

# VILLAGE OF THOMPSONVILLE



WATER SYSTEM

PRELIMINARY ENGINEERING REPORT

**JULY 2021** 



### PROJECT OVERVIEW

- THIS STUDY IS TO BE UTILIZED BY THE VILLAGE TO SEEK FUNDING OPPORTUNITIES FOR INFRASTRUCTURE UPGRADES AND INCLUDES THE FOLLOWING KEY ELEMENTS:
  - INFRASTRUCTURE & CONDITION ASSESSMENT
  - ESTIMATE EXISTING AND FUTURE FLOW RATES
  - EVALUATE OPTIONS FOR WATER SUPPLY, STORAGE AND DISTRIBUTION UPGRADES
  - PROVIDE ESTIMATED COSTS AND POTENTIAL SERVICE FEES
  - RECOMMENDATIONS FOR PROPOSED IMPROVEMENTS



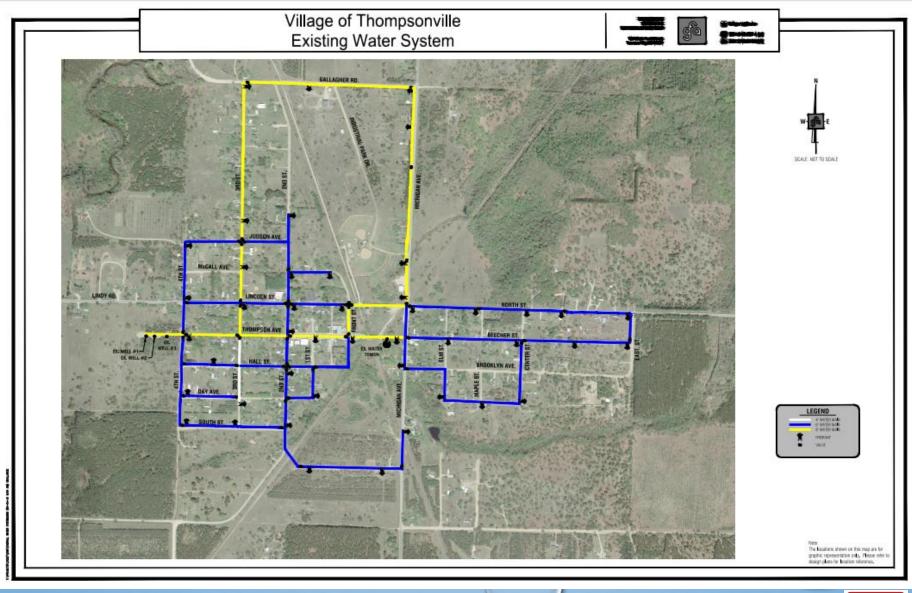
#### **EXISTING INFRASTRUCTURE**

| Village of Thompsonville System Components – Typical vs. Remaining Life<br>Expectancy |                         |                           |  |
|---|-------------------------|---------------------------|--|
| Component   | Typical Life Expectancy | Remaining Life Expectancy |  |
| Distribution System   |                         |                           |  |
| Valves  | 35 years +              | Varies                    |  |
| Piping  | 50 years                | Varies                    |  |
| Hydrants  | 35 years                | Varies                    |  |
| Supply System   |                         |                           |  |
| Well #2   | 75 years +              | 0 years                   |  |
| Well #3   | 75 years +              | 0 years                   |  |
| Well #4   | 75 years +              | 70 years                  |  |
| Wellhouse   | 50 years +              | 0 years                   |  |
| Chemical Feed System  | 10 years                | 0 years                   |  |
| Well #2 – Pump / Motor  | 25 years +              | 0 years                   |  |
| Well #3 – Pump / Motor  | 25 years +              | 0 years                   |  |
| Well #4 – Pump / Motor  | 25 years +              | 20 years                  |  |
| Mechanical Piping /   | 25 years                | 0 years                   |  |
| Valves  |                         |                           |  |
| Controls  | 10years                 | 0 years                   |  |
| Control Panel   | 25 years                | 0 years                   |  |
| Storage System  |                         |                           |  |
| Tower   | 50 years +              | 20 years                  |  |
| Controls  | 10- years               | 0 years                   |  |

