tracks)



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EVALUATION OF EXISTING SEWER SYSTEM - COLLECTION SYSTEM

» Flow Evaluation



- Average Annual Daily Flow Rate: 27,500 gallons per day (gpd)
- Peak Monthly Flow Rate: 44,800 gpd
- Peak Daily Flow Rate: 131,000 gpd
- Peak Hour Flow Rate: 485 gpm



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EVALUATION OF EXISTING SEWER SYSTEM – TREATMENT

Lagoon Issues

- » DEQ H&S Study & Recommendations
- » Influent Structure Splitter Control Not Working
- » Excessive Sludge – about 2.5 million gallons
- » Eroded Banks

Sewer System Inspection Report	
Date	04/14/2022
Location	1000 S. 10th St., Lincoln, NE
1. General condition of sewer system (Sewer main, manholes, etc.)	Good
2. Inflow and Infiltration (I&I) (Sewer main, manholes, etc.)	None observed
3. Sewer main condition (Sewer main, manholes, etc.)	Good
4. Manhole condition (Sewer main, manholes, etc.)	Good
5. Sewer main material (Sewer main, manholes, etc.)	Good
6. Sewer main diameter (Sewer main, manholes, etc.)	Good
7. Sewer main depth (Sewer main, manholes, etc.)	Good
8. Sewer main slope (Sewer main, manholes, etc.)	Good
9. Sewer main invert (Sewer main, manholes, etc.)	Good
10. Sewer main flow (Sewer main, manholes, etc.)	Good
11. Sewer main odor (Sewer main, manholes, etc.)	Good
12. Sewer main gas (Sewer main, manholes, etc.)	Good
13. Sewer main noise (Sewer main, manholes, etc.)	Good
14. Sewer main vibration (Sewer main, manholes, etc.)	Good
15. Sewer main temperature (Sewer main, manholes, etc.)	Good
16. Sewer main humidity (Sewer main, manholes, etc.)	Good
17. Sewer main pressure (Sewer main, manholes, etc.)	Good
18. Sewer main flow rate (Sewer main, manholes, etc.)	Good
19. Sewer main flow direction (Sewer main, manholes, etc.)	Good
20. Sewer main flow velocity (Sewer main, manholes, etc.)	Good
21. Sewer main flow turbulence (Sewer main, manholes, etc.)	Good
22. Sewer main flow noise (Sewer main, manholes, etc.)	Good
23. Sewer main flow vibration (Sewer main, manholes, etc.)	Good
24. Sewer main flow temperature (Sewer main, manholes, etc.)	Good
25. Sewer main flow humidity (Sewer main, manholes, etc.)	Good
26. Sewer main flow pressure (Sewer main, manholes, etc.)	Good
27. Sewer main flow flow rate (Sewer main, manholes, etc.)	Good
28. Sewer main flow flow direction (Sewer main, manholes, etc.)	Good
29. Sewer main flow flow velocity (Sewer main, manholes, etc.)	Good
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91. Sewer main flow flow flow flow flow flow flow flow flow direction (Sewer main, manholes, etc.)	Good
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98. Sewer main flow flow flow flow flow flow flow flow flow pressure (Sewer main, manholes, etc.)	Good
99. Sewer main flow flow flow flow flow flow flow flow flow flow rate (Sewer main, manholes, etc.)	Good
100. Sewer main flow flow flow flow flow flow flow flow flow flow direction (Sewer main, manholes, etc.)	Good



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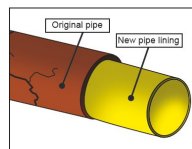
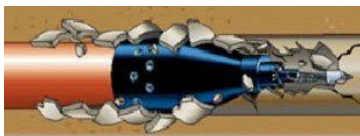
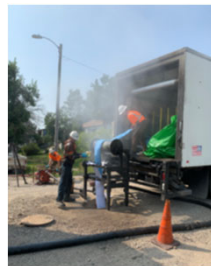
ALTERNATIVES EVALUATION - COLLECTION

Methods to Consider:

- » No Action
- » Open Cut
- » Pipe Rehabilitation
 - » Pipe Bursting
 - » Cured-In-Place Pipe (CIPP)
 - » Bore and Jack Pipeline installation

Preferred Alternative:

