DRINKING WATER REVOLVING FUND

PROJECT PLAN FOR WATER SERVICE REPLACEAMENT PROJECT

NEWBERRY, MICHIGAN

May, 2022

UP Engineers & Architects

424 South Pine Street

Ishpeming, MI 49849

Project No: N24-

PROJECT BACKGROUND

Delineation of Study Area

The study area includes the entire Village of Newberry Water System. The Village is supplied by three different wells located around the village.

The Newberry Water System has one 100,000 gallon storage tank which is shown on the system map, included in Appendix C to this report, and discussed further in the existing facilities section of this project plan.

The proposed water service replacement project will take place along with a USDA funded project.

Appendix B, Figure 1 shows a delineation of the project location within the Village of Newberry.

Land Use in Study Area

The current land use for the Village of Newberry is shown in the land use map included in Appendix D to this report.

The existing land use within the proposed project area is zoned as central business district, community commercial, industrial, and residential.

POPULATION DATA

Population data for Newberry is in the tables below:

Table 1. Village of Newberry - Historic Population

Name	1970	1980	1990	2000	2010	2020
Village of Newberry	2,334	2,112	1,837	2,086	1,519	1,280

Table 2. Village of Newberry - Projected Population

	Existing Population	+5 years	+10 years	+20 years
Village of Newberry	1,280	1,280	1,280	1,280

Historical population data and projections for the Village were obtained from the U.S. Census Bureau.

The Village of Newberry has seen little population change over time. There is no reason to think there will be any significant population changes in the service area. Newberry's water demand will likely not change significantly over time either.

WATER DEMAND

The Newberry system services one industrial user and a few large commercial users, but the system services mostly residential users. With little projected population growth there is no reason to believe that there will be an increase in water demand.

EXISTING FACILLITIES

The Village's water system was originally constructed in 1913 with major upgrades around 2015.

A. *The condition of source facilities (e.g., wells, intakes, cribs, etc.).*

Water is supplied to Newberry by three wells. Well house #4 is located northeast of the Wisconsin Central railroad tracks in a concrete masonry well house. The well is operated by a 50 HP pump. The pump motor was replaced in 2004 leaving the well house in good working condition. Wells #6 and #7 are located southwest of the village and were installed in 2004. The wells are located outside of a well house with the controls inside. Both wells are operated by 75 HP motors and both wells are in excellent working condition. Wells #1, 2, 3, and 5 are no longer in use and are disconnected from the system.

B. *The method of water treatment, as well as the location and physical condition of facilities, including years in service of major components.*

Current Treatment Process

C. An evaluation of storage tank and pump station capacities, including the adequacy and reliability of pump stations in maintaining system integrity.

The System has one 100,000 gallon elevated steel storage tank. The tank is located by the village offices and garage off of Harrie Street. The tank was constructed in 1937 and has undergone maintenance on the interior and exterior most recently in 2012. The tank is undersized. Newberry's average daily usage is 250,000 gallons and the system should be able to store equal to one day's use of water. There are no pump stations in use by the system.

D. The condition of service lines.

Newberry has many old watermains that likely supply water to customers through galvanized or lead service lines. Galvanized services are not approved by EGLE and will have to be replaced where they are present. Some of the newer water services are copper or PVC, but the number of these services is unknown.

E. The type of conveyance system and the condition of any existing transmission and distribution mains.

The Newberry water system was originally constructed between 1913 and 1930 and most of the pipe installed was sand cast iron pipe with leaded joints. The system currently is comprised of 76,887 feet of watermain. A lot of this pipe has been upgraded since then, but some of it is still the original sandcast iron and some of it is undersized. There is a high presence of iron bacteria in these old mains that due to the sand cast pipes not having a cement lining. This makes the old, deteriorated watermain is susceptible to breaks, leaky joints, and provide an environment

for undesirable iron bacteria growth. The old main in the system experiences a large amount of leakage

F. The method of residuals handling and disposal, if applicable.

Not Applicable

G. The Condition of Water Meters

The Village meters all users in the system and the meters are in working condition.

H. A discussion of operation and maintenance including any problems, as well as an evaluation of opportunities to maximize operation and maintenance to improve drinking water quality.

The Newberry water system currently has a high presence of iron bacteria. This is caused by old sandcast iron pipe materials in the system and also inadequate flushing velocities. Also the system experiences a large amount of leakage. Replacing the existing distribution system with new ductile iron watermain would improve these issues by removing the old and undersized mains. This would reduce leakage, limit areas where iron bacteria can grow, and would include replacing inoperable gate valves and hydrants. Increasing the main size and replacing inoperable valves and hydrants would help the village adequately flush the main during maintenance of the system.

