

# Town of Mendon

---

16 West Main Street  
Mendon, New York 14472

**ENGINEER'S REPORT**

*FOR THE*

**EXTENSION #7 TO  
MENDON WATER DISTRICT #1**

September 2006  
MRB Group Project No. 133510

Prepared by:

**MRB** | *group*  
Engineering, Architecture, Surveying, P.C.

2480 Browncroft Boulevard  
Rochester, New York 14625  
(585) 381-9250 — (585) 381-1008 fax  
www.mrbgroup.com — e-mail: info@mrbgroup.com

---

**SOLUTIONS FROM CONSULTANTS YOU CAN TRUST**

**TABLE OF CONTENTS**

**I. INTRODUCTION.....1**

**II. PROJECT PLANNING AREA.....1**

    A. LOCATION.....1

    B. ENVIRONMENTAL RESOURCES PRESENT.....1

**III. EXISTING FACILITIES.....2**

    A. LOCATION MAP.....2

    B. HISTORY.....2

    C. CONDITION OF FACILITIES.....2

    D. FINANCIAL STATUS OF OPERATING CENTRAL FACILITIES.....4

**IV. NEED FOR PROJECT.....4**

    A. HEALTH AND SAFETY.....4

    B. SYSTEM O&M.....4

**V. ALTERNATIVES.....5**

    A. DESCRIPTION.....5

    B. DESIGN CRITERIA.....6

    C. SCHEMATIC LAYOUT.....6

    D. LAND REQUIREMENTS.....7

    E. CONSTRUCTION PROBLEMS.....7

    F. ADVANTAGES / DISADVANTAGES.....7

**VI. PROPOSED PROJECT.....8**

    A. PROJECT DESIGN.....8

    B. CAPITAL COST ESTIMATE.....13

    C. ANNUAL OPERATING BUDGET.....15

    D. PROJECT JUSTIFICATION:.....18

    E. REQUIRED APPROVALS.....20

**VII. CONCLUSIONS AND RECOMMENDATIONS.....21**

---

**LIST OF FIGURES**

---

FIGURE 1 – LOCATION MAP ..... 3

**LIST OF TABLES**

---

TABLE 1: WATER SUPPLY REQUIREMENTS ..... 9  
TABLE 2: DISTRIBUTION ..... 10  
TABLE 3: MWCA SUPPLIED SYSTEM DATA ..... 11  
TABLE 4: OPINION OF PROBABLE PROJECT COST..... 14  
TABLE 5: TYPICAL COST PER PARCEL..... 16  
TABLE 6: ANNUAL COST SUMMARY ..... 17

**LIST OF APPENDICES**

---

- A. Map and Plan
- B. Boundary Description
- C. Hydraulic Analysis
- D. Debt Service

## **I. INTRODUCTION**

The residents of the south east portion of the Town of Mendon have requested public water. The Town of Mendon authorized MRB|group, P.C. to perform a study to determine the feasibility of extending water to these residents. The results of the study were presented at a public information meeting for the effected residents on August 14, 2006. Following the presentation the Town of Mendon issued a resolution authorizing MRB|group, P.C. to prepare a Map, Plan, and Report.

This map, plan and report was prepared in accordance with Article 12 Section 12 of the New York State Consolidated Laws and provides the information required by the Town Law to facilitate the creation of Extension #7 to Mendon Water District #1.

## **II. PROJECT PLANNING AREA**

### **A. LOCATION**

The general geographic area for the project is shown on Exhibit 1 – Map and Plan, in Appendix A. The service area includes those parcels in the south east portion of the Town that are not now part of a water district. A description of the service area is included in Appendix B – District Boundary Description.

### **B. ENVIRONMENTAL RESOURCES PRESENT**

The project area is rural/residential/agricultural in nature consisting primarily of single family homes and farms. A review of available mapping indicates that Federal listed wetlands exist within the proposed water district but are not located adjacent to the roads where the water mains would be installed. There do not appear to be State listed wetlands within the proposed water district.

There do not appear to be any environmental or cultural resources that will prohibit project development. All appropriate environmental and cultural resources will be investigated and documented as part of the required State Environmental Quality Review (SEQR) process including historic and archeological sites and critical species and habitats.

### **III. EXISTING FACILITIES**

#### **A. LOCATION MAP**

Figure 1 shows the project location in the south east corner of the Town of Mendon.

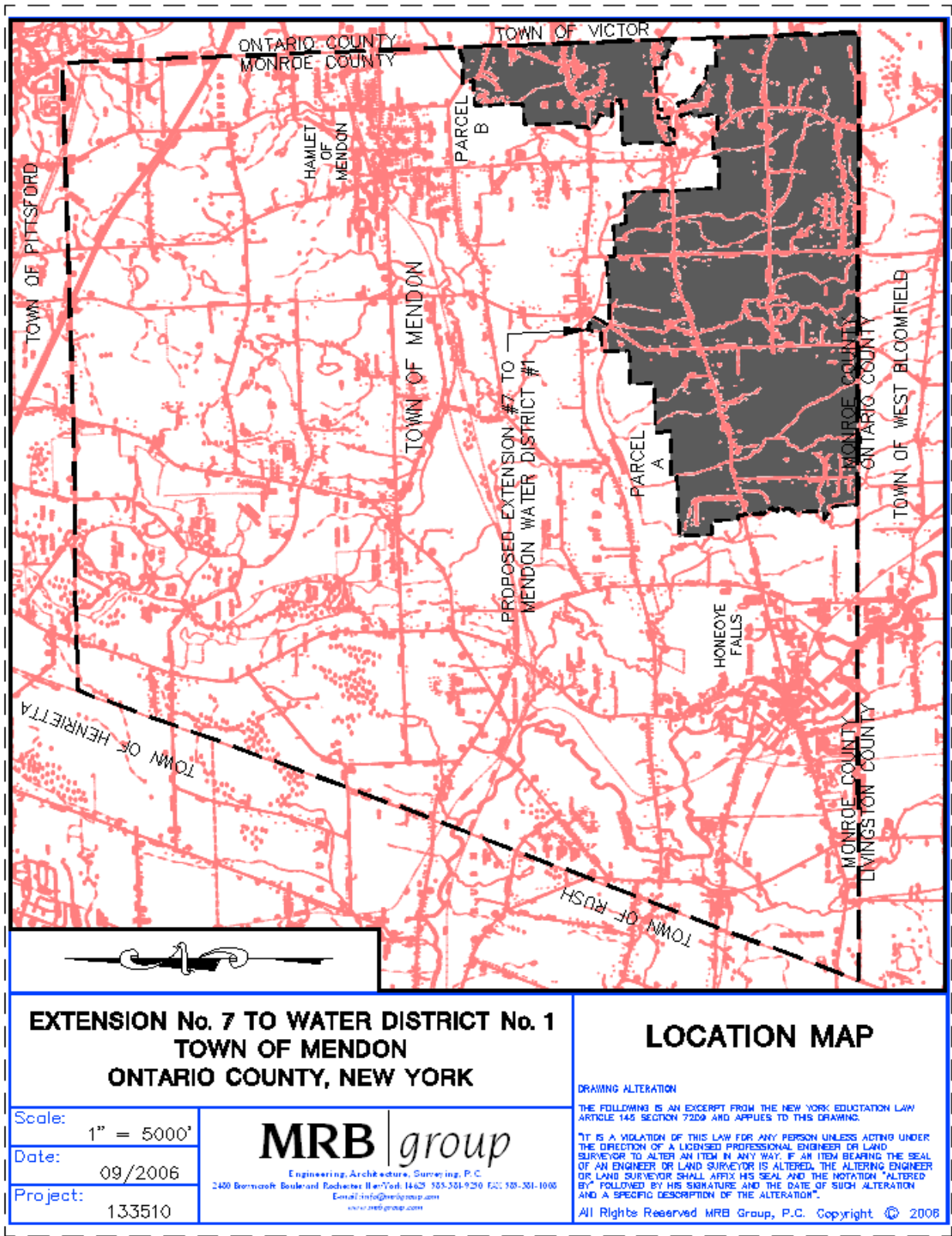
#### **B. HISTORY**

Mendon Water District #1 supplies water to the Town of Mendon and is operated and maintained by the Monroe County Water Authority. Mendon Water District #1 includes five district extensions. The proposed Extension #7 will provide water to areas not presently served and will provide critical looping of existing dead-end water mains.

