The Village of Mantua

DRAFT Water and Wastewater Treatment Plant Facilities Plan



Water Treatment Plant



Wastewater Treatment Plant

August 2018

Prepared by the Portage County Water Resource Department
for the Village of Mantua

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1 EXECUTIVE SUMMARY

This Facilities Plan identifies the needs for current and future operating conditions, treatment process modifications/additions, infrastructure improvements, equipment replacement and future budgeting requirements to ensure continued quality operations. This Plan provides prioritized tasks for water and sanitary sewer improvement projects that can be utilized as a basis for the Capital Improvement Plan (CIP).

Documentation in this report comes from information gathered by the Portage County Water Resources Department (PCWR), Village of Mantua (Village) officials and the water and wastewater treatment plant operators. PCWR gathered available documents from CT Consultants (The Village of Mantua Engineer), the Village and Ohio EPA that consisted of existing studies, reports, plans, Operations and Maintenance (O&M) documents, existing water and sewer rate structure and other relevant documents needed to prepare this Facilities Plan.

A summary of key findings and recommendations from this Facilities Plan are provided below:

(TO BE COMPLETED IN FINAL DRAFT REPORT)

2 REGULATORY CONSIDERATIONS

The following Regulatory Considerations were evaluated:

- Review of Ohio EPA inspection reports and other records
- Future regulations and requirements

Any modifications to the wells, treatment systems or collection and distribution systems may require prior plan approval from the Ohio EPA.

2.1 OHIO EPA INSPECTION REPORTS – MANTUA WATER TREATMENT PLANT

The following is a summary of the latest Ohio EPA inspections findings and Notice of Violations (NOVs) for the Mantua Water Treatment Plant (WTP).

December 21, 2017, Kathleen Pinto of Ohio EPA notified Mantua that the 2016 Consumer Confidence Report (CCR) was incomplete. The report did not include the 2016 detection of barium and the 2015 detections for lead and copper. The report did not include a range of Total Trihalomethanes (TTHM) and Haloacetic Acids 5 (HAA5). The table included contaminants that were not detected and should only include the most recent data.

Laurel Ljubi (Ohio EPA) inspected the Mantua WTP and conducted a Sanitary Survey on September 27, 2017 and October 18, 2017 at Mantua WTP. The following violations were noted:

- Chlorine Injection pit was flooded due to an inoperative sump pump (Corrected);
- In-ground reservoir roof cracked and deteriorated (On-going);
- Three test wells near the current production wells were not properly capped/sealed (corrected); and
- Contingency plan was not updated within one year (Corrected).

February 8, 2016, Kenneth Baughman of Ohio EPA. Untimely submittal of the lead consumer notification of tap results and verification notification (Corrected).

January 22, 2016, Kenneth Baughman of Ohio EPA. Failure to submit lead and copper rule Form 5105 Corrected).

September 23, 2015, Laurel Ljubi of Ohio EPA. Manganese concentrations exceeded the secondary water quality standard for two weeks in July 2015 (Corrected with filter media replacement).

August 6, 2015, Laurel Ljubi of Ohio EPA. Manganese concentrations exceeded the secondary water quality standard for four weeks in June 2015 (Corrected with filter media replacement).

November 10, 2014, Laurel Ljubi of Ohio EPA. Manganese concentrations exceeded the secondary water quality standard for two weeks in September 2014 (Corrected with filter media replacement).

September 19, 2014, Laurel Ljubi of Ohio EPA, Sanitary Survey. The following items were noted:

- Low pressure issues in northeast quadrant – sporadic low pressure, possibly low chlorine residual and only minimal working pressure around Fernway, Ambler and Main streets. This area is served by 4-inch water mains and several dead ends that further reduce water pressure (On-going issue).
- Reservoir Access Opening – Access opening for reservoir is not fitted with a water tight cover (On-going issue).
- Emergency Contingency Plan not updated within a year (Corrected).
- Backflow Prevent Program – Significant amount of backflow prevention devices were not tested annually (???).
- Recommended Supervisory Control and Data Acquisition (SCADA) upgrades to included notification for depressurization (???).
- Recommended tracking unaccounted for water (????).

April 14, 2014, Laurel Ljubi of Ohio EPA. Manganese concentrations exceeded the secondary water quality standard for four weeks in February 2014 (Corrected with filter media replacement).

March 18, 2014, Laurel Ljubi of Ohio EPA. Manganese concentrations exceeded the secondary water quality standard for four weeks in January 2014 (Corrected with filter media replacement).

February 13, 2014, Laurel Ljubi of Ohio EPA. Manganese concentrations exceeded the secondary water quality standard for four weeks in December 2013 (Corrected with filter media replacement).

November 26, 2013, Michael W. Deal, Failure to monitor and report drinking water results for TTHM and HAA5s during the 2013 monitoring period (Corrected).

January 3, 2011, Leslie Otten of Ohio EPA. No properly certified plant operator of record (Corrected).

2.2 OHIO EPA INSPECTION REPORTS – MANTUA WASTEWATER TREATMENT PLANT

The following is a summary of the latest Ohio EPA inspections findings and NOVs for the Mantua Wastewater Treatment Plant (WWTP).

January 25, 2018, Compliance Evaluation Inspection by Chris Moody of Ohio EPA. The following items were noted:

- Records for biosolids not maintained at the facility to verify pathogen reduction, the geometric mean concentration of fecal coliform, and vector attraction reduction were met prior to land application (Closed).
- Standard Operating Procedures (SOPs) not developed for biosolids sample collection, monitoring, frequency, preservation and storage and standard calculations (Closed).
- Beneficial use of unclassified biosolids was performed. Biosolids were not immediately incorporated into the soil so they failed to satisfy the vector attraction reduction option (Closed).
- The facility should remove the vegetation present and prohibit its growth within the sludge drying beds to increase the facility's onsite storage (Open issue).
- Provide analytical methods for determining reported nutrients and metals concentrations (Closed).

November 2017, Missing Discharge Monitoring Report for National Pollutant Discharge Elimination System (NPDES) Permit (Closed)

May 11, 2015, Compliance Evaluation Inspection by Melanie Barbis. The following items were noted:

- Mercury limit variance application to be submitted to Ohio EPA by 7/31/15 (Closed);
- SCADA system to be installed (Open);
- Carbonaceous Biochemical Oxygen Demand (CBOD) procedures for disinfected effluent sample and Glucose and Glutamic Acid (GGA) standard for each batch of tests (Closed); and
- One exceedance for Escherichia coli (E. coli) was identified in a review of monitoring data in July 2013 (Closed).

April 15, 2013 Compliance Evaluation Inspection by Ermelindo Gomes. The following items were noted:

- Unpermitted bypass Equalization (EQ) Basin (Assumed issue will remain open given the proximity of the EQ Basin to the Cuyahoga River).
- Excessive inventory of mixed liquor suspended solids and waste activated solids in the plant (Closed).
- Acceptance of septage from local haulers (Closed).
- Influent and effluent automatic composite samplers were not being utilized (Closed)
- General laboratory procedures were not being performed and some equipment requiring replacement and/or calibration (Closed).
- Lack of written SOPs for sample collection, storage, transport, analyses, and quality control and record keeping (Closed).
- pH, Dissolved Oxygen (DO), and temperature sensor at the effluent station to be checked and calibrated as necessary (Closed).

- Exceedances for; Nitrogen and Ammonia in March 2011, August 2011, October 2011, April 2012, July 2012, and March 2013; Total phosphorus in March 2011, July 2011, May 2012, June 2012 and August 2012; and E. coli in June 2011, July 2011, August 2011 and June 2012; and total suspended solids (TSS) in September 2011 were identified in a review of discharge monitoring data (Closed).

February 2009, Pre-permit Compliance Inspection by William Zawiski,

- Identified sludge blanket discharging over effluent channel in both clarifiers due to snow melt and rain (Closed).
- Exceedances for total mercury were identified in a review of monitoring data for March, June, August, and December 2008. Exceedance for TSS in March 2008 (Closed).

November 2007, Missing Discharge Monitoring Report for NPDES Permit September 2007 (Closed).

2.3 FUTURE REGULATIONS AND REQUIREMENTS

Regulations and requirements are consistently changing for public water and wastewater treatment facilities. These requirements are usually the result of; a health effect or environmental impact for a chemical constituent is identified; a better treatment technology is developed; or a better analytical method to measure a chemical constituent is invented. In some cases, a regulation or requirement can be the result of the current administration or an actual crisis.

In the wake of the harmful algae blooms (HAB) in the City of Toledo, circa 2014, the emphasis of Ohio EPA turned to sustainability of utilities. While onsite at Toledo's water treatment plant to assist with the HAB, Ohio EPA observed the operators dealing with critical infrastructure failures daily. The plant, producing water near its rated capacity, prevented operators from shutting treatment processes to make necessary repairs and City Leaders not understand the impact of operating their utility in this manner. At the time, Ohio EPA had no means to require Asset Management. After several more similar events with other public water utilities, Ohio EPA received the backing and in June 2017 Senate Bill 2 enacted new legislature to require all public water systems to have an asset management plan in place by October 1, 2018.

The main components of the plan include: Inventory of assets; Evaluation of assets; Level of service (Ohio EPA will provide list of criteria for Owners to select from); Metrics (Ohio EPA will require a set of specified criteria for the Owner to measure) and Operation and maintenance programs.

It is anticipated by PCWR that Ohio EPA will also require asset management plans for wastewater facilities in the future.

2.4 FLOODPLAIN DATA

Flooding is one of the most common hazards in the United States. Impacts to drinking water and wastewater utilities can include loss of power, damage to infrastructure and dangerous conditions for personnel. The EPA stresses “flood resilience” to prevent costly damage and enable reliable service to customers during a disaster. A public utility can apply for federal disaster mitigation funds to help pay for flood mitigation measures.

The Federal Emergency Management Agency (FEMA) flood map for the Mantua WTP site is shown below in Figure 2-1. The plant and production wells are not located in the floodplain but much of the property owned by the Village of Mantua is in the floodplain.



Figure 2-1 FEMA Flood Map for the Village of Mantua WTP

The FEMA flood map for the Mantua WWTP site is shown below in Figure 2-2. Portions of the plant are within the floodplain. The elevated tanks would continue to operate; however, the Ultraviolet (UV) disinfection system and the Stamm pump station may become inoperable during a flooding event.



Figure 2-2 FEMA Flood Map for the Village of Mantua WWTP

3 EVALUATION OF CURRENT OPERATION AND MAINTENANCE PROGRAM

The following aspects of the current operation and maintenance program were evaluated:

- Villages' Organizational Structure and Staffing;
- Systems Operations;
- Maintenance and Control;
- Emergency Response Plan; and
- Record Keeping and Reporting Procedures.

3.1 VILLAGE SEWER AND WATER AUTHORITY

The Village of Mantua was incorporated in 1898. The Village Government consists of the Mayor and a six-member Village Council. The water and wastewater facilities are overseen by the Service Committee which is comprised of three (3) members of the Village Council appointed by the President Pro-tempore (Mantua Cod Ord Section 121.03 Article XII (1) (a).

The Village derives its authority to provide and regulate the public water and sewer system under Ohio Revised Code 715.08, 171.01, 727.44, 743.01 and Codified Ordinances of Mantua Part 9 Title Three Chapters 921, 931 and 941.

The Village may construct water and sewer facilities to provide service to the residents of the Village. The operation and maintenance of these water and wastewater facilities are provided directly by the Village.

The Village Council has the following basic powers for the Water and Sewer Utilities:

1. To retain professional engineers to conduct surveys to determine the proper boundaries of districts,
2. To acquire, construct, maintain and operate water and wastewater treatment facilities.
3. To employ registered professional engineers or create an engineering department, and
4. To adopt, publish, administer and enforce rules relating to the construction, maintenance, use, and protection of water and wastewater facilities.

Water and wastewater facilities may not be constructed in the incorporated area or connect to the Village's system until the plans and specifications for the improvement have been approved by the Village Engineer and Village Administrator. If the plans are approved, construction is supervised by the Village Administrator or duly authorized representative. The Village does not currently collect fees for the construction inspection of private sewer and water extensions.

The Village Council has the power to establish water and sewer rates to be charged for the use of improvements owned and operated by the Village. Rates must be sufficient to pay for the cost of operation and maintenance of facilities.

The Village Council establishes connection/tap-in fees and requires these fees to be paid prior to the time an owner connects to the water or sewer main.

3.2 VILLAGE SEWER AND WATER SERVICE

The day-to-day operations of the water and wastewater utilities are overseen by the Village Administrator. The Village Administrator reports to the Service Committee who makes recommendations to the Village Council. Any purchase over $3000 for the water and wastewater facilities must be recommend by the Service Committee to go before the Village Council for funding.

The Village Council is responsible for determining funding levels for both the drinking water and wastewater systems. The Village Administrator is authorized to perform duties in accordance with the Ohio Revised Code. Among numerous other responsibilities the Village Administrator has the authority for hearing and ruling on providing water and sewer services.

3.3 STAFFING

The Village does not employ any full-time dedicated water or sewer staff. The duties and operations of the water and sewer utilities are done by various Village personnel as an additional duty or on an as needed basis. Meter readings are performed by one to two staff members. Commercial meters are read monthly and residential meters are read bi-monthly this effort typically requires two (2) days per reading cycle. Billing and customers service is handled as additional responsibility by the Village Administrative Assistant and the Mayor. The wastewater collection and water distribution repairs and complaints are handled by the Village Service Department on an as needed basis. The water distribution booster station and four (4) pump stations are checked on average once a week by the Village Administrator or the Service Department.

For the period July 1 through December 31, 2018, PCWR is operating both the WTP and WWTP and related booster stations and pump stations under an Agreement with the Village.

3.3.1 Water Treatment Plant

The WTP is rated by the Ohio EPA as a Class I Facility based upon a ground water source water with a design flow of less than two and a half (2.5) million gallons per day (MGD) with "only" secondary maximum contaminant level (MCL) removal - iron & manganese. A Class I Facility has a staffing requirement for an Ohio Certified Class I (or higher) Water Operator of Record for a minimum of three (3) days per week and one and a half (1.5) hours per week.

The manpower requirement for the optimal operation of this facility is significantly greater than the minimum requirement for the Operator of Record. Under ideal conditions,

operator attendance for one and a half (1.5) hours three times per week may be sufficient for a minimal level of oversight and supervision only. It is safe to assume that an additional eight (8) man hours per week are necessary to complete all important tasks such as backwashing, replenishing chemicals, preventative maintenance, sampling and calibration of equipment. Additionally, administrative tasks such as the completion of the Consumer Confident Report (CCR), conducting the Lead & Copper Sampling Program, a Wellhead Protection Plan, backflow protection program, calculating unaccounted-for-water, etc. will result in an expenditure of additional hours beyond those required for routine operations. An increase in the treatment rate to fulfill any additional demand will increase the run-hours for the plant and the manpower requirement. The WTP is currently manned by Village personnel for approximately ten (10) hours per week.

The plant is designed to be operated primarily as an unmanned automated facility. This is facilitated to a large extent by a computer based Supervisory Control and Data Acquisition System (SCADA). The SCADA system is equipped with alarms to summon an operator in the event of an equipment malfunction or a preset parameter is met. Operator attendance is required to perform routine tasks such as backwashing filters, sampling, replenishing chemicals, performing maintenance, etc. The SCADA System is fairly comprehensive and is operational. However, it needs to be upgraded to include additional functionality.

3.3.2 Wastewater Treatment Plant

Ohio EPA designates the WWTP as a Class II Facility. The required plant staffing is four (4) hours per day, five (5) days per week. The WWTPs Operations and Maintenance (O&M) Manual states an optimum staff of five (5) full-time employees, it is currently staffed by one (1) part-time Operator and (1) one part-time Mechanic. The current staff also visits the facility on weekends to record flow, check equipment, clean debris from return activated sludge (RAS) pumps and clean the bar screen at the WWTP headworks. Currently the plant is staffed a minimum total of twenty-six (26) hours per week.

The Ohio EPA staffing requirement could possibly be reduced with an upgraded SCADA monitoring system.

3.4 Maintenance and Control

3.4.1 Maintenance

Operations and Maintenance (O&M) Manuals are typically created by the facility design agent and amended as necessary by the owner of the water and wastewater treatment plants. O&M manuals provide the Operator comprehensive guidance, procedures and technical reference material (equipment manufacturer O&M manuals) to efficiently operate the facility.

A proper O&M program extends the useful life of a facility; protects the health, safety, and welfare of the public; and allows the Village to meet water quality goals and standards. Preventive maintenance includes an inspection program and routine maintenance tasks that are performed at the treatment plants and the collection and distribution systems. The goals of preventive maintenance are to reduce untimely failure, improve efficiency, and prolong the life of the equipment and lines. Corrective

maintenance consists of the work required to restore equipment and structures to operational status after a breakdown occurs or if failure is impending.

Some preventative maintenance at the plants has been performed; however, there doesn't appear to be any maintenance schedules or method of tracking maintenance activities. An automated computer tracking system or field form could ensure appropriate recommended maintenance is being completed.

Records provide the basis for the efficient operation, maintenance, and management of the plants. Accurate records help the operator evaluate system function and identify abnormal conditions. Searchable records appear to not be kept, Operators record equipment repairs and replacements by writing on the equipment or the electrical panel with a black marker. Work being performed by the Operator is recorded in the facility log books. However, review when this work was performed would require a person to go through all the pages of the log book. No notes are being kept with regard to cause of equipment failure which if kept could be used to define other pieces of equipment which may need to be repaired or replaced.

The American Water Works Association (AWWA) considers a waterline flushing program as a best management practice. Flushing is preformed to: remove sediment and loose deposits (clean lines); decrease water age in dead ends and restore chlorine residuals. Currently the Village does not have a flushing program. Flushing is performed on an "as needed basis". The Village should consider a dedicated staff to manage the O&M of the water distribution system to include; Water Meter Inspection/Replacement Program, tracking of water loss, Backflow Prevention Program, Valve Turning Program, Hydrant Flushing and Maintenance Program and Water Line repair records. The Ohio EPA will be looking at these aspects with the implementation of Asset Management Program in October 2018. Matrices from these programs will be used to categorize a public water systems Level of Service (LOS). Based on the age of the distribution system the level of maintenance required can increase dramatically. The Village currently utilizes Service Department personnel or contractors to do waterline repairs; however, limited preventative maintenance is being completed.

A sanitary sewer collection system requires some routine maintenance to verify condition and prevent blockages and overflow conditions. Gravity sewer lines should be maintained by flushing routinely every three years depending on conditions (i.e., pipe type, slope, connections, etc..). If pipe type, upstream use and installation conditions are favorable then the recommended three (3) year frequency of cleaning may be extended. Accurate records need to be kept on a per location basis to maintain the highest level of service and define the cleaning frequency. Closed circuit television (CCT) inspections of flushed lines can assist in identifying conditions of pipe in need of repair or replacement to reduce inflow and infiltration in the collection system. The Village currently only flushes on an "as needed basis".

The Village currently does not have an industrial pretreatment program or fats oil grease (FOG) inspection program for the wastewater collection system. Inspecting FOG generating facilities can minimizes build ups and blockages in the sanitary sewer and prevent sanitary backups. Although not mandated by Ohio EPA for Mantua, it is recommended for the protection of the WWTP to inspect current industrial user for

potential chemical releases and response measure to prevent releases into the sanitary sewer. The WWTP does have a mercury variance; however, a mercury source survey of the commercial/industrial users needs to be completed to keep the variance in place.

3.4.2 Control

In today's modern water and wastewater facilities the normal control of a plant is through System Control and Data Acquisition (SCADA) computers along with Programmable Logic Controllers (PLCs) and Human Machine Interface (HMI) systems which continually monitors set points and makes plant adjustments accordingly. From a local or remote computer, the operator can gain access to the plant controls changing the "on/off" level settings or turn pumps on or off.

3.4.2.1 Water SCADA System

The SCADA System is fairly comprehensive and operational but it is mostly serving to document and archive some plant data and to provide alarms to summon an operator based on pre-determined parameters for pumping, tank levels and processes. The software was last updated in 2015 when the computer, monitor and printer were replaced; however, the PLCs, remote terminal units (rtu's) and many other components are 20+ years old.

The plant (wells & processes) are controlled to start and stop based on the water level in the clearwell (finished water storage tank). The clearwell level is controlled by mercury float switches which are operational, but must be replaced due to the potential for mercury contamination. The high service (finished water) pumps are controlled by the level in the distribution system concrete water storage reservoir. The plant is essentially "on" or "off" based on the water level in those two tanks. The chemical feeders (potassium permanganate and chlorine) "start" and "stop" with the plant. Their settings are controlled manually by the operator. There is a SCADA screen display with data provided for the filters, but no filter controls are included in the SCADA System. The distribution system utilizes a booster pump station to feed water from the concrete water storage reservoir to the water high service lines. The booster pumps are controlled to "start" and "stop" automatically based upon the pressure in the high water system distribution lines. The booster pump station improvements in 2003 included a new backup generator and new pumps. The pumps have since been rebuilt and remain in good operating condition.

Overall the SCADA system is lacking a significant amount of necessary and desirable functionality and automation (control). Currently the system is setup to dial-out only to the Village Police Station because of an issue with the SCADA system; when functioning properly alarm conditions can be sent by text message to the operator providing the details of the alarm.

3.4.2.2 Wastewater SCADA System

The single screen SCADA System is first generation technology and is for "monitoring" only. It does not allow panel "control" by the operator. The only alarm condition dial-out is for the stand-by generator. The entire plant SCADA system is need of an upgrade.

The pump stations are monitored by the SCADA for high wet well only.

Upgrading the wastewater SCADA System could reduce the Ohio EPA required plant Operator of Record man hours.

3.5 Safety Procedures and Issues

The Village is responsible for establishing and promoting safety. One way to promote safety is to develop Standard Safety Procedures (SSP) for specific tasks in the Plants. Conduct safety-training programs and require all personnel to participate. Keep records on training received. Safety training should be provided annually. Site specific checklists can be developed to help ensure that safe practices are being used. Accident report forms are helpful in identifying the causes of accidents and developing corrective procedures.

In 1989, OSHA established rules governing confined space entry. The employer is required to develop a permit entry program for confined spaces. The employer must also identify all confined spaces in its Plant, protect against unauthorized entry, properly inform and train its employees on how to safely enter a confined space, and properly equip them to do so. All personnel must attend a recognized Confined Space training class and must be certified.

Confined spaces can be deadly spaces. Due to lack of ventilation (a characteristic of confined spaces), toxic gases can accumulate. Many of these toxic gases are colorless and odorless. Thus, if the operator relies solely on his or her senses to detect poisonous air, the gases will remain undetected until it is no longer possible to safely exit the space. For the sake of safety, the operator should always use the proper safety equipment when monitoring and entering confined spaces.

The Village currently does not have a documented safety program to ensure workers receive appropriate annual safety training. It is recommended that SSP be developed to ensure workers complete tasks in a safe manor given there is minimal manning at the Plants. The Village should develop safety training program to include at a minimum confined space entry program, trench safety program, and safety data sheet (SDS) program for personnel who work on the water and wastewater systems. Additionally, it is recommended that accountability procedures be developed to ensure personnel who respond to call-outs afterhours are safe.

3.6 Emergency Response Plan

The Ohio EPA requires that every water plant have a "Contingency Plan" for emergencies. They issued new requirements as well as a new format for this plan in December 2016 under OAC 3745-85-01. The Village should plan to review, train and exercise on one or more circumstances identified in their plan before the end of 2018.

Ohio EPA requires annual documentation of exercising the "Contingency Plan" and each circumstance must be exercised at least one every five years. Links to a training video and other information related to the new rule are provided below.

Contingency Plan Training Video: https://www.youtube.com/watch?v=KAVo4O-YkMc&feature=youtu.be

Contingency Plan Rule: http://www.epa.ohio.gov/portals/28/documents/rules/Final/3745-85-01_effective%2012-23-16.pdf

The EPA recommends each municipal WWTP develop a comprehensive emergency operating procedures to protect the health and welfare of staff. As well, the United States Department of Agriculture, Rural Development (USDA/RD) require a Security Vulnerability Assessment (VA) and Emergency Response Plan (ERP) to receive funding. There is no known ERP for the Village WWTP. The Village should consider developing an ERP. The Rural Community Assistant Partnership (RCAP) offers a template for WWTP systems serving 3,300 or less to use.

Emergency Response Planning Template for Public Wastewater Systems: http://www.rcapsolutions.org/wp-content/uploads/2013/06/Emergency-Response-Planning-Template-for-Public-Wastewater-S.pdf

3.7 Record Keeping and Reporting Procedures

Operational records are kept to assist the operator in exercising proper control over the unit processes and treatment plant performance. The collection and interpretation of data is the key to the successful operation of a WTP & WWTP. Test results and gauge and meter readings provide insight into the events in the plant. Good process control requires good operational records that are analyzed regularly, with trends noted.

Records are to be permanent, complete, and accurate. Write entries clearly and neatly on data sheets in ink or with indelible pencil. Do not use a lead pencil; entries can be smudged or erased. Keep your records organized. A record misplaced is a record lost, and a lost record is worthless. All records are to be kept at the respective WTP or WWTP Administration Building.

Laboratory records are vital to the proper monitoring and reporting of the plant's performance. Lab records can be subpoenaed in legal cases involving non-compliance or stream degradation. Good lab records are also essential to maintain high standards of quality control.

Management records include financial records, personnel records, and official correspondence records. Management records help to ensure that there are sufficient funds to effectively operate and maintain Village's multi-million-dollar investment.

Maintenance records should be maintained to assist the staff in maintaining the equipment and grounds.

A record tracking or index should be maintained current for ease of retrieval when needed.

3.8 RECOMMENDATIONS FOR IMPROVEMENTS TO THE O&M PROGRAM

The Village should create standardized recording keeping forms, create an index for records and prepare maintenance schedules/checklists and/or purchase an O&M software program.

As well it is recommended the Village should:

- Develop a safety program;
- Improve the SCADA System;
- Develop an ERP for WWTP and exercise CP for WTP (document each exercise);
- Create an O&M Program for the Collection and Distribution System; and
- Develop and implement the use of Asset Management to guide the operational process and administrative decisions making.

4 POPULATION PROJECTIONS

In the November 1991 CT Consultants, Inc. (CT) report, "The Village of Mantua's Wastewater Treatment Plant Service Study Area Projected Land Use and Residential Units" it was estimated that in the next 20 years the population in the vicinity of the Village of Mantua would increase by 7,000 persons.

The actual population growth for the Village has been flat. Table 4-1 summarizes the last two United States Census results for the Village of Mantua.

Table 4-1 Historical Census Data – Village of Mantua Service Area

Census Data Year	Population
2000	1,046
2010	1,043

PCWR reviewed the Akron Metropolitan Area Transportation Study (AMATS) data forecasts for Portage County to estimate the anticipated growth of the Village. AMATS evaluates historical Census data and the American Community Survey (ACS) data to establish trends to project populations growth. The latest AMATS projects that Portage County's population will increase by an overall rate of 9.82% and northwest portion of Portage County to increase by a rate of 5.86% by the year 2045. The communities in the northwest portion of Portage County include; the City of Aurora, Mantua Township, the Village of Mantua, Shalersville Township, the City of Streetsboro and the Village of Sugar Bush Knolls.

The AMATS Census data trends for the individual communities indicate growth is projected in for the City of Aurora (+6.37%), Mantua Township (+10.91%), Shalersville Township (+20.07%) and the Village of Sugar Bush Knolls (39.34%). It should be noted that the ACS data trends do not necessarily predict similar trends as the Census data for individual communities but does for the overall northwest portion of Portage County.

Census data in the AMATS specific to the Village of Mantua indicates a 2.39% decrease in population (1,018), but the ACS data indicates a 43.74% increase (1,499). Therefore, to predict the population for the Village it is recommended to use the northwest region rate of 5.86% for a projected population of 1104 by the year 2045; an increase of 61 people.

Table 4-2 summarizes the population projections obtained from the Portage County Regional Planning Commission for the Village and adjacent townships that could potentially be served by the Village of Mantua through water and sewer service agreements with PCWR. However, the entire populations listed would not be served since some areas are currently served by PCWR or geographically the area may be served by a different water or wastewater facility.

Table 4-2 2025 Population Projections – Adjacent Political Units

Comparison of Population Projections for Portage County Political Units	*2010 US Census (actual counts)*	Scripps Gerontology Center, Miami University, 2012 (Ritchey, P.N., Mehdizadeh, S., Yamashita, T.)			AMATS Projections 2012		
		Assigned to political unit based on predicted growth rate from Scripps Gerontology Ctr for each 5 yr period					
		2015 (4.23% growth rate)	2020 (3.02% growth rate)	2025 (2.74% growth rate)	2015	2020	2025
Mantua	1,043	1,087	1,120	1,151	1,038	1,039	1,014
Mantua Township	4,811	5,015	5,166	5,307	4,979	5,091	5,070
Shalersville Township	5,670	5,910	6,088	6,255	5,986	5,967	5,793
Total Population Served	11,524	12,012	12,374	12,713	12,003	12,097	11,877

Table 4-3 summarizes the currently permitted connections to the Village WTP and WWTP for both the Village of Mantua and PCWR (through current sewer service agreement).

Table 4-3 Mantua WTP and WWTP Service Connections

Service Area Connections	Sewer Connections		Water Connections	
	Village	PCWR	Village	PCWR
Mantua	433	1	502	-
Mantua Township	-	122	-	-
Freedom Township	-	1	-	-
Total Population Served	433	124	502	0

Figure 4-1 provides a regional overview for the sewer and water utilities. The red line on the map represents the approximated location of Village of Mantua's water and sewer service area boundary. The yellow line represents the 1990 study area for the WWTP. The orange line represents the Ohio EPA Clean Water Plan 208 Facilities Planning Area for the WWTP. The pink lines represent sanitary force mains owned by PCWR to provide sewer service to Mantua Corners, Aurora Meadows and the Brady's Leap Ohio Turnpike Service Plaza representing the 124 service connections on Table 4-3.

Currently the WTP and WWTP are operating at 15% and 41% of their design capacities, respectively. Based on the information known to date, both plants are adequately sized for future growth.

