

**VILLAGE OF NEWBERRY
VILLAGE COUNCIL PUBLIC HEARING
CLEAN WATER SRF
6:00 P.M., TUESDAY, APRIL 19
Meeting Location: 307 E. McMillan Avenue**

- 1. CALL TO ORDER**
- 2. PLEDGE OF ALLEGIANCE**
- 3. ROLL CALL**
- 4. APPROVAL OF AGENDA**
- 5. PRESENTATION AND DISCUSSION OF CLEAN WATER STATE REVOLVING FUND (CWSRF) FINAL PROJECT PLAN FOR WASTEWATER SYSTEM IMPROVEMENTS**

Items to be covered (may not take place in order)

- a. Description of water quality problems being addressed by the project and principal alternatives that were considered
 - b. Description of the recommended alternative, including its capital costs and a cost breakdown by project components
 - c. Discussion of project financing and costs to users, including the proposed method of project financing and estimated monthly debt retirement; the proposed annual, quarterly, or monthly charge to the typical residential customer; and any special fees that will be assessed.
 - d. Description of the anticipated social and environmental impacts associated with the recommended alternative and the measures that will be taken to mitigate adverse impacts.
- 6. PUBLIC COMMENT-** Citizens must identify themselves by name and address prior to speaking. Comments are limited to 3 minutes.
 - 7. CLOSING OF THE OFFICIAL PUBLIC COMMENTS PERIOD ON THE PROPOSED PROJECT & ADJOURNMENT OF PUBLIC HEARING**

Item	Target (Year 1 Project)
Funding Closing	July 2023
Contract Award	July 2023
Construction	August 2023
Substantial Completion	October 2023
Final Completion and Initiate Operation	November 2023

Cost Summary

A brief summary of planning, design, and construction costs is included below in Table 10.

Table 10. Project Cost Summary

Item	Year 1 – Estimated Costs	Future Year – Estimated Costs
Construction	\$1,340,000	\$9,445,000
Administration, Legal, Bonding, Permits, & Miscellaneous	\$20,000	\$141,000
Planning	\$20,000	\$20,000
Design	\$98,000	\$827,000
Bidding	\$4,000	\$43,000
General Engineering During Construction	\$37,000	\$331,000
Post Construction Services	\$3,000	\$34,000
Resident Project Representative	\$48,000	\$336,000
Additional Services – Design Related	\$3,000	\$128,000
Additional Services – Construction Related	\$13,000	\$204,000
Engineering Total	\$226,000	\$1,923,000
Contingencies	\$96,000	\$691,000
Total Project Cost	\$1,682,000	\$12,200,000

Authority to Implement the Selected Alternative

The Village of Newberry was incorporated in 1885 as a General Law Village in the State of Michigan. The Village of Newberry has successfully implemented facility improvements projects over the past 50 years including most recently, construction of municipal water system improvements through the United States Department of Agriculture, Rural Development. The Village has shown it has the legal, institutional, technical, financial and managerial resources to accomplish implementation of the recommended alternatives.

User Costs

This report has recommended improvements and suggested a phasing of improvements to reduce the short term effects on user rates on Village residents. Potential rate increases for the Village of Newberry customers, assuming a no grant scenario, are outlined in Table 11 for Year 1 and Future Year(s) Projects. Because the Village of Newberry is a disadvantaged community, they are eligible for a 30-year loan/bond term. Detailed costs are shown in Appendix A.

Table 11. User Costs for Year 1 (Assuming No Grant)

Description	Year 1
CWSRF Loan Amount	\$1,682,000
Anticipated Interest Rate	2.125%
Term	30
Annual Debt Service	\$76,398
Monthly Debt Service	\$6,367
Estimated System EDUs	2,337
User Rate Impact / EDU	\$2.72

Table 12. User Cost for Future Year(s) Projects (Assuming No Grant)

Description	Future Years
CWSRF Loan Amount	\$12,200,00
Anticipated Interest Rate	2.125%
Term	30
Annual Debt Service	\$554,136
Monthly Debt Service	\$46,178
Estimated System EDUs	2,337
User Rate Impact / EDU	\$19.76

Disadvantaged Community

A “Disadvantaged Community Status Determination Worksheet” is included with the final project plan submittal (see Appendix B). According to guidelines, the Village of Newberry does qualify as a disadvantaged community considering their current and projected debt service, median household income, and user rates.