I. *The design capacity of the waterworks system and existing uses of available capacity.*
Design Capacity Issues

J. Evaluation of the System's climate Resiliency

Summary of Project Need

The Village of Newberry likely has many water services that are made out of galvanized or lead materials and are not in compliance with EGLE and EPA standards. It will be efficient and cost effective to replace them along with upcoming watermain replacement projects.

Compliance with the drinking water standards defined in the Administrative Rules for Act 399.

A. Any acute violations of a Maximum Contaminant Level or surface water treatment technique.
None

B. Any non-acute violations of a Maximum Contaminant Level or surface water treatment technique.
None

C. An evaluation of the existing treatment facility as conducted and/or reviewed by EGLE or other appropriate regulatory agency. The evaluation should compare the existing treatment facility to the requirements of Act 399.
None

D. A description of any waterborne disease outbreaks, their magnitude, and their apparent causes.
None

E. A Reliability Study/ Master Plan which substantiates water supply needs and outlines deficiencies that warrant correction.
Attached in Appendix A of this project plan is the Reliability Study/ Master Plan. Performed by Stantec in 2013.

Orders or Enforcement Actions

Please provide a copy of any court or enforcement order against the water supplier, including written enforcement actions, such as a Notice of Violation, Consent Agreement, or Department Order to correct deficiencies and achieve compliance with Act 399.

No official documentation from the EGLE in regards to these items.

Drinking Water Quality Problems

A. Drinking water quality problems being experienced by the water supplier should be identified. The aesthetic quality of the drinking water supply should also be discussed.

The system has high amounts of iron bacteria in areas where there are old, sandcast iron watermains. The water system also contains many galvanized or lead water services that are not approved for use by EGLE.

B. Where the community is proposing to provide new service to areas currently served by individual wells, the project plan must document the nature, number and location of wells that are malfunctioning based on the DEQ, and/or local health department records, and/or sanitary surveys. The site characteristics (e.g., groundwater levels, soil permeability, geology) contributing to the problems must be documented. The system failures and limiting site characteristics must be plotted on a map along with existing habitation.

No proposed expansion of water main into new areas to serve customers that currently operate private wells.

C. Where surface water or groundwater contamination is of concern, point and nonpoint sources of pollution should be examined. For groundwater contamination, aquifer condition and type should be identified. Where surface water contamination is of concern, describe and evaluate the impact of these problems on the quality of drinking water.

PROJECTED NEED FOR THE NEXT 20 YEARS

The proposed project, in conjunction with the USDA RD Water Improvements Project, will address a significant portion of the projected 20-year capital improvements. Work associated with the lead/copper rules requirements will be added to the Capital Improvements Plan once the Final DSMI Report is completed and we have an accurate projection on the financial burden this will place on the water system.

EXPLORATORY WELL INVESTIGATIONS/WELL SITE SELECTION/TEST WELL DRILLING PROCEDURES

Not Applicable

ANALYSIS OF ALTERNATIVES

Identification of Potential Alternatives

No-Action

With a 'No-Action' alternative, the removal and replacement of deficient lead or galvanized water services will not occur along with proposed water projects and will have to be done at a later date after the project is completed and will lead to higher costs for the village including redoing surface restoration. No-Action is not an approved by EGLE regulatory requirements associated with the current Lead and Copper Rules.

Replacement of Old Deficient Service Lines

This recommended proposed alternative, as outline in the project plan, includes the placement of new type K copper water services where lead or galvanized services are present.

Optimum Performance of Existing Facilities

The optimal performance of the Village of Newberry water system would require upgrades outlined in the proposed project plan. By performing the upgrades outlined in this plan, the reliability and performance of the system will be increased. To continue to strive towards optimum performance of the system, the Village will continue to pursue funding options for all of the items outlined in the 20-year improvements plan.

Regional Alternatives

There are no nearby water systems to tie into, so there are no reginal alternatives.

ANALYSIS OF PRINCIPLE ALTERNATIVES

The only alternative presented is the "No-Action" alternative which would cause the water services to be replaced at a later date to comply with EGLE and EPA standards. This would lead to higher restoration costs for the city.

The recommended option is the replacement of deficient service lines where they are discovered within the upcoming watermain replacement project areas.