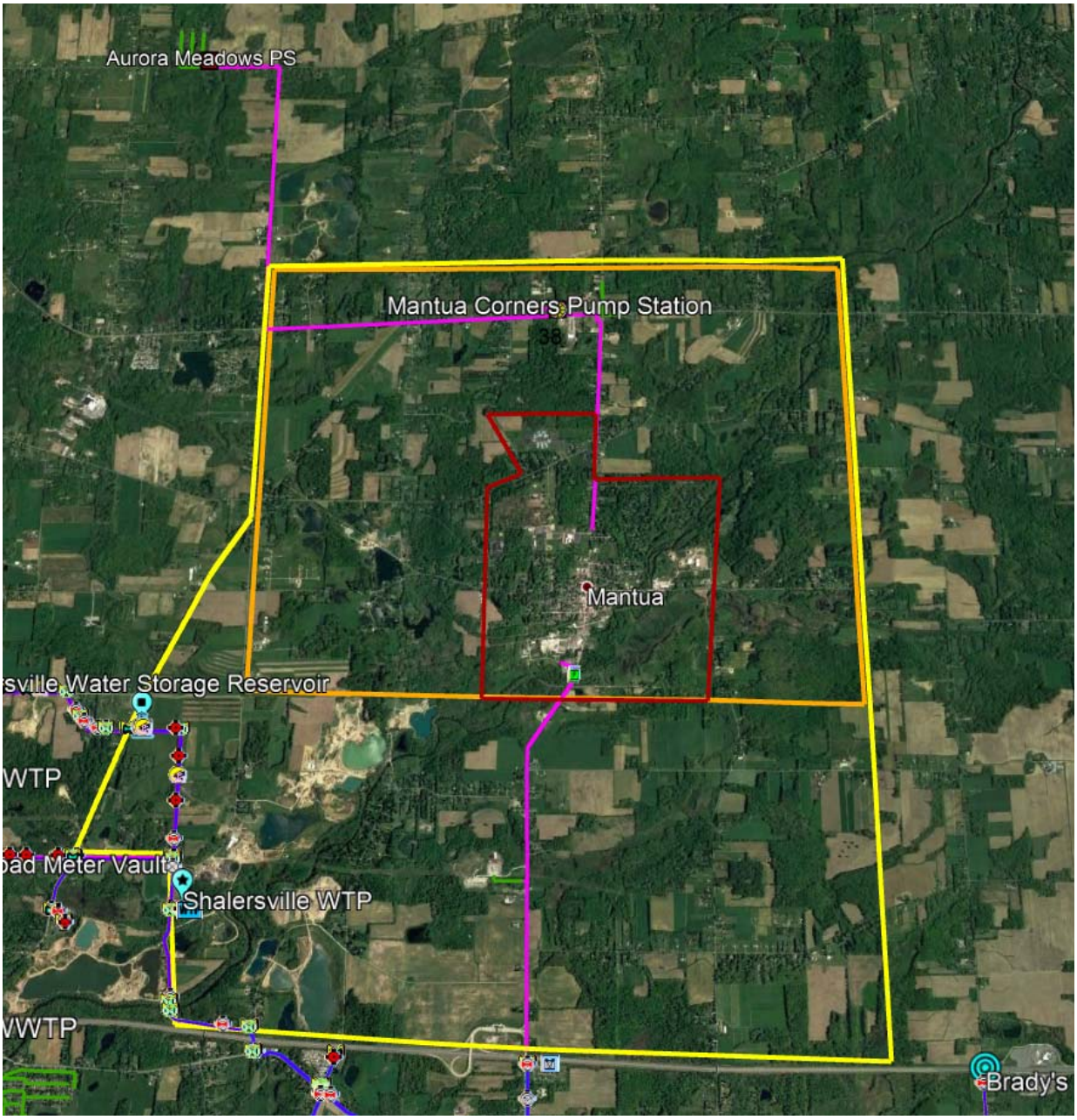


Figure 4-1 Regional Overview

5 EQUIPMENT/ASSET INVENTORY

Developing an equipment inventory is the first step in an Asset Management Plan. The Asset Management Plan process ensures that you get the most value from each of your assets and that you have the financial resources to rehabilitate or replace an asset when necessary.

The goal of Asset Management is to maintain the desired Level of Service (LOS) at the lowest life cycle costs. Benefits of Asset Management Include: 1) work more efficiently (reduce time looking for items i.e. valve on a water line); 2) Improved emergency response; 3) Enhanced communication; 4) Improved Capital Improvement Plan (CIP) process; 5) Financial benefits (phase projects properly); and 5) Transferring of knowledge (operator knowledge is captured through mapping and inventory). Asset management is a way you do business and must be constantly updated and maintained.

Equipment Inventory spreadsheets were compiled for the Village's water and wastewater systems which are included in Appendix A and Appendix B (respectively). Appendix A represents 474 water system equipment items identified during the plan review and site visit. There are roughly 624 wastewater equipment items included in Appendix B.

The intent of the inventory was to capture as much information as possible for all the major components of water and sanitary sewer system to create the equipment/asset inventory. Information from drawings, site visits and interviews with personnel were used to complete the spreadsheets. The intent of the inventory was to create a living document that can be maintained and updated as necessary by the Village. The spreadsheet contains the following information in it:

- Life expectancy;
- Age;
- Condition;
- Redundancy; and
- Pictures.

These spreadsheets also include spaces to collect the make, model, serial #, capacity, electrical requirements, year manufactured, date installed, location, and replacement cost for each component. Not all this information was available and/or accessible by PCWR during the site visit; however, as Village staff utilizes the spreadsheet the missing information can be completed in the future.

Assets that should be tracked include: 1) equipment > $500; 2) items that must have maintenance preformed on them; 3) critical components (regardless of price); and 4) multiple items that collectively account for a significant amount of money (i.e., hydrants, meters, valves)

The data in the asset inventory was used to develop a CIP. The CIP is provided in Appendix C. This CIP is based mostly on acceptable life expectancies for the varies equipment items and broken into two components for the water system and the wastewater system. When possible manufactures pricing and life expectancy were used. It should be noted that life expectancies can fluctuate significantly depending on site conditions, proper installation, and the operation

and maintenance of the asset. The current replacement cost for each asset was adjusted to a future cost by adding a three percent (3%) increase per year.

The next step will be to prioritize the projects. Prioritization means ranking your system's assets to help you decide how to allocate available resources. Risk assessments of each component is typically the best means to prioritize projects. Prioritization involves looking at each asset and determining how critical an asset is and what are the consequences if it fails. Assets that involve human health should obviously take precedence over facility aesthetics. Failure of an asset includes: mortality (breakdown or collapse), LOS (not meeting operational expectations), capacity (does not meet the current demand), and financial inefficiency (cost more to fix than replace, i.e. repeated line breaks in an area or a sanitary sewer which has high inflow and infiltration).

Other factors can influence which projects are funded and when they are completed. For example, distribution system rehabilitation and replacement is tied to the road repair schedule and budgeting.

Developing a CIP plan and prioritizing your assets maintenance and replacement will help determine when an asset should be replaced so as to not jeopardize the Village utilities LOS.

6 INFRASTRUCTURE EVALUATION - MANTUA WTP AND DISTRIBUTION SYSTEM

The purpose of this Section is to evaluate the existing treatment processes used at the Mantua WTP. The existing plant was built and placed in-service in 1998, approximately twenty (20) years ago. The plant replaced the original Village WTP that was placed in-service in 1902. The original plant was comprised of a pump station with chlorination (disinfection).

The new WTP was designed with a rated capacity of 1.0 MGD based upon the installed approved filtration capacity. The WTP can facilitate the addition of one more filter within the existing footprint at a minimal expense. This would expand the capacity from 1.0 MGD to 1.34 MGD. The current average daily water demand is approximately 153,000 gallons per day (0.153 MGD) (see table below). It is interesting to note that the water demand has dropped considerably from approximately 250,000 gallons per day (0.25 MGD) when the water plant was originally constructed, an approximate 39% decrease. The loss of some industrial users and an increase in conservation are the likely reason for this decrease.

The treatment consists primarily of the removal of high concentrations of iron and manganese from the well source water. The iron and manganese are oxidized by the addition of two chemicals; potassium permanganate and chlorine. Iron and manganese in the oxidized state is then subsequently removed by greensand filtration. Greensand is a special filter media (manganese dioxide coated granules) that are utilized specifically for the removal of iron and manganese. Chlorine gas is also used as a disinfectant.

While the design was intended to facilitate the use of zinc orthophosphate as a corrosion inhibitor, it has never been used. That equipment was purchased and installed, but never utilized since there are no known lead or copper issues in the distribution system. The plant infrastructure, pumping and process equipment remain in relatively good condition

Most of the WTP equipment is now 20+ years of age. The fact that the plant has been operating at only a small percentage of its design capacity may extend the life of some equipment. However, the lack of sufficient exercise (minimal use) and/or the lack of regular preventative maintenance of equipment can be counter-productive to extending its useful life.

Table 6-1 is provided to illustrate the plant design capacity vs. the current demand (water usage) by the Village of Mantua. The plant design rating is based upon a filtration rate of three (3) gallons per minute (gpm) per square foot (ft2) of filter media (mandated by Ohio EPA and Ten State Standards).

Table 6-1 Mantua WTP Plant Capacity

Filter Rate (MGD)	Design[1]	Actual	% of Design Capacity	Available Capacity
	1.0	0.15	15%	0.85

1. WTP capacity ratings are usually calculated with one filter process unit out-of-service, in which case the Mantua WTP would be 678,000 gal/day (design=0.678 MGD, 22% of design and 0.53 MGD remaining). Laurel Ljubi of the Ohio EPA NE District Office confirmed that their records indicate the plant is rated (approved) at 1.0 MGD as presented above.

The following is a list of the most recent water system improvements which documentation was available:

1995 - New Ductile Iron Raw Water Line at $53,700.00;
1997 - New Water Treatment Plant at $1,037,468.87;
1997 - Well Improvements #1, #2 & #3 at $38,975;
2003 - Distribution System Improvements, Reservoir Dr. Booster Station (including new generator) and Franklin & Woodford Streets waterline at $459,618.00;
2015 - Complete rebuild of all three (3) filters at $49,985.00;
2015 - Rebuilt three (3) diaphragm pump discharge valves at $6,156.87;
2015 - SCADA System upgrades (computer, printer & software) at $14,443.00;
2015 - Chlorine piping and equipment rebuild at $15,250.00, and
2017-18 - Rebuilt Raw Water (well) pump #3 and cleaned the well at $21,000.00.

Figure 6-1 below is an aerial image of the WTP site. The WTP design treatment process flow diagram and floor plan prepared by CT Consultants Inc. are provided in Figure 6-2 and Figure 6-3, respectively.



Figure 6-1 Aerial Image of Mantua WTP

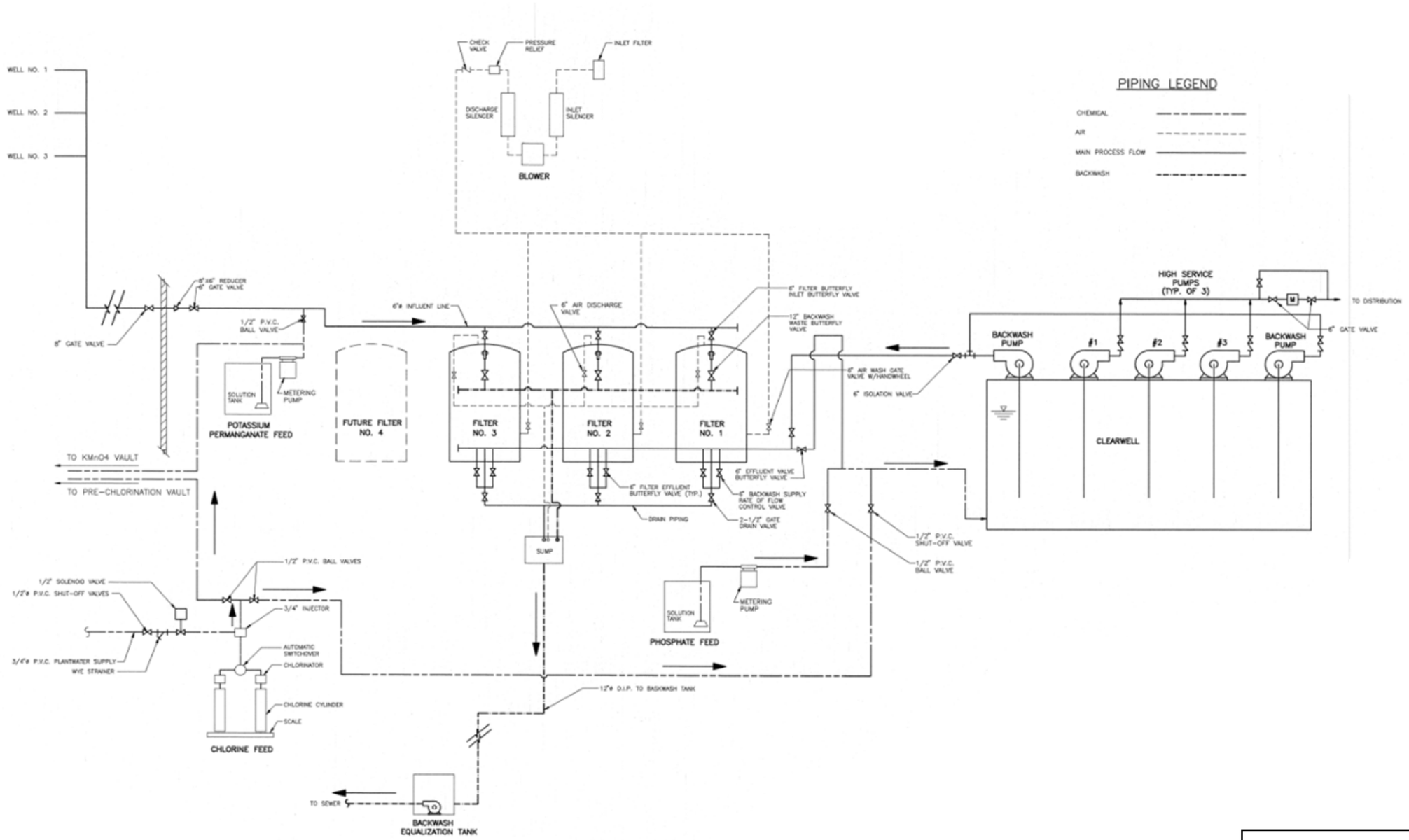


Figure 6-2 Mantua WTP Process Flow Diagram

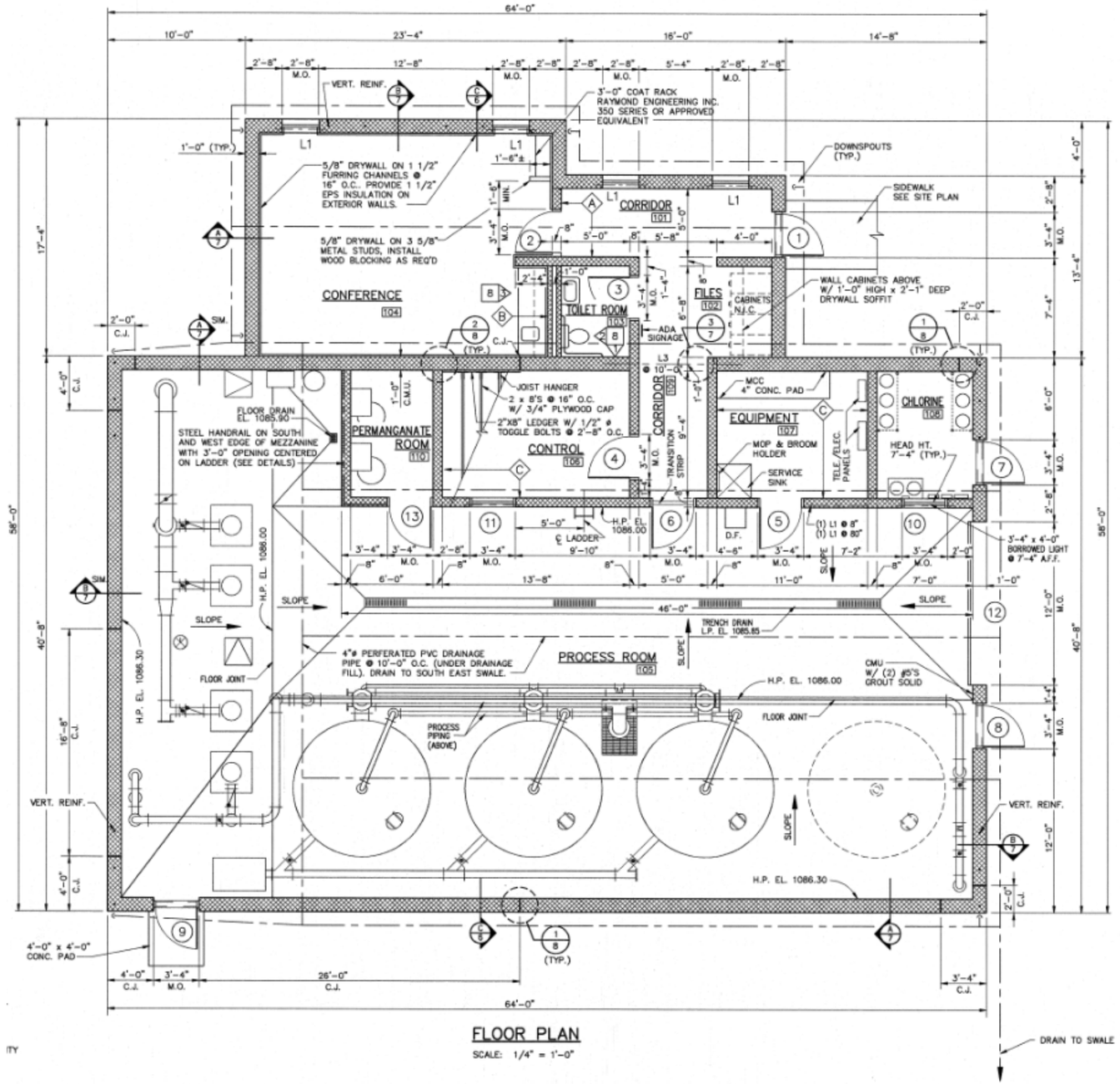


Figure 6-3 Mantua WTP Floor Plan

6.1 FINISHED WATER QUALITY

Table 6-2 summarizes the finished water quality based on the testing performed during 2013 through 2015. All parameters below (and including Copper) were taken from the 2015 Consumer Confidence Report (CCR). There are no violations based on this data. PCWR reviewed all of the Village's CCR's from 2009 through 2015. The Village had reporting violations in 2013 and 2014 for HAA5 and TTHMs for both contaminants for both years; however, the levels detected for the contaminants were below the maximum contaminant level (MCL). The range detected was reported as not applicable (NA) for both contaminants for both years indicating that the Village did not have a detectable level of those contaminants. The violations were issued not for an exceedence of the contaminant, but instead, for not reporting the results properly.

Table 6-2 Finished Water Quality

Contaminant	Unit	MCL	MCLG	Detected or Average Level	Range Detected	Sample Period
Barium	ppm (mg/l)	2	2	<100 ppb	NA	2013
Copper	ppb (ug/l)	1300	1300	140	10 – 160	2015
Fluoride	ppm (mg/l)	4	4	< 1.50	NA	2013
Lead	ppb (ug/l)	15	0	3	< 2.0 – 6.0	2015
Nitrate	ppm (mg/l)	10	10	<0.10	<0.10	2015
Alachlor	ppb (ug/l)	2	NA	<0.2	NA	2014
Radium 228	pCi/l	5	0	<1	NA	2013
Asbestos	MFL	7	7	<0.16	NA	2013
HAA5s	ppb (ug/l)	60	NA	<6	NA	2015
TTHM's	ppb (ug/l)	80	NA	7.72	NA	2015
Total Chlorine	ppm (mg/l)	4	4	1.23	0.22 – 2.09	Daily

MCLG=Maximum Contaminant Level Goal, MCL= Maximum Contaminant Level, ppm=Parts per Million, mg/l = milligrams per liter, ppb=parts per billion, ug/l = microgram per liter, "<" with number = less than analytical detection limit, MFL=million fibers per liter greater than 10 micrometers, pCi/L= picocuries per liter, HAA5s = Haloacetic acid, TTHMS = Total Trihalomethanes, NA = not applicable

6.2 WATER SUPPLY WELLS

The Raw water is provided to the treatment plant from three (3) groundwater wells ranging from 99 to 109 feet in depth in a sand and gravel aquifer within the Cuyahoga River Buried Valley aquifer system. The Ohio E.P.A. has completed a Source Water Assessment as required under the Safe Drinking Water Act. It may be viewed on-line at the following URL: http://wwwapp.epa.ohio.gov/gis/swpa/OH6702212.pdf

The aquifer has been determined to have a high susceptibility to contamination as a result of the permeability of the soils in the recharge zone. This does not imply that there is any immediate danger of being contaminated, but only that it is very important that the potential contaminant sources contained in the assessment are adequately managed.

The Village of Mantua currently lacks a Wellhead Protection Program which is how those potential contaminant sources can best be managed. The three (3) wells; No.'s 1, 2 & 3 consist of submersible vertical turbine pumps set at 68 ft., 69 ft. and 77 ft. respectively with thirty (30) feet of stainless steel screen below the bottom of the pump. The total

depth of the wells is 100 ft., 99 ft., and 109 ft. respectively. The well casing in each is ten (10) inches in diameter and the pump discharge is 6 inches in diameter. The raw water piping to the WTP consists of an eight (8) inch diameter ductile iron pipe. The pumps are identical and each has a 7.5 horsepower (HP) motor and is rated at 475 gpm (design). Each well is also equipped with a level transducer. Table 6-3 summarizes information on the wells. The capacity of the wellfield (one well out of service) is estimated to be 950 gpm (1.37 MGD). Table 6-4 presents raw water quality data for Well 1, collected and tested by Ohio EPA in August 2017.

Table 6-3 Well Data

WELL #	RATED CAPACITY (GPM)	YEAR INSTALLED	ODNR WELL LOG #	HP	SCREEN DEPTH (FT)	WELL DEPTH (FT)	STATIC WATER LEVEL (FT) AT INSTALL	RUNNING WATER LEVEL (FT) AS ON 6/15/18
#1	475	7/2/93	763002	7.5	67 to 97	100	7.88	49.8
#2	475	10/20/94	788734	7.5	69 to 99	99	11.0	Off
#3	475	8/1/94	788735	7.5	79 to 109	109	22.28	Off
CAPACITY[1]	950 (1.37 MGD)							

Note: Wells were installed by Ohio Drilling Company. During installation, the wells were numbered by order of install therefore Well 2 and Well 3 names were reversed. The information from the well logs in this table was put under the operational names of the wells.

1. Capacity is the sum of the well rated capacities with one well out of service – typically the highest producing well.

GPM = gallon per minute, HP = horsepower, MGD = millon gallons per day.

Table 6-4 Raw Water Quality

Parameter	Unit	Result	MCL	SMCL	AL
Ph	SU	7.49	-	6.5-8.5	-
Specific Conductance	uS/cm	593	-	-	-
Total Dissolved Solids	ppm (mg/l)	415	-	-	-
Aluminum	ppb (ug/l)	<200 ug/l	-	200	-
Barium	ppb (ug/l)	172	2,000	-	-
Boron	ppb (ug/l)	<200 ug/l	-	-	-
Calcium	ppm (mg/l)	76	-	-	-
Chromium	ppb (ug/l)	<2 ug/l	100	-	-
Copper	ppb (ug/l)	<2 ug/l	-	-	1,300
Hardness	ppm (mg/l)	261	-	-	-
Iron	ppb (ug/l)	**1530**	-	300	-
Lead	ppb (ug/l)	<2 ug/l	-	-	15
Magnesium	ppm (mg/l)	17.2	-	-	-
Manganese	ppb (ug/l)	**206**	-	50	-
Nickel	ppb (ug/l)	<2 ug/l	-	-	-
Potassium	ppb (ug/l)	<2 ug/l	-	-	-
Sodium	ppm (mg/l)	36.1	-	-	-
Strontium	ppb (ug/l)	127	-	-	-
Zinc	ppb (ug/l)	<10 ug/l	-	5,000	-
Arsenic	ppb (ug/l)	<2 ug/l	10	-	-
Cadmium	ppb (ug/l)	<0.2 ug/l	5	-	-
Selenium	ppb (ug/l)	<2 ug/l	50	-	-
Ammonia	ppm (mg/l)	0.0619	-	-	-
Total Organic Carbon	ppm (mg/l)	<2 mg/l	-	-	-
Chemical Oxygen Demand	ppm (mg/l)	<20 mg/l	-	-	-
Nitrate	ppm (mg/l)	< 0.1 mg/l	10	-	-
Total Kjeldahl Nitrogen	ppm (mg/l)	< 0.2 mg/l	-	-	-
Phosphorus	ppm (mg/l)	< 0.01 mg/l	-	-	-
Total Alkalinity	ppm (mg/l)	194	-	-	-
Bromide	ppb (ug/l)	30.1	-	-	-
Chloride	ppm (mg/l)	66.9	-	250	-
Fluoride	ppm (mg/l)	< 0.2 mg/l	4	2	-
Sulfate	ppm (mg/l)	30	-	250	-
Total Dissolved Solids	ppm (mg/l)	322	-	-	-

MCL= Maximum Contaminant Level, SMCL= Secondary Maximum Contaminant Level, AL = Action Level, ppm=Parts per Million, mg/l = milligrams per liter, ppb=parts per billion, ug/l = microgram per liter, "<" with number = less than analytical detection limit, SU= Standard Unit, uS/cm = microsiemen per centimeter.

An MCL is established to protect human health, concentrations above an SMCL is recommended and only affects the aesthetics of the water (color smell taste) but the water is still safe to use. An AL is level set by the EPA that will require the PWS to take action to correct the problem; concentrations at an AL do not impact health. It is important to note that these levels are to be achieved after treatment.

Figure 6-4 provides a diagram showing location of the Wellfield, the wellfield Source Protection Area and Potential Contaminant Sources in the vicinity of the wellfield. The Ohio EPA used the following inputs to generate the map: Pump rate of 300,000 GPD; Aquifer porosity of 25% (sand/gravel) and 10% (sandstone/shale); Aquifer thickness of 78 ft; Hydraulic conductivity of 350 and 495 ft/day (sand/gravel) and 30 ft/day (sandstone/shale); recharge from precipitation of ten inches/year.

Figure 6-5 presents the location and size of the raw water line and groundwater wells.

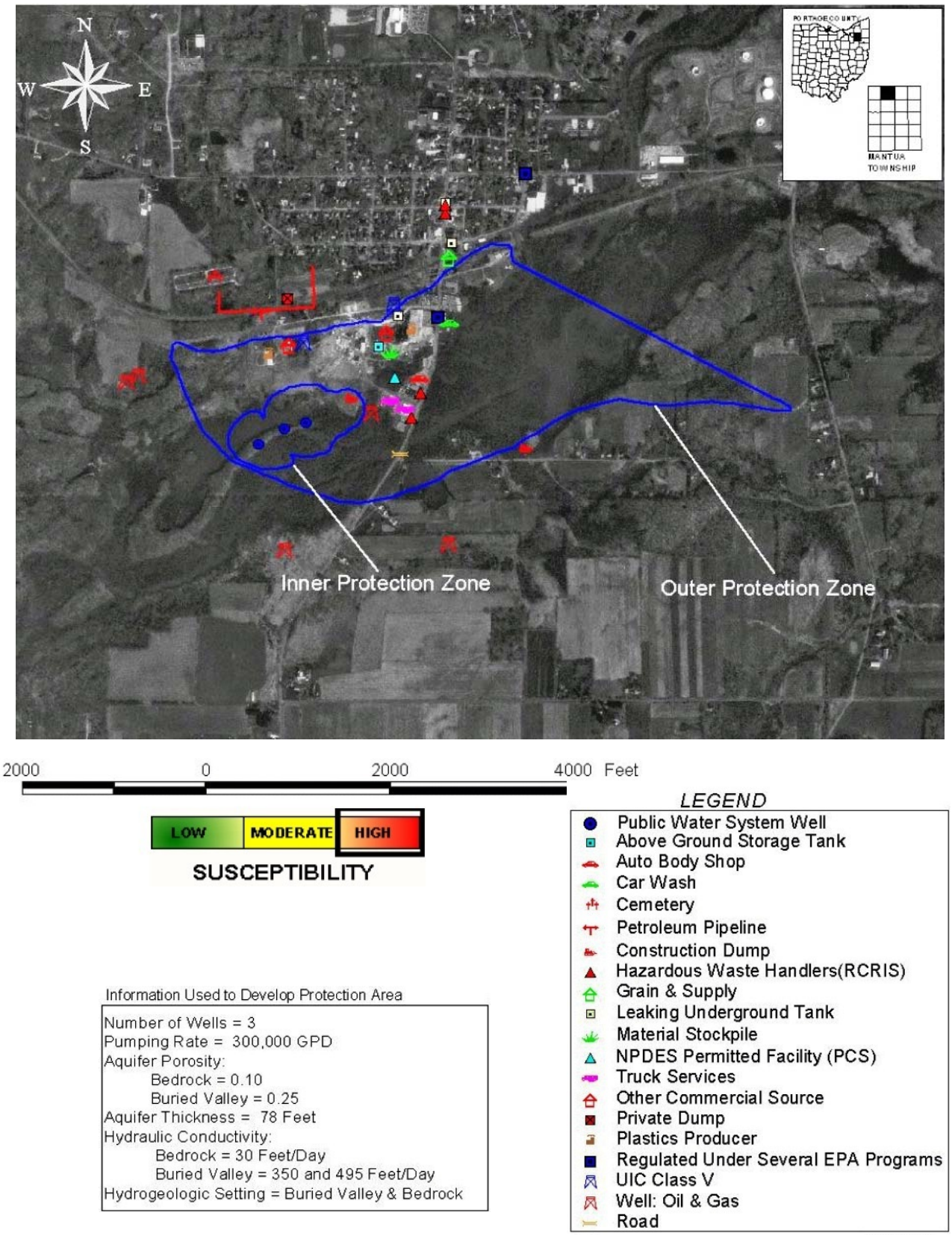


Figure 6-4 Ohio EPA Mantua WTP Wellfield Susceptibility Map



Typical Well Site

Figure 6-5 Mantua WTP Wells and Raw Water Line Map

6.2.1 Deficiencies and Improvements

The operation of the wells should be rotated to equalize the run hours among all three. Well# 1 was last cleaned in 2014. Well #2 was cleaned and the pump repaired in 2013. Well #3 was cleaned and the pump rebuilt in 2011 and again in 2018. On the most recent occasion, the Contractor recommended replacing the #3 well pump instead of repairing it, but it was repaired due to the lower cost. All three well pumps and motors should be replaced and wells #1 & #2 should be cleaned within the next two years. Well #1 will not currently operate in automatic mode. The source of the problem is likely the switch, a relay, or the SCADA System programming. This problem must be corrected.

A Wellhead Protection Program should be initiated as soon as is reasonably possible. It is not critical to the continued operation of the system. However, it is important to insure adequate control is maintained in preventing potential contamination in the future for the sustainability of the well field.

6.3 DISINFECTION

Gaseous chlorine is injected at two points in the treatment process, in the raw water and the finished water utilizing gas chlorinators (regulators) mounted on 150 pound (lb) cylinders that include an automatic vacuum operated switch-over unit to insure an uninterrupted supply, and a chlorine residual analyzer. The WTP feeds between two (2) and four (4) lbs of chlorine per day on average. The chlorine feed rate for each of the injection points is set by the operator. All of the chlorine feed equipment was manufactured and supplied by Capital Controls. This equipment is very high quality and is relatively safe to operate since it is a vacuum system. A vacuum system will automatically shut-off in the event of a loss of vacuum caused by a loose connection or a break in the tubing. This does not mean that gaseous chlorine leaks cannot occur, but only that the likelihood is greatly reduced. The ancillary components such as the injectors, rotameters, tubing and piping are all in good condition. The feed water and solution piping is schedule 80 chlorinated polyvinyl chloride (CPVC). The water flow rotameters show some corrosion on their face that appears to be only superficial. The stainless-steel (SS) faceplate is likely 304 SS, which is highly susceptible to corrosion from chlorine (whereas 316 SS is resistant to chlorine). The 150 lb. chlorine cylinders are mounted on scales (load cells) that provide a weight of chlorine remaining for the operator to monitor in an effort to ensure that the proper amount is fed on a daily basis.