THE VILLAGE OF THOMPSONVILLE WATER SYSTEM IS COMPRISED OF:

- THREE (3) POTABLE WELLS (SUPPLY)
- ONE (1) 100,000 GALLON ELEVATION WATER TANK (STORAGE)
- 36,800 LINEAR FEET OF 4-8"
   WATERMAIN (DISTRIBUTION)

THE LIST TO THE LEFT REPRESENTS ALL
CRITICAL INFRASTRUCTURE AND TYPICAL /
REMAINING LIFE EXPECTANCY FOR EACH





### **EXISTING INFRASTRUCTURE**



ATTACHED PHOTOS OF CRITICAL INFRASTRUCTURE:

~100,00 GALLON ELEVATED TANK BUILT IN 1980

~WELL NO. 3 ORIGNALLY INSTALLED IN 1947

~WELLHOUSE CONSTRUCTED IN 1947 AND RENOVATED IN 1980



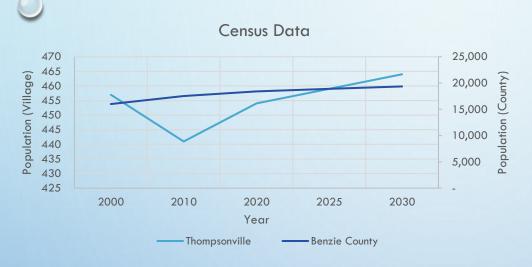
Village of Thompsonville Preliminary Engineering Report - 2021

#### **NEED FOR PROJECT & INFLUENCING FACTORS**

- CUSTOMERS NEEDS: EXISTING WATER SYSTEM IS A STAND-ALONE
   SYSTEM THAT PROVIDES CLEAN WATER TO 260 CUSTOMERS. THE
   INFRASTRUCTURE HAS BEEN IN OPERATION FOR OVER 40 YEARS WITH
   CRITICAL COMPONENTS EVEN OLDER AND IDENTIFIED AS DEFICIENT.
- OVERALL MUNICIPAL IMPACT:
  - LACK OF REDUNDANCY AND RELIABILITY
  - IMPACTS TO SYSTEM OPERATION, SECURITY AND INABILITY TO DELIVER QUALITY WATER TO CUSTOMERS
- OVERALL ENVIRONMENTAL IMPACT: SHORT TERM AND INSIGNIFICANT COMPARED TO OVERALL LIFE CYCLE OF THE INFRASTRUCTURE AND THE SUBSTANTIAL LONG-TERM IMPACT ON WATER QUALITY WITHOUT THE UPGRADES.
- EGLE HAS PROVIDED LETTER OF DEFICIENCY CITING NEED FOR PROJECT



## FLOW RATES & ESTIMATED CUSTOMERS



- 2% ANNUAL GROWTH IS ANTICIPATED FOR THIS STUDY
- THE CAPACITY OF THE EXISTING
  INFRASTRUCTURE CAN
  ACCOMMODATE 34% ADDITIONAL
  GROWTH (APPROXIMATELY 136
  CUSTOMERS)

| Year                     | 2000            | %<br>Change | 2010      | %<br>Change | 2020           | %<br>Change | 2030*          |
|--------------------------|-----------------|-------------|-----------|-------------|----------------|-------------|----------------|
| State of Michigan        | 9,938,444       | -0.6%       | 9,883,640 | 2.0%        | 10,077,33<br>1 | 3.3%        | 10,422,60<br>0 |
| Benzie County            | 1 <i>5</i> ,998 | 8.7%        | 17,525    | 4.8%        | 18,417         | 2.17%       | 18,826         |
| Village of Thompsonville | 457             | -3.5%       | 441       | 3.0%        | 454            | 2.17%       | 464            |