Useful Life

Remaining Useful Life of all wastewater assets is available in the 2020 SAW Asset Management Plan and Process Evaluation (see Appendix D).

SUMMARY

Project Background

This study was authorized by the Village of Newberry's Village Council on July 20, 2021. This Michigan Clean Water State Revolving Loan Fund (CWSRF) Project Plan is being completed to evaluate needs and recommend alternatives for improvements to the Newberry Wastewater Treatment Plant (WWTP) and sanitary collection system for a 20 year planning period.

The Village of Newberry (Village) is the responsible governing entity for a municipal WWTP serving the Village and portions of McMillian and Pentland Townships. The Village owns, operates, and maintains the WWTP which is located on the east side of the State Highway M-123 adjacent to the Tahquamenon River, approximately one-mile north of the Village limits. Sanitary collection systems exist for the Village and each Township. The Village owns and maintains the collection system within the limits of the Village and MicMillan Township. Pentland owns and maintains their collection system.

Construction of the original WWTP was completed in 1964 and a major upgrade was completed in 1979 and 2014 with minor improvements in 2019. The current treatment process includes raw sewage grinding, raw sewage pumping, grit removal, primary clarification, activated sludge secondary treatment, secondary clarification, and chlorine disinfection. The treated effluent is discharged to the Tahquamenon River. Residual solids are treated through anaerobic digestion and gravity thickening. Biosolids disposal is by land application. The design average flow is 0.9 MGD and design peak flow is 2.5 MGD.

Summary of Project Need

Reliable operation of the wastewater collection system within the Village of Newberry's utility systems are imperative to protect the health and safety of the Village's citizens and visitors. The Village has been operating and maintaining the wastewater treatment plant and collection system effectively, but there are areas of escalating deterioration and obsolescence that require a larger, preventative replacement, and rehabilitation effort. Operators, consultants, and regulators have collaborated on the proposed solutions for these areas of work.

Analysis of Alternatives

The principal and recommended alternatives are the rehabilitation of the existing collection system with improvements to the wastewater treatment plant and land acquisition for sludge disposal. Other alternatives considered are No Action, Replacement of the Collection System, and Hauling Sludge to Alternative Sites.

Selected Alternative

Upgrade of Existing Facilities, Rehabilitation of the Collection System, and Land Acquisition for Sludge Disposal is considered the preferred alternative.

Environmental Evaluation

The anticipated environmental impacts resulting from implementation of the selected alternative are relatively minor. There is no increase in the extent of the wastewater system, and no major changes in terms of residuals or other material effects. Full detail may be found under the section labeled “Environmental Evaluation”.

Mitigation Measures

Where adverse impacts due to installation of the recommended improvements cannot be avoided, mitigation measures will be implemented. Costs for mitigation measures were considered and included where applicable in project opinions of probable cost and included in construction contract documents. A full discussion of mitigation measures can be found in detail in section “Mitigation Measures”.

Public Participation

A public hearing for this CWSRF Project Plan took place on April 19, 2022. Copies of public hearing advertising and minutes are included in Appendix E of the adopted final version of this Project Plan.

ANALYSIS OF ALTERNATIVES

The Village of Newberry has invested in regular maintenance, asset management, and capital improvements planning for their wastewater treatment plant and collection system. This Project Plan examines several alternatives for development in the next five to twenty years.