#### **C. CONDITION OF FACILITIES**

The existing infrastructure in the general area of the proposed improvements is in good condition. The proposed service area is within Water District #1 supply capabilities. Compliance with Safe Drinking Water Act and applicable State requirements are handled by the Monroe County Water Authority, which operates the water system.

Figure 1 – Location Map



D. FINANCIAL STATUS OF OPERATING CENTRAL FACILITIES

The Town of Mendon will arrange for financing the proposed district extension. Repayment of the financing is the responsibility of District Extension #7. Infrastructure included in the district will be constructed to Monroe County Water Authority Standards.

**IV. NEED FOR PROJECT**

A. HEALTH AND SAFETY

This project is necessary due to water quantity and quality concerns. Residential complaints to the Town of Mendon and the Monroe County Health Department have documented poor water quality in the proposed service area.

The project will also provide fire protection to the properties within the proposed service area.

B. SYSTEM O&M

Operation and maintenance of the district is the responsibility of the Monroe County Water Authority. Operating and maintenance costs are paid through the Authority's retail rate. The 2006 retail rate is \$2.42/1,000-gallon plus a \$43.80/year meter charge. Based on an annual water usage of 70,000 gallons per year, it is anticipated that the cost of water to the average customer will be \$213.

## V. ALTERNATIVES

### A. DESCRIPTION

A single alternative is presented in this report, which includes about 80,600 LF of 8-inch main water main along portions of Boughton Hill Road east of Mendon-Ionia Road, Amann Road, Huntington Heights, West Bloomfield Road, Lanning Road, Mendon-Ionia Road, Taylor Road, Harloff Road, Cheese Factory Road, Partridge Hollow, Partridge Hill, Hunt Club Drive, Mendonshire Heights, Parrish Road, Buggywhip Trail, and Langpap Road. The project also includes about 14,900 LF of 12-inch water main along portions of Boughton Hill Road west of Mendon-Ionia Road.

The proposed project includes two hydraulic grade zones; an upper zone and a lower zone. The lower zone includes 52,200-feet of water main along Amann Road; Boughton Hill Road from the east end of an existing water main about 1,000-feet west of Huntington Heights to the west end of an existing water main about 1,000-feet west of Mendon-Ionia Road; Boughton Hill Road from Mendon-Ionia Road to Mendonshire Drive; Cheese Factory Road from Mendon-Ionia Road east to the Town line; Harloff Road; Huntington Heights; Lanning Road from Cheese Factory Road to Parrish Road; Partridge Hill Road; Partridge Hollow Road; Taylor Road from Harloff Road to the north property line of 602 Taylor Road; and West Bloomfield Road from Cheese Factory Road to Parrish Road.

The upper zone includes 43,300-feet of water main along Boughton Hill Road from Mendonshire Drive east to the Town line; Buggywhip Trail; Hunt Club Drive (existing water main); Langpap Road; Lanning Road from Parrish Road south to the Town line; Mendon-Ionia Road from Mendonshire Drive south to the Town Line; Mendonshire Drive (existing water main); Mendonshire Heights; Morgan Chase (existing water main); Parrish Road; and West Bloomfield Road

from Parrish Road south to the Town Line. Also included in the upper zone are pressure reducing valve vaults on West Bloomfield Road at Parrish Road, Lanning Road at Parrish Road, Mendonshire Heights at Mendon-Ionia Road, and Boughton Hill Road at Mendonshire Heights; a booster pump station on Mendon-Ionia Road near Mendonshire Heights; and a 150,000 gallon elevated water tank located on the east end of land owned by the Monroe County Water Authority.

Alternatives for providing water only to the upper zone or lower zone as separate projects were presented at the Town Board meeting held on August 14, 2006. The presentation demonstrated a cost benefit of providing water to both zones as a single project. Following a discussion of the presentation by residents and the Town Board, the residents at the meeting requested that the Town Board proceed with the Map, Plan and Report based on providing water to the entire service area. The Town Board concurred with this request.

B. DESIGN CRITERIA

Design of the project will be in accordance with Monroe County Water Authority design standards and the criteria outlined in the “Recommended Standards for Water Work,” 2003 edition. The system will be designed for a minimum working pressure of 35 psi, and a minimum fire flow of 500 gpm at 20 psi residual pressure.

C. SCHEMATIC LAYOUT

A schematic layout of the project is included in Exhibit 1, Appendix A.

D. LAND REQUIREMENTS

It is anticipated that the majority of the project will be constructed within Town of Mendon, Monroe County and New York State road rights-of-way. Selected easements may be required depending upon site conditions.

E. CONSTRUCTION PROBLEMS

Based on the information presently available, no significant construction problems are anticipated. In general, the project will be constructed in open areas along Town, County and State roads. Stream crossing are anticipated at various locations in the project area. The proposed storage tank will be constructed on land owned by the Monroe County Water Authority.

F. ADVANTAGES / DISADVANTAGES

The proposed project contemplates providing public water along roads where a connection to the existing public water supply is highly desirable. The existing supply network is capable of supplying the necessary volume of water to the area, with adequate pressures and flows. Additionally, the connections will improve hydraulics in the existing system by providing looping within the network. Each of these points can be considered advantages to proceeding in the manner described. The only discernable disadvantage of the project is that its cost exceeds the audit and control threshold amount.

## **VI. PROPOSED PROJECT**

### **A. PROJECT DESIGN**

#### **1. Population Growth**

US Census estimates for the Town of Mendon show an increase in the total population of 41 residents from 8,692 in 2003 to 8,733 in 2005. New residents to the Town moved into existing and new housing developments.

According to the Town of Mendon Building Department, the Town issued 92 building permits from 2003 through 2005. Of these permits, only about 3 were issued per year within the proposed water district extension area.

In 2006 there are 348 occupied parcels in the project area. Assuming an average of 3 building permits issued per year, it is anticipated that the number of occupied parcels will increase by 90 to 428 by 2036. Sufficient land is available under existing zoning requirements to accommodate this growth.

#### **2. Water Supply**

The Monroe County Water Authority will supply water to the proposed district through its existing distribution system. The existing system has sufficient capacity to supply the proposed water district. Depending on daily operating conditions, the MCWA can supply water to this portion of the Town of Mendon either from the Authority's Shoremont Water Treatment plant on Lake Ontario or from the City of Rochester's Hemlock Lake treatment plant. The Authority purchases water from the City of Rochester to supplement its water supply. The Authority has an existing

connection to the City conduits located just east of the Village of Honey Falls, which is adjacent to the proposed project.

The Monroe County Water Authority and City of Rochester water treatment plants are currently permitted by New York State Department of Environmental Conservation and have sufficient capacity to provide water to the proposed district extension. The treatment capacity of the MCWA system is 145 MGD with an average system demand is 63.1 MGD. The proposed district extension will have an average day demand of about 0.067 MGD.