The Engineer's Opinion of Cost is:

Item #	Description	Units	Quantity	Unit Price	Total
W1	Mobilization	LS	1	$150,000	$150,000
W2	Curb Stop	EA	350	$300	$105,000
W3	Corp Stop	EA	350	$300	$105,000
W4	1" Water Service	LFT	17,500	$60	$1,050,000
W5	Connect to Ex Water Service	EA	400	$200	$80,000
W6	HMA Restoration	SYD	17,500	$30	$525,000
W7	Grass Restoration	SYD	17,500	$7	$122,500
W8	Misc	LS	1	$100,000	$100,000
				Construction Subtotal	$2,237,500
				Engineering (15%)	$335,625.00
				Admin	$102,135
				Project Total Cost	$2,675,260

Cost Effective Analysis

A. Present Worth – Proposed Option of Distribution Upgrades

i. No Action

Not Applicable – Required by Lead/Copper Rule Requirements to complete this portion of the project

ii. Proposed Project – Open Cut Installation of Ductile Iron Watermain

If the RD Project proceeds, this project is mandatory.

iii. Alternative – Directional Bore Installation of HDPE Watermain

Mobilization costs associated with directionally boring each individual service is cost prohibitive due to the open cut method taking place for the water main at the same time. This is not a cost-effective approach.

B. Discount Rate

1.2%

C. Salvage Value

Not Applicable. There is no salvage value for buried water services in either option.

D. Escalation

Leakage could increase slightly over time for the deficient water services, but they will need to be replaced in the near future anyway to comply with EGLE and EPA standards.

E. Interest During Construction

F. CMAR, PDB, or FPDB Delivery Method

Environmental Evaluation

A. Cultural Resources

No anticipated cultural impacts since the project is removing and replacing/repairing existing infrastructure. If it appears that cultural resources are being impacted, work would be immediately ceased, and the State would be contacted.

B. The Natural Environment

The environmental impacts of the proposed project are limited due to the locations of the water service improvements. The project will be taking place just outside of Village right-of-way.

Climate
The Village of Newberry is located in the Eastern Upper Peninsula. It has a temperate climate with major influence from Lake Superior. Recent extreme winters have played a significant role in the overall impact that weather plays on water system infrastructure within the UP. The winter of 2013 was the worst winter in recent memory with frost depths reaching down to over 9 feet.

Air Quality
N/A – no measurable impact by the proposed project

Coastal Zones
Final project to be reviewed by EGLE during the design phase of the project. Correspondence included in Attachment B.

Major Surface Waters
There are no major bodies of water in the village of Newberry.

Wild and Scenic Rivers
According to the "Clean Water State Revolving Fund Project Plan Preparation Guidance" and the Michigan DNR website, there are no wild and scenic rivers located within the project area. Review letter response included in Attachment B.

Floodplains
The proposed project will include no surface improvements beyond the removal and replacement of valve boxes and fire hydrants. Thus the project will have no impact on the floodplain.

Wetlands
The proposed project is not expected to impact any wetlands that are located within the vicinity of the proposed project.

Topography
See Appendix B for study area topographic map.

Geology and Soils
Geology and Soils maps included in Appendix B.

Protected Plans and Animals
None

A permit would be submitted to the EGLE for review during the design phase of the project.

National Natural Landmarks
None

Unique Features
None

MITIGATION
Minor mitigation is expected to handle construction related environmental issues.

Mitigation Short-Term Impacts

Short-term impacts shall be addressed with all necessary construction permits. Soil Erosion and Sedimentation Control permit shall be required to be obtained by the contractor prior to construction. Minor inconveniences will exist for the residential population located within the project area. The contractor shall be required to accommodate local traffic to the best of their ability during the construction process.

Mitigation Long-Term Impacts

Long-term impacts from the proposed project include increased reliability and water quality to the project area. A Reduction in loss due to leakage will result in reduced water treatment and pumping costs.

Implementability and Public Participation

Public Participation into the selection of an alternative is a key aspect of the Drinking Water Revolving Fund Process. The two possible options, water main replacement and "No-Action" would be provided to the public for review during the public information meeting.

Technical and Other consideration

Option 1 – Upgrades to the existing water services would take place along with the upcoming watermain replacement projects.

Option 2 – "No-Action"

This option would result in the water services being replaced at a later date.

Residuals

A. Industrial/Commercial/Institutional

There is one industrial user and a few other large-scale users on the system.

B. Growth Capacity

Not Applicable

Contamination

There are a few locations of known contamination. Along the downtown corridor there are four contamination sites near the northern end of town. There is also one closed, leaking underground storage tank in the western part of town.

NEW/INCREASED WATER WITHDRAWLS

No projected new water users or changes in water demand.

SELECTED ALTERNATIVE

Description

The selected alternative is the project outlined in the project plan.