Chlorine Equipment

An on-line chlorine residual analyzer and chart recorder are utilized to continuously monitor and record the finished water chlorine residual. The analyzer and chart recorder are no longer functional.

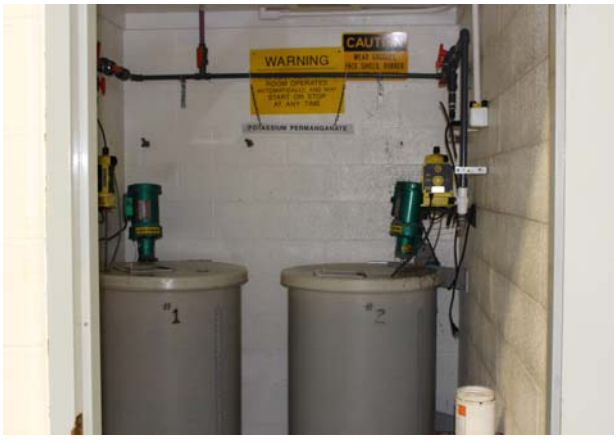
It should be noted; Ohio EPA may request the Village to transition from a gas chlorine disinfection system to liquid chlorine (sodium hypochlorite) disinfection system in future to reduce the potential health risks associated with a gas release. Chlorine gas is a very dangerous gas that is deadly at high concentrations (first gaseous chemical warfare agent).

6.3.1 Deficiencies and Improvements

The chlorine feed equipment (Capital Controls) was rebuilt in 2015 and is in good operating condition· including all the ancillary equipment. This is very high quality and reliable equipment. However, since this equipment is 20+ years of age, consideration should be given to replacement within approximately five (5) years.

The existing inoperative chlorine residual analyzer unit should be removed or repaired and returned to service. Consideration should be given to replacing it with a new unit. If it is replaced, it should be tied into the plant SCADA System for the purpose of monitoring, recording and archiving the data. An in-line continuous chlorine residual analyzer is not a requirement for this plant. However, it would provide positive assurance of uninterrupted disinfection and added integrity to the operation. If installed, calibration at a frequency of no less than every three months is required. A minimum of one chlorine residual per day (a single sample) at the entry point to the distribution system is the minimum required by regulation.

6.4 OXIDATION



Potassium Permanganate System

A Potassium Permanganate solution is fed in the raw water upstream from the three (3) greensand pressure filters. Redundant LMI metering pumps purchased in 2014 are utilized to feed the proper dosage of permanganate from one (1) of two (2) day tanks both equipped with mixers and all of which are contained in a separate isolated chemical feed area (room). Potassium Permanganate solution is fed into the raw water ahead of the filters at a rate set by the operator. The tanks, mixers and diaphragm metering pumps are in excellent operating condition.

6.4.1 Deficiencies and Improvements

There are no immediate needs. However, It is recommend that consideration be given to replacing these metering pumps at some time in the future with new peristaltic metering pumps. Peristaltic pumps provide greater reliability with less maintenance.

6.5 GREENSAND PRESSURE FILTERS

Three (3) ten (10) ft diameter greensand (synthetic manganese dioxide media) pressure filters manufactured by Tonka are utilized for the removal of iron and manganese from the raw water after oxidation by potassium permanganate and chlorine. The filters are rated at three (3) gpm per ft^2. The total filtration capacity is 706.5 gpm or 1.017 MGD. The filters were rebuilt by the original manufacturer in 2015 and are in excellent condition. A filter control panel provided by the filter manufacturer (Tonka Equipment Co.) and includes the switches and push button controls for all of the filter valves. A PLC is included and programmed for an automatic backwash sequence.



Greensand Pressure Filters

Table 6-5 Current Greensand Pressure Filter Capacity

# OF FILTERS	DIAMETER (FT)	SURFACE AREA (SF)	DESIGN FILTER LOADING RATE (GPM/SF)	CAPACITY PER PF (GPM / MGD)	TOTAL PF CAPACITY (GPM / MGD)
3	10	78.54	3.0	235.6 / 0.34	706.5 / 1.017

Table 6-6 below shows the type and depth of each layer of filter media in the PF.

Table 6-6 Filter Media

PARAMETER	VALUE
ANTHRACITE	6 inches
GREENSAND	18 inches
SUPPORT GRAVEL	12 inches
TOTAL MEDIA DEPTH	36 inches

Backwashing of filters is initiated in automatic mode by the operator with a push of a button. The backwash is accomplished automatically with sequencing facilitated by a programmable logic controller in the filter control panel. However, backwashing can also

be accomplished manually by the operator. All of the valves are manufactured by Keystone and are resilient seat 1/4 turn butterfly type equipped with electric actuators. They are also equipped with a hand-wheel for manual operation. There are two (2) ten (10) HP vertical turbine pumps that are utilized to backwash the filters. The backwash pump utilizes finished water from the clearwell to reverse the flow up through the filter bed. An electrically actuated butterfly valve can be utilized to control the flow. Only one (1) pump is used for a backwash and each pump is rated at 785 gpm that draws from the finished water clearwell. The second pump is provided for redundancy. The backwash rate is ten (10) gpm/ft^2. However, the backwash is also supplemented with air scour. A blower (Rotary Air Compressor) is utilized during a portion of the backwash procedure as a means to further fluidize and scour the filter media to insure the effectiveness of the backwash. A 1/4 turn butterfly valve is also utilized for control of the air scour. Wasted backwash water is sent to an equalization tank and slowly discharged (pumped) to the sanitary sewer at a rate of 100 gpm.

Table 6-7 shows the flow rate required for filter backwash at 10 gpm/SF.

Table 6-7 Pressure Filter Backwash Requirements

DIAMETER (FT)	SURFACE AREA (SF)	BACKWASH RATE (GPM/SF)	BACKWASH FLOW RATE PER PF (GPM / MGD)	DURATION (MIN)	BACKWASH VOLUME PER PF (GAL)	TOTAL BACKWASH VOLUME (GAL)
10	78.54	10.0	785.4 / 1.13	20	15,708	150,708

Media will be lost in during backwash over time. A normal amount is 2-3% per year. The media depth should be verified every five (5) years and replenished as necessary. After 15 years, all the media should be replaced and the filter internals and coating system should be inspected and repaired as required.

6.5.1 Deficiencies and Improvements

The filters beds are in excellent condition and do not require any attention in the immediate future. The filters have been operating at only a very small percentage of their design capacity. However, given the age of the valves and actuators, consideration must be given to replacement of them in the very near future. Additionally, technology for the filter control panel is outdated. A recommended upgrade of the plant SCADA System can include these controls and replace the filter control panel with at the very least, a touch-screen.

The backwash pumps and motors should be rebuilt or replaced to insure reliability and proper operating conditions in the future. The rotary compressor should be inspected and the condition assessed.

6.6 Finished Water Pumping and Clearwell

There are three (3) high service vertical turbine pumps each rated at 435 gpm or 626,400 gpd. Only one pump and one motor have received any attention (repairs) since their original installation. Each pump is equipped with a hydraulically controlled diaphragm

(Ross) discharge valve. These slow closing valves are critical to insure against water hammer when a pump is shut-off. Additionally, the lack of a positive shut will allow water from the distribution system to flow back into the plant clearwell. In the event that this occurs, the entire plant will flood. This has happened on more than one occasion. These valves should be replaced with new and more reliable valves.



High Service Pumps

The three finished water pumps pull the treated water from the clearwell beneath them. The finished water clearwell has an approximate capacity of 75,000 gallons. The clearwell has a wall that that enables isolation of half the capacity. It provides the redundancy necessary for maintenance. There are no known issues or concerns with the clearwell. The mercury float switches provided for level control must be replaced.

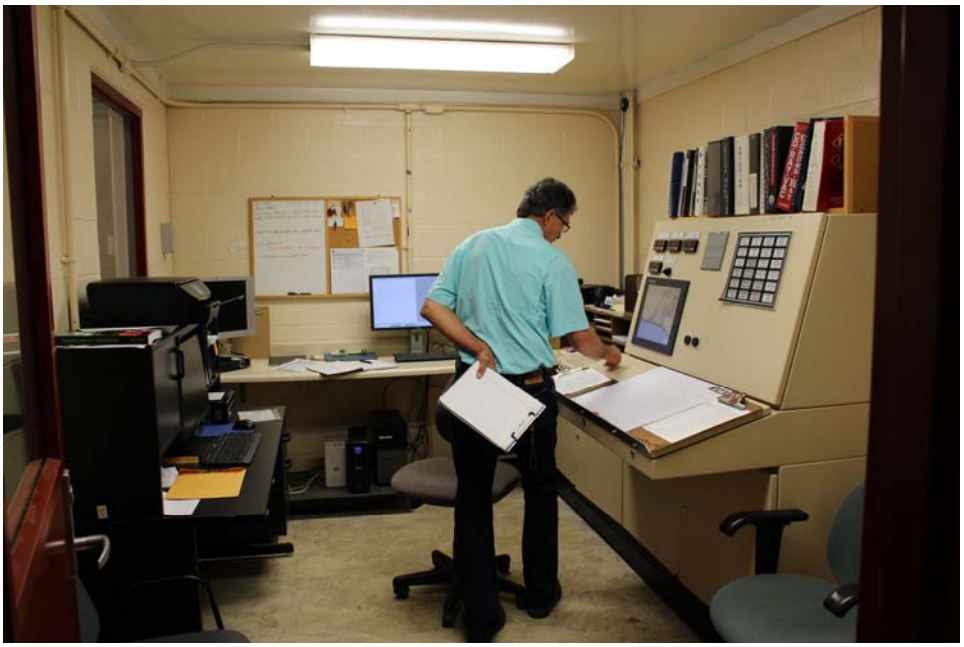
6.6.1 Deficiencies and Improvements

Ohio Drilling Co. had been utilized for the original well drilling and it appears exclusively for miscellaneous pump and motor repair work since then. Research of the WTP records indicate one (1) high service finished water pump and one high service finished water pump motor have been repaired since their original installation. High service pump # 3 was pulled and repaired in January of 2012. However, it is unknown at this time which motor was repaired, but one high service pump motor repair was completed in May 2011. Further investigation is needed to determine which unit was repaired. It is recommended all three pumps and motors should be rebuilt and/or replaced to insure reliability. Consideration should be given to the purchase and installation of at least one variable frequency drive (VFD) to improve efficiency. Additionally, all three hydraulic pump discharge valves are not sufficiently reliable. They must be replaced with new more reliable slow acting positive closing valves.

The clearwell float switches (2) must be replaced with ultrasonic transducers, pressure transducers or capacitance probes. Depending upon the method used, it may dictate the need for some programming changes in the SCADA system. The clearwell should also be cleaned to ensure there is no sediment buildup in the bottom of the vault.

6.7 SCADA System

The plant SCADA System was installed by an integrator (OCI) that is no longer in business. Many of the components in the system such as the flow and level meters were manufactured by Bailey and Fisher & Porter. Those companies have been acquired by other companies that were acquired by other companies as a major consolidation has taken place in the industry. While some of the older equipment and technology such as float switches, panel mounted displays, and chart recorders are still being manufactured today, major improvements to the technology have been made that provide greater reliability and flexibility today. However, some of the equipment is no longer being manufactured and parts are unavailable. While many of the components remain operational, they should be replaced with the latest technology due to their age and likelihood of failure. The main computer and displays were replaced in 2015 along with a software updated.



SCADA Panel

6.7.1 Deficiencies and Improvements

While most of the components remain operational, some should be replaced with the latest technology due to their age and likelihood of failure. Programming changes that include additional functionality should be considered. This can be accomplished on a gradual basis or through a comprehensive project. However, a very holistic approach must be taken in the planning of this effort.

6.8 BACKWASH WATER EQUALIZATION TANK

The backwash water equalization tank is utilized to collect the wasted wash water from filter backwashes. It slowly pumps the wastewater out to the sewer plant equalizing the flow over time. The tank is equipped with one (1) 2-HP 100 gpm submersible pump. The volume of the tank is approximately 29,000 gallons.



Backwash Water Equalization Tank

6.8.1 Deficiencies and Improvements

The purchase of a stand-by pump is essential since the tank is equipped with only one pump.

6.9 WTP BACKUP GENERATOR

The WTP is equipped with a 150 Kilowatt (KW) generator that is sized for the entire installed plant load. It is equipped with an automatic transfer switch. The plant operator is required to report to the plant in the event of a power failure, because there are occasions when not all equipment re-starts when the switch to or from commercial power occurs.



Backup Generator

6.9.1 Deficiencies and Improvements

The backup generator should be exercised under load on occasion to check the status of equipment start-up and shut-down under emergency conditions. Ideally, the goal is to ensure that all essential equipment operates without interruption under those conditions.

6.10 Ancillary Equipment

6.10.1 Pump and Motor Efficiencies

The efficiency of all pump and motor systems should be tested and any low-efficient systems should be considered for replacement with more efficient ones. Variable Frequency drives (VFD) should also be considered.

6.10.2 Dehumidification System

The system is currently inoperative.

6.10.3 Plant Meters

The WTP is equipped with two (2) 6-inch magnetic flow meters each rated at 1.5 MGD with 4-20 milliamp (ma) output.

6.10.4 Heating Ventilation and Air Conditioning

The Heating Ventilation and Air Conditioning (HVAC) for the administrative areas includes a furnace and central air conditioning unit. It appears that they have been replaced in recent years but there are no records on when they were replaced.

6.10.5 Building Roof

The building roof is comprised of asphalt shingles that appear to be in good condition.

6.10.6 Deficiencies and Improvements

The WTP dehumidifier operation is critical to insuring against corrosion and equipment damage caused by condensation (cold water and warm air). Condensation drips, pools and accumulates on surfaces, structures and equipment. Due to the availability of newer more efficient technology, the unreliable and cost prohibitive nature of repairing the existing unit, a new unit must be purchased and installed. The Village has obtained cost estimates to replace system.

The WTP meters (two 6-inch magnetic flow meters) require annual calibration. They were last calibrated in 2015. Consideration should be given to their replacement These meters require annual calibration. They were last calibrated in 2015. Consideration should be given to their replacement.

6.11 MCC System

All of the equipment in the MCC Room is in excellent condition and fully operational. The motor starters are properly equipped with overload protection and phase monitoring exists. All of the contactors have recently been cleaned and/or replaced. There are no known issues,

6.12 Safety

On June 28, 2018, the PCWR Compliance Specialist conducted a safety inspection at the Village WTP to evaluate the facility prior to PCWR overseeing the operation of the Plant on July 1, 2018.

There were no obvious significant safety concerns or issues throughout the WTP. The chemicals are clearly labeled. The chemical feed room (potassium permanganate) is equipped with a safety shower and there appears to be sufficient secondary containment for the solution tanks. The chlorine room has outside access, an exhaust fan and an active leak detection device. There is a chlorine "A" repair kit available and an SCBA. There is also an ample supply of miscellaneous safety equipment such as gloves and safety goggles.

Below is an itemized list of concerns identified by the Compliance Specialist.

- No Fire extinguishers within the plant have been maintained. All need annual maintenance check.
- Compressed canister not secured. Age and contents unknown. Unknown whether it is empty or not.
- The stairs used to access the generator door does have a handrail (handrail is required when there are more than two [2] risers) and is unstable.
- Exterior fenced in area is overgrown and cluttered with garbage.

- Blue barrel containing unknown substance and no label in compliance with Global Harmonization.
- SCBA kit does not indicate when it was last inspected or had maintenance performed.
- Dehumidifier located under tap in slop sink. This potentially poses an electric shock hazard.
- Extension cord lying across the entrance to the electrical room poses a trip hazard.
- Several electrical cabinets are obstructed by boxes and miscellaneous items. There must be 36 inches of clearance in front of all electrical cabinets.
- Ceiling tiles in the Meeting Room have indication of water leakage and water damage.
- Door to the electric room has sticky note reading “Leave Door Open to Vent Heat”. This indicates that the electrical room may have an issue with overheating. This may need to be addressed.
- Backwash EQ has a damaged cover.

6.12.1 Deficiencies and Improvements

An inventory needs to be taken on the chlorine "A" Repair Kit to ensure that it is complete. The plan to remediate a major chlorine leak needs to be included in the Contingency Plan. The plan should specify a call-out of the fire department in the event of a leak. Employees cannot use the SCBA unless they are trained and fit tested. Therefore, the SCBA should be disposed of. The leak repair kit should be made available to the fire department if a major leak occurs. There is no confined space equipment on-site. Employees must be trained and a plan developed.

6.13 Distribution System and Storage

The water distribution system piping is comprised of water mains of various compositions and ages. There remains a considerable amount of original (circa 1902) cast iron water main in various areas of the distribution system that can be considered trouble spots due to their fragility. The potential for future costly failures and emergency repairs is very high. The distribution system layout has a multitude of dead ends where water does not circulate which leads to poor water quality (sediments, bacteria, low chlorine residual). Dead ends can also: limit water available for fire-fighting, result in decreased line pressures on the end; and increase in the number of customers without water during a water main repair. The remedy to this problem is to plan specific water main replacement projects based upon its age, size, criticality and a comprehensive hydraulic analysis. CT Consultants is currently analyzing the hydraulic conditions in the Village’s water distribution system.

In 2016, Ohio law required all community public water systems to identify areas that are known to contain or likely to contain lead service lines. CT Consultants prepared and submitted documentation identifying most of the Village as “likely” to have lead service

lines, Figure 6-6. It is recommended to replace service laterals as distribution systems improvements are completed in the “likely” lead service line areas.



Figure 6-6 Mantua Distribution System Service Lateral Lead Based Mapping

The water distribution system includes an old concrete underground water storage reservoir and a booster pump station. The booster station was replaced in 2003 (new construction) along with a major waterline replacement project on Franklin Street.

The concrete water storage reservoir is in need of significant repairs that were estimated at $83,000.00 in 2015. CT Consultants completed the design and has received an Ohio Public Works Commission (OPCW) grant and loan to complete the project.

The current Operator of Record has endeavored to calculate the amount of unaccounted-for-water (water loss) for the system on a couple of occasions. Water loss is the difference between metered finished water from the plant and billed water from residential, commercial and industrial meters. The Operator determined that an average loss of approximately 17% exists. This loss can be the result of water main breaks, leaks, water theft, etc. The average benchmark (goal) published by Sustainable Communities in a 2012 report is 15%.

Eight years of data was downloaded from the Ohio EPA Electronic Discharge Monitoring Report (e-DMR). The OEPA's requires plant operators to provide data through the e-DMR reporting methodology. The data reported for 2011 through 2018 is in the following Table 6-8:

Table 6-8 Monthly WTP Total Flow

Village of Mantua - Monthly Water Total Flow in Gallons								
	2011	2012	2013	2014	2015	2016	2017	2018
January	7,853,000	7,853,000	6,804,000	5,333,000	5,607,000	4,223,000	4,970,000	5,044,000
February	5,540,000	7,309,000	6,289,000	4,598,000	5,612,000	3,977,000	4,649,000	4,419,000
March	6,439,000	6,357,000	6,272,000	5,439,000	5,829,000	4,712,000	4,951,000	4,509,000
April	5,933,000	6,144,000	6,193,000	5,787,000	5,276,000	4,668,000	4,990,000	4,084,000
May	6,399,000	6,588,000	6,756,000	5,693,000	6,150,000	4,774,000	5,562,000	4,188,000
June	6,615,000	6,965,000	4,636,000	5,818,000	5,592,000	4,606,000	5,225,000	3,669,000
July	6,692,000	6,714,000	4,743,000	5,484,000	5,341,000	4,806,000	4,634,000	3,798,000
August	7,658,000	6,355,000	4,743,000	5,872,000	4,858,000	5,562,000	4,614,000	4,614,000
September	7,992,000	5,392,000	4,681,000	5,001,000	4,574,000	5,248,000	4,292,000	4,292,000
October	8,354,000	6,288,000	5,003,000	5,337,000	4,562,000	5,145,000	4,348,000	4,348,000
November	8,155,000	6,506,000	4,998,000	5,338,000	4,164,000	4,708,000	3,939,000	3,939,000
December	7,443,000	5,506,000	5,571,000	5,686,000	4,422,000	5,114,000	3,840,000	3,840,000
Total Yearly	85,073,000	77,977,000	66,689,000	65,386,000	61,987,000	57,543,000	56,014,000	50,744,000

In an attempt to normalize data for analysis the missing data was replaced as follows. Note for January 2011 no data was reported; for January 2011 the January 2012 data was used. For August through December 2018 no data has been entered as of the date of this report. The data reported August through December 2017 was used to report data for August through December 2018. It must be noted that there is a high probability that data reported for the period of August through December 2018 may be overstated

given the downward trend seen between 2017 and 2018 for the months May, June and July.

Data Analysis: The total water produced at the Village of Mantua WTP for 2011 is estimated to be 85,073,000 and for 2018 the water production is estimated to be 50,014,000 equating to a 40 percent drop in production. It must be noted that 2011 is the highest reported production and that 2018 is projected to be the lowest volume produced. Using the same analysis method for years where full data was available (2012 and 2017) the decrease is reduced from 40% to 28%.

Table 6-9 WTP Total Flow Analysis

Year	Volume	Year	Volume
2011	85,073,000	2012	77,977,000
2018	50,744,000	2017	56,014,000
	34,329,000		21,963,000
	40%		28%

The data necessary to define the reason for a 40-percent (or even a 28-percent) decrease in water revenue was not available during drafting this report. However, the obvious fact which is developed from the data is less water produced directly relates to less water sold or simply put less revenue. More importantly is the trend is down and the Village of Mantua, just like every other public utility has little control over the volume of water it sells.

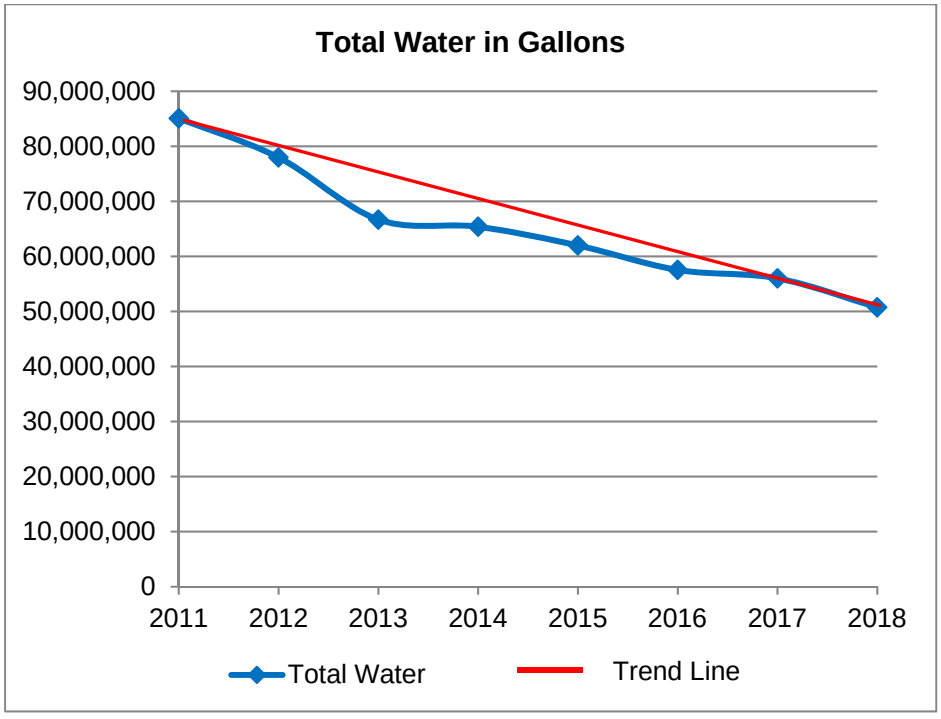


Figure 6-7 Mantua WTP Total Gallons Produced Per Year

From a water industry standpoint the rate of the downward is not what is typically seen from a decrease residential consumers consumption. A downward trend of 5-percent or even 10-percent per year would be expected to be seen from residential customers as they replace their plumbing fixtures with low flow devices.

Table 6-10 WTP Total Flow Analysis

Month	2017	2018	17 - 18	Percent
May	5,562,000	4,188,000	1,374,000	25%
June	5,225,000	3,669,000	1,556,000	30%
July	4,634,000	3,798,000	836,000	18%

The decreases being seen in the Village of Mantua for the period 2017 compared to 2018 as seen in Table 6-10 is more indicative of a major consumer, such as a commercial factory decreasing their water use.
The average age of water meters is unknown, but there have been some upgrades in recent years. An attempt has been made to standardize customer meters with Badger wired remote read meters.

Currently the Village does not have an alternative water supply. In the case of a catastrophic event at the WTP or a major fire, bulk water would need be hauled into Village to support maintain water service. An interconnect with Portage County would provide redundancy and additional capacity to the support the Village in the event of an emergency. The redundancy would also provide flexibility to the Village if they wanted to shut down the WTP for a major repair or maintenance event.

6.13.1 Deficiencies and Improvements

A meter upgrade project to install radio or some other communication protocol that will serve to automate meter reading. It is necessary to improve efficiency and reduce manpower costs.

Water main and water hydrant projects are needed to replace aged and inadequately sized water mains to ensure proper pressure, water quality, and fire protection is maintained for the Village residents and businesses. Looping dead end water mains and replacing old “likely” lead service laterals during water improvement projects is recommended.

The water storage tank repairs are pending.

Look at cost sharing an interconnect with PCWR to provide redundancy to system.

7 INFRASTRUCTURE EVALUATION – MANTUA WWTP AND COLLECTION SYSTEM

The purpose of this Section is to evaluate the existing wastewater treatment systems used at the Mantua WWTP. The original plant was constructed in 1968 and upgraded in 2001 to a 0.50 MGD plant. The only remaining original structures from 1968 include a concrete block laboratory building, two (2) above ground circular concrete tanks and two (2) sludge drying beds.

The WWTP consists of: an influent screen, pump station and laboratory; backup generator; aerated grit removal; two (2) equalization tanks; flow splitter and two (2) oxidations ditches; two (2) clarifiers and pump building; aerobic digester; blower building with three (3) blowers; two (2) sludge holding tanks; an aluminum sulfate chemical feed system; ultraviolet (UV) disinfection system and outfall.

The average yearly flow is 0.205 MGD. (41% of the hydraulic loading) and an influent Carbanaceous Biological Oxygen Demand (CBOD) of 197 pounds (lbs)/day (52% of design organic loading). Figure 7-1 is an aerial image of the Mantua WWTP.



Figure 7-1 Aerial Image of Mantua WWTP

A process flow diagram for the WWTP is provided in Figure 7-2. Figure 7-3 shows the hydraulic profile for the WWTP. Both figures were obtained from the 2000 CT Consultants Mantua WWTP Expansion drawings.

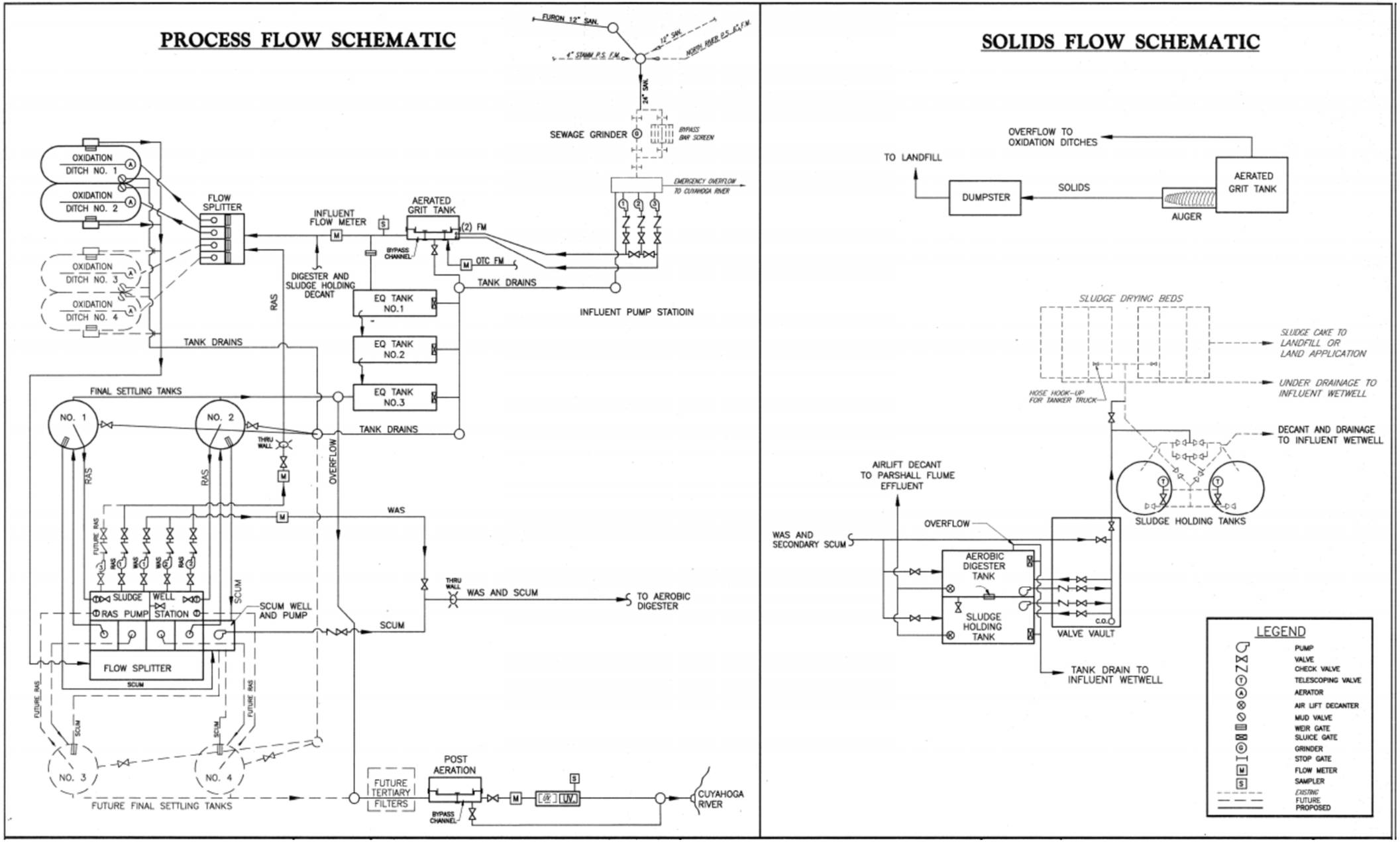


Figure 7-2 Mantua WWTP Process Flow Diagram

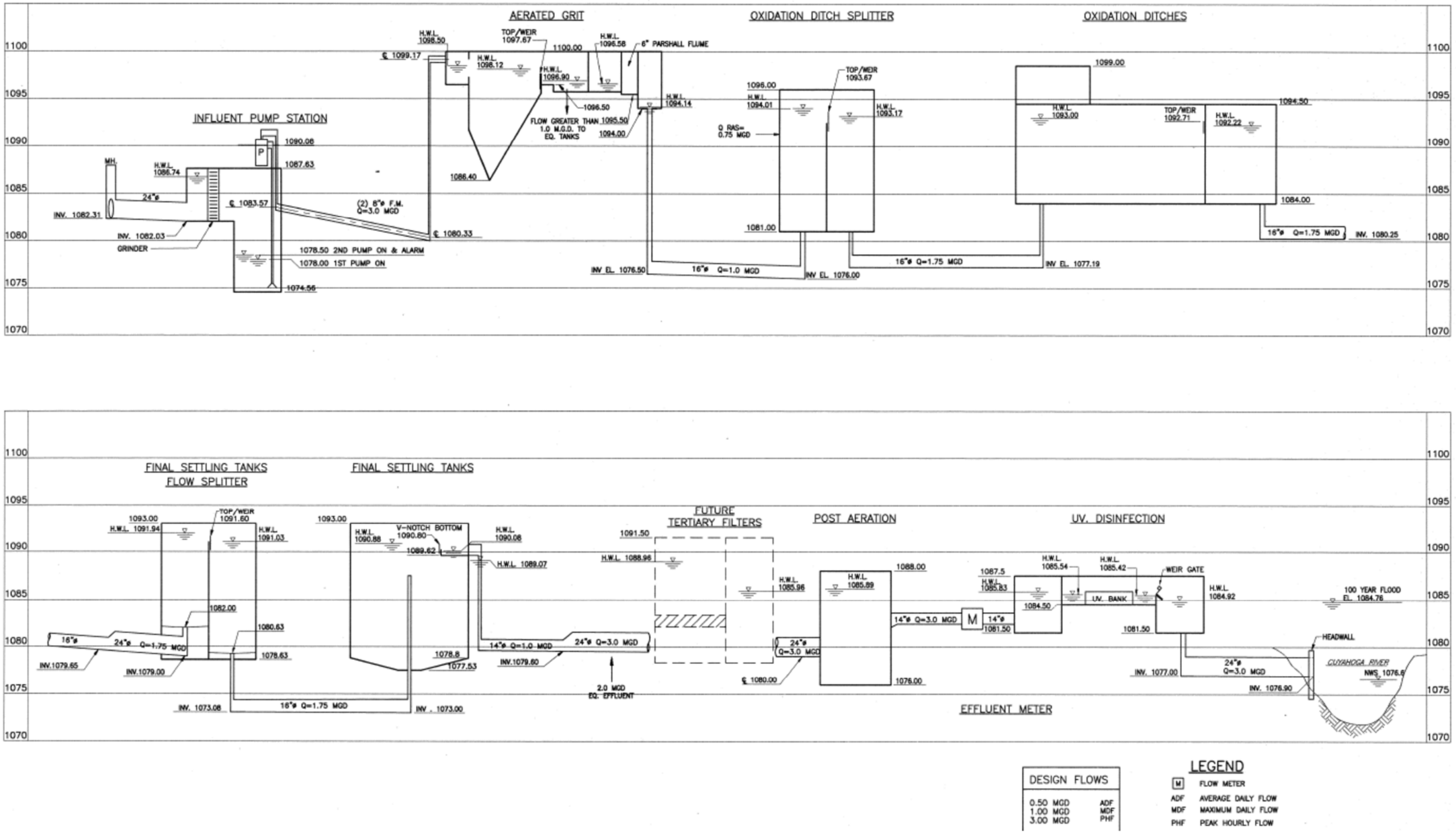


Figure 7-3 Mantua WWTP Hydraulic Profile

7.1 EFFLUENT DISCHARGE WATER AND SLUDGE QUALITY

PCWR reviewed the effluent water quality data and sludge data for the Mantua WWTP for the period of 2003 to 2018. The data was obtained from the Ohio EPA Monthly Operating Report and is provided in Appendix E. Tables 7-1 and 7-2 summarize the data from 2015 to current for all the parameters currently required to be tested for at the WWTP's current Ohio EPA issued National Pollutant Discharge Elimination System (NPDES) permit 3PB00031*KD, dated November 2, 2015 and expiring on November 30, 2020. The data indicates for the most part the WWTP is currently meeting it's NPDES permit requirements for both effluent and solids.