Table 1: Water Supply Requirements presents a projection of the water supply requirements within the proposed district.

**Table 1: Water Supply Requirements**

Year:	2006	2036
Number of Equivalent Units*	348	438
Estimated Average Day Demand (GPD)	66,740	84,000
Total Annual Requirement (GPY)	24,360,000	30,660,000
Estimated Average Daily Flow (GPD) for a 3-Month Summer Period (1.3 x Avg.)	86,800	109,200
Estimated Maximum Day Requirement (GPD)	133,500	168,000
Estimated Peak Hour (gpm)**	200	200

\* Equivalent Units (EU) are herein defined as being an occupied unit using the equivalent water of a single-family home.

\*\* New York State Department of Health, "The Design of Small Water Systems," Figure 1-Probable Maximum Momentary Water Demand, 1958.

### 3. Treatment

Water treatment is the responsibility of the Monroe County Water Authority. Currently the Authority treats water from Lake Ontario and purchases additional water from the City of Rochester, which treats water from Hemlock and Canadice Lakes. Treatment of both sources is by a

traditional flocculation / sedimentation / filtration process with chlorine and fluoride added to the water before distribution. No water treatment improvements are proposed as part of this project.

4. Distribution and Layout

Table 2: Distribution, lists estimated amounts of water main anticipated for the project.

**Table 2: Distribution**

<b>ROAD</b>	<b>LENGTH (ft)</b>
Amann Road	5,200
Boughton Hill Road*	20,200
Buggywhip Trail	2,175
Cheese Factory	5,460
Harloff Road (extended)	3,310
Huntington Heights	2,810
Langpap Road	5,445
Lanning Road	11,465
Mendon-Ionia Road	7,760
Mendonshire Heights	1,820
Parrish Road	13,490
Partridge Hill Road	1,780
Partridge Hollow Road	935
Taylor Road	1,620
W. Bloomfield Road	12,075
<b>TOTAL</b>	<b>95,545</b>

\* 14,910 LF 12-inch, 5,290 LF 8-inch.

5. Hydraulic Calculations

a. Distribution and Layout

A hydraulic model was developed for the proposed district extension using EPANet 2.0 and FireFlow 2.1 by OptiWater. The model includes connections to the existing MCWA distribution system at three locations;

Mendon-Ionia Road, north of Assembly Drive; Rush-Mendon Road west of Assembly Drive; and on Quaker Meeting House Road north of Semmel Road. Also included are existing water mains between the points of connection and the District Extension. The MCWA provided static pressures and residual pressures at different flow rates at the points of connection. This data was used to develop flow curves used to simulate changes in the existing water system based on demands provided in the Expansion area. The Mendon Reservoir, which controls the hydraulic grade in this area of the MCWA system, was held at elevation at its normal operating elevation of 840. The model was calibrated the MCWA supplied data prior to adding the proposed District Expansion to the model.

**Table 3: MWCA Supplied System Data**

**With Mendon Reservoir on Line, Water level at El. 840'**

<b>Location</b>	<b>Elevation</b>	<b>0 gpm</b>	<b>500 gpm</b>	<b>1000 gpm</b>	<b>1500 gpm</b>
Cheese Factory Road, East of Chamberlain at 12" pipe.	650	80	75	66	52
Rush Mendon Road at Assembly Road	595	104	99	91	79
Route 64 at Assembly Road	580	111	106	98	86
Quaker Meeting House @ Semmel	650	81	76	69	60
Mendon BPS Status		Off	Off	Off	Off

**Without Mendon Reservoir on Line**

<b>Location</b>		<b>0 gpm</b>	<b>500 gpm</b>	<b>1000 gpm</b>	<b>1500 gpm</b>
Cheese Factory Road, East of Chamberlain at 12" pipe.	650	78	70	52	27
Rush Mendon Road at Assembly Road	595	103	96	85	73
Route 64 at Assembly Road	580	109	103	92	80
Quaker Meeting House @ Semmel	650	79	73	63	48
Mendon BPS Status		Off	Off	Off	Off

Located at the intersection Quaker Meeting House Road and Cheese Factory Road is a MCWA pump station that draws finished water from the City Conduits. For purposes of the model, this pump was turned off.

The model was used to determine the limits of the upper and lower hydraulic grade zones and includes a booster pump station, a tank on the MCWA property, and pressure reducing valves (PRV) on Boughton Hill

Road, West Bloomfield Road, Lanning Road and Mendonshire Drive. Pressure reducing valves were provided to allow the upper zone to feed the lower zone under high demand situations such as during a fire; normally the valves are closed.

Monroe County Water Authority design standards require that a minimum system pressure of 35 psi be maintained at the water meter of each property based on a system demand of 5 gpm per parcel. A minimum system pressure of 20 psi must also be provided at each parcel during a fire flow and a system demand of 3 gpm per parcel.

Results of the hydraulic model determined that the proposed district extension meets the MCWA minimum system pressure and fire flow requirements for both existing (2006) and proposed (2036) conditions. Expected system pressures and fire flows are included in Appendix C.

b. System Storage

The Recommended Standards for Water Works, 2003 edition indicates, “storage facilities should have sufficient capacity, as determined from engineering studies, to meet domestic demands and where fire protection is provided, fire flow demands.”

The domestic demand (average day) for the two zones are estimated as:

Year:	2006	2036
District Expansion #6 (GPD)	66,740	84,000
Lower Zone (GPD)	38,360	48,140
Upper Zone (GPD)	28,380	35,860

Fire flow requirements are established by the Insurance Services Office (I.S.O.). Section 604 of the Fire Suppression Rating Schedule prepared by

I.S.O., states that, “the fire flow duration should be 2 hours for Needed Fire Flows up to 2500 gpm.” Section 340 shows that for residents greater than 100-feet apart, the minimum required fire flow is 500 gpm.

Based on current zoning and existing construction within the proposed water district extension, the typical spacing between residents is greater than 100-feet, which means the minimum required flow is 500 gpm. The needed fire storage volume for a two (2) hour fire at 500 gpm demand is 60,000 gallons.

The total required storage for average day demand plus fire flow is:

Year:	2006	2036
Lower Zone (GPD)	98,400	108,100
Upper Zone (GPD)	88,400	95,900

Located within the proposed service area is the Monroe County Water Authority’s Mendon Reservoir, which has a capacity of 5 million gallons. This reservoir controls the hydraulic grade of the lower zone and has sufficient storage capacity for the existing Mendon Water District and the proposed service area.

A standard sized 150,000 gallon storage tank is proposed for the upper hydraulic grade zone. This tank will be fed by a booster pump off the lower zone.

**B. CAPITAL COST ESTIMATE**

Program costs are based on first quarter 2006 vender quotes and recent bids received for similar projects. Table 4 provides an opinion of the probable project cost for the District Expansion.