- » Open Cut, with Bore and Jack at HWY and Railroad

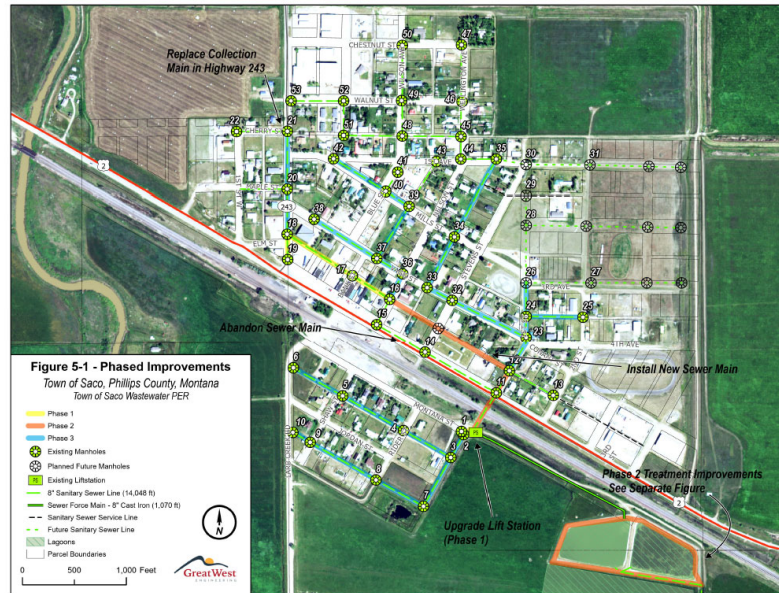


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ALTERNATIVES EVALUATION - COLLECTION

Locations & Phasing
 Total Project Estimates

- » C-1: No Action
- » C-2: Phase 1 - \$350k
- » C-3: Phase 2 - \$960k
- » C-4: Phase 3 - \$2.7 mil



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ALTERNATIVES EVALUATION – LIFT STATION

- » LS-1 No Action
- » LS-2 Lift Station Upgrades - \$750k
 - » Submersible Packaged Lift Station



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ALTERNATIVES EVALUATION – TREATMENT

Methods:

- » No Action
- » All Options Would Remove and Dispose Sludge
- » T-1: Reconstruct Lagoons, add UV System
- » T-2: Reconstruct Lagoon, add Total Retention Lagoon
- » T-3: Minor Lagoon Upgrades, Effluent Irrigation
- » T-4: Minor Lagoon Upgrades, UV System

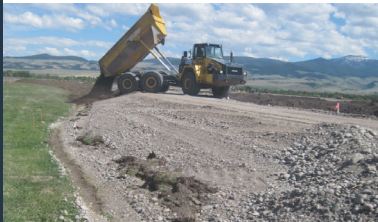


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ALTERNATIVES EVALUATION – TREATMENT

Methods:

- » Lagoon Reconstruction Alternatives



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ALTERNATIVES EVALUATION – TREATMENT

» UV System Options (Building or Vault)



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ALTERNATIVES EVALUATION – TREATMENT

» Effluent Irrigation Options

» DEQ Standards and Considerations:

- Keep Discharge Permit as Backup
- Flow meter required
- Raise a viable crop to remove nutrients
- Low trajectory sprayers - End guns are not approved
- “should not” be placed in the flood plain.
- Could irrigate in mid to late summer,
- Groundwater is below 4-feet
- Own land or have 20-yr lease/agreement with a private landowner
- Nutrient Management and Irrigation Plan Required
- No irrigation on surface water. No ponding
- Soil Conditions

» Cost Effective Method



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ALTERNATIVES EVALUATION – TREATMENT

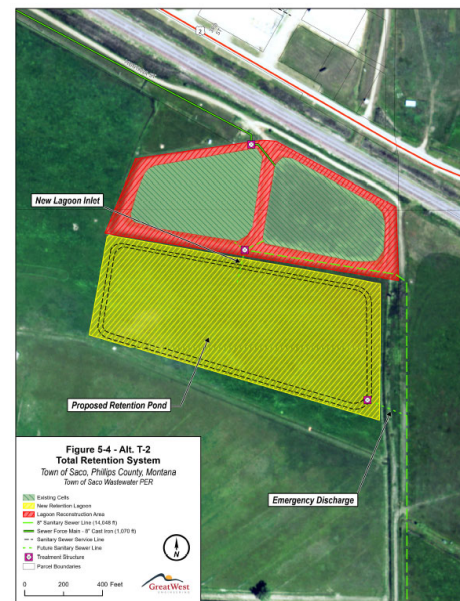
- » T-1 Reconstruct Lagoons Add UV System
- » Estimated Total Project Cost = \$2.6 mil



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ALTERNATIVES EVALUATION – TREATMENT

- » T-2 Reconstruct Lagoons, Total Retention
- » Estimated Total Project Cost = \$2.98 mil.



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ALTERNATIVES EVALUATION – TREATMENT

- » T-3 Minor Lagoon Upgrades, Irrigation
- » Estimated Total Project Cost = \$930,000



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ALTERNATIVES EVALUATION – TREATMENT

- » T-4 Minor Lagoon Upgrades, UV Treatment
- » Estimated Total Project Cost = \$1.3 mil.