Table 7-1 Discharge Water Quality

Parameter	Units	NPDES permit limit[2]	2015				2016				2017				2018			
			No. of Samples	Min	Max	Mean	No. of Samples	Min	Max	Mean	No. of Samples	Min	Max	Mean	No. of Samples	Min	Max	Mean
Temperature	°C	-	258	1	23	13.3	256	2	23	14.1	255	2	24	14.2	105	1	20	8.8
Dissolved Oxygen	mg/l	≥ 5	258	7.7	12.5	9.9	256	7.9	12.1	9.8	255	7.3	11.4	9.2	105	8.7	11.5	10.4
pH	S.U.	9.0 to 6.5	258	7.4	8.1	7.9	256	7.3	8.2	7.9	255	7.4	8.2	7.9	105	7.1	8	7.7
Total Suspended Solids	mg/l	11.9[1]	105	2	**12**	5.3	106	2	10	5.2	104	2	10	4.4	44	2	9	4.8
Oil and Grease (Hexane Method)	mg/l	10	12	2.5	2.5	2.5	12	2.5	2.5	2.5	12	2.5	4	2.6	5	2.5	3.3	2.7
Nitrogen, Summer Ammonia (NH_3)	mg/l	1.4[1]	36	0.02	1.31	0.63	35	0.04	0.14	0.07	34	0.03	6.6	0.28	-	-	-	-
Nitrogen, Winter Ammonia (NH_3)	mg/l	1.7[1]	26	0.03	0.52	0.06	25	0.03	2.8	0.22	26	0.03	**8.8**	0.69	26	0.03	0.11	0.05
Total Nitrite Plus Nitrate	mg/l	-	12	27.1	65.1	40.2	12	22.8	63	37	12	6.9	77.2	30.8	5	11.4	26.8	19.4
Total Phosphorus	mg/l	0.6[1]	12	0.2	0.52	0.3	12	0.2	0.59	0.33	12	0.14	0.41	0.24	5	0.1	0.33	0.18
Total Recoverable Nickel	ug/l	-	4	0	10	6.25	4	10	10	10	4	10	10	10	1	10	10	10
Total Recoverable Zinc	ug/l	-	4	10	50.6	21.4	40	24	42	33.75	4	10	20	15	1	15	15	15
Total Recoverable Cadmium	ug/l	-	4	0	2	0.875	4	0.5	50	13.125	4	0.5	1	0.625	1	0.5	0.5	0.5
Total Recoverable Lead	ug/l	-	4	0	5	2.25	4	2	2	2	4	2	2	2	1	2	2	2
Total Recoverable Chromium	ug/l	-	4	0	10	6.25	4	10	50	20	4	10	10	10	1	10	10	10
Total Recoverable Copper	ug/l	-	4	0	10	6.25	4	10	10	10	4	10	10	10	1	10	10	10
Dissolved Hexavalent Chromium	ug/l	-	4	0	10	4.5	4	4	10	5.5	4	4	4	4	1	4	4	4
E. Coli	#/100 ml	126[1]	52	1	23	2.3	52	1	11	2	54	1	2420	52	10	1	2	1.1
Total Mercury (low level)	ng/l	1700	4	0	24.5	7.05	4	0.518	1.09	0.86	4	0.5	1.87	0.85	1	1.23	1.23	1.23
Free Cyanide (low level)	ug/l	-	1	3	3	3	4	0.003	3	0.753	4	0.003	0.003	0.003	1	0.003	0.003	0.003
Total Filterable Residue	mg/l	-	1	620	620	620	12	612	1052	829	12	438	1044	841	5	438	1360	1027
CBOD, 5 day	mg/l	9[1]	103	1	4	2.25	104	2	8.2	2.77	104	2	4	2.41	44	2	4	2.5

1. For parameters with more than one permit limit, the monthly average was used for this table. 2. The maximum and/or minimum concentration limit was used for this table if one is listed on the permit, if not the monthly average was presented. A bold number indicates the level exceeded the permit limit presented on the table, but does not necessarily mean an NOV was issued, since the data presented summarizes the range and average concentration for each parameter for the entire year; an average for a monitoring period may have been within the permit limit.
NPDES = National Pollutant Discharge Elimination System, mg/l = milligram per liter, °C = degree Celsius, S.U.= standard units, ug/l = micrograms per liter, ng/l = nanograms per liter. "-" no data available or no specified permit limit.

Table 7-2 Sludge Quality

Parameter	Units	NPDES Permit Limit	2015	2016	2017	2018
Ammonia	mg/kg	-	1,760	19,700	368	
Total Nitrogen Kjeldahl	mg/kg	-	30,100	24,700	30,100	
Total Phosphorus	mg/kg	-	32,400	28,300	34,100	
Potassium	mg/kg	-	3,580	4,020	3,300	
Total Arsenc	mg/kg	75	12	12	9	
Total Cadmium	mg/kg	85	12	3	2	
Total Copper	mg/kg	4,300	348	347	364	
Total Lead	mg/kg	840	29	30	31	
Total Nickel	mg/kg	420	32	28	23	
Total Zinc	mg/kg	7,500	691	763	847	
Total Selenium	mg/kg	-	3	4	7	
Fecal Coliform	CFU/gm	2,000,000	17,129	408	731	
Total Mercury	mg/kg	57	1	3	0	
Molybdenum	mg/kg	75	10	14	7	

NPDES = National Pollutant Discharge Elimination System, mg/kg = milligram per kilo gram, CFU/gm = colony-forming unit per gram, "-" = no data available or no specified permit limit. Current permit only requires one sample per year. 2018 data was not available at the time this Report was prepared.

7.2 PRELIMINARY TREATMENT - SCREENING

Wastewater influent flow arrives at the north side of the lab/influent building and passes through a Muffin Monster for rag "shredding" (no removal). As the flow approaches design capacity, the influent is directed to a parallel channel that automatically overflows a slide gate and passes through a 5/8-inch manually cleaned barscreen.



Influent Channel



Muffin Monster and Bar Screen

The Muffin Monster does not incorporate actual rag removal, therefore this results in debris accumulation throughout the WWTP. This accumulation not only hinders plant operations, but has created several plugging issues throughout the facility. The most obvious is the plugged discharge flume in the north oxidation ditch.

7.2.1 Deficiencies and Improvements

Install an automatic fine screening device at the plant influent area to remove debris from the influent flow.

7.3 INFLUENT WET WELL

The Influent Wet Well was constructed in 2001 and is located under the lab/influent building. The building was originally constructed in 1968 (current laboratory area) and an addition was added in 2001. The building condition is good and does not appear to be causing any issues at this time.

All flow from the influent channel is directed to the Influent Wet Well, serviced by three (3) twenty (20) HP Gorman Rupp six-inch suction lift pumps. These pumps were installed in 2001 and appear to be operating well. All three (3) rotating units have been replaced between 2010 and 2017. Two (2) of these pumps are operated in a lead/lag mode, with the 3rd pump as a redundant backup. The only issue with this system is that the #3 pump cannot be used as a lead pump, since the SCADA system does not accommodate the use of the #1 or #2 pumps as lag pumps. Since the grit removal unit is located downstream of these pumps, the influent wet well must be cleaned on an annual basis. The influent wet well is currently filled with a thick layer of rags limiting the wet well capacity and increasing the probability of pumps plugging which could lead to plant failure. Grit depth is in the wet well is unknown at this time. The last cleaning was in excess of two (2) years ago.



Gorman Rupp Pumps

7.3.1 Deficiencies and Improvements

Clean influent wet well as soon as possible

Update the SCADA system with flexible influent pumping options.

7.4 GRIT REMOVAL

The Influent Pumps lift the flow to the highest elevation in the WWTP, allowing it to enter the elevated grit chamber. A screw pump removes the grit from the chamber and deposits it into a hopper located at ground level. This system is operated once per week and appears to be operating properly. However, freezing conditions create operational issues both on the exposed portion of the screw pump and inside the housed discharge area. The grit removal unit is inoperable when this occurs.



Grit Screw Pump

7.4.1 Deficiencies and Improvements

Enclose the exterior area over the screw pump and use heat from the influent wastewater to avoid freezing conditions.

Upgrade the interior building heater to a larger unit.

7.5 EQUALIZATION TANK

There are two (2) above ground concrete tanks used to capture excessive storm flows. These structures are in good condition. To the operator's knowledge there was a recent incident when both of these tanks were nearly full, otherwise they appear to function well. If the tanks were to overflow, untreated wastewater would flow through the Post Aeration Tank as a non-permitted bypass to the Cuyahoga River.



Equalization Tanks

7.6 OXIDATION DITCHES

Flow then proceeds to an automatic sampler and through a 6-inch Parshall Flume to the two Oxidation Ditches. Based on current loading rates, only one (1) of the two (2) ditches is being used with a mixed liquor suspended solids (MLSS) concentration of 3,000 milligrams per liter (mg/L).

The ditches consist of circular concrete flow tanks, each driven by a separate 2-speed submerged mechanical mixer. While both mechanical mixers are operational, the #2 ditch is currently plugged by debris at the effluent end and cannot be used. Due to the inability to completely drain the ditches, the off-line tank has also accumulated a considerable amount of herbaceous vegetation that needs to be removed.



Oxidation Ditches

7.6.1 Deficiencies and Improvements

Clean the northern Oxidation Ditch of all debris and use as a backup. Modify to drain oxidation ditches for maintenance and cleaning

7.7 CLARIFIERS



Clarifiers

There are two (2) above-ground clarifiers. Both clarifiers appear to be doing a good job of solids separation with a 30-minute settable solids (SS) of 270 milliliters per liter (ml/L). However, there are some issues that need to be addressed. The clarifier weirs cannot be accessed for cleaning without the use of a tall ladder. This results in excessive algae growth and insufficient weir maintenance.

The surface skimmers allow too much water to enter the sump pit that pumps directly to the Aerobic Digester. This in turn fills the aerobic digester prematurely, creating a high volume of supernatant that must be returned to the head of the plant. Currently, the skimmers are only used periodically when the operator is present. The sump pump is not functioning properly and needs to be repaired and/or replaced.

The two (2) clarifiers are designed to be separated with a gate valve located between them; however, this valve is currently inoperable. This prevents work from being performed inside the Clarifiers, since both have to be taken off-line. This will result in multiple permit violations.



Clarifier Weir

7.7.1 Deficiencies and Improvements

Repair/replace sump pump.

Construct a walkway around the outside perimeter of each Clarifier to allow the Operator access for weir cleaning. Shading the weirs may also be helpful to reduce algae growth.

Research the skimmer system to determine improvements that allow these units to operate continuously.

The isolation valve between the clarifiers must be repaired. This repair requires prior notice to the Ohio EPA.

7.8 PUMP BUILDING

This concrete building houses the aluminum sulfate with two (2) chemical feed pumps (used for phosphorus control), two (2) return activated sludge (RAS) pumps and two (2) waste activated sludge (WAS) pumps. The building structure appears sound and meets the needs most of the time. However, freezing problems arise in the winter due to an inefficient heating system located external to the building (ground level). This causes the entry door to freeze shut and must be thawed by torch for operator entry. Several contractors have attempted to repair the heating unit, but have been unsuccessful. Additionally, the inoperable exterior HVAC does not provide the required air exchange at a rate that requires on some occasions that entry be completed as confined space.



Chemical Feed Pumps

RAS and WAS Pumps



The two (2) RAS centrifugal pumps located in the basement of the Pump Building were experiencing plugging problems caused by excessive debris, therefore the original pumps were recently replaced with two (2) constant speed Vaughn “chopper” pumps. This appears to have solved the plugging problem. The source of the debris is the chopper pump at the head of the plant. The VFDs for the RAS pumps do not function properly.

The constant speed pumps do not allow the operator control of the sludge blanket depths, resulting in extremely diluted WAS flow when wasting sludge from the Clarifiers. The operator is forced to turn the RAS pumps off for two (2) hours prior to wasting sludge (for thickening), thus eliminating RAS flow to the Oxidation Ditch during this period.

The two (2) mud valves to control RAS rate have corroded stems at the water surface.

The two (2) WAS centrifugal pumps located in the basement of Pump Building are original from the 2001 project and appear to be operating properly at this time. Again, freezing issues arise in the winter months. While the WAS discharge piping is primarily underground, it is eventually exposed when the flow is directed up and into the Aerobic Digester. This area of the piping system is subject to freezing, which forces the operator to temporarily discontinue the sludge wasting program.

7.8.1 Deficiencies and Improvements

Replace the heating unit and improve building insulation.

Replace VFDs on the RAS pumps to allow the Operator to control RAS flow rates.

Replace the valve stems on the two (2) mud valves.

Install commercial grade heat tape and insulation to the exposed portion of the WAS piping near the digester.

7.9 Post Aeration and Disinfection

Flow from the Clarifiers proceeds directly to the Post Aeration Tank, followed by an 80 bulb Trojan Ultraviolet (UV) disinfection system. UV bulbs are used for approximately four (4) years or less. An automatic sampler collects effluent for analysis. Temperature, pH and Dissolved Oxygen (DO) meters/probes are located here. All meters are sun-baked to the point where they are unreadable.



Post Aeration Tank and UV Channel

7.9.1 Deficiencies and Improvements

Replace the meters/probes and housing in this area.

7.10 SLUDGE DIGESTION

The Aerobic Digester is an above-ground concrete structure sharing a wall with the EQ tank. It is equipped with coarse bubble air diffusers. Several diffusers are currently plugged; therefore, the tank needs to be drained, cleaned and have the diffusers replaced. There appears to be adequate detention time to meet Ohio EPA rules and regulations for agricultural application. The operator conducts periodic tests for pH and dissolved oxygen. When additional digester space is required, the tank air is shut off to allow for solids separation and the clear water is removed and diverted to the head of the plant via a telescoping valve located inside the digester. When the solids are concentrated to the point where solids separation ceases, a portion of the tank contents are removed and diverted to one of the two (2) sludge holding tanks.

Air is provided by three (3) Sutorbilt rotary lobe blowers located in the space under the influent grit removal area. All three (3) blowers are five (5) years old or less. Only one of these constant speed blowers is required for normal operation of the Aerobic Digester, Post Aeration Tank and the two (2) Sludge Holding Tanks. However, the operator reports an average D.O. concentration of approximately 7 mg/L in the digester. While this is excessive (and a waste of money to pay for electric), the operator has little control due to the constant speed of the blower motor.



Rotary Lobe Blowers

There are also no accommodations for removing/replacing these heavy blower units. The Mechanic is required to build wooden blocking assemblies for this purpose.

This area is also used as workshop space for the Mechanic. These blowers are extremely loud and the area is often avoided due to this reason.

7.10.1 Deficiencies and Improvements

The digester tank needs to be drained, cleaned and the diffusers replaced.

Install VFDs on the blower motors to provide operational flexibility and electrical cost savings. More efficient turbo blowers could be considered for a future project.

Provide a safe method for blower removal/replacement.

Provide a safe/adequate work space for a workshop.

7.11 Sludge Disposal



Sludge Storage Tanks

The two (2) concrete sludge storage tanks were constructed in 1968 and are showing signs of wall cracking. Grouting these cracks could extend the useful life. The metal stairs are also very steep and pose a potential fall hazard for the staff.

Agri-Sludge removes the Class B liquid sludge and transports to area farms for agricultural application. Historically, this process has been required every 10–11 months and is usually performed during the warmer months.

7.11.1 Deficiencies and Improvements

The Sludge Storage Tanks need to be evaluated for cleaning, diffusers replacement, structural integrity and stair replacement.

7.12 Sludge Drying Beds

The two (2) old sludge drying beds have not been maintained and are now covered with small trees and vegetation. Although the beds have not been utilized for several years, the Ohio EPA has indicated that they would prefer that the beds be returned to a usable condition.



Sludge Drying Bed

7.12.1 Deficiencies and Improvements

Clean and return drying beds to usable condition. If there is no need for these beds it is suggested to meet with Ohio EPA to discuss permanent removal.

7.13 LABORATORY



WWTP Laboratory

The laboratory appears to be adequately equipped for a portion of the required parameter testing. The Operator routinely performs Suspended Solids (SS), Carbonaceous Biological Oxygen Demand (CBOD), pH, Mixed Liquor Suspended Solids (MLSS), Dissolved Oxygen (DO) and temperature. A large portion of the required testing is currently out sources to PCWR Laboratory including; Ammonia (NH_3), Nitrogen Dioxide ($N0_2$), Nitrate (NO_3), Phosphate (PO_4), Oil and Grease(O&G), Escherichia coli (E.coli), and the upstream and downstream river samples. The heavy metals samples are shipped to Alloway Laboratory.

7.13.1 Deficiencies and Improvements

The space is very limited in the laboratory, since it also serves as the Operator's office. A modified air conditioner is currently located on the Operator's desk. Consideration should be given to enlarge this space.

7.14 SCADA

The single screen SCADA System is first generation technology and is for "monitoring" only. It does not allow panel "control" by the operator. The only alarm condition dial-out is for the backup generator. The entire plant SCADA system requires updating.

The pump stations are monitored by the SCADA for high wet well only.



SCADA Monitor

7.14.1 Deficiencies and Improvements

The SCADA system should be upgraded. Programming changes that include additional functionality should be considered. This can be accomplished on a gradual basis or through a comprehensive project. However, a very holistic approach must be taken in the planning of this effort, including WWTP data acquisition.

Consider including more information regarding the pump stations to include, but not limited to; flow, pump on/off, and communication.

7.15 WWTP Backup Generator

This Backup Generator is large enough to supply all equipment in the facility and is routinely maintained by an outside contractor. However, some ancillary devices have been inadequately maintained and/or eliminated from the system. These need to be restored for proper operation. Also, when the Backup Generator shuts down (after normal power returns), there are several pieces of plant equipment that do not return to service automatically. This requires an Operator to manually restart the equipment. Note: The generator is routinely started to ensure proper operation; however, the transfer switch is not activated to run the generator under load. This startup procedure needs to be changed to include running all WWTP equipment under load.



Backup Generator

7.15.1 Deficiencies and Improvements

Restore all generator functions and convert all major equipment to automatic restart.

7.16 Ancillary Items

7.16.1 Samplers

The influent and effluent samplers are not working as intended and need to be replaced. EPA regulations require flow-proportionate samplers.

7.16.2 Incoming Electrical Power

Large tree branches need to be cut around the area of the incoming power lines and transformers.

7.16.3 Back Flow Devices

While some of the devices appear adequate, others need to be upgraded to current standards. Information on routine testing/maintenance is lacking. An internal study of the water supply system should be performed to ensure adequate protection of the residents and the facility workers to the potable water supply.

7.16.4 Electrical Outlets

For worker safety, various electrical outlets located throughout the facility need to be replaced with Ground Fault Interrupter (GFI) outlets.

7.16.5 Perimeter Fence

Previous damage to this fence needs to be repaired along with brush and debris removal.

7.16.6 Drain Lines

Several drain lines located around the facility have become plugged and need to be cleaned.

7.16.7 Flow Meter Calibration

There are four (4) to five (5) flow meters located throughout the WWTP, with the influent and effluent meters being the most important for regulatory purposes. The calibration of these units has not been performed for quite some time. All need to be calibrated to ensure proper record keeping.

7.16.8 Spare Parts

There are currently no spares parts stocked for emergency or routine equipment repairs. An internal review should be conducted to establish a needs list of these items.

7.16.9 Bulk Chemical Storage

Aluminum Sulfate is currently delivered in 250-gal totes with a usage rate of one (1) tote per week. Mantua's Service Department is routinely contacted to move these totes from the drop-off point to the small storage tank located in the RAS Building. Due to freezing potential, two (2) of these totes are stored in the Grit Building during the winter months. A more desirable solution would be to construct an addition to the existing RAS Building to house a larger storage tank. The product could then be delivered by a bulk chemical truck and eliminate the time-consuming handling of the small totes.

7.16.10 Deficiencies and Improvements

Replace influent and effluent samplers with Ohio EPA required flow-proportionate samplers.

Trim tree branches around WWTP incoming power lines and transformers.

Perform a backflow protection study on the WWTP's potable water lines.

Replace outlets as required with GFI outlets.

Clean debris and brush around perimeter fence and make required repairs as needed.

Calibrate WWTP flow meters.

Evaluate spare parts that should be "on-hand" for routine and emergency repairs.

Consider alternative for Aluminum Sulfate chemical handling and storage.

7.17 SAFETY

On June 28, 2018, the PCWR Compliance Specialist conducted a safety inspection at the Village WWTP to evaluate the facility prior to PCWR overseeing the operation of the Plant on July 1, 2018. The noted deficiencies are provided in the following sections.

7.17.1 Fire Extinguishers

All inspected fire extinguishers require annual maintenance. All tags are dates 2016. No monthly inspections performed. This issue was determined to be inaccurate by the Mantua/Shalersville Fire Department.

7.17.2 Influent Building and surrounding area

1. Eyewash station contained bottle of eyewash that expired on 9/00.
2. Unknown conduit protruding from the ground outside of sludge holding tank. Unclear of its purpose.
3. Clutter in front of the electrical panels in the influent raw pump room. Must keep a 36-inch clearance around electrical panels.
4. Unclear what APC battery back-up is supporting. Must investigate further to assure max amperage has not been exceeded.
5. Electrical outlets are not GFI outlets. In most environments throughout the facility, they should have GFI outlets.
6. Many outdoor electrical outlets do not have protective covers.
7. Influent has no railing or grating to prevent slipping and falling into the open pit.

8. Eyewash station in the old chlorine (Cl_2) influent room is blocked with garbage in the sink.
9. Threshold of door to the chlorine (Cl_2) influent room is rusted and damaged causing a trip hazard.
10. The influent building office/lab has clutter in front of the electrical boxes to include calendars hung on the electrical boxes.
11. Paper products and chemicals around and on heating unit in the bathroom.
12. Foliage and tree growth around power lines, poles, and transformers could result in fire or loss of power.
13. Generator door does not stay closed. A wooden plank is being used to keep in closed.
14. Miscellaneous items and clutter being stored in front of the building surrounding the transformer and posing a trip hazard.
15. Outdoor fire extinguisher cabinet no longer contains protective glass covering exposing extinguisher to the elements. This may shorten the life of the extinguisher.
16. Foliage growing under electrical boxes. Could begin to degrade and/or obstruct access to electrical boxes.
17. Wooden plank being used to level grating may pose a trip hazard. Wooden plank also contains rusty nail head protruding from one end which could cause injury if brushed against.
18. Foliage and overgrowth obstructing sand filters' effectiveness.
19. Power cable, motor, and other miscellaneous items obstructing walkways at the sludge holding tank.

7.17.3 Blower Building

1. Filter at blower building could use cleaned/changed to prevent airflow from being disrupted.
2. Various items preventing access to electrical panels in the blower building. Must maintain a 36-inch clearance around electrical panels at all times.
3. Miscellaneous items including spare fuses being stored on top of and around the transformer.

7.17.4 Grit removal/ EQ Tank/ Digester

1. Several areas are missing required toe guards for the railing system.
2. Grating needs to be bolted down to prevent slips, trips and falls (previous operator has fallen through grating).
3. Pieces of the railing are missing.
4. The valve box located near the Digester is considered a Permit Entry Confined Space. Please note the valve can be adjusted without entry.

5. Walkways surrounding this area are not level causing potential trip and fall hazards.

7.17.5 Grit EQ Room

1. Machine guard is not on. The guard for the machine is located next to it on the floor. This is because of an adjustment that must be made to the belt of the screw pump regularly. This adjustment requires using a long broom handle to guide the belt to its proper position. This procedure is also unsafe and could result in injury. I recommend reassessing this process to prevent an accident.
2. Heat lamp is located in the screw pump room that is not rated for hazardous environment. Lamp is showing signs of deterioration possibly from Hydrogen Sulfide. This is a portable lamp which should not be used as a permanent fixture.
3. The dumpster in the grit room is missing wheels causing the dumpster to be unstable.

7.17.6 Pump Building/Clarifiers

1. The stair railing on the far side of the tank is not the proper height. The railing on either side of the stairs is not of equal height.
2. Weeds are growing up through risers of the stairway and railing.
3. Outdoor electrical outlets are not covered exposing it to the elements.
4. Various items preventing access to electrical panels. Must maintain a 36 in clearance around electrical panels at all times.
5. Improperly installed backflow preventer.
6. An energized dehumidifier is positioned in a puddle of water posing an electrical shock hazard.
7. Electrical box contains a spout to drain the water. The box needs waterproofed.
8. No safe means of walking around secondary clarifiers. They currently need to be reached by a ladder. Please do not walk around the edge of the clarifier without proper fall protection.
9. Cleaning of the RAS and wasting valves poses a serious fall hazard. This is occasionally done while employee is alone. This operation must be assessed and a safer process developed.
10. Alum spill containment reservoir has a hole drilled through the bottom to allow water to drain. If the alum leaks, it will also drain through the hole thus making the containment reservoir ineffective.
11. The chain hoist is supported by 4x4 boards. There is no indication of a weight rating or an inspection of the hoist to indicate that the boards or the hoist can support the capacity of a load.

12. There is a water hose hanging on an electrical box. It is unclear if there is power to this box. This could potentially pose a shock hazard.
13. Electrical outlets are not GFI. This poses an electrical shock hazard in a wet environment.
14. Air return to the basement of the RAS Building is not operational causing a potential oxygen deficiency to the basement. The basement has one way in and out. Basement appears to be a confined space and could potentially be a permit entry without proper air flow.

7.17.7 UV Channel/Pump Station

1. UV channel walkways have uneven pavement posing a trip hazard.
2. Pump Station does not have operational lighting or venting. Air flow is required for PS to not be a permit entry confined spaces.

7.17.8 Deficiencies and Improvements

Potentially several violations that should be addressed are summarized below:

The influent channel has no railing or grating to prevent slips, trips or falls into the open channel. The influent channel is in an open area and near to level with the walking work area. This poses an even more dangerous situation. It is plausible that an employee could trip on the raised edge of the pavement surrounding the channel. Their forward motion would land them in the influent. As employees may be required to work alone on most occasions, the possibility of someone finding them right away may be limited. Recommend installing grates to prevent access to the open pits except when access is necessary. I also recommend a railing around the pit to prevent accidental access to the area.

The belt guard on the screw pump has been removed which exposes the belt. All rotating machines must be guarded in order to prevent injury. If an operator were to accidently touch the belt, it may result in injury or amputation of a body part. The guard also prevents injury if the belt were to snap, which could cause injury to a nearby operator. The operator indicated that the guard is removed because the belt occasionally needs to be realigned. The task is also preformed using a long broom style handle, by placing the tip against the belt, and waiting for it to maneuver back into place. This issue needs to be resolved as this procedure must be eliminated to prevent injury to the operator and any other bystander that may be in the vicinity if this were to fail.

Backflow preventer on the potable water line at the oxidation ditches is improperly installed. This device prevents the back flow of wastewater into the potable water distribution system. Contamination could impact the public water distribution system if an accidental backflow were to occur.

There are electrical issues in the Pump Building that could pose a serious shock hazard to the operators. The electrical box in the basement of the RAS building has a spout to drain the water to the box. This box should be repaired or replaced to

prevent water from entering the panel. If the water passes through an energized circuit, it will act as a conductor and energize the box. This could potentially cause shock or electrocution if touched. This stands true for the dehumidifier that is located in a puddle of water while energized.

Process of cleaning rags and other debris from the RAS wasting valves. The process involves an operator, often alone, to remove the grates that cover the vaults, bend, squat or lay over the open vault and remove the debris with a hooked tool. This area will freeze during the winter and accumulate ice in this area as well. The process is a serious slip, trip and fall hazard for the operators. The vault contains liquid sewage as well as pumps and other abrasive machinery that an operator can come in contact with causing severe injury. This process must be revisited and either a new process created or the initial issue of the accumulation of rags and debris addressed.