**Table 4: Opinion of Probable Project Cost**

Item No.	Item Description:	Qty	Unit	Unit Price	Total
<b>Base Bid Items</b>					
101	8" Pipe Only - Class 51 DIP	80,635	LF	\$ 20.72	\$ 1,670,578.01
102	8" Gate Valve	87	EA	\$ 850.00	\$ 73,950.00
103	12" Pipe Only - Class 51 DIP	14,910	LF	\$ 25.39	\$ 378,608.53
104	12" Gate Valve	18	EA	\$ 1,560.00	\$ 28,080.00
105	Connect New 8" Watermain to Existing	6	EA	\$ 3,000.00	\$ 18,000.00
106	Hydrant Assembly, inc. Hydrant, Guard Valve & box, Anchor pipe and Tee	209	EA	\$ 2,400.00	\$ 501,600.00
107	Boring and Casing	900	LF	\$ 195.00	\$ 175,500.00
108	Blowoff Assembly	40	EA	\$ 200.00	\$ 8,000.00
109	Driveway Replacement (Stone/Gravel)	2,138	LF	\$ 1.91	\$ 4,083.58
110	Lawn/Field Restoration	93,407	LF	\$ 1.23	\$ 114,890.61
111	Pump Station	1	LS	\$ 198,900.00	\$ 198,900.00
112	PRV - Vault	4	EA	\$ 32,000.00	\$ 128,000.00
113	Property and Easements	1	LS	\$ 19,500.00	\$ 19,500.00
114	Steel Spheroid Tank (150,000 gal)	1	LS	\$ 643,696.31	\$ 643,696.31
115	Mobilization/Demobilization	1	LS	\$ 118,901.61	\$ 118,901.61
116	Maintenance & Protection of Traffic	1	LS	\$ 118,901.61	\$ 118,901.61
Subtotal Base Bid Items					\$ 4,201,190.26
<b>Conditional Bid Items</b>					
C101	# 1 & #2 Crushed Stone Bedding ( unstable conditions)	500	CY	\$ 24.00	\$ 12,000.00
C102	Rock Removal	300	CY	\$ 50.00	\$ 15,000.00
C103	Control density Fill	300	CY	\$ 50.00	\$ 15,000.00
Subtotal Conditional Bid Items					\$ 42,000.00
<b>Estimated Construction Cost</b>					<b>\$ 4,243,190.26</b>
Contingency				10%	\$ 424,319.03
Legal, Administration, and Engineering				25%	\$ 1,060,797.57
Project Total					<u>\$ 5,728,306.85</u>
<b>2006 Residual Project Cost to be Financed</b>					<b>\$ 5,728,306.85</b>
Base Year				2006	
Construction Year				2009	
Inflation				5.11%	
<b>Future Cost</b>					<b>\$6,652,094.07</b>
<b>2009 Residual Project Cost to be Financed, Use:</b>					<b>\$6,652,000.00</b>

Construction cost estimates were prepared without the benefit of test holes or borings. Accordingly, no allowance has been made for bedrock removal / disposal, or unstable soil conditions. Costs include an annual 5.11% construction cost inflation factor for construction in 2009. 5.11% inflation is based on Turner Construction Cost data.

C. ANNUAL OPERATING BUDGET

1. Debt Service

Financing for the project is proposed in the following manor:

Debt service associated with the proposed improvements will be distributed among the properties served by the water main on an ad valorem basis. As shown in Table 5, the anticipated average debt service charge is \$5.10/\$1,000 of taxable assessed value. For a typical property with an assessed value of \$212,000, the annual debt service charge is \$1,081.20. Debt service charge is based on the essentially level debt method and a constant TAV of the district. The method used to calculate the debt service charge is subject to the Town of Mendon's fiscal advisor and loan requirements.

Based on the Essentially Level Debt method, it is anticipated that the debt service charge will start at 5.07/\$1,000 TAV in the first year of the loan. The debt service charge will likely decrease over time as additional units are built within the district. Based on a \$1,000,000 per year increase in the Taxable Assessed Value of the district, it is anticipated that the debt service will decrease to 4.68/\$1,000 TAV in 10 years, to 4.25/\$1,000 TAV in 20 years and to 3.90/\$1,000 TAV in 30 years when the loan is paid off. A \$1,000,000 increase represents on average three (3) new units per year.

**Table 5: Typical Cost per Parcel**

Proposed Financing		
Total Construction Cost	\$	6,652,000
Loan Length		<b>30</b> years
Interest Rate		<b>6.00%</b>
Total average annual payment for debt service.		\$483,260.56
Total Taxable Assessed Value for District As Proposed	\$	94,817,180
Average Tax Rate		\$5.10 /\$1,000 TAV
Mode assessed value for the proposed district is	\$	212,000.00 per Unit
Average Tax Rate / \$1000 TAV		\$5.10 a
Avg. Assessed Value	\$	212,000.00 b
Average Debt Service Cost per Parcel	\$	<b>1,081.20 = a x (b / \$1000)</b>
Cost for Water	\$	2.42 /1000 gal
Average Annual Consumption		70,000 gal / year
Average Cost for Water	\$	<b>169.40</b>
3/4" Meter Charge	\$	<b>43.80</b> /year
Cost for O&M		
<b>Total Cost per Parcel</b>	<b>\$</b>	<b>1,294.40</b>

The Audit and Control Threshold for the year 2006 is \$579. The figures used to determine the overall capital costs utilize material costs based on construction in 2009.

An example of a repayment schedule for the essentially level debt method is included in Appendix D – Debt Service.

2. Operation and Maintenance Costs

Financing for the operation and maintenance of the project is proposed in the following manner:

Commodity charges (for water used) will be made to all users on a quarterly schedule and based upon their individual metered consumption multiplied by the adopted rates of the Monroe County Water Authority. Initially, the water rate is estimated to be in the range of \$2.42 per 1000 gallons along with a meter charge of approximately \$43.80/year for a ¾” meter. For a typical water use per unit of estimated at 70,000 gallons per year, the commodity charge would be \$213.2/year.

3. Financing Summary

Table 6 provides a summary of the Debt Service and Operation and Maintenance Costs. The annual debt service is based on a 30 year loan with a 6% annual interest rate.

**Table 6: Annual Cost Summary**

	<b>Cost</b>
Annual Debt Service Charge per Parcel*	\$ 1,081.20

\* Assumes uniform (level) annual service payment, but the technique is subject to the Town’s fiscal advisor and loan requirements.

\*\* The Audit and Control Threshold for the year 2006 is \$579. The figures used to determine the overall capital cost utilize probable material costs based on construction in 2009.

4. One-Time Charge

MCWA charges a one time connection charge of \$1,790 per establishment, inclusive of the meter, appurtenances, and inspection charges which will cover the cost of installing a service from the water main to the R.O.W. A separate charge arrangement for larger sized services will be based upon the actual cost of the upsized meter and appurtenances.

Individual property owners will be responsible for hiring a contractor to install the water service from the R.O.W. to the residence or place of business. In 2006, service costs ranged from \$10 to \$14 per foot depending on size and length of service. Additionally, individual property owners will also need to purchase and have installed any required pressure reducing valve or reduced pressure zone backflow preventor.

D. PROJECT JUSTIFICATION:

Requirements for New York State Department of Environmental Conservation  
Water Supply Application:

*1. The plans are justified by public necessity.*

Residents in the Town of Mendon residing in the south east portion of the Town have publicly expressed, to the Town Board an interest in receiving public water. The existing individual well supplies for those residents within the proposed district service area produce poor quality water, as well as a seasonally limited quantity.

*2. The plans take proper consideration of other sources of supply.*

The source of supply for this proposed district will be the MCWA distribution system.

*3. The plans provide for proper and safe construction of all work.*

The plans and specifications will be designed in accordance with the contemporary standards of the New York State Department of Health and its formal approval will be received prior to construction.

*4. The plans provide for proper protection of the supply watershed.*

The source of supply for this district are the Lake Ontario watershed, and the Hemlock Lake and Canadice Lake Watersheds. The MCWA and City of Rochester must meet or exceed all Health Department regulations for a treated source.

*5. The plan provides an adequate water supply.*

The MCWA has sufficient capacity to serve the proposed water district.

*6. The plans are just and equitable to other municipal corporations, etc.*

The plans are just and equitable. Communities will not be affected, particularly with regards to their present need for public water. The residents that are supplied by the proposed water main improvements residing in the Town of Mendon will pay for the debt service associated with the improvements as well as an equal water rate for the cost for water.