Identification of Potential Alternatives

No Action

The No Action alternative, although saving a large initial capital investment, would result in several and continuing adverse impacts on the Newberry wastewater system and its customers. Those impacts include, but may not necessarily be limited to, the following:

- Continued risk of system failure
- Continued decrease in the reliability of waste treatment and increased risk to water quality in the Tahquamenon River water shed
- Continued and accelerated degradation of facilities along with increased maintenance costs.
- Continued use of excess energy

Optimum Performance of Existing Facilities

Optimizing of the existing facilities alone, without capital improvements, will fail to incorporate improved technologies; will fail to restore the service life to facilities and system; will fail to take advantage of improvements to reduce energy use; and will fail to improve the sustainability of the facility. The principal alternative described below can be considered an extension of this concept, but one that requires significant capital improvements.

Water and Energy Efficiency

Selected equipment shall have greater energy efficiency verses original components. Equipment items are to be optimized and controlled via variable frequency drives (VFD) which will improve efficiency. Electric motors will be high efficiency types. Screening Improvements will increase the service life and treatment effectiveness throughout various unit processes.

Regional Alternatives

The Newberry WWTP is currently a regional facility serving the Village of Newberry, McMillian Township, and Pentland Township. The nearest potential new regional contributor would be a greater distance than could be feasible for small

number of system users. The Village believes the existing regional service district cannot be expanded, and no neighboring facility can accept the large flow from Newberry.

Principal Alternatives

Alternative 1: No Action

Not implementing a corrective measures project at this time while attempting to correct deficiencies in the system over time as maintenance budgets will allow.

Alternative 2A: Rehabilitation of Sewers

This alternative includes rehabilitation of the wastewater collection system through trenchless methods, lining of the pipes and manholes, while reducing restoration costs and disturbances and extending asset life. This alternative includes 13,500 ft of pipe with the worst quick ratings outlined in SAW (refer to Appendix D).

Alternative 2B: Land Acquisition for Sludge Disposal

The WWTP is in need of 40 acres of land in close proximity (less than three miles for current proposed sites) for sludge disposal to decrease operation costs. Currently, the Village produces about 600,000 gallons annually (300,000 gallons in the spring and 300,000 gallons in fall) and land applies it to 30 acres.

Alternative 2C: Improvements to Existing WWTP and Collection System (Future Years)

Improvements to the existing WWTP were outlined under the 2012 SRF Project Plan, 2020 Process Evaluation Report, and 2020 SAW Program (see Appendix D). The following is a summary of improvements to be include:

- Sludge Storage Expansion
- Headworks Improvements (Fine Screening and Septage Receiving Station)
- Final Tank Dome Replacements
- Primary Settling Tank Expansion
- Raw Sewage Pump Station Rehabilitation
- Return Activated Sludge (RAS) No. 3 Pump Replacement
- Miscellaneous Building and Site Improvements (i.e. painting, SCADA, driveway replacement, service building improvements, new generator)
- Collection System Improvements

Alternative 3A: Replacement of Sewers

This alternative includes open trench methods for full replacement of sewer pipe (13,500 feet) and manholes with restoration including road repairs, slope, and sidewalk. This alternative includes 13,500 ft of pipe with the worst quick ratings outlined in SAW (refer to Appendix D).

Alternative 3B: Alternative Methods for Sludge Disposal

An alternative biosolids disposal method to land application is to landfill the biosolids. This method would still include trucking the solids. However, the closest landfill is over 50 miles away from the WWTP, there would be additive costs for landfill tipping fees, and a sludge press would need to be installed at minimum (with increased energy costs).

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ANALYSIS OF PRINCIPAL ALTERNATIVES

The Monetary Evaluation

The construction costs for the collection and WWTP are shown in Table 5 and Table 6 below. Costs used in this analysis are based on previous work done in the Village of Newberry and neighboring communities. Costs have been adjusted based on ENR index and typical engineering and administrative fee rates. Detailed costs, sewer lengths/sizes, and number of manholes corresponding with Table 5 can be found in Appendix A.