The Pump Building HVAC system that provides ventilation to the basement is inoperable. The basement of the Pump Building is a confined space that requires ventilation in case of oxygen deficiency. The HVAC system should be repaired to allow the operators to safely enter the building.

7.18 COLLECTION SYSTEM

The Village wastewater collection system is comprised of approximately 72% vitrified clay pipe (VCP) installed in the late 1960s. The remaining pipes are ductile iron (DI) and polyvinyl chloride (PVC). Although VCP has the benefit of chemical resistance, it also has a few drawbacks (multiple joints, root intrusions, and labor intensive to install). Over time as the ground moves, through the freeze and thaw process or earthquakes, the pipe joints tend to separate allowing for the exfiltration of sewage. This leakage attracts roots from the nearby trees and bushes which compounds the joint separation. The resulting separation causes infiltration into the sanitary collection system.



Example of Roots in VPC Joint (PCWR System)



Example of Infiltration from VCP Joint Failure (PCWR System)

"Inflow" is clean water from ground surfaces sources that enter the sanitary system. Typically, inflow is the result of a storm event or rapid snow melt. Improper connections such as down spouts and sump pumps account for most of inflow. Inflow impacts a WWTP rather quickly.

"Infiltration" is clean water entering the sewer from groundwater source. This is not as noticeable at the WWTP as inflow, but can impact the system significantly in sewered areas with a high groundwater water table.

It is important to control inflow and infiltration (I/I) in a sanitary sewer system. The additional clean water from the groundwater (infiltration) or rain (inflow) dilutes sewage, which decreases the efficiency of the WWTP and increases the volume the sewage in the system. This can cause the WWTP, pump station or even the pipes to surcharge (overflow). Basically, inflow and infiltration lead to additional operational expenses (overtime for staff and additional treatment costs due to more flow and potential Ohio EPA permit violation and fines for discharges into the environment) and/or capital expenses to increase treatment capacity or equalization storage in the sanitary sewer collection system. Consideration should be given to evaluating the sewer collection system to determine areas needed for rehabilitation (lining), point repairs or replacement.

To estimate the I/I in the Village's sewage collection system, the monthly total gallons of treated wastewater at the WWTP were evaluated to identify seasonal dry periods (minimal precipitation and potentially a lower groundwater table) and wet periods (maximum rainfall and elevated groundwater tables). Table 7-3 summarizes the data. It is assumed that dry periods reflect little to no I/I in the sanitary wastewater and therefore considered sanitary waste only. The average dry period (gallons/month) was calculated at 4,604,100 gallons/month over the period from 2009 to 2018.

Table 7-3 Gallons Treated at WWTP by Month and Year

Year	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
January	5,950,000	6,485,000	**6,557,000**	**11,665,000**	6,388,000	5,982,000	5,459,000	4,499,000	8,532,000	5,673,000
February	8,487,000	5,632,000	6,659,000	7,989,000	6,133,000	4,952,000	5,018,000	6,505,000	7,486,000	7,970,000
March	**10,880,000**	**9,148,000**	**16,984,000**	9,178,000	7,202,000	7,170,000	**9,403,000**	**7,786,000**	8,293,000	9,058,000
April	8,467,000	5,968,000	11,692,000	5,352,000	6,411,000	9,115,000	7,487,000	7,755,000	**10,174,000**	**11,374,000**
May	6,615,000	7,008,000	14,501,000	5,294,000	5,085,000	**9,467,000**	5,086,000	5,403,000	9,837,000	6,934,000
June	5,650,000	5,975,000	8,440,000	4,421,000	5,354,000	6,132,000	7,704,000	4,814,000	5,786,000	**4,994,000**
July	5,772,000	5,843,000	7,021,000	4,256,000	**8,146,000**	5,588,000	8,209,000	4,393,000	5,307,000	5,391,000
August	6,004,000	6,302,000	7,048,000	**4,143,000**	5,022,000	6,632,000	4,382,000	4,971,000	3,818,000	-
September	5,591,000	**5,190,000**	8,779,000	4,175,000	**4,178,000**	**4,875,000**	3,969,000	4,575,000	**3,331,000**	-
October	5,566,000	5,664,000	9,942,000	5,591,000	4,469,000	5,362,000	4,080,000	5,020,000	3,626,000	-
November	**5,011,000**	5,588,000	8,212,000	5,442,000	4,670,000	4,874,000	**3,822,000**	**3,941,000**	4,871,000	-
December	6,425,000	6,984,000	11,198,000	5,918,000	5,939,000	5,585,000	4,756,000	5,494,000	3,714,000	-
MAX Month (Gallons)	10,880,000	9,148,000	16,984,000	11,665,000	8,146,000	9,467,000	9,403,000	7,786,000	10,174,000	11,374,000
MIN Month (Gallons)	5,011,000	5,190,000	6,557,000	4,143,000	4,178,000	4,874,000	3,822,000	3,941,000	3,331,000	4,994,000
Total	80,418,000	75,787,000	117,033,000	73,424,000	68,997,000	75,734,000	69,375,000	65,156,000	74,775,000	51,394,000
Average Daily Flow (GPD)	220,323	207,636	320,638	201,162	189,033	207,490	190,068	178,510	204,863	-

Identifies minimum gallons treated for a month period in the year (dry period). **Identifies maximum gallons treated for a month period in the year (wet period).** Indicates the flow meter was not functional and flow is estimated. "– " data not available, GPD= gallons per day, MAX = maximum, MIN = minimum

The average dry period flow (gallons/month) was then subtracted from the recorded monthly flows, the sum of these numbers and estimated gallons of I/I over the period from 2009 to 2018 is presented on Table 7-4. Negative numbers were accounted for as a zero.

Table 7-5 summarizes the data by year totals and estimates the annual percentage of I/I in the wastewater being treated at the WWTP. The estimated percent of I/I in the wastewater flow ranged from 17% (2016) to 53%(2010) with an average of 29% over the nine-year period. On average, the estimated I/I equates to approximately 45 gallons per minute (gpm) over a 24-hour period at the WWTP (NOTE – a single family home is estimated at 400 GPD which equates to 0.27 gpm over a 24-hour period).

Figure 7-4 presents the average daily flows for the WWTP and the estimated average sanitary waste only flow (average dry period).

Table 7-4 Estimated I/I Treated at WWTP by Month and Year

Year	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
January	1,345,900	1,880,900	1,952,900	7,060,900	1,783,900	1,377,900	854,900	0	3,927,900	1,068,900
February	3,882,900	1,027,900	2,054,900	3,384,900	1,528,900	347,900	413,900	1,900,900	2,881,900	3,365,900
March	6,275,900	4,543,900	12,379,900	4,573,900	2,597,900	2,565,900	4,798,900	3,181,900	3,688,900	4,453,900
April	3,862,900	1,363,900	7,087,900	747,900	1,806,900	4,510,900	2,882,900	3,150,900	5,569,900	6,769,900
May	2,010,900	2,403,900	9,896,900	689,900	480,900	4,862,900	481,900	798,900	5,232,900	2,329,900
June	1,045,900	1,370,900	3,835,900	0	749,900	1,527,900	3,099,900	209,900	1,181,900	389,900
July	1,167,900	1,238,900	2,416,900	0	3,541,900	983,900	3,604,900	0	702,900	786,900
August	1,399,900	1,697,900	2,443,900	0	417,900	2,027,900	0	366,900	0	-
September	986,900	585,900	4,174,900	0	0	270,900	0	0	0	-
October	961,900	1,059,900	5,337,900	986,900	0	757,900	0	415,900	0	-
November	406,900	983,900	3,607,900	837,900	65,900	269,900	0	0	266,900	-
December	1,820,900	2,379,900	6,593,900	1,313,900	1,334,900	980,900	151,900	889,900	0	-
Total	25,168,800	20,537,800	61,783,800	19,596,200	14,309,000	20,484,800	16,289,200	10,915,200	23,453,200	19,165,300
Average Daily Flow (GPD)	68,956	56,268	169,271	53,688	39,203	56,123	44,628	29,905	64,255	-

- Data not available

Table 7-5 Estimated I/I Treated at WWTP by Year

	2009	2010	2011	2012	2013	2014	2015	2016	2017
Total Gallons Treated	80,418,000	75,787,000	117,033,000	73,424,000	68,997,000	75,734,000	69,375,000	65,156,000	74,775,000
Estimate Gallons of I/I Treated	25,168,800	20,537,800	61,783,800	19,596,200	14,309,000	20,484,800	16,289,200	10,915,200	23,453,200
Estimated Gallons Sewage Treated	55,249,200	55,249,200	55,249,200	53,827,800	54,688,000	55,249,200	53,085,800	54,240,800	51,321,800
Estimated Percent I/I	31%	27%	53%	27%	21%	27%	23%	17%	31%

I/I – inflow and infiltration.

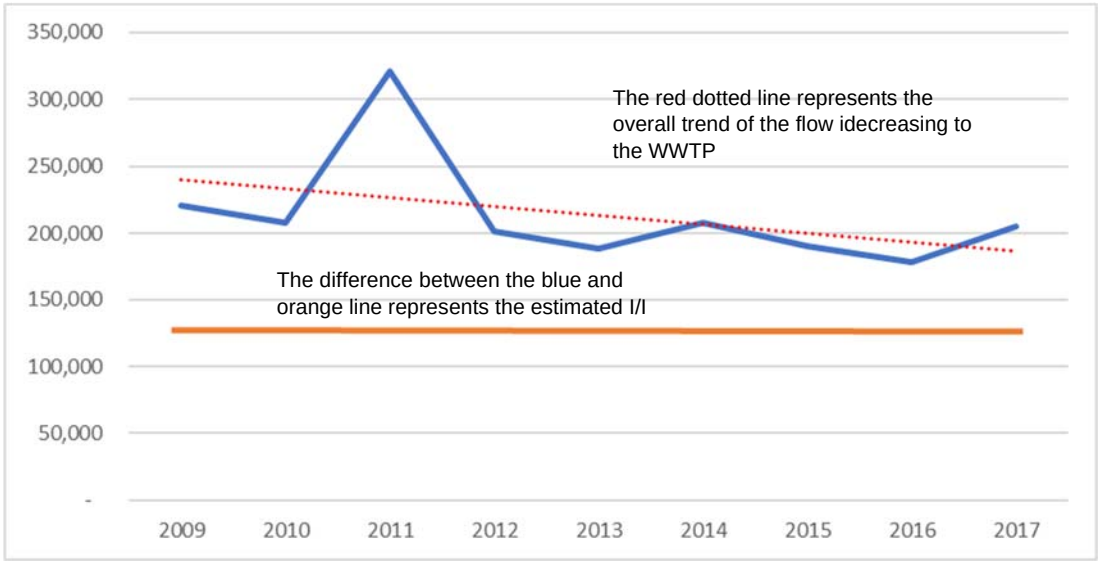


Figure 7-4 WWTP Average Daily Flow

There are eight (8) pump stations (PS) that contribute to the WWTP flow. The Village is only responsible for four (4) of these. They are the Ambler PS, the North River PS, East High Street PS and the Stamm PS (located on the WWTP site). The remaining PSs include two (2) located on the Ohio Turnpike and are owned/operated by the Turnpike Commission with a flow of approx. 20,000–30,000 gpd. The two (2) PSs owned/operated by PCWR that receive flow from Aurora Meadows, Mantua Corners and surrounding areas in Mantua Township. They contribute approximately 11,000 gpd to the Mantua WWTP.



North River PS

New pumps have recently been installed at the Ambler PS and it appears to be operating well. The Stamm PS only receives minimal flow from the adjacent Stamm Company and the filter backwash water from the Mantua WTP. There are periodic plugging issues in the North River Pump Station caused by disposable wipes. Currently, one (1) of the two North River pumps is partially plugged and requires an outside contractor to complete the repair. All pump stations have basic SCADA monitoring for high level alarm only. The Village should consider educating their sewer customers via a flyer in their bill regarding the myths of “flushable” cleaning products. Many companies advertise “flushable” but the product does not break down resulting in plugged pumps and increased wastewater operational costs and an increase sewer rates.

7.18.1 Deficiencies and Improvements

Evaluate sanitary collection system for I/I and rehabilitate, repair and replace as necessary.

Consider notifying/educating customers on the do’s and don’ts of what is really “flushable”.

Install two (2) new “chopper” pumps at the North River PS to eliminate plugging issues.

Upgrade the SCADA system to provide additional monitoring data that can be accessed by both on-site and off-site operators.

8 CAPITAL IMPROVEMENT PLAN

The purpose of this Section is to evaluate and document the current and future capital investment requirements for the Village of Mantua's Water and Wastewater public utilities over the next 30 years. These costs are anticipated due to replacement of equipment reaching its end of useful life, plant modifications for operational flexibility/efficiency and for Ohio EPA regulatory requirements.

It is assumed, based on the population projections presented in Section 4 that there is no need to expanded treatment capacities at either the WTP and the WWTP for this Facilities Plan for the foreseeable future.

8.1 VILLAGE WATER TREATMENT SYSTEM ANTICIPATED CAPITAL COSTS

The estimated project costs for the "needed" improvements identified in this Facilities Plan for the Mantua Public Water System (PWS) are provided in Table 8-1. Table 8-2 summarizes the future needed improvements based existing equipment age and an assumed life for each component in the Villages water system. It should be noted that every effort was made to ensure no duplication of costs occurred between Table 8-2 based on life cycles and Table 8-1 is based on condition analysis.

The costs in both tables assumes no capacity improvements unless required by current regulations. For instances, 4-inch water mains are no longer acceptable by Ohio EPA and must be a minimum of 6-inch. Costs were based on 2018 estimated facilities replacement costs and projected to future dollars at annual three (3) % increase. Future costs on Table 8-2 do not include project engineering, administrative, permitting or contingency dollars, typically increasing the actual cost in the range of 25 to 35 percent. It should also be noted that the year and the equipment costs can fluctuate depending on selected manufacturer and options; therefore, these numbers are provided as a basis for future costs and need to be refined as the Village's Asset Management program develops and refines life cycle years, equipment standardization, as well as improved equipment condition assessments and defined O&M schedules.

The projects in Table 8-1 are listed in order of suggested priority except for two projects: 1) Replacing "Likely" Lead Laterals and 2) Looping the Water Distribution System. These projects would be included as part of the distribution system replacement projects, i.e., you would replace the laterals, hydrants, valves, water mains and loop the lines in a specified area based on the criticality of the existing lines, based on available funds. For example, one area may have a higher critical need but a different project maybe put ahead due to ease of implementation, available funding or in conjunction with a roadway project that is already planned.

Below is a brief description of the project identified on Table 8-1:

Distributions System Water Reservoir Roof Repair project is the replace/repair the existing roof. CT Consultants has designed and obtained OPWC funding for the project. The estimated cost includes design, construction and project oversight. Construction is estimated at $375,000 of the total cost of $450,000.

Replace Mercury Switch Level Controls, assumes replacement with ultrasonic level transmitters and controllers for each clearwell compartment with SCADA integration and labor.

Upgrading the SCADA will include updating some PLCs and RTUs but mostly labor to do additional programming for better remote control of the system.

Restore Well Pump #1: It is unknow by PCWR the cause for Well Pump #1 to operate remotely so it is assumed that the cost will be either included in the Upgrade SCADA project or they may be some electrical panel repairs. It is assumed that electrical panel repairs should not exceed the estimated cost of $3,000.

Plant Dehumidification is currently being planned by the Village. The estimated system replacement includes labor and equipment.

Water Distribution Replacement Projects: For the purposes of this estimate, all pipes that were less than 6-in and/or exceeded their useful life were defined as needing replaced with a minimum pipe size diameter of 6-inch or to match existing diameter. CT Consultant's water model should refine this number to indicate best diameter and prioritize the order of replacement. This estimate does not include roadway or sidewalk repair/replacement, but includes design and project oversight costs.

Clean Wells #s1-3, these estimates are based of PCWR's current average costs to clean a well and repair/replace well pumps and motors with labor and equipment.

Second Pump for EQ Tank: To install a second pump for the EQ tank the estimate is based on the purchase cost of a single 2 (two) HP sewage submersible pump with rail system installed by others. There is no engineering design or overhead included-assuming installing pump in kind to existing.

Rebuild/Replace High Service Pumps and Motors #s 1-3, these costs assume both the motor and pump will need to be replaced and includes the installation of VFD drives.

Replace High Service Discharge Valves: Assumes parts and labor to replace check and gate valves on discharge side of each High Service pump.

Equipment Items Identified through Life Cycle Analysis: Incorporates all the equipment items identified in the asset inventory projected to fail at some time in the future based on "typical" life cycles of equipment and estimated installation dates.

Develop Well Head Protection Program: Assumes labor to prepare plan based off Ohio EPA vulnerability analysis.

Customer Meter Upgrade Project: includes the costs for labor and materials to replace and/or upgrade readers for all of the meters in the distribution system with radio frequency (RF) transmitters to automate the reading process. The basis of the estimate was interpolated from the former Rootstown Water Service Company's meter replacement project for their entire system, which included project oversight and customer coordination and notification. NOTE: Customer meters should be added to the asset inventory to project replacement costs at some future date.

Covert to Liquid Chlorine: Includes equipment, labor, design and administrative costs, including minor building modifications (if needed).

Replace "Likely" Lead Service Lines: Assumes 50% of the 430 residential water customers have on average 90-foot lateral (includes a 30 foot bore under the roadway) and the other 50% have a 60-foot lateral. This cost includes labor and materials. Engineering and administrative costs are not included. By looping dead end water mains, the quality of water and the dependability of water service goes up.

Loop Water Distribution Systems: Includes seven (7) loops in the existing system. They include connecting: 1) Main Street, Fernway Drive and Ambler Lane; 2) Pioneer Trail to Main Street; 3) E. Second to Franklin; 4) John Edward Street to High Street; 5) Woodford Street to Ambler Lane; 6) Park Street to High Street and 7) Mill Street to Orchard Street. This estimate assumes some easements and roadway pavement repairs; however, as mentioned before engineering and administrative cost are assumed to be within the Water Distribution repair costs.

Interconnect with PCWR Public Water System: Install a watermain from the intersection of State Route 303 and State Route 44 to the Village of Mantua and Shalersville Township Fire Station (approximately 13,569 feet [2.56 miles]). Estimate includes bore under the Ohio Turnpike, based on CT Consultants 2010 project estimate. Completion of an emergency interconnect guarantees a sustainable water supply for the Village in the event of treatment plant failure, and in some cases of distribution interruption. The County would receive an equal benefit and should be approached regarding sharing the cost.

Table 8-1 Mantua Public Water System Immediate Needs

Immediate Needs	Estimated Cost
Distribution System Water Storage Reservoir Roof Repair[1]	$450,000.00
Replace Mercury Switch Level Controls in Clearwell	$20,000.00
Upgrade SCADA System	$40,000.00
Restore Well Pump #1 to operate automatic	$3,000.00
Plant Dehumidifier	$20,000.00
Water Distribution System Replacement Projects	$3,500,000.00
Clean Well #1 and rebuild/replace pump	$50,000.00
Clean Well #2 and rebuild/replace pump	$50,000.00
Clean Well #3 and rebuild/replace pump	$50,000.00
Purchase and install second pump for EQ tank	$8,000.00
Rebuild/replace HS #1 pump and motor	$35,000.00
Rebuild/replace HS #2 pump and motor	$35,000.00
Rebuild/replace HS #3 pump and motor	$35,000.00
Replace three (3) HS Pump Discharge Valves	$48,000.00
Misc. Items Identified through Life Cycle Analysis	$622,214.00
Develop a Wellhead Protection Program	$8,000.00
Customer Meter Upgrade Project	$220,000.00
Convert to liquid Chlorine	$60,000.00
Replace “likely” lead service laterals	$1,505,000.00
Loop Water Distribution System	$1,137,500.00
Interconnect with PCWR Water System[2]	$2,044,423.00
	$9,931,137

1. Project recently received OPWC grant and loan funding. 2. Total project cost without a PCWR cost share (to be determined).

Table 8-2 Mantua Water System Anticipated Future Capital Expenses

Fiscal Year	Total	WTP	Distribution System	Booster/Storage
2020	$681,819.21	$-	$681,819.21[1]	$-
2022	$2,240.09	$546.36	$1,693.73	$-
2022	$38,267.30	$-	$38,267.30	$-
2023	$23,185.48	$-	$23,185.48	$-
2024	$40,293.29	$-	$1,850.78	$38,442.51
2025	$-	$-	$-	$-
2026	$28,702.48	$28,702.48	$-	$-
2027	$218,082.40	$26,959.22	$191,123.18	$-
2028	$125,118.61	$4,703.71	$120,414.91	$-
2029	$20,763.51	$-	$20,763.51	$-
2030	$128,318.48	$128,318.48	$-	$-
2031	$-	$-	$-	$-
2032	$254,547.67	$254,547.67	$-	$-
2033	$309,502.69	$35,300.43	$274,202.27	$-
2034	$372,309.55	$273,122.64	$-	$99,186.91
2035	$32,423.91	$16,850.78	$15,573.13	$-
2036	$19,954.22	$-	$19,954.22	$-
2037	$362,970.49	$338,514.34	$24,456.15	$-
2038	$43,427.94	$-	$43,427.94	$-
2039	$1,546,403.16	$1,207,383.08	$324,137.73	$14,882.36
2040	$43,415.07	$43,415.07	$-	$-
2041	$-	$-	$-	$-
2042	$7,114.78	$7,114.78	$-	$-
2043	$31,406.67	$-	$31,406.67	$-
2044	$226,646.96	$-	$21,565.91	$205,081.05
2045	$166,596.68	$166,596.68	$-	$-
2046	$218,824.72	$-	$218,824.72	$-
2047	$495,387.77	$495,387.77	$-	$-
2048	$-	$-	$-	$-
2049	$547,770.10	$434,266.46	$-	$113,503.65

1. 8-in pipe from 1970s on High, Reservoir and Park. Note – These projections do not include capital re-investment for new WTP. The average annual capital re-investment over the next 30-years, not including future WTP and projects on Table 8-1 is approximately $199,516 for the next 30-years. The average annual capital re-investment including Table 8-2 is $513,762 per year for the next 30-years.

Figures 8-1 and 8-2 graphically present the anticipated capital costs over the next 30 years. These costs do not include capacity changes (unless required by current regulations) or capital reinvestment of a future plant. It is assumed the Village will

obtain funding to construct a new plant when the current facility exceeds its useful life. Figure 8-1 presents the anticipated capital costs after immediate needs are funded and Figure 8-2 presents the costs with the immediate capital investment needs.

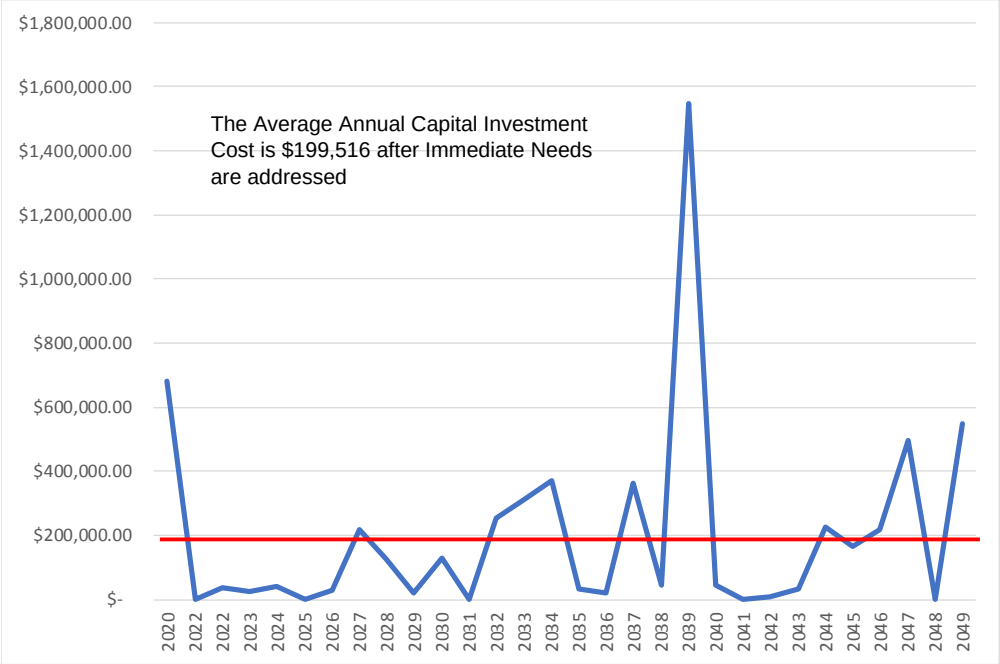


Figure 8-1 Anticipated Capital Expenditures for Water After Immediate Needs over 30 years

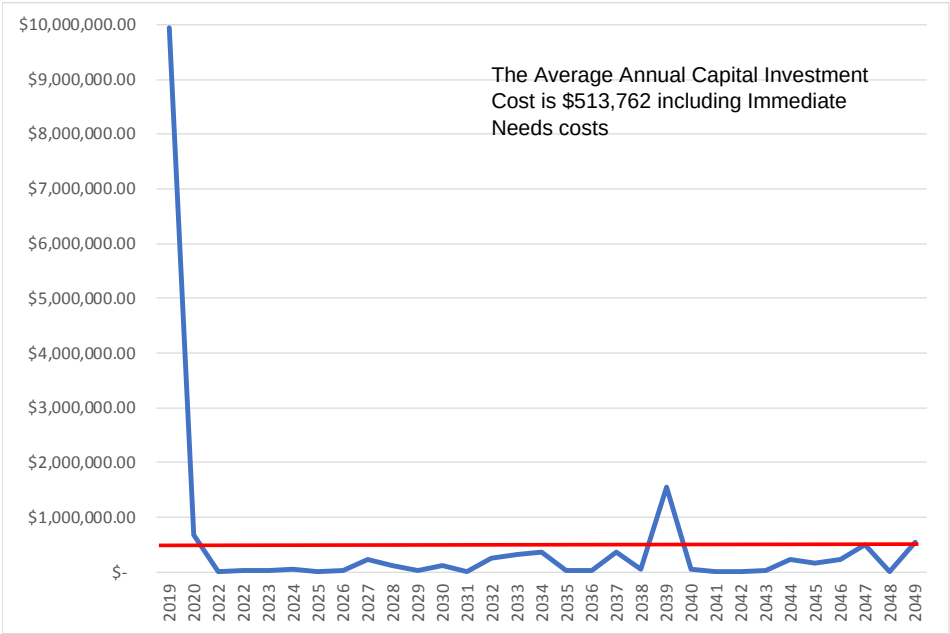


Figure 8-2 Anticipated Capital Expenditures for Water Including Immediate Needs over 30 years

8.2 VILLAGE WASTEWATER SYSTEM ANTICIPATED CAPITAL COSTS

The estimated project costs for the "needed" improvements identified in this Facilities Plan for the Village of Mantua's Public Wastewater System are provided in Table 8-3. Table 8-4 summarizes the future needed improvements based on life cycles of existing equipment and an assumed life for each component in the Villages wastewater system. These costs assume no capacity improvements or plant capital re-investment (total plant replacement). The costs in Table 8-3 are based on 2018 equipment estimated replacement costs and projected to future dollars at annual three (3) % increase. Future costs in Table 8-4 do not include project engineering, administrative, permitting or contingency dollars. It should also be noted that the year and the equipment costs can fluctuate depending on selected manufacturer and options; therefore, these numbers are a basis for future costs and need to be refined as the Village's Asset Management program develops and refines life cycle years, equipment standardization, as well as improved equipment condition assessments and defined O&M schedules.

The projects provided in Table 8-3 are listed in order of suggested priority and categorized by criticality of project. A summary of what was included in the project cost estimate is provided below. These costs are estimated based on logical assumptions, former projects of similar scope or known current equipment pricing. Costs can fluctuate as more information is gathered or the full scope of the issue is better defined through further investigation.

Oxidation Ditch: Clean and dispose of sediments in northern oxidation ditch. Estimate includes labor and equipment and assumes all solids will be hauled to a landfill for disposal.

Influent Wet Well Cleaned: Estimate includes confined space entry and one full day of work with four men to complete; due to limited access through manhole, setup for confined space entry and anticipated volume and condition of material (hardened).

Repair or Replace Scum Pit Sump Pump: This project assumes full replacement of pump given anticipated age (assumed the pump has not been replaced since WWTP pump online). It is assumed the pump is 5 HP, 480 Volt, Three (3) phase.

Repair Broken Valves Between the Clarifies: Assumes two (2) fiberglass slide gates and labor to replace.

SCADA Upgrades: Include PLC and RTUs and labor to do additional programming for better remote control of the WWTP and collection system (pump stations).

Raw and Effluent Monitoring: Replace meters and continuous monitoring probes and control panels for the raw (influent) and effluent water. No labor included assumes staff can accomplish as part of maintenance activities.

Replace HVAC and Insulate Pump Building: Labor and equipment and application of spray insulation in lower level of building.

Mud Valves Corroded Stem: Ten-foot extension rods and labor to replace on four mud valves.

Replace Automatic Samplers: Two samplers to be replaced, no labor.

Replace VFDs on RAS Pumps: Assumes labor and equipment for replacement of two (2) five (5) HP rated VFDs on RAS pumps.

Calibrate Flow Meters: Labor to have four meters calibrated.

Replace GFI Outlets: Replacement of approximately twenty (20) 20-amp GFI exterior outlets with labor.

Back Flow Devices: Review and replacement of existing backflow devices and installation of reduced pressure zone (RPZ) backflow device with two gate valves in heated above ground cabinet with labor and engineering services.

Influent Screening: Install influent automatic screening with heat protection and weather protection. Base price is approximately $60,000 for equipment and project will fluctuate based on equipment enclosure selected.

Install New "Chopper" Pumps at North River PS: Five (5) HP pumps, railing, new pump controls, new wet well cap with large hatch and labor.

Clean Aerobic Digester: Labor and equipment to drain, clean, and replace diffusers in aerobic digester.

Upgrade Interior Heater: Labor and equipment to replace heater with intrinsically safe heater unit.

Miscellaneous Item Identified Through Life Cycle Analysis: Incorporates all the equipment items identified in the inventory projected to fail based on expected life cycles of equipment and estimated installation dates. Equipment items included are primarily HVAC equipment in buildings, water heaters and pumps (Twenty-year equipment items).

Construct Walkway Around Each Clarifier: Materials and labor to install a three (3) foot wide elevated stainless steel walkway around each clarifier (NOTE – price may fluctuate due to steel tariffs).

Improve Skimmer System in Clarifier: Full replacement, labor and engineering assistance.

Grit Removal Enclosure: Twenty-nine (29) foot by ten (10) foot enclosure over channel. No engineering design fees are included at this time.

Provide a Safe Method for Blower Removal: Half-ton rail and cranes system with engineering review/approval.

WAS Piping: Insulate exterior pipes with foam wrap and install self-regulating heat tape. Includes labor and some minor electrical work for heat tape.

Covert all Equipment to Automatic Restart: Approximately 100 equipment items to be modified with labor.

Install VFDs on Blower Motors: Includes labor and equipment for three (3) 75 HP rated VFDs.

Research Economical Method for Sludge Disposal: Includes labor costs to review sludge alternates for WWTP.

Repair and Clear Perimeter Fence: Includes costs to repair fence from tree fall, install man gate near laboratory building (east side) and clear and grub (remove trees and brush) three-foot wide path on exterior side of fence.