*7. The plan makes equitable payment for any damages or acquisitions to lands that are affected by the execution of said plans.*

Any lands that require easement acquisition to accommodate pipeline installation or other capital facilities would be negotiated between the Town of Mendon and the affected property owners.

*8. The plans will provide for an adequate near term and long range water conservation program.*

The MCWA has implemented a water conservation program and this project will be subject to the program requirements.

E. REQUIRED APPROVALS

- NYS Department of Health - Water Main Extension
- NYS Department of Environmental Conservation
  - Water Supply Application
  - SEQRA
  - Article 15 – Freshwater Wetland Permit (T.B.D)
- NYS Department of Agriculture & Markets
- NYS Department of Audit & Control
- Town of Mendon Town Board
  - SEQRA Determination
  - District Formation
- NYS Department of Transportation
- Monroe County Water Authority
- Monroe County Health Department
- Monroe County Highway Department
- Town of Mendon Highway Department

## **VII. CONCLUSIONS AND RECOMMENDATIONS**

There is a substantial need and desire for public water to be extended into the areas presented in this report. Not only will this project provide much needed water to currently not serviced areas, but will also bolster fire flows for this area of the Town of Mendon.

Based on the favorable disposition of all of the above factors, it is the recommendation of MRB|group to create this District Extension and implement the program.

# APPENDIX A

---

## Map and Plan



# APPENDIX B

---

## Boundary Description

**EXTENSION No. 7 TO MENDON WATER DISTRICT No. 1**  
**TOWN OF MENDON**  
**PARCEL A**

**ALL THAT TRACT OR PARCEL OF LAND** situate in the Town of Mendon, County of Monroe, State of New York, being designated as Parcel A as shown on a map prepared by MRB group, P.C. dated 9/2006, entitled “Ext. No. 7 to Water District No. 1, Exhibit 1 – District Map and Plan”, and being more particularly described as follows:

Beginning at a point in the existing municipal boundary between the Town of Mendon with the Town of West Bloomfield, at its intersection with the existing westerly boundary of Tax Map Parcel (TMP) 229.04-1-5.2; thence,

- 1.) Northerly, along the existing westerly boundaries of TMP 229.04-1-5.2, TMP 229.04-1-4.1, TMP 229.04-1-4.2, TMP 229.04-1-2 and TMP 229.04-1-1, a distance of 1,693± feet to a point at its intersection with the existing southerly bounds of Extension #4 to Mendon Water District #1; thence along the existing boundary of Extension #4 to Mendon Water District #1 the following three (3) described courses and distances,
- 2.) Easterly, a distance of 341± feet to a point at its intersection with the existing westerly boundary of TMP 229.02-1-21.1; thence,
- 3.) Generally northerly, along the existing westerly boundaries of TMP 229.02-1-21.1, TMP 229.02-1-22, TMP 229.02-1-28.1 and TMP 229.02-1-28.2 as they wind and turn, crossing Boughton Hill Road, and along the existing westerly boundary of TMP 229.01-1-9, a distance of 5,680± feet to a point at its intersection with the existing southerly boundary of TMP 222.03-1-32; thence,
- 4.) Westerly, along the existing southerly boundaries of TMP 222.03-1-32 and TMP 222.03-1-31, a distance of 591± feet to a point at its intersection with the existing easterly bounds of Extension #2 to Mendon Water District #1; thence,
- 5.) Northerly, along the existing westerly boundaries of TMP 222.03-1-31 and TMP 222.03-1-30, and also along the existing easterly bounds of Extension #2 to Mendon Water District #1 and also along Mendon Water District #1, a distance of 1,382± feet to the existing southerly bounds of Mendon Water District #1; thence,
- 6.) Generally easterly, along the existing southerly bounds of Mendon Water District #1, said southerly bounds also being the existing northerly boundaries of TMP 222.03-1-30, TMP 222.03-1-29, TMP 222.03-1-28, TMP 222.03-1-27, TMP 222.03-1-26, TMP 222.04-1-18, TMP 222.04-1-14, TMP 222.04-1-12.12, TMP 222.04-1-12.13, TMP 222.04-1-9.1,

- TMP 222.04-1-9.21 and TMP 223.03-1-46.2 and its easterly extension, a distance of 7,509± feet to a point at its intersection with the existing easterly bounds of TMP 222.02-1-23.1; thence,
- 7.) Northerly and easterly, along the existing easterly and southerly boundary of TMP 222.02-1-23.1, a distance of 1,878± feet to a point at its intersection with the existing westerly bounds of TMP 223.01-1-47.2, said westerly bounds also being the westerly boundary of Extension #3 to Mendon Water District #1; thence,
  - 8.) Generally easterly, along the existing southerly bounds of Extension #3 to the Mendon Water District #1, said boundary also being the existing northerly boundary of TMP 223.03-1-1.1, the existing westerly boundaries of TMP 223.01-1-39 and TMP 223.01-1-40, the existing northerly boundary of TMP 223.01-1-40, the westerly and northerly boundaries of TMP 223.01-1-35, the existing centerline of West Bloomfield Road, the existing northerly boundaries of TMP 223.01-1-36.3 and TMP 223.01-1-33. the existing centerline of Lanning Road and the existing northerly boundary of TMP 223.01-1-29, a distance of 9,160± feet to a point at its intersection with the existing easterly bounds of TMP 223.01-1-29; thence,
  - 9.) Southerly, continuing along the existing boundary of Extension #3 to Mendon Water District #1, and also along the existing bounds of Extension #1 to Mendon Water District #1, a distance of 494± feet to a point at its intersection with the existing northerly bounds of TMP 223.04-1-1.11; thence along the existing boundary of Extension #1 to the Mendon Water District #1 the following five (5) described courses and distances,
  - 10.) Easterly, along the existing northerly boundary of TMP 223.04-1-1.11, a distance of 1,362± feet to a point at its intersection with the existing easterly bounds of TMP 223.04-1-1.11; thence
  - 11.) Southerly, along the existing easterly boundaries of TMP 223.04-1-1.11, TMP 223.04-1-1.22 and TMP 223.04-1-1.21, crossing the aforementioned Boughton Hill Road, and along the existing easterly boundaries of TMP 223.04-1-45 and TMP 223.04-1-46, a distance of 4,016± feet to a point at its intersection with the existing northerly bounds of TMP 230.02-1-3.2; thence,
  - 12.) Easterly, along the existing northerly boundaries of TMP 230.02-1-3.2 and TMP 230.02-1-4, the existing westerly and northerly boundaries of TMP 223.04-1-39, the centerline of Mendon-Iona Road (New York State route 64), and the existing northerly boundary of TMP 230.02-1-9.3, a distance of 3,527± feet to a point at its intersection with the existing westerly bounds of TMP 224.03-1-17; thence,
  - 13.) Northerly, along the existing westerly boundaries of TMP 224.03-1-17 and TMP 224.03-1-16, a distance of 1,669± feet to a point at its intersection with the existing southerly highway boundary of Mendonshire Drive; thence,

- 14.) Easterly, along the last mentioned existing southerly highway boundary, crossing Mendonshire Heights, and continuing along the existing southerly highway boundary of Mendonshire Drive, a distance of 585± feet to a point at its intersection with the existing easterly bounds of TMP 224.03-1-23; thence,
- 15.) Southeasterly, continuing along the existing westerly bounds of Extension #1 to Mendon Water District #1, and also along the existing westerly bounds of Extension #6 to Mendon Water District #1, and also along the existing easterly bounds of TMP 224.03-1-23, TMP 224.03-1-22, TMP 224.03-1-21 and TMP 224.03-1-20, TMP 224.03-1-19, TMP 231.01-1-1.11 and TMP 231.01-1-6.1, a distance of 3,866± feet to point at its intersection with the existing municipal boundary between the Town of Mendon the Town of Victor, said point also being on the municipal boundary between the County of Monroe with the County of Ontario; thence,
- 16.) Southerly, along the last mentioned existing municipal boundary, a distance of 6,042± feet to a point at its intersection with the existing municipal boundary between the Town of Mendon with the Town of West Bloomfield, said point also being on the municipal boundary between the County of Monroe with the County of Ontario; thence,
- 17.) Westerly, along the last mentioned existing municipal boundary, a distance of 20,306± feet to the Point and Place of Beginning, containing 4,662± acres of land more or less.