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SELECTION OF PREFERRED ALTERNATIVE

ALTERNATIVE	DESCRIPTION	TOTAL
C-1	Phase 2 - Collection System Improvements	\$960,000
T-3	Phase 2 - Minor Lagoon Improvements, Irrigation	\$930,000
Grand Total		\$1,890,000

ANNUAL OPERATION & MAINTENANCE COST INCREASE					
	ITEM	QTY	UNITS	UNIT PRICE	TOTAL
1	Operator	40	HR	\$20.00	\$800
2	Nutrient Management, Irrigation Plan Logging	20	HR	\$20	\$400
3	Power to Irrigation System	2,400	kWh	\$0.15	\$360
4	Monitoring & Testing	1	LS	\$700.00	\$700
5	Spare Parts/Maintenance	1	LS	\$500.00	\$500
6	Reserve	1	LS	\$500.00	\$500
TOTAL					\$3,300



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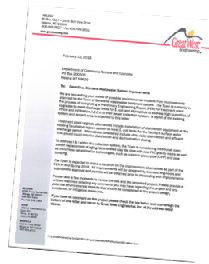
ENVIRONMENTAL ASSESSMENT

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



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ENVIRONMENTAL ASSESSMENT

No Substantive Comments or Assessments

- » Some Mitigated Impacts
 - » Leaking Underground Tank Areas and Mitigation
 - » Irrigation Permit – DEQ Feedback
 - » Storm Water
 - » Flood Plain Mapping
 - » Railroad and Highway Crossings (Permits)

Decision:

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

Environmental Checklist Environmental Checklist Requested by: On: 1/15/2022 Requested by: [Name] [Title] Requested by: [Name] [Title] Requested by: [Name] [Title]	
Project Description Project Name: [Name] Project Location: [Address] Project Description: [Text]	
Project Location Project Location: [Address] Project Location: [Address] Project Location: [Address]	
Project Status Project Status: [Status] Project Status: [Status] Project Status: [Status]	



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)	= \$42,500
Department of Commerce Target Rate Threshold:	
(Target Rate is 2.3% for combined water/wastewater)	
SS & Water Target Rate	= \$81.46/MO
Current Combined Rate (\$25 Sewer, \$55 Water)	= \$80/MO
Percent Poverty	= 21.7%
Low & Moderate Income (LMI)	= 55%

Town is eligible for RD, TSEP, CDBG Grants, SRF Loan w/ Forgiveness



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PROJECT FUNDING STRATEGY

PROJECT FUNDING SCENARIOS (\$1.9 Mil Project)

» Scenario #1

- » \$500,000 MCEP Grant
- » \$125,000 DNRC Grant
- » \$600,000 CDBG Grant
- » \$334,000 SRF Loan (2.5% 20 years) with 50% SRF forgiveness (\$333k)
- » \$6-8 per month rate increase

» Scenario #2

- » \$500,000 MCEP Grant
- » \$125,000 DNRC Grant
- » \$600,000 CDBG Grant
- » \$300,000 RD Grant (Assume 45%)
- » \$367,000 RD Loan (2.0%, 40 years)
- » \$5 to \$7 per month rate increase

» Scenario #3

- » \$500,000 MCEP Grant
- » \$125,000 DNRC Grant
- » \$570,000 RD Grant (Assume 45%)
- » \$697,000 RD Loan (2.0%, 40 years)
- » \$12 to \$14 per month rate increase
- » (Example without a CDBG Grant)



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IMPLEMENTATION SCHEDULE

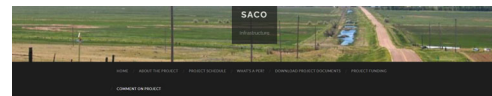
Action	Date
Public Hearing on Draft PER & EA	4/13/22
Complete Final PER, Adopt EA & PER by Resolution	April 30, 2022
Apply for DNRC Grants	May 15, 2022
Apply for TSEP Grants	May, 2022
Apply for CDBG Grants	Fall, 2022
Apply for RD Grants or SRF Funding	Fall, 2022
TSEP Award and Contracting	June/July, 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



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WEBSITE

www.sacoinfrastructure.com



Welcome

Welcome to Saco Infrastructure. The purpose of this website is to keep the community informed about Saco's ongoing efforts to upgrade the Town's wastewater system. Stay on top of all projects, the status of the planning process, the latest information about the Preliminary Engineering Report (PER) and various improvements that the Town is developing with the assistance of Great West Engineering of Idaho.

The Town was awarded an American Recovery Plan Act (ARRA) grant by the state to complete Phase 1 construction improvements in the Town. The Phase 1

Search

Comment on Project

Your feedback counts! Please use the form below to let us know what you think.

Your name

Your email

Subject

Can obtain web visit metrics for app.



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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 or SRF Applications – Fall 2022

- » Phase 1 Project – ARPA startup, start design



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QUESTIONS OR COMMENTS?



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