Land acquisition Costs for Year One (Alternative 2B) are estimated to be about \$65,000. The Village plans to purchase 40 acres of land estimated at \$1,500 per acre for a total of \$60,000. It is estimated that an additional \$5,000 will be needed for additional services associated with land acquisition such as appraisals, survey work, title work, agreements, etc. Alternative 3B includes capital costs for installing a sludge thickening facility and increased O&M costs for electricity, hauling sludge to a landfill, and landfill tipping fees (estimated from WWTPs in Michigan of similar size).

Table 5. Construction Cost Estimate – Year One Collection System Improvements

Priority	Label	Description	Sewer (LF)	Alternative 2: Rehabilitation	Alternative 3: Replacement
1	A1	W Helen St from Sherman St to Newberry Ave and stretch of sewer going south on Robinson St	1,540	\$144,000	\$526,000
1	A2	W Ave A from Washington Blvd to Phelps St	1,330	\$127,000	\$458,000
1	A3	E Ave A from Newberry Ave to Parmelee St	630	\$62,000	\$222,000
Priority 1 Total			3,500	\$333,000	\$1,206,000

Priority	Label	Description	Sewer (LF)	Alternative 2: Rehabilitation	Alternative 3: Replacement
2	A4	W Ave B from Tahquamenon Blvd to Phelps St	2,120	\$202,000	\$729,000
2	A5	W Ave C from Tahquamenon Blvd to Phelps St	2,290	\$219,000	\$792,000
Priority 2 Total			4,410	\$421,000	\$1,521,000

Priority	Label	Description	Sewer (LF)	Alternative 2: Rehabilitation	Alternative 3: Replacement
3	B1	W Victory Way from west of Washington Blvd to Robinson St, Robinson St going north to W Ave D	1,630	\$155,000	\$155,000
3	B2	Alley north of E Ave D from Charles St to E Limits St, E limits St from E Ave C going south to County Rd 466	1,740	\$169,000	\$394,000
Priority 3 Total			3,370	\$324,000	\$549,000

Priority	Label	Description	Sewer (LF)	Alternative 2: Rehabilitation	Alternative 3: Replacement
4	C1	E McMillan Ave from Charles St to E Limits Rd	1,210	\$116,000	\$420,000
4	C2	Broad St from E Ave B to C including to alley west of Broad St	850	\$86,000	\$227,000
Priority 4 Total			2,060	\$202,000	\$647,000
Priority 1, 2, 3, & 4 Total			13,340	\$1,280,000	\$3,930,000

Table 6. Construction Cost Estimate – Future Years (Alternative 2C) WWTP and Collection System Improvements

Description	Estimated Cost
Sludge Storage, Increased Capacity	\$1,530,000
Headworks Improvements	\$2,240,000
Final Tank Domes Replacement	\$700,000
Primary Settling Tank Expansion	\$930,000
Raw Sewage Pump Station Coating	\$60,000
Driveway Replacement	\$130,000
Service Building/ADA Bathroom	\$30,000
SCADA	\$160,000
RAS Pump Replacement (No. 3 Pump)	\$40,000
WWTP Painting	\$25,000
Generator	\$250,000
Collection System Improvements	\$3,350,000
Total Construction	\$9,445,000

A 30-year present worth analysis is also included in Table 7 below. Because the Village of Newberry is a disadvantaged community, they are eligible for a 30-year loan/bond term. The bond schedule, operating expense, and salvage values can be found in Appendix A. O&M impacts were assumed to effect plant operations only for this analysis. The anticipated savings in operating expenses is represented in Appendix A as negative “O&M impacts.” Likewise, the “no action” alternative indicates escalating expenses as utility rates increase and energy efficiency decreases.