Excepting and reserving from the above described Ext. No. 7 to Mendon Water District No. 1 a parcel known as TMP 230.02-1-6.11.

**EXTENSION No. 7 TO MENDON WATER DISTRICT No. 1**  
**TOWN OF MENDON**  
**PARCEL B**

**ALSO ALL THAT TRACT OR PARCEL OF LAND** situate in the Town of Mendon, County of Monroe, State of New York, being designated as Parcel B as shown on a map prepared by MRB group, P.C. dated 9/2006, entitled “Ext. No. 7 to Water District No. 1, Exhibit 1 – District Map and Plan”, and being more particularly described as follows:

Beginning at a point in the existing municipal boundary between the Town of Mendon with the Town of Victor, said point also being on the municipal boundary between the County of Monroe with the County of Ontario, at its intersection with the existing northerly bounds of Extension #5 to Mendon Water District #1, said boundary also being the intersection of the existing southerly bounds of Tax Map Parcel (TMP) 224.03-1-10; thence,

- 1.) Westerly, along the last mentioned existing northerly boundary of Extension #5 to Mendon Water District #1 and also being the existing southerly boundaries of TMP 224.03-1-10, TMP 224.03-1-1 and TMP 224.03-1-12, the existing westerly boundary of TMP 224.03-1-12, the existing southerly boundaries of TMP 224.03-1-13, TMP 224.03-1-14 and TMP 224.03-1-15 and the existing westerly boundary of TMP 224.03-1-15, a distance of 1,794± feet to a point at its intersection with the existing southerly highway boundary of Boughton Hill Road; thence,
- 2.) Westerly, along the last mentioned existing southerly highway boundary and Extension #5 bounds, and also along the existing northerly bounds of Extension #1 to Mendon Water District #1, and also being along the northerly boundaries of TMP 224.03-1-44, TMP 224.03-1-43, TMP 224.03-1-42, TMP 224.03-1-41.1, TMP 224.03-1-31, TMP 224.03-1-30.1, TMP 224.03-1-28.1, TMP 224.03-1-27.1 and TMP 224.03-1-26.1, the easterly, southerly and westerly boundaries of TMP 223.04-1-18.1, the northerly boundaries of TMP 224.03-1-26.1 and TMP 224.03-1-25.1, the easterly and southerly boundaries of TMP 223.04-1-19, the easterly and southerly boundaries of TMP 223.04-1-20 and the southerly boundary of TMP 223.04-1-47, a distance of 4,275± feet to a point at its intersection with the existing westerly bounds of TMP 223.04-1-47; thence,
- 3.) Northerly, along the existing westerly boundaries of TMP 223.04-1-47 and TMP 223.04-1-21, crossing the aforementioned Boughton Hill Road, and along the westerly boundary of TMP 223.04-1-15.1, a distance of 2,252± feet to a point at its intersection with the existing northerly bounds of TMP 223.04-1-15.1; thence,

- 4.) Easterly, along the northerly boundary of TMP 223.04-1-15.1, a distance of 1,908± feet to a point at its intersection with the existing westerly bounds of TMP 224.01-1-18; thence,
- 5.) Generally northerly, along the existing westerly boundary of TMP 224.01-1-18, the existing southerly and westerly boundaries of TMP 223.02-1-12.2, the existing southwesterly boundary of TMP 223.02-1-13, crossing Cheese Factory Road, and along the existing westerly boundaries of TMP 223.02-1-9 and TMP 223.02-1-54, the existing northerly boundary of TMP 223.02-1-54, and also along the existing westerly boundaries of TMP 217.03-1-14, TMP 217.03-1-15, TMP 217.03-1-18.1 and TMP 217.03-1-18.2, and the existing northerly boundary of TMP 217.03-1-18.2, a distance of 9,343± feet to a point at its intersection with existing westerly highway boundary of Taylor Road; thence,
- 6.) Northerly, along the last mentioned existing westerly highway boundary, a distance of 458± feet to a point at its intersection with westerly prolongation of the existing northerly boundary of TMP 217.03-1-2; thence,
- 7.) Generally easterly, crossing Taylor Road, and along the existing northerly boundaries of TMP 217.03-1-2, TMP 217.03-1-3 and TMP 217.03-1-5 a distance of 1,689± feet to a point at its intersection with the first mentioned existing municipal boundary between the Town of Mendon with the Town of Victor and the County of Monroe with the County of Ontario; thence,
- 8.) Southerly, along the last mentioned existing municipal boundary, a distance of 9,004± feet to the Point and Place of Beginning, containing 632± acres of land more or less.

# APPENDIX C

---

## Hydraulic Analysis

2006 System Pressures and Fire Flows

Existing Conditions (2006) - 5 gpm/unit				Existing Conditions (2006) - 3 gpm/unit			
Node ID	Demand GPM	Head ft	Pressure psi	Demand GPM	Head ft	Pressure psi	Fire Flow GPM
<b>Lower Zone</b>				<b>Lower Zone</b>			
J-MC-14	40	826.8	92.2	24	831.5	94.2	1,970
J-MC-15	5	826.8	80.5	3	831.6	82.6	1,865
J-MC-16	5	826.2	89.3	3	831.2	91.5	1,915
J-MC-23	25	832.5	68.7	15	835.0	69.7	2,215
J-MC-25	20	932.0	96.2	12	932.2	96.3	680
J-MC-27	5	932.0	74.5	3	932.2	74.6	665
J-MC-29	5	932.0	83.2	3	932.2	83.3	645
J-MC-30	5	932.0	91.0	3	932.2	91.1	635
J-MC-31	10	823.8	79.6	6	830.6	82.6	1,330
J-TM-6	0	833.6	62.2	0	835.6	63.1	2,445
J-TM-10	20	832.4	47.9	12	834.9	48.9	770
J-TM-37	30	823.8	66.6	18	830.6	69.6	1,340
J-TM-38	40	823.6	75.2	24	830.5	78.2	1,120
J-TM-39	115	823.8	64.5	69	830.6	67.4	1,390
J-TM-40	55	823.2	53.4	33	830.4	56.5	685
J-TM-41	0	824.2	64.6	0	830.8	67.5	1,320
J-TM-42	140	825.4	62.6	84	831.2	65.1	1,405
J-TM-43	70	968.4	116.7	42	1007.9	133.9	650
J-TM-44	40	968.0	76.7	24	1007.8	93.9	570
J-TM-45	155	827.1	61.6	93	832.0	63.7	1,665
J-TM-46	0	970.7	115.2	0	1008.8	131.7	765
J-TM-53	65	817.9	77.1	39	828.0	81.5	815
J-TM-54	50	817.8	51.0	30	827.9	55.4	665
J-TM-55	55	816.8	72.3	33	827.5	76.9	810
J-TM-56	30	816.8	67.9	18	827.5	72.6	795
J-TM-57	40	816.4	74.7	24	827.4	79.5	760
J-TM-58	5	816.4	61.3	3	827.4	66.0	685
J-TM-59	50	815.7	89.1	30	827.1	94.1	770
J-TM-60	25	815.6	93.4	15	827.1	98.4	740
<b>Upper Zone</b>				<b>Upper Zone</b>			
J-TM-1	25	1022.9	35.9	15	1029.1	38.6	1,260
J-TM-2	10	932.0	61.5	6	932.2	61.6	595
J-TM-3	20	932.0	57.2	12	932.2	57.3	630
J-TM-4	150	981.1	95.4	90	1012.8	109.1	1,035
J-TM-5	0	987.8	90.0	0	1015.4	102.0	1,040
J-TM-7	0	980.2	125.7	0	1012.5	139.7	750
J-TM-8	0	980.2	125.7	0	1012.5	139.7	750
J-TM-9	20	980.2	125.7	12	1012.5	139.7	760
J-TM-11	0	971.3	115.4	0	1009.0	131.7	770
J-TM-12	55	970.8	115.2	33	1008.9	131.7	795
J-TM-13	20	968.0	92.3	12	1007.8	109.5	560
J-TM-14	10	825.4	54.8	6	831.2	57.3	785
J-TM-15	0	932.3	105.0	0	932.3	105.0	750
J-TM-16	30	827.0	52.8	18	831.9	55.0	930
J-TM-47	70	970.6	80.0	42	1008.8	96.5	770
J-TM-48	15	970.6	102.1	9	1008.8	118.6	735
J-TM-49	90	970.7	69.6	54	1008.8	86.1	770
J-TM-50	40	970.5	95.6	24	1008.7	112.1	740
J-TM-51	75	974.9	79.3	45	1010.4	94.7	830
J-TM-52	5	974.9	71.5	3	1010.4	86.9	745