Repair/Remove Sludge Holding Tank: Includes draining, cleaning, inspection report and engineering cost and repairs. Price is based off equivalent project and can fluctuate based on actual condition of tank. Note: the outcome of these tanks will be based on outcome of Sludge Disposal research.

I/I Collection System Repairs: Recommend analysis of best method of sealing sewers. Presented price is based on cured in place (CIP) pipe for all VCP pipe installed in late 60s/ early 70s and lining all associated manholes instead of replacing with new. Note costs in asset inventory assumes replacement – a difference of approximately $30/foot.

Bulk Chemical Storage, Lab Building and Workshop: Approximately 1,264 square feet (SF) required to provide additional space for the listed functions. Further evaluated needed to determine best method to accomplish. Consider workshop centrally located to support WTP as well, one facility to reduce construction cost for both.

Table 8-3 Mantua Public Wastewater System Immediate Needs

Immediate Needs (Failure or Violation Potentially Imminent)	Estimated Cost
Oxidation Ditch - Clean the #2 Oxidation Ditch	$25,000.00
Influent Wet Well Cleaned	$1,800.00
Repair or Replace scum pit sump pump (5 HP)	$4,000.00
Clarifiers - Repair Broken valves between the Clarifiers	$20,000.00
SCADA - Upgrade WWTP and Pump Station SCADA System	$60,000.00
Raw and Effluent Monitoring - Replace Meters/Probes	$14,000.00
Pump Building - Replace HVAC and insulate building	$12,000.00
Mud Valves (4) - Replace corroded stems	$6,000.00
Replace Automatic Samplers (2)	$15,000.00
Non-Critical Failure and Anticipated Failure Needs	
RAS Pumps - Replace VFDs on RAS pumps	$3,000.00
Flow Meters - Calibrate	$12,000.00
Electrical Outlets - Replace with GFI outlets	$1,000.00
Back Flow Devices - Conduct Study and replace/repair	$100,000.00
Influent Screening - Install an automatic fine screening device	$120,000.00

Table 8-3 Mantua Public Wastewater System Immediate Needs Cont.

Install new "chopper" pumps at the North River PS	$50,000.00
Aerobic Digester - Drain, clean, replace diffusers	$7,000.00
Grit Removal Bldg. - Upgrade interior heater unit	$5,000.00
Inventory Projected Failures for 2019	$324,650.00
Clarifiers - Construct walkway around each	$46,000.00
Operational Improvements	
Clarifiers - Improve skimmer system	$200,000.00
Grit Removal-Enclose exterior to prevent freezing	$72,500.00
Blowers - Provide a safe method for blower removal	$40,000.00
WAS piping - Install heat tape and insulation	$2,700.00
Backup Power - Convert all equipment to automatic restart	$10,000.00
Blowers - install VFDs on the blower motors	$25,000.00
Sludge Disposal - Research most economical method	$8,000.00
Repair and Clear Perimeter Fence	$17,000
Sludge Holding Tanks - Repair or Remove if not needed)	$520,000.00
I/I Collection System Repairs	$1,660,000.00
Bulk Chemical Storage- Construct Building Addition	$112,500.00
Lab Building - Enlarge for addition space	$25,000.00
Workshop - Provide a work shop/area	$432,000.00
Total Immediate Needs	$157,800.00
Total Non-Critical Failure and Anticipated Failure Needs	$668,650.00
Total Operational Improvements	$ 3,124,700.00
TOTAL	**$3,951,150.00**

Work recommended to be completed in 2019 or shortly thereafter.

Table 8-4 Mantua Public Wastewater System Anticipated Future Capital Costs

Fiscal Year	Total	WWTP	Collection System	Pump Stations
2020	$265,602.68	$256,585.03	$-	$9,017.65
2021	$-	$-	$-	$-
2022	$-	$-	$-	$-
2023	$-	$-	$-	$-
2024	$14,204.45	$-	$-	$14,204.45
2025	$148,568.76	$148,568.76	$-	$-
2026	$4,650.16	$-	$-	$4,650.16
2027	$-	$-	$-	$-
2028	$-	$-	$-	$-
2029	$40,281.21	$40,281.21	$-	$-
2030	$477,471.07	$475,475.00	$-	$1,996.07
2031	$-	$-	$-	$-
2032	$-	$-	$-	$-
2033	$399,039.08	$-	$396,471.55	$2,567.53
2034	$449,276.08	$425,324.23	$-	$23,951.85
2035	$-	$-	$-	$-
2036	$2,553.65	$2,553.65	$-	$-
2037	$-	$-	$-	$-
2038	$-	$-	$-	$-
2039	$128,321.26	$54,134.57	$-	$74,186.69
2040	$929,529.13	$901,207.43	$-	$28,321.69
2041	$197,358.65	$197,358.65	$-	$-
2042	$14,229.56	$14,229.56	$-	$-
2043	$-	$-	$-	$-
2044	$71,237.17	$15,096.14	$-	$56,141.03
2045	$-	$-	$-	$-
2046	$-	$-	$-	$-
2047	$32,442.55	$-	$-	$32,442.55
2048	$-	$-	$-	$-
2049	$735,393.63	$735,393.63	$-	$-
Total Repairs	$4,234,808.78	$3,548,580.31	$396,471.55	$289,756.92

Note – These projections do not include capital re-investment for new plant projected in fiscal year 2100, based on an assumed 100-year life for split face block building (with proper maintenance). The average annual capital re-investment over the next 30-years, not including future WWTP and projects on Table 8-3 is approximately $130,339 for the next 30-years. The average annual capital re-investment including Table 8-3 is $253,590 per year for the next 30-years.

Figures 8-3 and 8-4 graphically present the anticipated capital costs over the next 30 years. These costs do not include plant capacity or capital reinvestment of a future plant. Figure 8-3 presents anticipated capital costs after immediate needs are funded and Figure 8-4 presents the capital costs with the immediate capital cost needs.

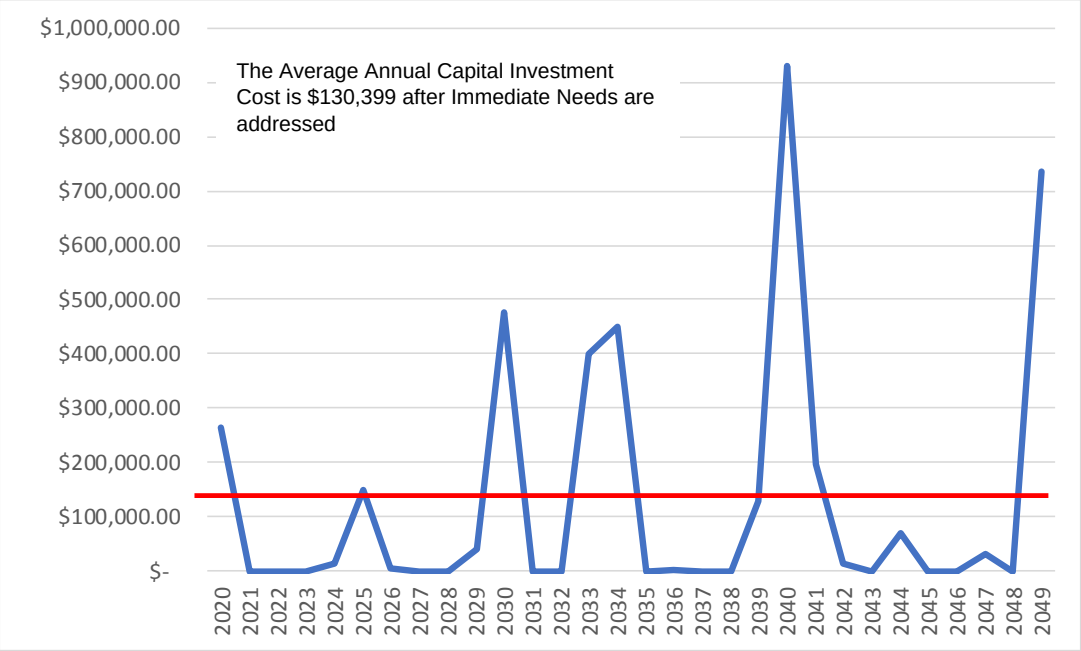


Figure 8-3 Anticipated Capital Expenditures for Wastewater After Immediate Needs over 30 years

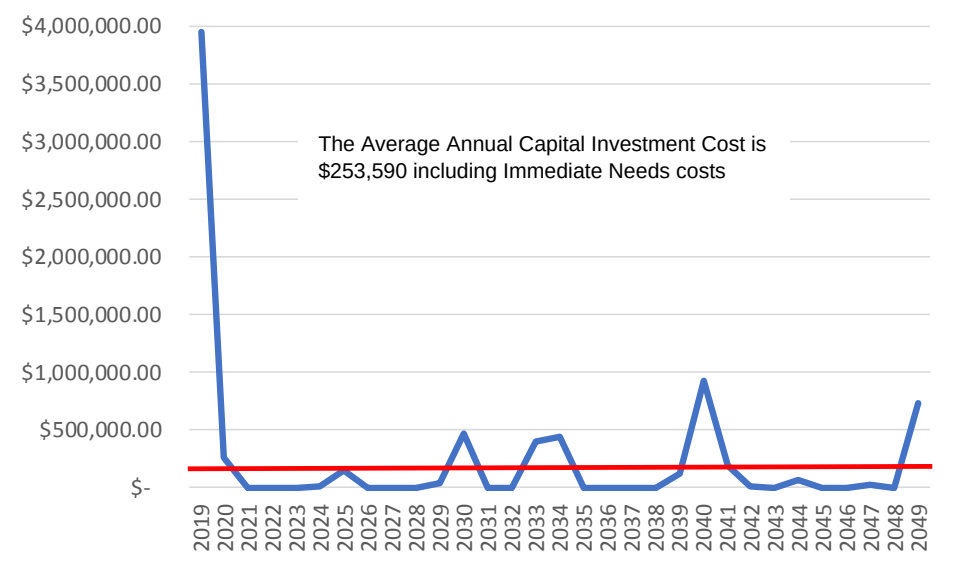


Figure 8-4 Anticipated Capital Expenditures for Wastewater Including Immediate Needs over 30 years

9 VILLAGE OF MANTUA - FINANCIAL INFORMATION

9.1 INTRODUCTION

The financial information contained in this Section is sourced from the Village of Mantua Audits for the period 1999 through 2016 plus additional information provided by the Village administration and CT Consultants, Inc. The information is used to historically trend the utility's revenues and expenses for the Village.

It must be noted that the Audit format changes over time and as such not all revenues and expenses are stated in the same category which requires some realignment of data in order for the analysis to reflect correctly over the period reported. By example, from 1999 through 2004 Capital Outlay was reported as an Operating Cash Disbursement and then starting in 2005 Capital Outlay was accounted for as a Non-Operating Cash Disbursement.

For the Village of Mantua the Sewer Funds and Water Funds in the Audit Report are combined to create the Proprietary funds, this is also known as Enterprise Funds. The individual sheets for each year are included for reference in Appendix D.

By way of introduction to the topic of Public Owned and Operated Utilities financial conditions a Google search for "financial condition of public owned water and sewer utilities" provide two of the more cited publications:

Bipartisan Policy Center, Washington, D.C.

https://bipartisanpolicy.org/

American Society of Civil Engineers

http://www.asce.org/water_and_wastewater_report/

Both the Bipartisan Policy Center and the American Society of Civil Engineers (ASCE) approach the financial problem of public owned water and sewer utilities from two different perspectives however, their findings are very similar.

From the Bipartisan Policy Center, Understanding America's Water and Wastewater Challenges, May 2017 the following:

> The nation's water and wastewater utilities are victims of their own success: Americans have rightfully become accustomed to receiving clean water when they turn on their taps and having waste disappear down their pipes. Yet public understanding of the complicated and expensive systems needed to deliver those services is minimal. For instance, the United States has 1.2 million miles of water-supply mains—26 miles of water mains for every mile of interstate highway. That is just the drinking water system. There are nearly an equal number of sewer pipes.

> Now, as systems across the country require critical repairs and upgrades, water and wastewater customers are often surprised by and reflexively opposed to new charges and fees, and thus unwilling or unable to accept a higher price for services they may have taken for granted. These expectations have left utilities with the challenge of raising mission-critical funding from a skeptical public while maintaining affordability for those who already struggle to pay their bills.

From the ASCE 2017 Infrastructure Report Card for Drinking Water the following:

> Drinking water is delivered via one million miles of pipes across the country. Many of those pipes were laid in the early to mid-20th century with a lifespan of 75 to 100 years. The quality of drinking water in the United States remains high, but legacy and emerging contaminants continue to require close attention. While water consumption is down, there are still an estimated 240,000 water main breaks per year in the United States, wasting over two trillion gallons of treated drinking water. According to the American Water Works Association, an estimated $1 trillion is necessary to maintain and expand service to meet demands over the next 25 years.

And finally, from the ASCE 2017 Infrastructure Report Card for Wastewater the following:

> The nation's 14,748 wastewater treatment plants protect public health and the environment. Years of treatment plant upgrades and more stringent federal and state regulations have significantly reduced untreated releases and improved water quality nationwide. It is expected that more than 56 million new users will be connected to centralized treatment systems over the next two decades, and an estimated $271 billion is needed to meet current and future demands.

No Ohio public utility is alone in that each is tasked with providing clean, dependable and safe drinking water while at the same time receiving for cleaning wastewater from homes and business with minimum budgets, the Village of Mantua is no different.

The information which follows was developed from sources available and is provided with a statement of qualification that it is not intended to provide anything other than a basis to understand the financial health of the Village of Mantua's water and wastewater facilities and finances.

9.2 AUDIT ACCOUNTING INFORMATION SYSTEM

Operating Cash Receipts	**Operating Cash Disbursements**
Charges for Services	Personal Services
Fines, Licenses & Permits	Fringe Benefits
Miscellaneous	Contractual Services
	Supplies and Materials
	Miscellaneous
	Capital Outlay
Total Operating Cash Receipts	**Total Operating Cash Disbursements**

Non-Operating Cash Receipts	**Non-Operating Cash Disbursements**
Earnings from Investments	Debt Service
Intergovernmental Receipts	Other Non-Operating Cash Disbursements
Proceeds from Notes and Bonds	Capital Outlay
Other Non-Operating Receipts	Principal Retirement
Special Assessments	Interest and Other Fiscal Charges
Other Financing Sources	
Total Non-Operating Cash Receipts	**Total Non-Operating Cash Disbursements**

Analysis Revenue & Expenses

Total Operating Cash Receipts
Total Operating Cash Disbursements
Operating Income (Loss)
Total Non-Operating Cash Receipts
Total Non-Operating Cash Disbursements
Non-Operating Receipts minus Disbursements
Income (Loss) before Transfers

Analysis Transfers and Year End/Start

Income (Loss) before Transfers
Transfers In
Transfers Out
Net Change in Fund Cash Balance
Fund Cash Balances, January 1
Fund Cash Balances, December 31
Reserve for Encumbrances, Dec. 31

In addition to the account categories outlined above additional information is provided from other source available at the time of this report, as identified herein.

9.3 REVENUE

The Proprietary Accounting Reports separate revenue into Operating Cash Receipts and Non-Operating Receipts.

Operating Cash Receipts include Charges for Services, Fines, Licenses & Permits, and Miscellaneous.

Non-Operating Receipts include Earnings from Investments, Intergovernmental Receipts, Proceeds from Notes and Bonds, Other Non-Operating Receipts, Special Assessments, and Other Financing Sources.

Table 9-1 Mantua Operating and Non-Operating Receipt

1999	2000	2001	2002	2003	2004	2005	2006	2007
$487,869	$611,224	$750,546	$436,413	$484,051	$800,606	$794,427	$790,413	$813,896
$113,557	$14,654	$902,646	$639,848	$764,778	$1,160,730	$148,703	$33,109	$570
2008	2009	2010	2011	2012	2013	2014	2015	2016
$760,253	$649,188	$678,708	$766,588	$768,871	$680,089	$746,298	$657,073	$661,253
$1,141	$1,766	$44,237	$0	$0	$48,810	$28,020	$101,676	$64,504

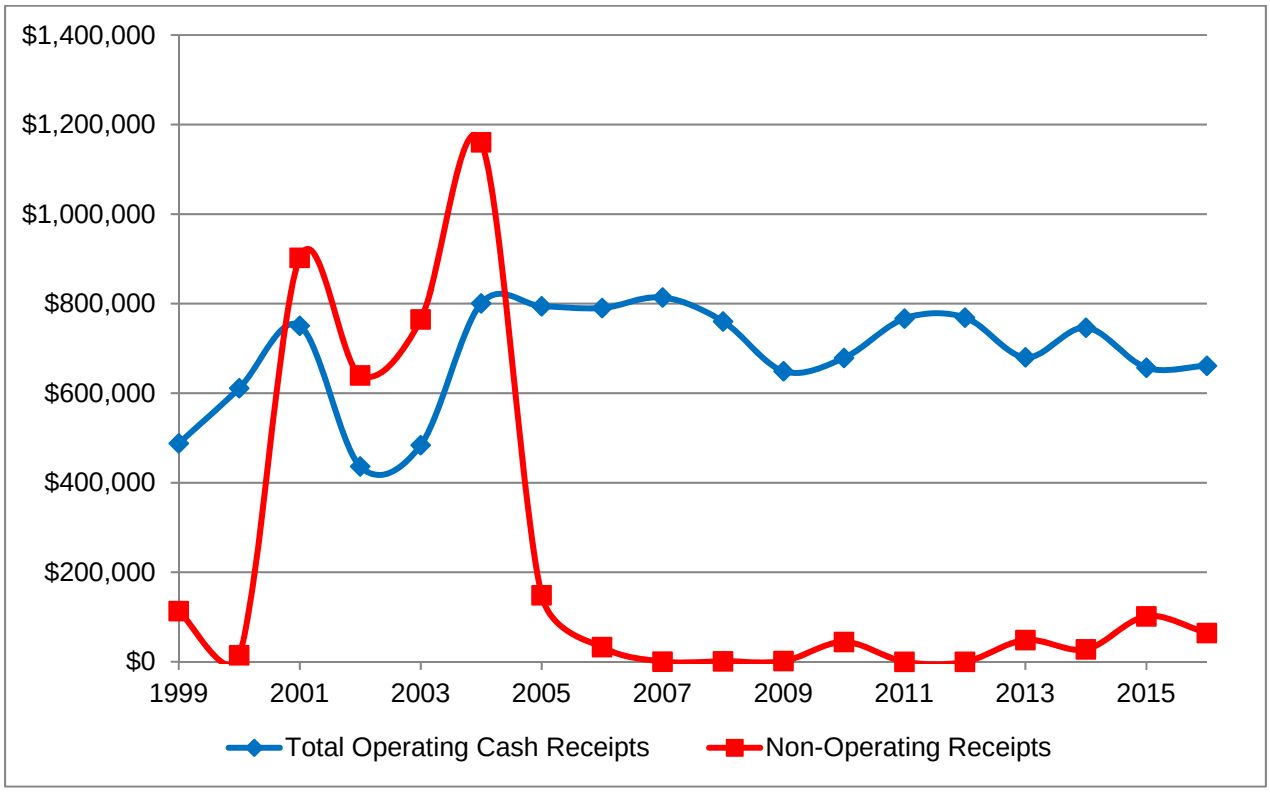


Figure 9-1 Operating Cash Receipts versus Non-Operating Receipts

9.4 CHARGES FOR SERVICE REVENUE

Charges for Service are the water and sewer customer's use fee or their monthly bill. For the Village of Mantua the use fee is based on metered water used by each residence and business. The trend from user fee charges for service is trending down nationally. A trend line is added starting in year 2003 and ending in 2016.

The primary reason for this downward trend is low flow fixtures. This downward trend is being experienced by the majority of both private and public utility systems.

Table 9-2 Mantua Service Revenue

1999	2000	2001	2002	2003	2004	2005	2006	2007
$487,869	$610,892	$750,097	$436,188	$483,729	$790,223	$786,925	$780,059	$805,382
2008	2009	2010	2011	2012	2013	2014	2015	2016
$718,454	$640,241	$670,717	$744,821	$752,130	$673,272	$738,492	$649,750	$655,063

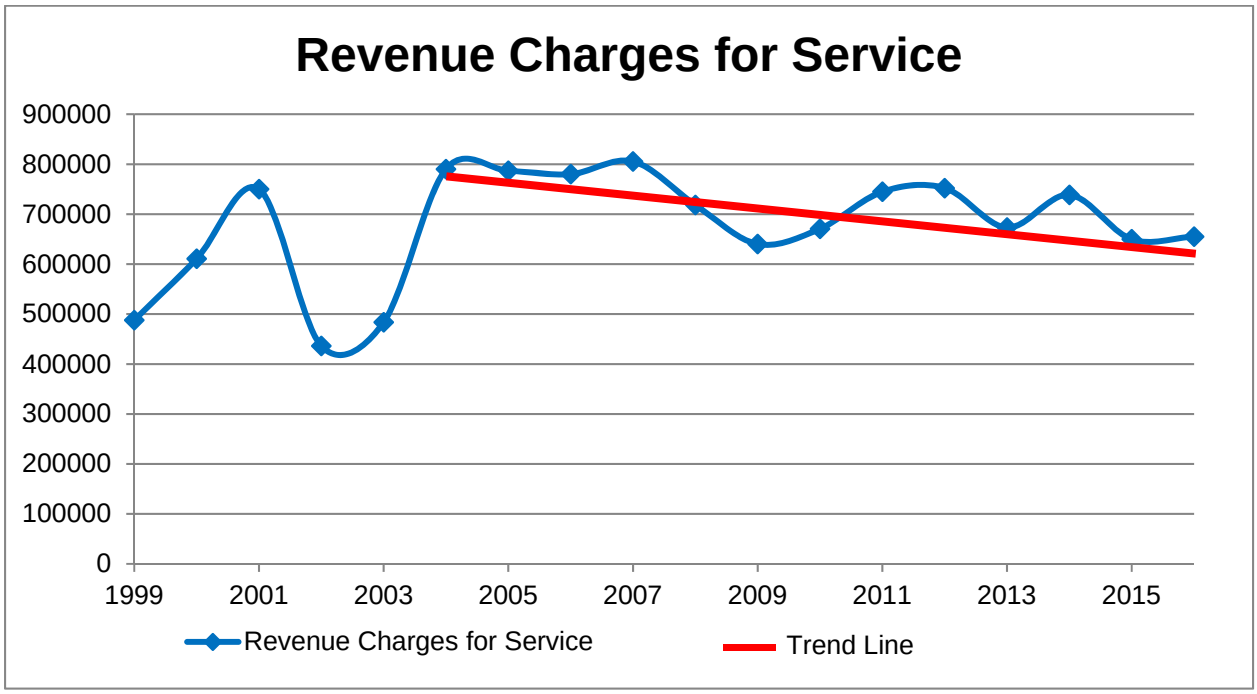


Figure 9-2 Revenue Charges for Service

The ASCE stated in their 2017 Infrastructure Report Card for Drinking Water that the water needed for public supply in the United States has been relatively flat since 1985 even as the population has increased by approximately 70 million people over the same period. Water conservation efforts, including through water efficient fixtures, have had a significant impact in reducing per capita water usage. Importantly, while per capita demand has fallen, population trends have significantly challenged how cities manage water."

9.5 OUTSIDE FUNDING

The Village Engineer reports that for the period 1993 through 2016 the Village of Mantua has been successful in obtaining grants and/or loans for eleven water and wastewater projects totaling $6,947,666. Although exact information was not reviewed for this report based on the amounts and descriptions it appears that $2,279,454 was grants and $5,387,332 was loans.

Table 9-3 Mantua Grants and Loans Received

Year	MANTUA VILLAGE Sanitary & Water Projects Project Description	Award Amount	Notes
1995	Mantua WWTP Ultra Violet Disinfection System	$77,933	
1995	Raw Waterline Construction	$53,700	McNish Excavating
1996	Mantua Water Treatment Facility	$1,481,457	Project was rebid. See record ID#362
1997	Raw Water Well Improvements	$38,975	Layne Christenson
1999	Mill St. PS Abandonment, WL Extension & Sanitary Sewer	$259,502	Awarded to C.J. Natale; WPCLF & OPWC CG06B
2000	WWTP Expansion	$3,749,755	Awarded: A - J.D. Williamson Construction - $3,094,450.00, B - Enertech Electrical - $563,000.00, WPCLF & OPWC-CG35/36D
2002	Water Distribution System Imps. - Franklin & Woodford Sts	$0	WSRLA, Owner rejected all bids.
2003	Water Distribution System Imps. - Contract A: Franklin & Woodford Sts./ Contract B: Reservoir Dr. Booster Station	$459,618	Awarded: Contract B General--Northeast Ohio Trenching ($364,599) Contract B Electrical--Misseri Electric ($95,019) WSRLA Funding
2014	Crestwood Sanitary Sewer	$120,604	OPWC Funded Project No. CG33Q
2016	High Street Waterline Replacement and Pavement Improvements - Mantua	$706,122	OPWC Funded Project Nos. CG41/42T

9.6 DEBT FUNDING

The Village Administration provided the following debt funding information from the Villages 2016 Audit Period, representing the amount to be paid back as of the end of 2016.

Table 9-4 Mantua Debt Funding

Type of Debt	Purpose	End	Interest Rate	Issue Amount	Principle paid in 2016	Balance 12/31/2016
OWDA Loan # 2789	Water Plant Construction [Fund 5701] (1997)	2018	2.00%	$1,493,665	$87,801	$89,557
OPWC Loan # CG902	Water Treatment Plant (CG902) [Fund 5701] (1998)	2018	0.00%	$185,000	$9,250	$9,250
OWDA Loan # 3413	Wastewater Plant [Fund 5702] (1001)	2023	0.68%	$5,725,519	$294,930	$1,797,994
OWDA Loan # 3945	Waterline Loops & Reservoir Pump Station [Fund 5703] (2003)	2024	3.03%	$150,000	$7,500	$60,000
OPWC Loan #CG36D	Wastewater Treatment Plant Expansion (CG360) [5702] (2005)	2025	0.00%	$545,783	$28,541	$243,433
				$8,099,967	**$428,022**	**$2,200,234**

Looking forward Village Administration reports that all current Debt will retire in 2024.

Table 9-5 Mantua Debt Retirement

Year	TOTAL DEBT FOR YEAR:
2017	$451,255
2018	$350,657
2019	$350,657
2020	$350,657
2021	$350,657
2022	$350,657
2023	$43,988
2024	$25,744

9.7 OTHER FUNDING - TRANSFERS

The Village Administration provided the following transfer funding information for the period 2010 through 2017.

Table 9-6 Mantua General Funds Transferred

TRANSFERS FROM GENERAL FUND:			
DATE OF TRANSFER:	AMOUNT TRANSFERRED TO WATER	AMOUNT TRANSFERED TO SEWER	ORD. #
8/20/2010		$6,000	2010-35
6/5/2013		$25,000	2013-44
9/17/2013		$20,000	2013-79
3/19/2014	$10,000		2014-17
3/19/2014		$84,000	2014-17
7/22/2015		$25,000	2015-27
4/21/2016		$25,000	2016-17
6/30/2016		$15,000	2016-38
12/21/2016	$5,000		2016-66
12/21/2016		$15,000	2016-66
6/21/2017	$30,000		2017-26
6/21/2017		$30,000	2017-26
12/27/2017		$7,000	2017-54
TOTAL:	**$45,000**	**$252,000**	

The reason for the transfer of funds from General Government to the Water and Sewer Funds was to cover the cost of operating the utilities.

9.8 EXPENSES

The Proprietary Accounting Reports separate Expenses into Operating Cash Disbursements and Non-Operating Disbursements.

Operating Cash Disbursements include Personal Services, Fringe Benefits, Contractual Services, Supplies and Materials, Miscellaneous, and Capital Outlay.

Non-Operating Disbursements include

Debt Service, Other Non-Operating Cash Disbursements, Capital Outlay, Principal Retirement, Interest and Other Fiscal Charges, and Other Financing Sources.

Table 9-7 Mantua Operating and Non-Operating Cash Disbursements

1999	2000	2001	2002	2003	2004	2005	2006	2007
$344,382	$747,143	$1,197,171	$805,708	$1,043,399	$1,505,972	$317,371	$289,206	$340,473
$192,273	$291,829	$320,153	$341,412	$257,444	$735,971	$756,468	$556,141	$503,898
2008	2009	2010	2011	2012	2013	2014	2015	2016
$343,917	$315,095	$269,498	$256,430	$291,725	$334,051	$336,168	$294,565	$296,430
$479,491	$453,372	$457,595	$490,328	$496,797	$464,435	$516,736	$544,984	$515,446

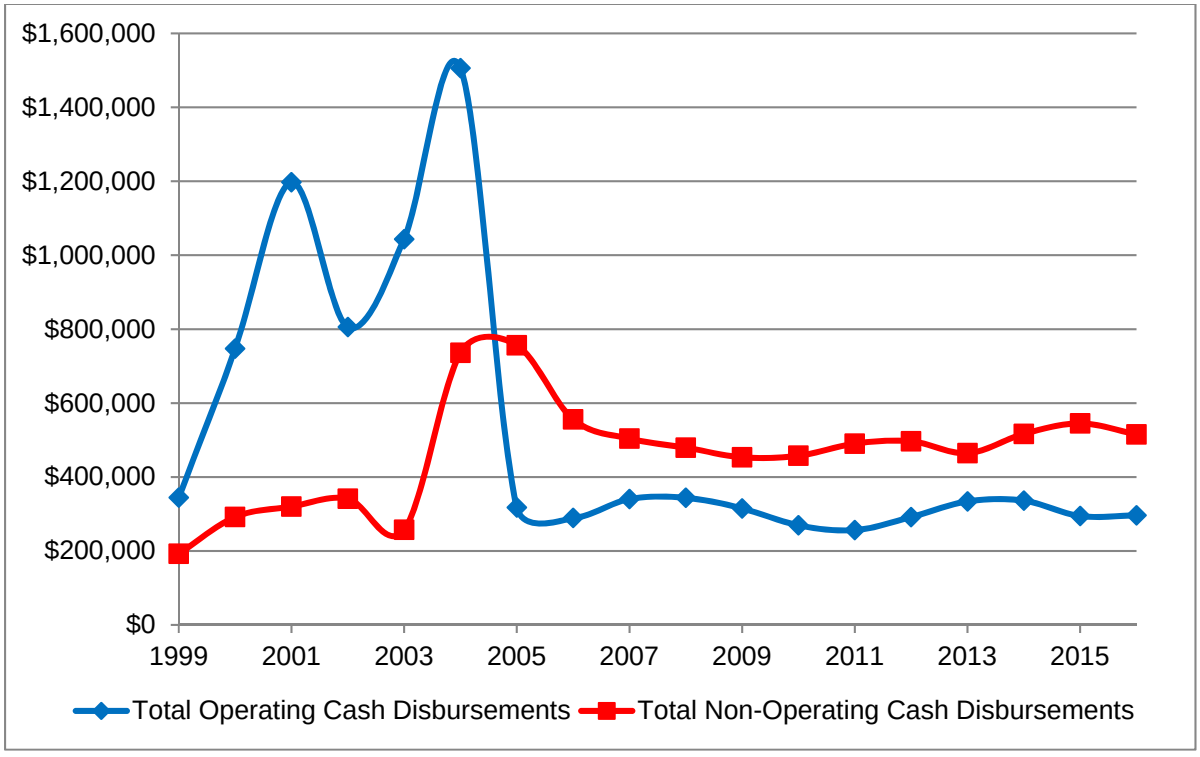


Figure 9-3 Operating and Non-Operating Cash Disbursements

9.9 OPERATING EXPENSES

Operating Expenses pay for personnel (including fringe benefits), contractual services (for such things as sludge hauling and engineering services), Supplies and Materials (pays for chemicals and electricity), and other (a miscellaneous catch all category).