Table 7. Present Worth Analysis

Item	Description	Alt. 1: No Action	Alt. 2A: Rehab. of Sewers	Alt. 2B: Land Acquis. For Sludge Disposal	Alt. 2C: Improvements to Ex. WWTP	Alt. 3A: Replacement of Sewers	Alt. 3B: Alt. Method for Sludge Disposal (a)
1	Construction Costs	\$0	\$1,280,000	\$60,000	\$9,445,000	\$3,930,000	\$600,000
2	Engineering, Legal, Administration, Planning, and Contingencies	\$0	\$337,000	\$5,000	\$2,755,000	\$1,170,000	\$180,000
3	Total Capital Cost	\$0	\$1,617,000	\$65,000	\$12,200,000	\$5,100,000	\$780,000
4	Annual O&M Cost Change	\$0	-\$5,000	\$0	-\$30,000	-\$5,000	\$30,000
5	Present Worth of O&M Costs	\$0	-\$103,000	\$0	-\$617,000	-\$103,000	\$617,000
6	Salvage Value	\$0	\$539,000	\$60,000	\$5,160,000	\$3,060,000	\$234,000
7	Present Worth of Salvage Value	\$0	\$567,000	\$64,000	\$5,425,000	\$3,218,000	\$247,000
8	Total Present Worth	\$0	\$1,012,000	\$1,000	\$6,158,000	\$1,779,000	\$1,150,000

(a) Construction costs include for a sludge thickening facility, O&M costs include: \$5,000 added electrical costs, \$5,000 for hauling to landfill and \$20,000 tipping fee (based on WWTPs in Michigan of similar size)

Table row description for Table 7:

1. Construction costs developed by AMP and detailed in Appendix A and D.
2. Project support fees based on a percentage of construction costs; typical rate 30%. Table 10 further breaks this total cost down for Alternative 2.
3. Capital costs are sum of 1 and 2.
4. O&M cost change due to the project.
5. Present value of O&M costs for 30 years at -0.25% (per 2022 USDA/SRF guidance).
6. Land considered permanent, 50-year life for piping, valves, and structures, 30-year life for lining, and 20-year life for equipment.
7. Present worth of line 6 at -0.25% interest for 30 years.
8. Total of items 3 and 5 minus 7.

Partitioning of the Project

The long-term needs of the Village treatment facility and collection system are discussed in this report and in SAW. The Village intends to partition the total collection system needs into numerous construction phases over the next several decades to enable improvements to within the limited financing capability of the service district. The 20-year improvement plan is outlined in Appendix D.

The Environmental Evaluation

Correspondence related to environmental impact aspects of this project can be found in Appendix C. Table 8 below summarizes potential environmental and public health impacts of the evaluated alternatives with brief descriptions following.

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SELECTED ALTERNATIVE

The Alternative 2A to rehabilitate sewers is the selected alternative among Alternative 1 and 3A because it provides the most cost effective option to provide improvements to structural deficiencies within the system. Alternative 2B is selected over Alternative 3B because it is the most cost effective option in the long term. Alternative 2C is chosen as a project for future years for both WWTP and collection system improvements.

Relevant Design Parameters

Alternative 2A: Rehabilitation of Sewers

This alternative includes rehabilitation of the wastewater collection system through trenchless methods, lining of the pipes and manholes, while reducing restoration costs and disturbances and extending asset life. This alternative includes 13,500 ft of pipe with the most severe quick ratings outlined in SAW (refer to Appendix D). Figure 8 on the following page shows priority areas.

Alternative 2B: Land Acquisition for Sludge Disposal

The WWTP is in need of new land in close proximity for sludge disposal to decrease operation costs. Figure 9 shows the potential sites proposed for sludge disposal, all located within three miles of the WWTP.

Alternative 2C: Improvements to Existing WWTP and Collection System (Future Years)

Improvements to the existing WWTP were outlined under the 2012 SRF Project Plan, 2020 Process Evaluation Report, and 2020 SAW Program (see Appendix D). Figure 10 illustrates the following is a summary of improvements to be include:

Sludge Storage Expansion

Current sludge storage is limited. Solids storage is limited; operations report that before digesters are emptied they are forced to return solids back to the WWTP. To provide the plant with more flexibility an additional sludge storage tank is suggested. Preliminary design concepts suggest a 300,000-gallon storage tank; project design phase will further investigate the functionality and size of the tank.