2036 System Pressures and Fire Flows

Future Conditions (2036) - 5 gpm/unit				Future Conditions (2036) - 3 gpm/unit			
Node ID	Demand GPM	Head ft	Pressure psi	Demand GPM	Head ft	Pressure psi	Fire Flow GPM
<b>Lower Zone</b>							
J-MC-14	70	823.6	90.8	42	829.9	93.6	1,755
J-MC-15	5	823.6	79.1	3	830.0	81.9	1,650
J-MC-16	5	822.9	87.9	3	829.7	90.9	1,860
J-MC-23	25	830.5	67.8	15	834.0	69.3	2,005
J-MC-25	20	932.0	96.2	12	932.2	96.3	625
J-MC-27	5	932.0	74.5	3	932.2	74.6	615
J-MC-29	5	932.0	83.2	3	932.2	83.3	595
J-MC-30	5	932.0	91.0	3	932.2	91.1	585
J-MC-31	10	819.6	77.8	6	828.7	81.8	1,235
J-TM-6	0	832.0	61.5	0	834.8	62.8	2,225
J-TM-10	80	829.8	46.7	48	833.7	48.4	770
J-TM-37	35	819.7	64.8	21	828.7	68.8	1,250
J-TM-38	50	819.4	73.4	30	828.6	77.4	1,105
J-TM-39	115	819.7	62.7	69	828.7	66.6	1,295
J-TM-40	55	819.1	51.6	33	828.5	55.7	665
J-TM-41	0	820.1	62.9	0	828.8	66.7	1,230
J-TM-42	170	821.4	60.8	102	829.4	64.3	1,330
J-TM-43	85	935.1	102.3	51	995.0	128.3	590
J-TM-44	60	934.5	62.2	36	994.7	88.3	520
J-TM-45	155	823.7	60.1	93	830.4	63.0	1,510
J-TM-46	0	938.8	101.3	0	996.4	126.3	665
J-TM-53	65	813.0	74.9	39	825.8	80.5	780
J-TM-54	50	812.8	48.9	30	825.8	54.5	640
J-TM-55	55	811.4	70.0	33	825.2	75.9	770
J-TM-56	30	811.4	65.6	18	825.2	71.6	755
J-TM-57	40	810.8	72.3	24	825.0	78.4	730
J-TM-58	40	810.7	58.8	24	824.9	65.0	675
J-TM-59	50	810.1	86.7	30	824.7	93.0	735
J-TM-60	25	810.0	91.0	15	824.7	97.4	720
<b>Upper Zone</b>							
J-TM-1	40	1017.4	33.5	24	1027.0	37.7	1,150
J-TM-2	10	932.0	61.5	6	932.2	61.6	550
J-TM-3	20	932.0	57.2	12	932.2	57.3	580
J-TM-4	195	954.6	83.9	117	1002.5	104.7	945
J-TM-5	25	964.2	79.8	15	1006.3	98.1	930
J-TM-7	0	953.7	114.3	0	1002.2	135.3	685
J-TM-8	0	953.7	114.3	0	1002.2	135.3	685
J-TM-9	20	953.7	114.3	12	1002.2	135.3	695
J-TM-11	45	939.4	101.6	27	996.7	126.4	695
J-TM-12	55	938.9	101.4	33	996.5	126.3	700
J-TM-13	20	934.4	77.8	12	994.7	103.9	500
J-TM-14	40	821.2	53.0	24	829.3	56.5	755
J-TM-15	0	932.3	105.0	0	932.3	105.0	685
J-TM-16	85	822.7	51.0	51	830.0	54.2	880
J-TM-47	100	938.9	66.2	60	996.5	91.2	700
J-TM-48	15	938.9	88.3	9	996.5	113.3	645
J-TM-49	90	939.1	56.0	54	996.6	80.8	685
J-TM-50	40	939.0	81.9	24	996.5	106.8	655
J-TM-51	75	945.9	66.7	45	999.2	89.8	740
J-TM-52	5	945.9	58.9	3	999.2	82.0	660