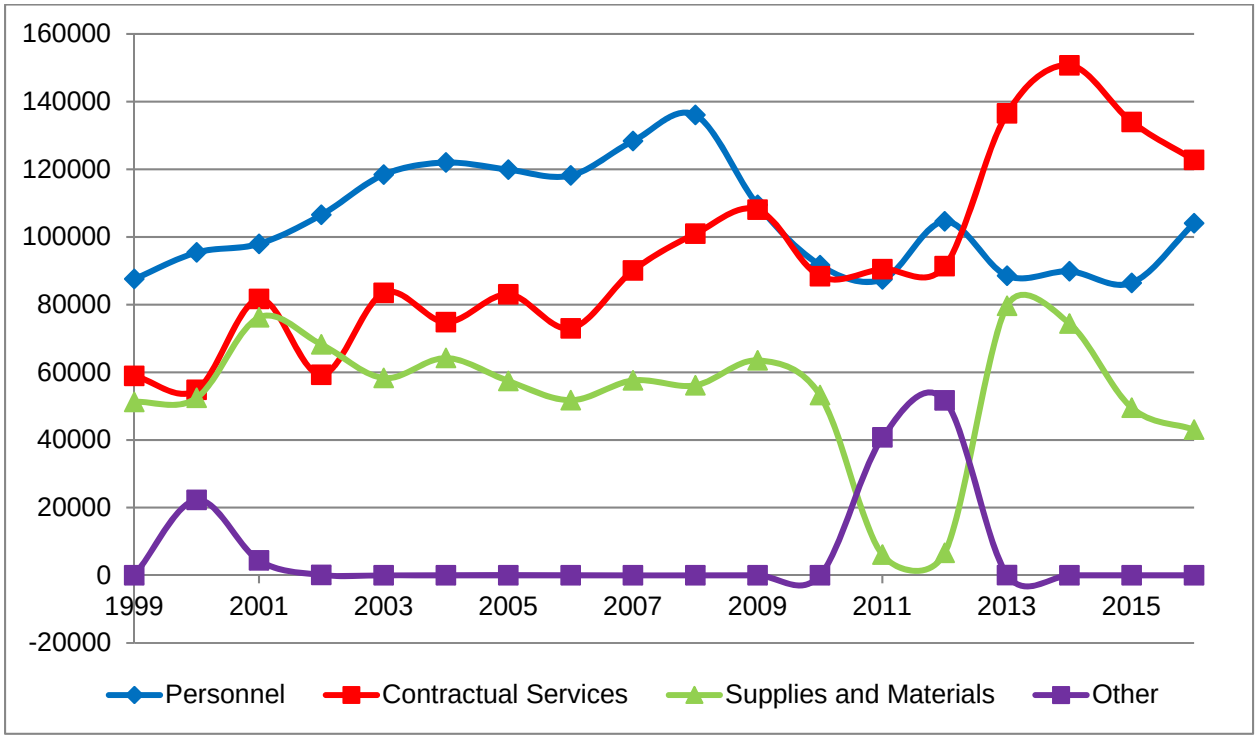


Figure 9-4 Operating Expenses

For the purpose of this report Capital Expenses are not being reported with the Operating Expenses even though in the years 1999 through 2004 the Capital expenses were reported with the Operating Cash Disbursements.

9.10 CAPITAL EXPENSES

Capital Expenses critical for the continued services provided for drinking water and wastewater. Absent timely Capital Expenses facilities break resulting in loss of service.

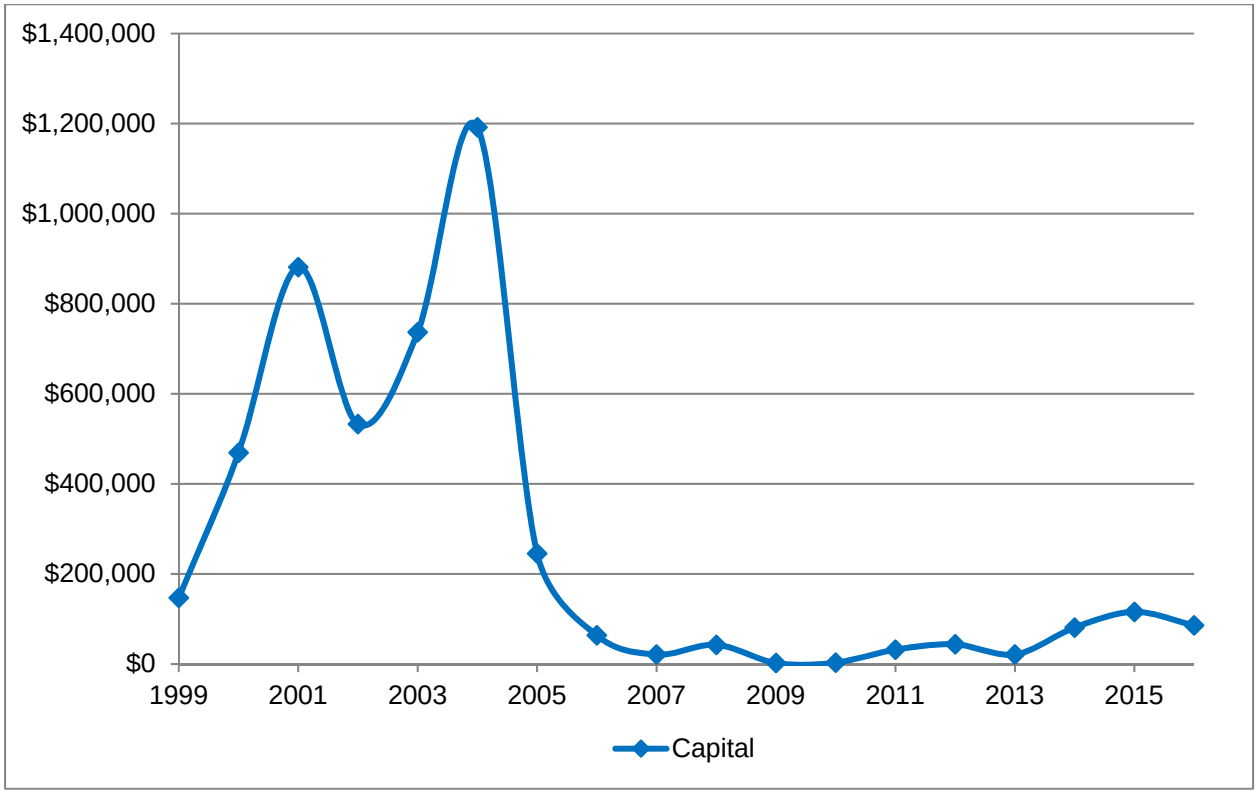


Figure 9-5 Capital Expenses

The minimum capital funds expended occurred in 2009 at an amount of $2,179 and the maximum capital expenses occurred in 2004 for plant upgrades totaling $1,191,748.

The financial information provided from different sources to not align exactly. The causes for the discrepancies may be in reporting period or source information. By example the reports provided may have started with estimated costs in year number 1 and where another report may be based in the actual construction cost and year 3 when the project was completed.

From the Audit Reports the total Capital Expenses for the period 1999 through 2016 totaled $4,714,782 or an average per year is $261,932.

9.11 DEBT EXPENSES

Debt Expenses account for pay back of loans and bonds, most typically to pay for capital expenses for drinking water and wastewater systems.

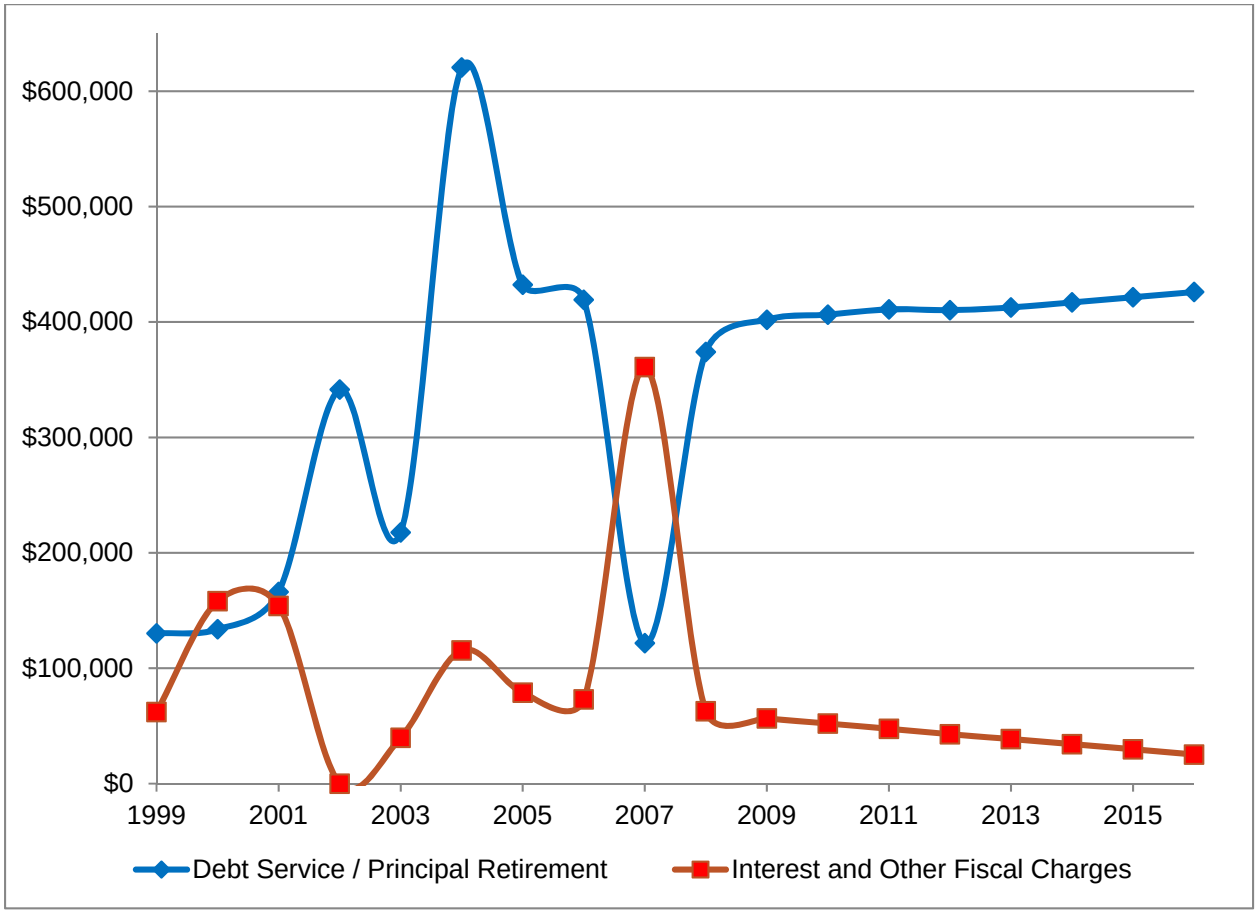


Figure 9-6 Debt Expenses

The minimum expense for debt service and principal retirement occurred in 2007 at an amount of $121,682 and the maximum capital expenses occurred in 2004 for plant upgrades totaling $620,529. The average expense for debt service and principal retirement is $347,988.

For the costs associated with interest and other fiscal charges the minimum expense occurred in 2002 when $0 was paid out and in 2007 when $361,061 was paid. The average expense for interest and other fiscal charges is $79,564.

The average for all expenses for the debt service was $427,552 with a minimum paid in 1999 of $192,273 and a maximum of $ 735,971 being paid in 2004.

9.12 FUND CASH BALANCES DECEMBER 31 EACH YEAR

Fund Cash Balance is also known as the Carry Over of funds not needed from the previous year or stated another way the Fund Cash Balance is the money available to be used to repair an unexpected malfunction in the utility systems.

Table 9-8 Mantua Annual Carry Over Funds (December 31)

1999	2000	2001	2002	2003	2004	2005	2006	2007
$815,760	$402,666	$538,534	$468,319	$416,305	$172,698	$91,989	$120,164	$90,259
2008	2009	2010	2011	2012	2013	2014	2015	2016
$28,245	-$37,268	$11,381	$48,825	$62,971	$58,181	$86,575	$58,155	$55,268

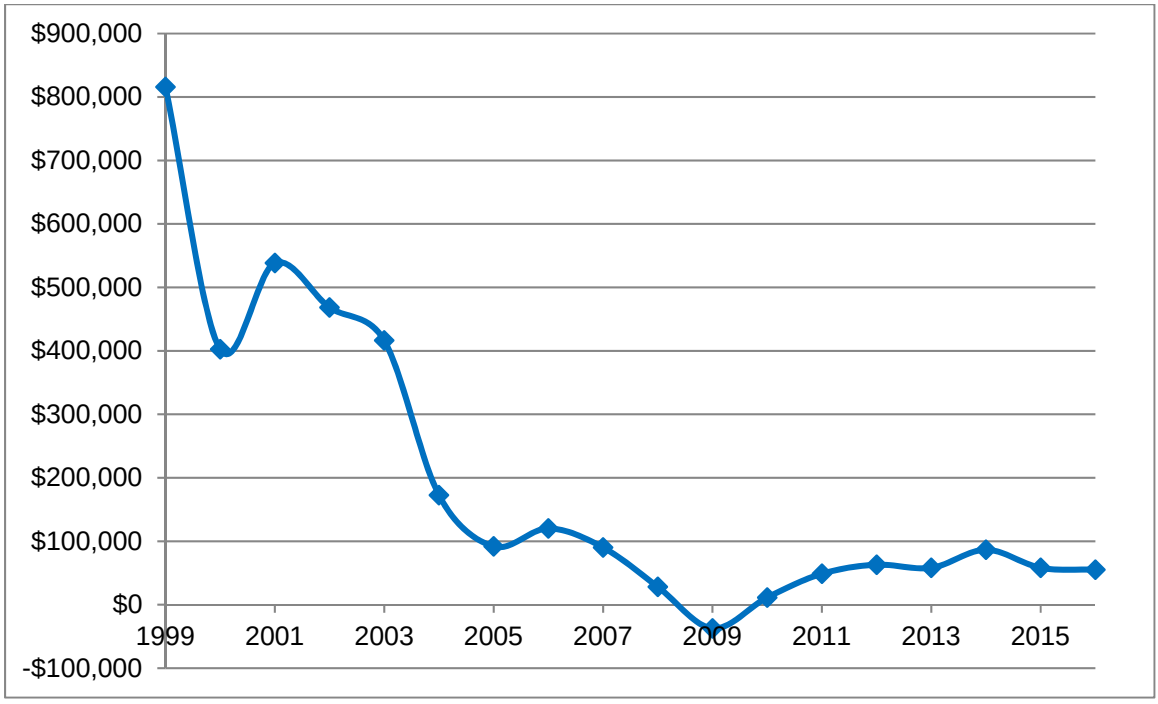


Figure 9-7 Annual Carry Over Funds

Reporting the Fund Cash Balances December 31 for each year provides a general measure of financial health. As a rule of thumb a carryover should be in the neighborhood of three (3) months or 25 % of total operating expenses.

For the Village of Mantua the combined water and wastewater expenses average $518,261 including capital which at 25% equals $129,565. For the year end December 31, 2016 the combined water and wastewater carryover was $55,268 or stated another way the carryover was short $74,297 (57%).

9.13 FINANCIAL PROJECTIONS

The Village of Mantua completed future analytics projecting revenue and expenses for both its Water and Sewer Funds. The projections are based on 15% increases for water starting in 2017 and continuing through 2024. The projected revenue and expenses graph follows:

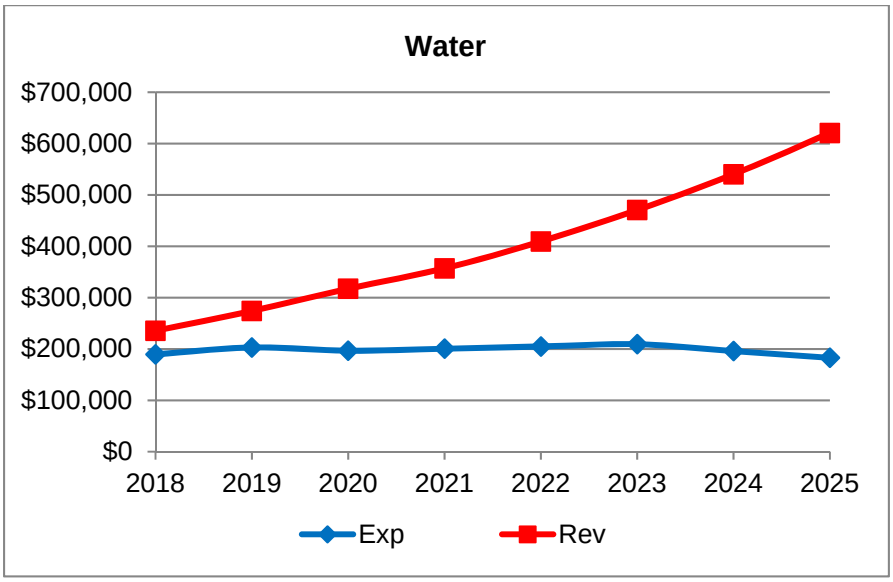


Figure 9-8 Water Fund Financial Projections

For water the period 2018 through 2025 is reported to generate $1,643,063 in reserve funds.

The projections are based on 15% increases for Sewer starting in 2017 and continuing through 2023. The projected revenue and expenses graph follows:

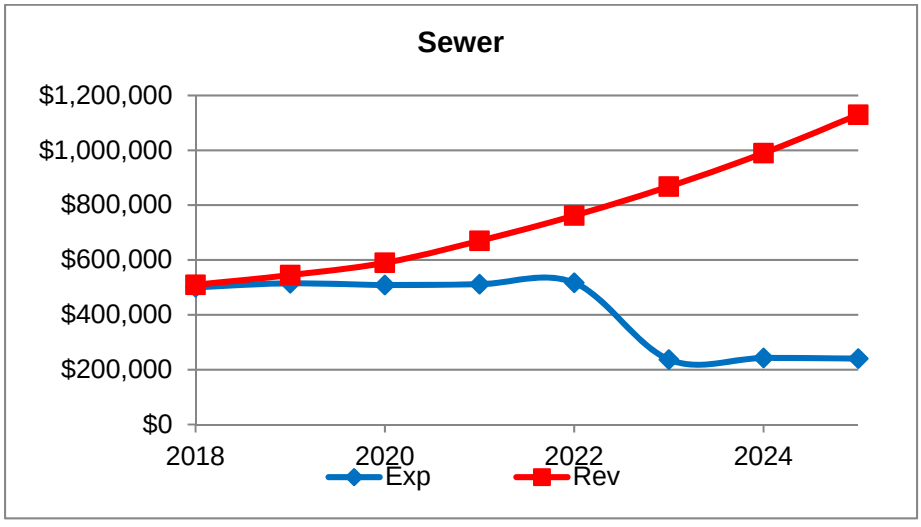


Figure 9-9 Sewer Fund Financial Projections

For water the period 2018 through 2025 is reported to generate $2,790,516 in reserves. See Appendix D for the Village of Matua Financial Forecast full report.

9.14 VILLAGE OF MANTUA RATES

The Village of Mantua completed an analysis projecting future revenue and expenses the outcome of which provided for recommended rate increases which were enacted by Village of Mantua Council. Water Rates were approved by Ordinance 2017-24 passed on September 19, 2017:

Table 9-9 Mantua Water Rates

Starting	Residential			Commercial		
	0-235 CF	236 to 2,667 CF per 100 CF	> 2,667 CF per 100 CF	0-235 CF	236 to 2,667 CF per 100 CF	> 2,667 CF per 100 CF
10/1/2015	$15.00	$3.47	$1.88	$15.00	$4.57	$1.88
10/1/2017	$17.25	$3.99	$2.16	$17.25	$5.26	$2.16
10/1/2018	$19.84	$4.59	$2.49	$19.84	$6.04	$2.49
10/1/2019	$22.81	$5.28	$2.86	$22.81	$6.95	$2.86
10/1/2020	$26.24	$6.07	$3.29	$26.24	$7.99	$3.29
10/1/2021	$30.17	$6.98	$3.78	$30.17	$9.19	$3.78
10/1/2022	$34.70	$8.03	$4.35	$34.70	$10.57	$4.35
10/1/2023	$39.90	$9.23	$5.00	$39.90	$12.16	$5.00
10/1/2024	$45.89	$10.61	$5.75	$45.89	$13.98	$5.75

CF= Cubic Feet, GPD=Gallons per Day. There 7.48 gallons in one cubic foot

Sewer Rates were approved by Ordinance 2017-25 passed on September 19, 2017:

Table 9-10 Mantua Sewer Rates

Starting	Residential				Commercial			
	0-100 CF	101 to 235 CF per 100 CF	236 to 1,167 CF per 100 CF	> 1,667 CF per 100 CF	0-100 CF	101 to 235 CF per 100 CF	236 to 1,167 CF per 100 CF	> 1,667 CF per 100 CF
10/1/2015	$15.36	$10.88	$8.34	---	$15.36	$10.88	$8.34	---
10/1/2017	$17.66	$17.66	$12.51	$9.59	$17.66	$17.66	$12.51	$9.59
10/1/2018	$20.10	$20.31	$14.39	$11.03	$20.10	$20.31	$14.39	$11.03
10/1/2019	$23.36	$23.36	$16.55	$12.68	$23.36	$23.36	$16.55	$12.68
10/1/2020	$26.86	$26.86	$19.03	$14.59	$26.86	$26.86	$19.03	$14.59
10/1/2021	$30.89	$30.89	$21.88	$16.77	$30.89	$30.89	$21.88	$16.77
10/1/2022	$35.53	$35.53	$25.17	$19.28	$35.53	$35.53	$25.17	$19.28
10/1/2023	$40.86	$40.86	$28.94	$22.17	$40.86	$40.86	$28.94	$22.17
10/1/2024	$40.86	$40.86	$28.94	$22.17	$40.86	$40.86	$28.94	$22.17

CF= Cubic Feet, GPD=Gallons per Day. There 7.48 gallons in one cubic foot

For both water (2017 through 2024) and sewer (2017 through 2023) rates the increase was 15% per year.

9.15 VILLAGE OF MANTUA – PORTAGE COUNTY WATER RATE COMPARISON

The Village of Mantua bills monthly for water utility services and Portage County bills quarterly. To compare water rates a common unit needs to be established. For this analysis the common unit was established for a typical residential property using 100 gallons of water per day.

Table 9-11 Mantua and Portage County Water Rate Comparison

For a 30-day billing cycle at 100 GPD		
Village of Mantua	Amount	Unit
Usage	100	GPD
Usage (7.48 gallons per CF)	13.37	CFD
30 Day Billing Cycle	401.1	CF
Volume for first tier 0 to 235 CF	235	CF
Volume for second tier 236 to 2,667 CF	166.1	CF
Unit Cost for first tier for 235 CF	$19.84	for 235 CF
Unit Cost for second tier per 100 CF	$4.59	per 100 CF
Cost for first tier	$19.84	
Cost for second tier	$7.62	
Total amount invoiced per month	$27.46	per month
Total amount invoiced for 3 months	$82.39	3 months
For a 90-day billing cycle at 100 GPD		
Portage County	Amount	Unit
Usage	100	GPD
Usage (7.48 gallons per CF)	13.37	CFD
30 Day Billing Cycle	1203.3	CF
Volume for first tier 0 to 1,500 CF	12.033	100 CF
Unit Cost for first tier	$72.67	
Billing Charge	$2.25	
Total amount invoiced	$74.92	
Monthly equivalent	$24.97	
Difference for 90 days	$7.47	

CF= Cubic Feet, GPD=Gallons per Day. There 7.48 gallons in one cubic foot.

The Table 9-11 water rate comparison is based on 2018 rates for both the Village of Mantua and Portage County. When the water rates are compared based on the Village of Mantua's known increases of 15% per year and a projected Portage County of 3% per year the difference in 2024 using the actual Mantua and projected Portage County rates calculates to have the Mantua rates for a 100 GPD customer paying $33.71 more per month or $101.12 more per three-month period for water service.

Water Rate Comparison Through 2024

Table 9-12 Mantua and Portage County Monthly Bill Water Rate Comparison

Year	Mantua	PC
2018	$27.46	$24.97
2019	$31.58	$25.72
2020	$36.32	$26.49
2021	$41.77	$27.29
2022	$48.03	$28.11
2023	$55.24	$28.95
2024	$63.53	$29.82

Table 9-13 Mantua and Portage County Quarterly Bill Water Rate Comparison

Year	Mantua	PC
2018	$82.39	$74.92
2019	$94.75	$77.17
2020	$108.96	$79.48
2021	$125.31	$81.87
2022	$144.10	$84.32
2023	$165.72	$86.85
2024	$190.58	$89.46

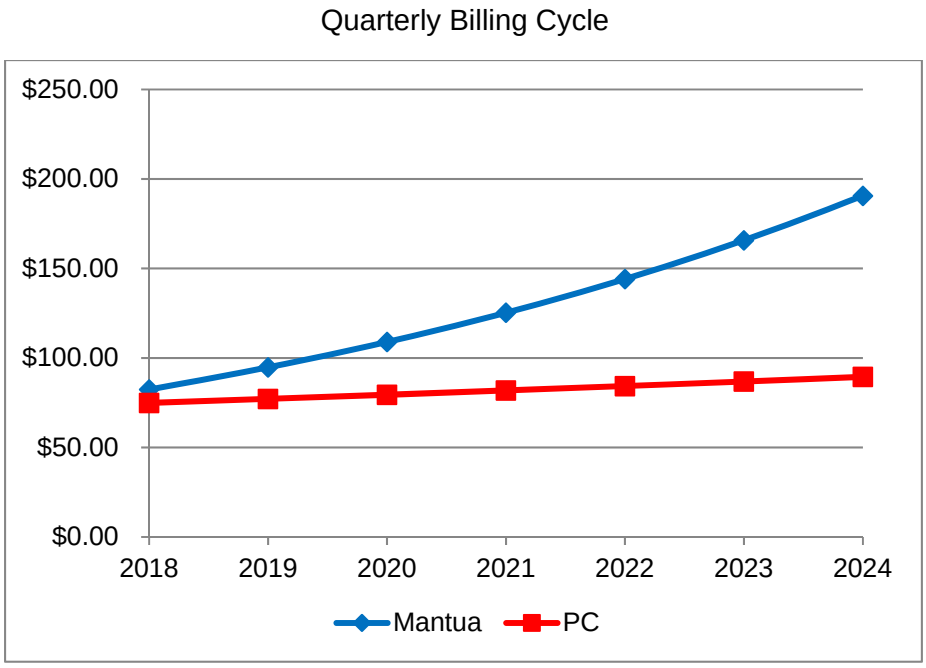


Figure 9-10 Water Rate Three Month Billing Cycle Comparison

9.16 VILLAGE OF MANTUA – PORTAGE COUNTY SEWER RATE COMPARISON

The Village of Mantua bills monthly for sewer utility services and Portage County bills quarterly. To compare sewer rates a common unit needs to be established. For this analysis, the common unit was established for a typical residential property using 100 gallons of water per day.

Table 9-14 Mantua and Portage County Sewer Rate Comparison

For a 30-day billing cycle at 100 GPD		
Village of Mantua	Amount	Unit
Usage	100	GPD
Usage (7.48 gallons per CF)	13.37	CFD
30 Day Billing Cycle	401.1	CF
Volume for first tier 0 to 235 CF	235	CF
Volume for second tier 236 to 1,667 CF	166.1	CF
Unit Cost for first tier for 235 CF	$20.31	for 235 CF
Unit Cost for second tier per 100 CF	$14.39	per 100 CF
Cost for first tier	$20.31	
Cost for second tier	$23.90	
Total amount invoiced per month	$44.21	per month
Total amount invoiced for 3 months	$132.64	3 months
For a 90-day billing cycle at 100 GPD		
Portage County	Amount	Unit
Usage	100	GPD
Usage (7.48 gallons per CF)	13.37	CFD
30 Day Billing Cycle	1203.3	CF
Flat Rate charge for volume	1	
Unit Cost for Flat Rate	$122.44	
Billing Charge	$2.25	
Total amount invoiced	$124.69	
Monthly equivalent	$41.56	
Difference for 90 days	$7.95	

CF= Cubic Feet, GPD=Gallons per Day. There 7.48 gallons in one cubic foot.

The above sewer rate comparison is based on 2018 rates for both the Village of Mantua and Portage County. When the sewer rates are compared based on the Village of Mantua's known increases of 15% per year and a projected Portage County of 3% per year the difference in 2024 using the actual Mantua and projected Portage County rates calculates to have the Mantua rates for a 100 GPD customer paying $39.30 more per month or $117.89 more per three-month period for sanitary sewer service.

Sewer Rate Comparison Through 2024

Table 9-15 Mantua and Portage County Monthly Bill Sewer Rate Comparison

Year	Mantua	PC
2018	$44.21	$41.56
2019	$50.84	$42.81
2020	$58.47	$44.09
2021	$67.24	$45.42
2022	$77.33	$46.78
2023	$88.93	$48.18
2024	$88.93	$49.63

Table 9-16 Mantua and Portage County Quarterly Bill Sewer Rate Comparison

Year	Mantua	PC
2018	$132.64	$124.69
2019	$152.53	$128.43
2020	$175.41	$132.28
2021	$201.72	$136.25
2022	$231.98	$140.34
2023	$266.78	$144.55
2024	$266.78	$148.89

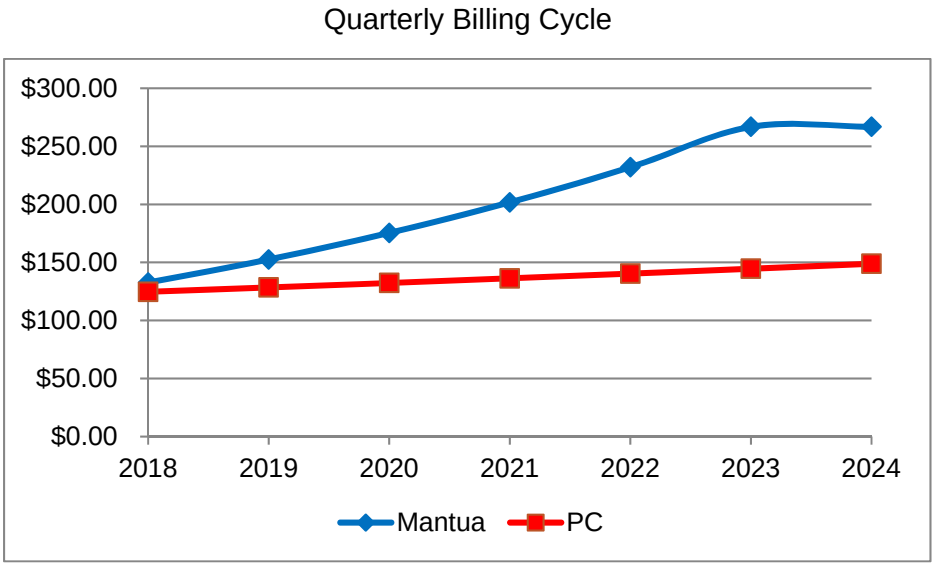


Figure 9-11 Sewer Rate Three Month Billing Cycle Comparison

9.17 VILLAGE OF MANTUA – FINANCIAL CONCLUSION

The issue of major focus needs to be in capital maintenance needs and financial forecast.