Final Tank Dome Replacements

It is recommended to replace existing (two) FRP domes with aluminum geodesic domes and a diameter of 40 ft. The domes will be designed for a live load of 15 psf, ground snow load of 70 psf, and wind load of 112 mph. Existing covers were coated under the last SRF project, but are nearing the end of their useful service life.

Primary Settling Tank Expansion

Existing primary tanks are undersized and recommended to increase capacity with a third primary tank to the east of the existing tanks. Tank would be similar in nature to existing tanks, complete with flights, drive mechanism, cross collector, and a dog house for motor. Preliminary calculations suggest an additional rectangular tank would reduce surface overflow rate at existing average flows to 860 GPD/sf and 1865 GPD/sf for future flows. Note with expansion of similar size clarifier, performance still falls short of recommended Ten State Standards.

Raw Sewage Pump Station Rehabilitation

Raw Sewage Pump station currently has infiltration issues. Rehabilitation will include dewatering the structure, repairing concrete, and coating with a water barrier coating to reduce the I/I coming to the plant.

Miscellaneous Building and Site Improvements

Miscellaneous building and site improvements include upgrades to the SCADA system, painting throughout the facility where needed, replacement of the driveway, new generator, and improvements to the service building including an ADA bathroom.

Collection System Improvements

Continued improvements to the collection system through rehabilitation and replacement are to be included in the next five-year scope. Priorities will be established using SAW findings (i.e. televising reports, manhole inspections, etc.). This information is detailed in Appendix D.

Return Activated Sludge (RAS) No. 3 Pump Replacement

The No. 3 RAS pump is to be replaced with a similar pump as No. 1 and 2 with a capacity of 450 gpm at 16 ft TDH, VFD controlled, and a semi-open impeller. The No. 1 and No. 2 RAS pumps were replaced in 2018.

Headworks Improvements: Fine Screening and Septage Equalization

Preliminary treatment improvements include a new Headworks Building. The new headworks facility will combine automatic fine screening and septage handling in one building located along the interceptor sewer entering the WWTP. The new screening process would use one new automatic screen with the existing grinder used in the bypass channel. Automatic screening equipment would discharge solids to a washer compactor system to flush out organics and eliminate excess moisture. Figure 11 outlines proposed improvements.

The Newberry WWTP is one of the few WWTPs in the Eastern Upper Peninsula that accepts septage; it is critical to the customers that they continue offering this service and maintain the reliability of the septage handling. Septage receiving system will be contained in the same structure and will include tanker discharge connecting piping with metering and sampling provisions, storage and equalization tankage, septage return pumps, and tanker control/security/operations software. An isolated electrical and septage control room will be accessible to drivers for use with authorization and data recording identification cards. Following are preliminary design criteria:

Screen Type:	Vertical bar or perforated plate
Screenings Handling:	Washer-compactor system continuous bag containment
Screen Opening:	1/4 inch
Peak Flow:	3.0 MGD
Width:	2.0 ft minimum
Septage Receiving System:	Gravity/pressure discharge, metering, equalization, controls return pumping.
Septage Design Capacity:	7000 GPD
Max Month Received:	49,000 gallons
Storage/Equalization Volume:	8,000-gallons

Return Pumping Rate:	10 to 25 gpm
Return Pump Description:	Submersible, grinder
Screen Septage Building:	Masonry, corrosion resistant construction
Screen and Septage Area:	26 ft x 26 ft, explosion proof, Nema 7
Electrical Area:	12 ft x 10 ft, Nema 12
Disposal Container:	Continuous bag or dumpster
Site Improvements:	To allow movement for screenings removal and septage delivery

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