Relevant Design Parameters

A. Major process features.
Removal and replacement of lead and galvanized water services where they are discovered during upcoming water projects in the Village of Newberry.

B. Unit processes and sizes as related to service area needs.
Areas where upcoming water projects are proposed are shown in the project map.

C. Schematic flow diagram.
Not Applicable for a water service replacement project

D. Design criteria (e.g., process loading, existing and projected design flows, and other aspects of the preliminary basis of design). Per 2014 10-States Standards and Michigan EGLE regulations.

E. Residuals management such as haul routes, times, and frequencies.

Haul routes, construction means and methods are to be determined by the contractor. The engineer shall be responsible for oversight to ensure that they follow permit requirements issued by the Luce County Road Commission

F. Wells and intakes.
Not Applicable. No Improvements planned for wells or intakes

G. Water distribution system. Provide details including pipe lengths and sizes, street names, and proposed routes. The route details are not expected to be known at a design level of specificity, but citizens should be able to read the description of the selected alternative and know if major construction is being considered for their street.
See Attached Project Map, Appendix C.

H. Pump station types and sizes, including provisions for standby power, telemetry, etc.
Not Applicable. No Improvements Planned for Pump Stations

I. Storage facilities.
Not Applicable. No Improvements planned for storage facilities

J. Schedule for design and construction.
- July 1 2022: Submitted Project Plan
- October 2022: Receive funding for water service replacements
- October 2022: Begin design engineering process
- January 2023: Part 1 of Application Submitted
- February 2023: Part 2 of Application Submitted
- March 2023: Bid Advertisement
- April 2023: Bid Opening
- June 2023: Loan Closing
- October 2023: Construction complete, project close out

Hydrogeological Analysis

Finalization of Well Design

Not Applicable

Schedule for Design and Construction
- July 1 2022: Submitted Project Plan
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Engineers Opinion of Cost

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				Admin	$102,135
				Project Total Cost	$2,675,260

User Costs

- *Engineers Opinion of Cost*
  $2,675,260

- *Estimated operation and maintenance costs, including replacement of equipment which may be necessary to ensure that the waterworks function properly throughout its useful life.*

  See Appendix E for a summary of Water Budget Expenses including O & M costs. 2021 operation and maintenance costs were $318,461.23

- *Other costs to be incurred by the system users.*
  Existing Debt Service ~~Interest~~ Payments (2021 Budget)

  Total Debt Service ~~Interest~~ for 2021 was $367,565.78

- *An analysis of the impacts of the annual user costs for water supply on the system users.*
  848 Users consuming a total of 1,192 Residential Equivalent Units. The proposed project impact is calculated using the 20 year, 2.5% DWRF interest rate and term. The annual payment costs associated with this loan amount to $12.00 per REU per month.

- *A demonstration of the water supplier's ability to repay the incurred debt, including discussion on how the project costs will be financed.*
  Debt Service fee shall be increased to pay for the new debt incurred by the proposed project. The debt service fee will increase by $12.00 per REU per month.

Disadvantaged Community

See Attachment A Disadvantaged Community Worksheet.

Ability to Implemented Selected Alternative

The Village of Newberry is the sole municipality involved in the proposed project plan. A Support Resolution will be adopted by the Board to accept the project. Resolution to be included in Attachment.

Environmental Evaluation

A. Cultural Resources

No anticipated cultural impacts since the project is removing and replacing/repairing existing infrastructure. If it appears that cultural resources are being impacted, work would be immediately ceased, and the State would be contacted.

B. The Natural Environment

The environmental impacts of the proposed project are limited due to the locations of the lift station improvements. The project will be taking place within Township right-of-way.

Climate
The Village of Newberry is located in the Eastern Upper Peninsula. It experiences a temperate climate with major influence from Lake Superior. Recent extreme winters have played a significant role in the overall impact that weather plays on water system infrastructure within the UP.

Air Quality
N/A – no measurable impact by the proposed project

Coastal Zones
Final project to be reviewed by EGLE during the design phase of the project. Correspondence included in Attachment B.

Major Surface Waters
No major waters nearby.

Wild and Scenic Rivers
According to the "Clean Water State Revolving Fund Project Plan Preparation Guidance" and the Michigan DNR website, there are no wild and scenic rivers located within the project area. Review letter response included in Attachment B.

Floodplains
The proposed project will include no surface improvements beyond the removal and replacement of sanitary manholes. Thus the project will have no impact on the floodplain.

Wetlands

The proposed project is not expected to impact any wetlands that are located within the vicinity of the proposed project. However, a letter was sent by UPEA to the EGLE for review and approval of the proposed project without any need for a wetland permit. An onsite review will need to take place between UPEA and the EGLE concerning the project locations to determine no impact to the adjacent wetlands, as outline in the EGLE response. Response letter included in Attachment B.