# APPENDIX D

---

## Debt Service

Proposed \$6,652,000 Capital Project  
 Proposed 30-Year Maturity Schedule

**ESSENTIALLY LEVEL DEBT**

Year	Annual Principal Payment	Remaining Principal Amount Outstanding	Annual Interest Payment	6.00% Bonds	Annual Debt Service	Taxable Assessed Value	Debt Service/ \$1,000 Assessed Value
		\$ 6,652,000					
1	\$ 82,000	\$ 6,570,000	\$ 399,120	\$	<b>481,120</b>	\$ 94,817,180	5.07
2	\$ 90,000	\$ 6,480,000	\$ 394,200	\$	<b>484,200</b>	\$ 94,817,180	5.11
3	\$ 95,000	\$ 6,385,000	\$ 388,800	\$	<b>483,800</b>	\$ 94,817,180	5.10
4	\$ 100,000	\$ 6,285,000	\$ 383,100	\$	<b>483,100</b>	\$ 94,817,180	5.10
5	\$ 105,000	\$ 6,180,000	\$ 377,100	\$	<b>482,100</b>	\$ 94,817,180	5.08
6	\$ 115,000	\$ 6,065,000	\$ 370,800	\$	<b>485,800</b>	\$ 94,817,180	5.12
7	\$ 120,000	\$ 5,945,000	\$ 363,900	\$	<b>483,900</b>	\$ 94,817,180	5.10
8	\$ 125,000	\$ 5,820,000	\$ 356,700	\$	<b>481,700</b>	\$ 94,817,180	5.08
9	\$ 135,000	\$ 5,685,000	\$ 349,200	\$	<b>484,200</b>	\$ 94,817,180	5.11
10	\$ 145,000	\$ 5,540,000	\$ 341,100	\$	<b>486,100</b>	\$ 94,817,180	5.13
11	\$ 150,000	\$ 5,390,000	\$ 332,400	\$	<b>482,400</b>	\$ 94,817,180	5.09
12	\$ 160,000	\$ 5,230,000	\$ 323,400	\$	<b>483,400</b>	\$ 94,817,180	5.10
13	\$ 170,000	\$ 5,060,000	\$ 313,800	\$	<b>483,800</b>	\$ 94,817,180	5.10
14	\$ 180,000	\$ 4,880,000	\$ 303,600	\$	<b>483,600</b>	\$ 94,817,180	5.10
15	\$ 190,000	\$ 4,690,000	\$ 292,800	\$	<b>482,800</b>	\$ 94,817,180	5.09
16	\$ 200,000	\$ 4,490,000	\$ 281,400	\$	<b>481,400</b>	\$ 94,817,180	5.08
17	\$ 215,000	\$ 4,275,000	\$ 269,400	\$	<b>484,400</b>	\$ 94,817,180	5.11
18	\$ 225,000	\$ 4,050,000	\$ 256,500	\$	<b>481,500</b>	\$ 94,817,180	5.08
19	\$ 240,000	\$ 3,810,000	\$ 243,000	\$	<b>483,000</b>	\$ 94,817,180	5.09
20	\$ 255,000	\$ 3,555,000	\$ 228,600	\$	<b>483,600</b>	\$ 94,817,180	5.10
21	\$ 270,000	\$ 3,285,000	\$ 213,300	\$	<b>483,300</b>	\$ 94,817,180	5.10
22	\$ 285,000	\$ 3,000,000	\$ 197,100	\$	<b>482,100</b>	\$ 94,817,180	5.08
23	\$ 305,000	\$ 2,695,000	\$ 180,000	\$	<b>485,000</b>	\$ 94,817,180	5.12
24	\$ 320,000	\$ 2,375,000	\$ 161,700	\$	<b>481,700</b>	\$ 94,817,180	5.08
25	\$ 340,000	\$ 2,035,000	\$ 142,500	\$	<b>482,500</b>	\$ 94,817,180	5.09
26	\$ 360,000	\$ 1,675,000	\$ 122,100	\$	<b>482,100</b>	\$ 94,817,180	5.08
27	\$ 385,000	\$ 1,290,000	\$ 100,500	\$	<b>485,500</b>	\$ 94,817,180	5.12
28	\$ 405,000	\$ 885,000	\$ 77,400	\$	<b>482,400</b>	\$ 94,817,180	5.09
29	\$ 430,000	\$ 455,000	\$ 53,100	\$	<b>483,100</b>	\$ 94,817,180	5.10
30	\$ 455,000	\$ -	\$ 27,300	\$	<b>482,300</b>	\$ 94,817,180	5.09
Totals	\$ 6,652,000		\$ 7,843,920	\$	<b>14,495,920</b>		
Averages	\$ 221,733		\$ 261,464	\$	<b>483,197</b>		\$ 5.10
Cumulative Outstanding Principal			\$ 130,732,000				

Proposed \$6,652,000 Capital Project  
 Proposed 30-Year Maturity Schedule

**ESSENTIALLY LEVEL DEBT**  
 \$1,000,000 / Year Increase in TAV

Year	Annual Principal Payment	Remaining Principal Amount Outstanding	Annual Interest Payment	6.00% Bonds	Annual Debt Service	Taxable Assessed Value	Debt Service/ \$1,000 Assessed Value
		\$ 6,652,000					
1	\$ 82,000	\$ 6,570,000	\$ 399,120	\$	<b>481,120</b>	\$ 94,817,180	5.07
2	\$ 90,000	\$ 6,480,000	\$ 394,200	\$	<b>484,200</b>	\$ 95,817,180	5.05
3	\$ 95,000	\$ 6,385,000	\$ 388,800	\$	<b>483,800</b>	\$ 96,817,180	5.00
4	\$ 100,000	\$ 6,285,000	\$ 383,100	\$	<b>483,100</b>	\$ 97,817,180	4.94
5	\$ 105,000	\$ 6,180,000	\$ 377,100	\$	<b>482,100</b>	\$ 98,817,180	4.88
6	\$ 115,000	\$ 6,065,000	\$ 370,800	\$	<b>485,800</b>	\$ 99,817,180	4.87
7	\$ 120,000	\$ 5,945,000	\$ 363,900	\$	<b>483,900</b>	\$ 100,817,180	4.80
8	\$ 125,000	\$ 5,820,000	\$ 356,700	\$	<b>481,700</b>	\$ 101,817,180	4.73
9	\$ 135,000	\$ 5,685,000	\$ 349,200	\$	<b>484,200</b>	\$ 102,817,180	4.71
10	\$ 145,000	\$ 5,540,000	\$ 341,100	\$	<b>486,100</b>	\$ 103,817,180	4.68
11	\$ 150,000	\$ 5,390,000	\$ 332,400	\$	<b>482,400</b>	\$ 104,817,180	4.60
12	\$ 160,000	\$ 5,230,000	\$ 323,400	\$	<b>483,400</b>	\$ 105,817,180	4.57
13	\$ 170,000	\$ 5,060,000	\$ 313,800	\$	<b>483,800</b>	\$ 106,817,180	4.53
14	\$ 180,000	\$ 4,880,000	\$ 303,600	\$	<b>483,600</b>	\$ 107,817,180	4.49
15	\$ 190,000	\$ 4,690,000	\$ 292,800	\$	<b>482,800</b>	\$ 108,817,180	4.44
16	\$ 200,000	\$ 4,490,000	\$ 281,400	\$	<b>481,400</b>	\$ 109,817,180	4.38
17	\$ 215,000	\$ 4,275,000	\$ 269,400	\$	<b>484,400</b>	\$ 110,817,180	4.37
18	\$ 225,000	\$ 4,050,000	\$ 256,500	\$	<b>481,500</b>	\$ 111,817,180	4.31
19	\$ 240,000	\$ 3,810,000	\$ 243,000	\$	<b>483,000</b>	\$ 112,817,180	4.28
20	\$ 255,000	\$ 3,555,000	\$ 228,600	\$	<b>483,600</b>	\$ 113,817,180	4.25
21	\$ 270,000	\$ 3,285,000	\$ 213,300	\$	<b>483,300</b>	\$ 114,817,180	4.21
22	\$ 285,000	\$ 3,000,000	\$ 197,100	\$	<b>482,100</b>	\$ 115,817,180	4.16
23	\$ 305,000	\$ 2,695,000	\$ 180,000	\$	<b>485,000</b>	\$ 116,817,180	4.15
24	\$ 320,000	\$ 2,375,000	\$ 161,700	\$	<b>481,700</b>	\$ 117,817,180	4.09
25	\$ 340,000	\$ 2,035,000	\$ 142,500	\$	<b>482,500</b>	\$ 118,817,180	4.06
26	\$ 360,000	\$ 1,675,000	\$ 122,100	\$	<b>482,100</b>	\$ 119,817,180	4.02
27	\$ 385,000	\$ 1,290,000	\$ 100,500	\$	<b>485,500</b>	\$ 120,817,180	4.02
28	\$ 405,000	\$ 885,000	\$ 77,400	\$	<b>482,400</b>	\$ 121,817,180	3.96
29	\$ 430,000	\$ 455,000	\$ 53,100	\$	<b>483,100</b>	\$ 122,817,180	3.93
30	\$ 455,000	\$ -	\$ 27,300	\$	<b>482,300</b>	\$ 123,817,180	3.90
Totals	\$ 6,652,000		\$ 7,843,920	\$	<b>14,495,920</b>		
Averages	\$ 221,733		\$ 261,464	\$	<b>483,197</b>		\$ 4.45
Cumulative Outstanding Principal		\$ 130,732,000					