# SUPPLY IMPROVEMENT NEEDS & OPTIONS – SUMMARY

WATER SUPPLY IS A CRITICAL COMPONENT OF THE WATER SYSTEM. WELLS #2 AND #3 INCLUDING ASSOCIATED INFRASTRUCTURE (WELLHOUSE, PIPING, VALVES, METERING EQUIPMENT, CONTROLS AND SCADA) ARE AGED AND OPERATING BEYOND THEIR LIFE EXPECTANCY WITH FAILURE EMINENT. THE FOLLOWING OPTIONS WERE EVALUATED:

| Options                                    | Pros  | Cons   |  |  |
|--|---|--|--|--|
| Option 1 — Replace<br>wells and well house | <ul> <li>Updated and more reliable system and equipment</li> <li>More efficient operation and remote monitoring</li> <li>Potential to expand service area</li> <li>Added security to system against vanadalism</li> </ul> | Financial impact to customers (higher water rates)   |  |  |
| Option 2 – No<br>Upgrades                  | <ul> <li>No need for financing</li> <li>Water rate increase not needed</li> </ul>   | <ul> <li>Long Term Impact ability to serve<br/>customers when infrastructure fails</li> <li>SDWA violation risk</li> </ul> |  |  |

# Storage Options - Summary

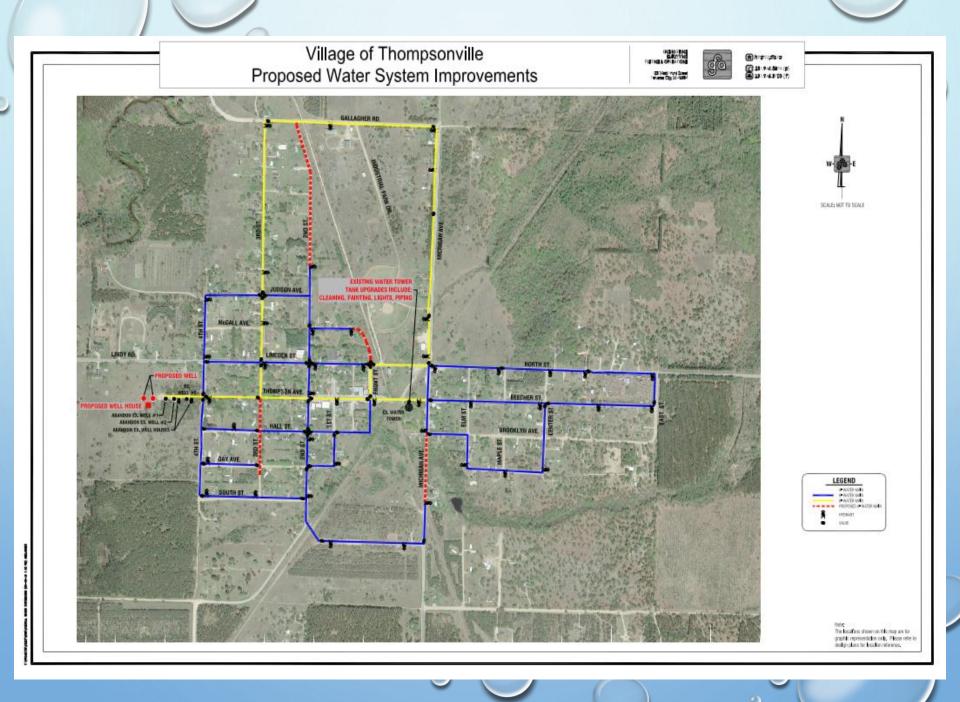
WATER STORAGE IS CRITICAL TO MAINTAIN SYSTEM PRESSURES
AND VOLUME FOR EMERGENCY (FIRE). A RECENT TANK
INSPECTION IDENTIFIED MAINTENANCE INCLUDING PAINTING,
LIGHTING AND PIPING REPAIRS. THE FOLLOWING OPTIONS
WERE EVALUATED:

| Options  | Pros   | Cons  |  |  |
|--|--|---|--|--|
| Option 1 — Rehab<br>Existing Elevated Water<br>Tower | <ul> <li>Reduce chance of drinking water contamination</li> <li>Aesthetically pleasing</li> <li>More efficient operations and remote monitoring</li> </ul> | <ul> <li>Temporary loss of water storage - Time needed to paint the water tower</li> <li>Financial impact to customers (higher water rate)</li> </ul> |  |  |
| Option 2 – No Upgrades                               | <ul> <li>No need for financing</li> <li>Water rate increase not needed</li> </ul>  | <ul> <li>Long Term Impact ability to serve customers when infrastructure fails</li> <li>SDWA violation risk</li> </ul>                                |  |  |

# Distribution Options - Summary

WATER DISTRIBUTION IS CRITICAL COMPONENT OF THE WATER SYSTEM TO DELIVER RELIABLE WATER TO CUSTOMERS. FOUR LOCATIONS WERE IDENTIFIED TO BE UPSIZED AND LOOPED TO ENSURE THIS RELIABILTY THE FOLLOWING OPTIONS WERE EVALUATED:

| Options  | Pros   | Cons   |  |  |
|--|--|--|--|--|
| Option 1 – Replace and add distribution piping to system | <ul> <li>Added redundancy in case of emergency</li> <li>Increased water quality and quantity (fire flows)</li> <li>Added security to system against vanadalism</li> <li>Remote monitoring of system improving efficiency in O&amp;M</li> </ul> | <ul> <li>Construction disturbance to the Village</li> <li>Financial impact to customers (higher water rate)</li> <li>Temporary water disruption to customers</li> <li>Temporary traffic disruption during install</li> </ul> |  |  |
| Option 2 – No Upgrades                                   | <ul> <li>No need for financing</li> <li>Water rate increase not needed</li> </ul>  | <ul> <li>Long Term Impact ability to serve customers when infrastructure fails</li> <li>SDWA violation risks</li> </ul>  |  |  |



# SYSTEM OPTIONS – CONSTRUCTION COST SUMMARY

# Construction Cost Estimates for All Water Supply, Storage and Distribution Options

| Total INCLUDING                                  | Option 1       | Option 2 |
|--|----------------|----------|
| Engineering,<br>Administrative and Legal<br>Fees | \$2,271,475.00 | \$0.00   |
| Supply   | \$875,025.00   | \$0.00   |
| Storage  | \$94,580.00    | \$0.00   |
| Distribution                                     | \$1,246,870.00 | \$0.00   |



### **RECOMMENDATION – WATER RATES**

|                        | EXISTING | PROPOSED |
|------------------------|----------|----------|
| Water Rate (Flat Rate) | \$38.00  | \$66.00  |

\*Annual Debt Payment conservatively assumes <u>NO</u> grant assistance, ONLY 40 Yr. USDA Loan @ 1.5% with annual payment of approximately \$76,000 per year

## FUNDING OPTIONS

#### USDA Rural Development – Grant / Loan

- Thompsonville is Eligible for 80% grant based upon income level / need
- Provides financial relief and monthly cost at a minimum of \$66.00
- Loan terms at 40 Years @ 1.50%

#### Low Interest Loan / Bonding

- Eligibility: No Restrictions
- Terms: 20 Year @ 3.5% Interest



\*\*\*\$1,000,000 Grant reduces monthly cost by \$10 (average)



## **NEXT STEPS**

- ✓ APPROVE THE PRELIMINARY ENGINEERING REPORT PER RECOMMENDATIONS
- ✓ INITIATE A PRE-APPLICATION MEETING WITH USDA SUBMIT APPLICATION AND ENVIRONMENTAL REPORT TO USDA FOR REVIEW
- ✓ VILLAGE TO SUBMIT APPLICATION UTILIZING USDA RD APPLY (WITH GFA HELP)
- ✓ USDA TO REVIEW AND PROVIDE COMMITMENT LETTER\*
- \*ONCE RECEIVED ALL COSTS INCURRED ARE ELIGIBLE EXPENSES COVERED UNDER LOAN / GRANT