Topography
See Appendix B for study area topographic map.

Geology and Soils
Geology and Soils maps included in Appendix B.

Protected Plans and Animals
None

A permit would be submitted to the EGLE for review during the design phase of the project.

National Natural Landmarks
None

Unique Features
None

Agricultural Land

No Agricultural land is present in the Village of Newberry.

Social/Economic Impact

Not Applicable

Construction/Operational Impact

The contractor will be responsible to accommodate the needs of the residence within the project area during construction. Once the upgrades are completed, the Township will be able to operate its system with a higher level of reliability.

Indirect Impacts

A. Changes in the rate, density, or type of development, including residential, commercial, industrial, and the associated transportation changes.
There are no anticipated changes to the rate, density, or type of development as this project will only address existing service lines.

B. Changes in land use (e.g., open space, floodplains, prime agricultural land, and coastal zones).
None

C. Changes in air or water quality stemming from primary and secondary development.
Minor impact to air quality during construction due to construction activities. This impact would include necessary dust control measures.

D. Changes to the natural setting or sensitive ecosystems, or jeopardy to endangered species resulting from secondary growth.
None

E. Impacts on cultural, human, social, and economic resources.
None

F. Resource consumption over the useful life of the facility and the generation of wastes.
None

G. Aesthetic and other impacts.
There will be surface restoration in areas disturbed by the project.

MITIGATION

Minor mitigation is expected to handle construction related environmental issues.

Mitigation Short-Term Impacts

Short-term impacts shall be addressed with all necessary construction permits. Soil Erosion and Sedimentation Control permit shall be required to be obtained by the contractor prior to construction. Minor inconveniences will exist for the residential population located within the project area. The contractor shall be required to accommodate local traffic to the best of their ability during the construction process.

Mitigation Long-Term Impacts

Long-term impacts from the proposed project include increased reliability and water quality to the project area. Replacing the services with the upcoming watermain project will prevent these areas from being excavated in the future.

PUBLIC PARTICIPATION

Public Meetings on Proposed Alternatives

Due to the lack of feasible or competitive alternatives to this project, it is the opinion of UP Engineers & Architects and the Village of Newberry that additional meetings above and beyond Village Board Meetings would be an unnecessary requirement of the decision making process.

The Formal Public Hearing

Scheduled to take place in June, 2022 to provide sufficient time to receive and react to public feedback.

Public Hearing Advertisement

A notice of the public hearing must be advertised at least 30 days prior to the hearing in a newspaper of general circulation in the communities affected by the proposed project. A copy of the advertisement and an affidavit confirming its publication must be included in the final project plan. Instructions on where to find copies of the project plan and how to submit written comments about the project must be included in the advertisement. A model public hearing notice is provided in Attachment D.
Public Hearing Transcript or Recording

The final project plan must be accompanied by one of the following:

A. A verbatim transcript of the public hearing, recorded by a court reporter or transcribed by a stenographer from a recording of the proceedings (most preferred).

B. Am audio recording of the public hearing.

C. A video recording of the public hearing (least preferred).

Public Hearing Contents

The following items must be discussed during the public hearing:

A. A description of the drinking water quality needs and problems to be addressed by the proposed project and the principal alternatives that were considered.

B. A description of the recommended alternative, including its capital costs and a cost breakdown by project components (e.g., supply, treatment, distribution, storage).

C. A 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. A description of the anticipated social and environmental impacts associated with the recommended alternative and the measures that will be taken to mitigate adverse impacts.

In the event no one from the public attends the hearing (a reporter would be considered a member of the public, as would members of the applicant's governing body), the public hearing may be opened and closed without a formal presentation of the project plan. However, a transcript or recording must still be submitted with the final project plan documenting this action.

Comments Received and Answered

The final project plan must include the following items:

A. A typed list with the names and addresses of the people who attended the public hearing.

B. A copy of any written comments which were received during the public comment period for the proposed project.

C. The applicant's responses to the comments received.

D. A description of any changes which were made to the project as a result of the public participation process.

Adoption of the Project Plan (Required)

The official period for receiving public comments on the proposed project may either end at the close of the formal public hearing or extend for a several days after the hearing. After the close of the public comment period, an alternative must be selected for implementation by the municipalities participating in the project. The final project plan submitted by the May 1 deadline must include resolutions from all of the participating local units of government to formally adopt the project plan and implement the selected alternative. A sample resolution can be found in Attachment A.