The Capital Needs Section of this report has identified immediate (to be completed ASAP), short term (to be completed in next 2 to 3 years) and long term (return to routine planned capital maintenance).

For the Mantua Water System the Capital needs for the immediate and short term are as follows:

Table 9-17 Mantua Water System Capital Needs

Description	Amount
Immediate Needs	$ 3,399,714
Short Term Needs	$ 6,531,423
Total Immediate and Short Term Needs	$ 9,931,137

For the Mantua Sanitary System the Capital needs for the immediate and short term are as follows:

Table 9-18 Mantua Sanitary System Capital Needs

Description	Amount
Immediate Needs	$ 157,800
Short Term Needs	$ 668,650
Total Immediate and Short Term Needs	$ 826,450

The reported Village of Mantua Financial Forecast does not provide for ongoing immediate, short term, and long term capital maintenance needs. The current calculated and reported reserve funds of $1,643,063 for water and $2,790,516 for sewer does not provide sufficient funds to complete the capital maintenance. Additionally, the unknown of future regulatory impacts and resulting improvements are absent funds which will be needed.

Additionally, the Mantua Financial Forecast did not provide for increases over the reporting period of 2018 through 2025 for all items listed for both revenue and expenses.

For expenses there were 4 items increase and 18 items not increases. The expense items increased were payroll related however the categories of personnel, utilities, insurance, vehicles, operating, maintenance and contractual services were not increased for the eight year period. For revenue there were 3 items increasing and 5 items not increasing over time. The consumer charges represented the 15-percent per year increase. The following table provides a list of those items increases and those not increased.

Expenses Increased Over Time	Expenses Not Increased Over Time
Wages (3% annual increase)	Workers Compensation
OPERS- (wages X .14 or 14%)	Health Care Reimbursement
Medicare- (wages X .0145)	Unemployment
Hospitalization (avg increase is 10% annually)	Uniforms-
	Electricity
	Gas
	Telephone
	Postage
	Training
	Insurance (Bond for water billing person)
	Dues & Fees
	Motor Vehicle Maintenance & Fuel
	Operating Expenses
	Equipment Maintenance & Repairs
	Haul Sludge
	Contractual Services
	New Truck
	Transfers Out (for fund 5702 debt pmts)

Revenues Increased Over Time	Revenues Not Increased Over Time
Consumer Rent	NSF Fee's
Misc Operating (late fees)	Other Governmental Contracts- County charges
Transfers In	Tap In Fees
	Reconnection fee
	Misc Operating (meters)

The outcome of the Mantua Financial Forecast review present the question if it represents accurately the expense increases which will need to be addressed over the eight year period and when added to the lack of funding for capital needs the Forecast may under estimate expenses representing the rate increases inaccurately as meeting the needs of the utility.

10 FUTURE DIRECTION OF VILLAGE'S PUBLIC UTILITIES

To Be Completed in Final Draft

11 CONCLUSION

To Be Completed in Final Draft

12 LIST OF REFERENCES

Table 12-1 is a list of documents that were reviewed in preparation of this Report. Documents were provided by and or prepared by the Village of Mantua, CT Consultants or PCWR.

Table 12-1 Referenced Documents

DIR	File Name
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	Index.xls
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	2018.06.28 Safety report Mantua .doc
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	Invoice_20180522.pdf
	Invoice_20180628.pdf
	Invoice_20180724.pdf
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	ASCE 2 Water Funding.docx
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	ASCE 2017 Wastewater-Final.pdf
	ASCE 3 Water Future.docx
	ASCE failure-to-act-water-wastewater-report.pdf
	BPC-Infrastructure-Understanding-Americas-Water-and-Wastewater-Challenges.pdf
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	Village_of_Mantua_04-Portage.pdf
	Village_of_Mantua_06-Portage.pdf
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	Village_of_Mantua_12-Portage.pdf

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	Village_of_Manuta_08-Portage.pdf
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	OPWC Funding - Mantua Rnd 1 to 32 - San & Water.xls
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	2016 Debt- liabilities.xls
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	Infrastructure Summary Form.pdf
	Prev Water Sewer projects.pdf
	W-S Cash Flow- Exp. and Rev. Budget-2015-2018.xlsx
	W-S Forecast 2018-2026.xlsx
	Water-Sewer Rates.pdf
	Water-Sewer Transfers and Advances 2008-2018 Org.xlsx
	Water-Sewer Transfers and Advances 2008-2018.xlsx
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	CHAPTER 931 sanitary.docx
	Part 9.docx
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	Rate Comparison Detailed.xlsx
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	Raw Water Well Improvements.pdf
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Appendix A

Equipment Inventory – Mantua WTP and Distribution System

Plant	Address	Structure/System	Equipment Description	Make	Model	Serial Number	Electrical	Capacity	Manufacturers Date	Condition	Install Date	2018 Equipment Cost
Mantua Water Treatment Plant	Mats Road	Fence	Fence, Wood	7 foot	120 ft						1/1/1997	$ 7,200.00
Mantua Water Treatment Plant	Mats Road	Backup Power	Transfer Switch								1/1/1997	$ 5,000.00
Mantua Water Treatment Plant	Mats Road	Roof		3236.3 ft2							1/1/1997	$ 161,800.00
Mantua Water Treatment Plant	Mats Road	High Service Pumps	Hydraulic Check Valve, 6-in	Ross Control Valve	40WR	L97117					1/1/1997	$ 4,472.00
Mantua Water Treatment Plant	Mats Road	High Service Pumps	Hydraulic Check Valve, 6-in	Ross Control Valve	40WR	L97116					1/1/1997	$ 4,472.00
Mantua Water Treatment Plant	Mats Road	High Service Pumps	Hydraulic Check Valve, 6-in	Ross Control Valve	40WR	L97118					1/1/1997	$ 4,472.00
Mantua Water Treatment Plant	Mats Road	Backwash Pump	Swing Check Valve, 6-in								1/1/1997	$ 6,551.00
Mantua Water Treatment Plant	Mats Road	Backwash Pump	Swing Check Valve, 6-in								1/1/1997	$ 6,551.00
Mantua Water Treatment Plant	Mats Road	Conference	Door								1/1/1997	$ 700.00
Mantua Water Treatment Plant	Mats Road	Entrance	Door								1/1/1997	$ 700.00
Mantua Water Treatment Plant	Mats Road	Bathroom	Door								1/1/1997	$ 700.00
Mantua Water Treatment Plant	Mats Road	Control	Door								1/1/1997	$ 700.00
Mantua Water Treatment Plant	Mats Road	Permanganate	Door								1/1/1997	$ 700.00
Mantua Water Treatment Plant	Mats Road	Electrical	Door								1/1/1997	$ 700.00
Mantua Water Treatment Plant	Mats Road	Chlorine	Door								1/1/1997	$ 700.00
Mantua Water Treatment Plant	Mats Road	Process	Door								1/1/1997	$ 700.00
Mantua Water Treatment Plant	Mats Road	Process	Door								1/1/1997	$ 700.00
Mantua Water Treatment Plant	Mats Road	Process	Overhead Door	12' x12'							1/1/1997	$ 1,200.00
Mantua Water Treatment Plant	Mats Road	Well No. 1	Submersible Pump, 6-in, 10 HP								1/1/1997	$ 10,000.00
Mantua Water Treatment Plant	Mats Road	Well No. 1	Control Panel								1/1/1997	$ 2,000.00
Mantua Water Treatment Plant	Mats Road	Well No. 2	Submersible Pump, 6-in, 10 HP								1/1/1997	$ 10,000.00
Mantua Water Treatment Plant	Mats Road	Well No. 2	Control Panel								1/1/1997	$ 2,000.00
Mantua Water Treatment Plant	Mats Road	Well No. 3	Control Panel								1/1/1997	$ 2,000.00
Mantua Water Treatment Plant	Mats Road	Pressure Filter No. 3	Vessel, 10 ft	Tonka		96192		235 gpm			1/1/1997	$ 66,250.00
Mantua Water Treatment Plant	Mats Road	Pressure Filter No. 3	Distributers/Strainers								1/1/1997	$ 8,750.00
Mantua Water Treatment Plant	Mats Road	Pressure Filter No. 2	Vessel, 10 ft	Tonka		96192		235 gpm			1/1/1997	$ 66,250.00
Mantua Water Treatment Plant	Mats Road	Pressure Filter No. 2	Distributers/Strainers								1/1/1997	$ 8,750.00
Mantua Water Treatment Plant	Mats Road	Pressure Filter No. 1	Vessel, 10 ft	Tonka		96192		235 gpm			1/1/1997	$ 66,250.00
Mantua Water Treatment Plant	Mats Road	Pressure Filter No. 1	Distributers/Strainers								1/1/1997	$ 8,750.00
Mantua Water Treatment Plant	Mats Road	Raw Water Inluent	Actuated Butterfly Valve, 6-in	Keystone	Epic Torc						1/1/1997	$ 2,050.00
Mantua Water Treatment Plant	Mats Road	Raw Water Inluent	Actuated Butterfly Valve, 6-in	Keystone	Epic Torc						1/1/1997	$ 2,050.00
Mantua Water Treatment Plant	Mats Road	Raw Water Inluent	Actuated Butterfly Valve, 6-in	Keystone	Epic Torc						1/1/1997	$ 2,050.00
Mantua Water Treatment Plant	Mats Road	Filter Effluent Line	Actuated Butterfly Valve, 6-in	Keystone	Epic Torc						1/1/1997	$ 2,050.00
Mantua Water Treatment Plant	Mats Road	Filter Effluent Line	Actuated Butterfly Valve, 6-in	Keystone	Epic Torc						1/1/1997	$ 2,050.00
Mantua Water Treatment Plant	Mats Road	Filter Effluent Line	Actuated Butterfly Valve, 6-in	Keystone	Epic Torc						1/1/1997	$ 2,050.00
Mantua Water Treatment Plant	Mats Road	Filter Effluent Line	Butterfly Valve, 6-in								1/1/1997	
Mantua Water Treatment Plant	Mats Road	Backwash Waste	Actuated Butterfly Valve, 12-in	Keystone	Epic Torc						1/1/1997	$ 4,050.00
Mantua Water Treatment Plant	Mats Road	Backwash Waste	Actuated Butterfly Valve, 12-in	Keystone	Epic Torc						1/1/1997	$ 4,050.00
Mantua Water Treatment Plant	Mats Road	Backwash Waste	Actuated Butterfly Valve, 12-in	Keystone	Epic Torc						1/1/1997	$ 4,050.00
Mantua Water Treatment Plant	Mats Road	Backwash Waste	Actuated Butterfly Valve, 6-in	Keystone	Epic Torc						1/1/1997	$ 2,050.00
Mantua Water Treatment Plant	Mats Road	Backwash Waste	Actuated Butterfly Valve, 6-in	Keystone	Epic Torc						1/1/1997	$ 2,050.00
Mantua Water Treatment Plant	Mats Road	Backwash Waste	Actuated Butterfly Valve, 6-in	Keystone	Epic Torc						1/1/1997	$ 2,050.00
Mantua Water Treatment Plant	Mats Road	Air Line	Actuated Butterfly Valve, 6-in	Keystone	Epic Torc						1/1/1997	$ 2,050.00
Mantua Water Treatment Plant	Mats Road	Air Line	Actuated Butterfly Valve, 6-in	Keystone	Epic Torc						1/1/1997	$ 2,050.00
Mantua Water Treatment Plant	Mats Road	Air Line	Actuated Butterfly Valve, 6-in	Keystone	Epic Torc						1/1/1997	$ 2,050.00
Mantua Water Treatment Plant	Mats Road	Drain	Gate Valve, 2.5-in								1/1/1997	$ 600.00
Mantua Water Treatment Plant	Mats Road	Drain	Gate Valve, 2.5-in								1/1/1997	$ 600.00
Mantua Water Treatment Plant	Mats Road	Drain	Gate Valve, 2.5-in								1/1/1997	$ 600.00
Mantua Water Treatment Plant	Mats Road	Clear Well	Sluice Gate	1.5' x 1.5'							1/1/1997	$ 5,000.00
Mantua Water Treatment Plant	Mats Road	Clear Well	Level Transducer								1/1/1997	$ 3,000.00
Mantua Water Treatment Plant	Mats Road		Gate Valve, 6-in								1/1/1997	$ 1,581.00

Plant	Address	Structure/System	Equipment Description	Make	Model	Serial Number	Electrical	Capacity	Manufacturers Date	Condition	Install Date	2018 Equipment Cost
Mantua Water Treatment Plant	Mats Road		Gate Valve, 6-in								1/1/1997	$ 1,581.00
Mantua Water Treatment Plant	Mats Road	High Service Pump	Pump, 6-in					435 GPM			1/1/1997	$ 15,000.00
Mantua Water Treatment Plant	Mats Road	High Service Pump	Pump, 6-in					435 GPM			1/1/1997	$ 15,000.00
Mantua Water Treatment Plant	Mats Road	High Service Pump	Pump, 6-in					435 GPM			1/1/1997	$ 15,000.00
Mantua Water Treatment Plant	Mats Road	High Service Pump	Soft Start, 40 HP								1/1/1997	$ 4,000.00
Mantua Water Treatment Plant	Mats Road	High Service Pump	Soft Start, 40 HP								1/1/1997	$ 4,000.00
Mantua Water Treatment Plant	Mats Road	High Service Pump	Soft Start, 40 HP								1/1/1997	$ 4,000.00
Mantua Water Treatment Plant	Mats Road	High Service Pump	Pump Motor, 40 HP	US Motors				1775 rpm			1/1/1997	$ 4,944.00
Mantua Water Treatment Plant	Mats Road	High Service Pump	Pump Motor, 40 HP	US Motors				1775 rpm			1/1/1997	$ 4,944.00
Mantua Water Treatment Plant	Mats Road	High Service Pump	Pump Motor, 40 HP	US Motors				1775 rpm			1/1/1997	$ 4,944.00
Mantua Water Treatment Plant	Mats Road	High Service Pump	Control Panel								1/1/1997	$ 2,000.00
Mantua Water Treatment Plant	Mats Road	Phospate Feed	Day Tank, 55 Gallon								1/1/1997	$ 211.00
Mantua Water Treatment Plant	Mats Road	Phospate Feed	Day Tank, 55 Gallon								1/1/1997	$ 211.00
Mantua Water Treatment Plant	Mats Road	Phospate Feed	Tank Mixer								1/1/1997	
Mantua Water Treatment Plant	Mats Road	Phospate Feed	Tank Mixer								1/1/1997	
Mantua Water Treatment Plant	Mats Road	Phospate Feed	Chemical Metering Pump								1/1/1997	
Mantua Water Treatment Plant	Mats Road	Phospate Feed	Chemical Metering Pump								1/1/1997	
Mantua Water Treatment Plant	Mats Road	Phospate Feed	Ball Valve, 1/2-in	PVC							1/1/1997	
Mantua Water Treatment Plant	Mats Road	Phospate Feed	Ball Check Valve, 1/2-in	PVC							1/1/1997	
Mantua Water Treatment Plant	Mats Road	Phospate Feed	Ball Check Valve, 1/2-in	PVC							1/1/1997	
Mantua Water Treatment Plant	Mats Road	Phospate Feed	Ball Valve, 1/2-in	PVC							1/1/1997	
Mantua Water Treatment Plant	Mats Road	Potassium Permangante Feed	Chemical Metering Pump	LMI Milto Roy	B111490 SI	13093670212-1	120 V 1ph	1.6 GPH			1/1/1997	$ 3,500.00
Mantua Water Treatment Plant	Mats Road	Potassium Permangante Feed	Day Tank, 100 Gallon								1/1/1997	$ 500.00
Mantua Water Treatment Plant	Mats Road	Potassium Permangante Feed	Day Tank, 100 Gallon								1/1/1997	$ 500.00
Mantua Water Treatment Plant	Mats Road	Potassium Permangante Feed	Tank Mixer	Lightning							1/1/1997	$ 1,500.00
Mantua Water Treatment Plant	Mats Road	Potassium Permangante Feed	Tank Mixer	Lightning							1/1/1997	$ 1,500.00
Mantua Water Treatment Plant	Mats Road	Potassium Permangante Feed	Ball Valve, 3/4-in								1/1/1997	$ 172.00
Mantua Water Treatment Plant	Mats Road	Potassium Permangante Feed	Ball Valve, 3/4-in								1/1/1997	$ 172.00
Mantua Water Treatment Plant	Mats Road	Potassium Permangante Feed	Ball Valve, 3/4-in								1/1/1997	$ 172.00
Mantua Water Treatment Plant	Mats Road	Backwash Pump	Pump, 6-in					785 GPM			1/1/1997	$ 17,000.00
Mantua Water Treatment Plant	Mats Road	Backwash Pump	Pump Motor, **10** HP								1/1/1997	$ 4,944.00
Mantua Water Treatment Plant	Mats Road	Backwash Pump	Pump, 6-in					785 GPM			1/1/1997	$ 17,000.00
Mantua Water Treatment Plant	Mats Road	Backwash Pump	Pump Motor, **10** HP								1/1/1997	$ 4,944.00
Mantua Water Treatment Plant	Mats Road	Backwash Pump	Control Panel	Tonka		96192					1/1/1997	$ 2,000.00
Mantua Water Treatment Plant	Mats Road	Chlorine Feed	Ball Valve, 1/2-in	PVC							1/1/1997	$ 90.00
Mantua Water Treatment Plant	Mats Road	Chlorine Feed	Vacuum Regulator								1/1/1997	$ 1,112.00
Mantua Water Treatment Plant	Mats Road	Chlorine Feed	Vacuum Regulator								1/1/1997	$ 1,112.00
Mantua Water Treatment Plant	Mats Road	Chlorine Feed	Double Check Valve, 3/4-in								1/1/1997	$ 165.00
Mantua Water Treatment Plant	Mats Road	Chlorine Feed	Scale								1/1/1997	$ 2,099.00
Mantua Water Treatment Plant	Mats Road	Chlorine Feed	Scale								1/1/1997	$ 2,099.00
Mantua Water Treatment Plant	Mats Road	Chlorine Feed	Chlorinator								1/1/1997	$ 4,517.00
Mantua Water Treatment Plant	Mats Road	Chlorine Feed	Chlorinator								1/1/1997	$ 4,517.00
Mantua Water Treatment Plant	Mats Road	Chlorine Feed	Automatic Switch								1/1/1997	$ 1,316.00
Mantua Water Treatment Plant	Mats Road	Chlorine Feed	Throttling Valve, 3/4-in								1/1/1997	$ 500.00
Mantua Water Treatment Plant	Mats Road	Chlorine Feed	Ejector, 3/4-in								1/1/1997	$ 469.00
Mantua Water Treatment Plant	Mats Road	Chlorine Feed	Rotameter								1/1/1997	$ 500.00
Mantua Water Treatment Plant	Mats Road	Chlorine Feed	Ejector, 3/4-in								1/1/1997	$ 469.00
Mantua Water Treatment Plant	Mats Road	Chlorine Feed	Rotameter								1/1/1997	$ 500.00
Mantua Water Treatment Plant	Mats Road	Chlorine Feed	Ball Valve, 1/2-in	PVC							1/1/1997	$ 90.00
Mantua Water Treatment Plant	Mats Road	Chlorine Feed	Solenoid Valve, 1/2-in								1/1/1997	$ 650.00
Mantua Water Treatment Plant	Mats Road	Chlorine Feed	Solenoid Valve, 1/2-in								1/1/1997	$ 650.00
Mantua Water Treatment Plant	Mats Road	Chlorine Feed	Ball Valve, 1/2-in	PVC							1/1/1997	$ 90.00
Mantua Water Treatment Plant	Mats Road	Chlorine Feed	Ball Valve, 1/2-in	PVC							1/1/1997	$ 90.00
Mantua Water Treatment Plant	Mats Road	Air Wash	Blower, 2.5-in	Sutorbuilt	3LP GABLBPA	U79559		3500 rpm			1/1/1997	$ 2,500.00
Mantua Water Treatment Plant	Mats Road	Air Wash	Blower Motor, 10 HP				230/460 V 3PH				1/1/1997	$ 1,200.00
Mantua Water Treatment Plant	Mats Road	Air Wash	Pressure relief, 4-in								1/1/1997	$ 315.00

Plant	Address	Structure/System	Equipment Description	Make	Model	Serial Number	Electrical	Capacity	Manufacturers Date	Condition	Install Date	2018 Equipment Cost
Mantua Water Treatment Plant	Mats Road	Air Wash	Check valve, 4-in								1/1/1997	$ 1,144.95
Mantua Water Treatment Plant	Mats Road	Air Wash	Inlet/Outlet Sliencer/Stand/belt guard								1/1/1997	$ 1,459.95
Mantua Water Treatment Plant	Mats Road	EQ Tank	Sump Pump, **2-in 2 HP**								1/1/1997	$ 1,800.00
Mantua Water Treatment Plant	Mats Road		water heater, gas	30 gal							1/1/1997	$ 3,000.00
Mantua Water Treatment Plant	Mats Road		Dehumidifer	Bry-Air	1500CFM 227 lbs/hr		208, 3 ph				1/1/1997	$ 23,000.00
Mantua Water Treatment Plant	Mats Road		Air Conditioner	Carrier	3 Ton		208, 1 ph				1/1/1997	$ 3,000.00
Mantua Water Treatment Plant	Mats Road		Furnance, Gas	Carrier	58MXA		120 V 1ph				1/1/1997	$ 3,205.00
Mantua Water Treatment Plant	Mats Road		Heater, Electric	Merkel	2 KW, 6.6 MBH						1/1/1997	$ 800.00
Mantua Water Treatment Plant	Mats Road		Ventalation, Exhaust Fan, 1/4 HP	Cook	700 cfm		120 V 1ph				1/1/1997	$ 1,500.00
Mantua Water Treatment Plant	Mats Road		Ventalation, Exhaust Fan, Ceiling	Cook	100 cfm		120 V 1ph				1/1/1997	$ 1,300.00
Mantua Water Treatment Plant	Mats Road		Ventalation, Exhaust Fan, Ceiling		150 cfm		120 V 1ph				1/1/1997	$ 1,300.00
Mantua Water Treatment Plant	Mats Road		Ventalation, Intake	Cook	PR-8, .4 sq ft						1/1/1997	$ 1,000.00
Mantua Water Treatment Plant	Mats Road		Heater, Radiant Heat Tubs				120 V 1ph				1/1/1997	$ 2,000.00
Mantua Water System	Reservoir Street	Booster Station	Electrical Service, Med Svc. Three Phase	400 amp, 480 V, 3 ph, 4 wire			480/277				1/1/2004	$ 19,600.00
Mantua Water System	Reservoir Street	Booster Station	Generator, Diesel					200 Kva			1/1/2004	$ 54,800.00
Mantua Water System	Reservoir Street	Booster Station	Switch Gear								1/1/2004	$ 5,000.00
Mantua Water System	Reservoir Street	Booster Station	SCADA System								1/1/2004	$ 6,500.00
Mantua Water System	Reservoir Street	Booster Station	Building	Split Face block	18' X 20 '						1/1/2004	$ 90,000.00
Mantua Water System	Reservoir Street	Booster Station	Roof	Shingles	18' X 20 '						1/1/2004	$ 18,000.00
Mantua Water System	Reservoir Street	Booster Station	Driveway, gravel		1000 ft2						1/1/2004	$ 1,500.00
Mantua Water System	Reservoir Street	Booster Station	Fence, wood		52 ft						1/1/2004	$ 2,600.00
Mantua Water System	Reservoir Street	Booster Station	Door								1/1/2004	$ 700.00
Mantua Water System	Reservoir Street	Booster Station	Overhead Door								1/1/2004	$ 600.00
Mantua Water System	Reservoir Street	Booster Station	Heater, Electric	Merkel	HFB5105N		240 V, 1 ph	5 KW, 17100 BTUH			1/1/2004	$ 700.00
Mantua Water System	Reservoir Street	Booster Station	Ventilation Exhaust Fan, 1/4 HP	Cook	APD 20P11D		115 V, 1 ph	2350 CFM			1/1/2004	$ 500.00
Mantua Water System	Reservoir Street	Booster Station	Ventilation Louver Auto Adjustable	Riskin	ELC6375D	48" x 24"	120 V, 1 ph				1/1/2004	$ 1,000.00
Mantua Water System	Reservoir Street	Booster Station	Control Panel, Lg Svc.	Allen Bradely							1/1/2004	$ 27,200.00
Mantua Water System	Reservoir Street	Booster Station	Pump, 2-in to 1-in	Sterling Fluid Systmes	c810AMBF	NSPE 7892A		200 gpm			1/1/2004	$ 3,000.00
Mantua Water System	Reservoir Street	Booster Station	Pump, 2-in to 1-in					200 gpm			1/1/2004	$ 3,000.00
Mantua Water System	Reservoir Street	Booster Station	Pump, 2-in to 1-in					200 gpm			1/1/2004	$ 3,000.00
Mantua Water System	Reservoir Street	Booster Station	Pump, 5-in to 4-in								1/1/2004	$ 7,080.00
Mantua Water System	Reservoir Street	Booster Station	VFD, 10 HP								1/1/2004	$ 1,000.00
Mantua Water System	Reservoir Street	Booster Station	VFD, 10 HP								1/1/2004	$ 1,000.00
Mantua Water System	Reservoir Street	Booster Station	VFD, 10 HP								1/1/2004	$ 1,000.00
Mantua Water System	Reservoir Street	Booster Station	VFD, 60 HP								1/1/2004	$ 6,000.00
Mantua Water System	Reservoir Street	Booster Station	Pump Motor, 10 HP	Baldor	Super E		230/460V	3500RPM	03/04		1/1/2004	$ 1,085.00
Mantua Water System	Reservoir Street	Booster Station	Pump Motor, 10 HP	Baldor	Super E		230/460V	3500RPM	03/04		1/1/2004	$ 1,085.00
Mantua Water System	Reservoir Street	Booster Station	Pump Motor, 10 HP	Baldor	Super E		230/460V	3500RPM	03/04		1/1/2004	$ 1,085.00
Mantua Water System	Reservoir Street	Booster Station	Pump Motor, 60 HP	Baldor	Super E 364 JP		230/460V	1775 RPM			1/1/2004	$ 3,575.00
Mantua Water System	Reservoir Street	Booster Station	Butterfly Valve, 3-in								1/1/2004	$ 1,314.00
Mantua Water System	Reservoir Street	Booster Station	Butterfly Valve, 3-in								1/1/2004	$ 1,314.00
Mantua Water System	Reservoir Street	Booster Station	Butterfly Valve, 3-in								1/1/2004	$ 1,314.00
Mantua Water System	Reservoir Street	Booster Station	Butterfly Valve, 8-in								1/1/2004	$ 1,667.00
Mantua Water System	Reservoir Street	Booster Station	Butterfly Valve, 8-in								1/1/2004	$ 1,667.00
Mantua Water System	Reservoir Street	Booster Station	Butterfly Valve, 6-in								1/1/2004	$ 1,347.00
Mantua Water System	Reservoir Street	Booster Station	Contol Valve, 6-in								1/1/2004	$ 4,000.00
Mantua Water System	Reservoir Street	Booster Station	Flow Meter, 4-in								1/1/2004	$ 8,100.00
Mantua Water System	Reservoir Street	Booster Station	Vault, Valve	Manhole, 4 ft diamter	5 ft						1/1/2004	$ 1,700.00
Mantua Water System	Reservoir Street	Booster Station	Swing Check Valve, 12-in								1/1/2004	$ 17,795.00
Mantua Water System	Reservoir Street	Booster Station	Manhole Cover, Valve Vault								1/1/2004	$ 500.00
Mantua Water System	Reservoir Street	Booster Station	Gate Valve, 6-in								1/1/2004	$ 1,648.00
Mantua Water System	Reservoir Street	Booster Station	Gate Valve, 8-in								1/1/2004	$ 2,628.00
Mantua Water System	Reservoir Street	Booster Station	Gate Valve, 8-in								1/1/2004	$ 2,628.00
Mantua Water System	Reservoir Street	Booster Station	Gate Valve, 8-in								1/1/2004	$ 2,628.00

Plant	Address	Structure/System	Equipment Description	Make	Model	Serial Number	Electrical	Capacity	Manufacturers Date	Condition	Install Date	2018 Equipment Cost
Mantua Water System	Reservoir Street	Booster Station	Gate Valve, 8-in								1/1/2004	$ 2,628.00
Mantua Water System	Reservoir Street	Booster Station	Gate Valve, 12-in								1/1/2004	$ 5,028.00
Mantua Water System	Reservoir Street	Booster Station	Gate Valve, 12-in								1/1/2004	$ 5,028.00
Mantua Water System	Reservoir Street	Booster Station	Valve Box								1/1/2004	$ 100.00
Mantua Water System	Reservoir Street	Booster Station	Valve Box								1/1/2004	$ 100.00
Mantua Water System	Reservoir Street	Booster Station	Valve Box								1/1/2004	$ 100.00
Mantua Water System	Reservoir Street	Booster Station	Valve Box								1/1/2004	$ 100.00
Mantua Water System	Reservoir Street	Booster Station	Valve Box								1/1/2004	$ 100.00
Mantua Water System	Reservoir Street	Booster Station	Valve Box								1/1/2004	$ 100.00
Mantua Water System	Reservoir Street	Booster Station	Vault, Valve	Manhole, 4 ft diamter	5 ft						1/1/2004	$ 1,700.00
Mantua Water System	Reservoir Street	Booster Station	Swing Check Valve, 12-in								1/1/2004	$ 17,795.00
Mantua Water System	Reservoir Street	Booster Station	Manhole Cover, Valve Vault								1/1/2004	$ 500.00
Mantua Water System	Reservoir Street	Booster Station	Gate Valve, 12-in								1/1/2004	$ 5,028.00
Mantua Water System	Reservoir Street	Booster Station	Gate Valve, 12-in								1/1/2004	$ 5,028.00
Mantua Water System	Reservoir Street	Booster Station	Valve Box								1/1/2004	$ 100.00
Mantua Water System	Reservoir Street	Booster Station	Valve Box								1/1/2004	$ 100.00
Mantua Water System	Reservoir Street	Reservior	250,000 Gallon								1/1/1909	$ 750,000.00
Mantua Water System	Franklin Street	Distribution System	1		260						1902	$ 20,800.00
Mantua Water System	High School	Distribution System	4	CIP	520						1955	$ 41,600.00
Mantua Water System	SR 44	Distribution System	4	CIP	1080						1902	$ 86,400.00
Mantua Water System	SR 44	Distribution System	4	CIP	300						1902	$ 24,000.00
Mantua Water System	Fernway Drive	Distribution System	4	PVC	300						1970	$ 24,000.00
Mantua Water System	Walnut Street	Distribution System	4	PVC	586						1970	$ 46,880.00
Mantua Water System	High Street	Distribution System	4	CIP	960						1902	$ 76,800.00
Mantua Water System	Prospect Street	Distribution System	4	CIP	388.5						1902	$ 31,080.00
Mantua Water System	E. Second Street	Distribution System	4	CIP	355						1902	$ 28,400.00
Mantua Water System	Franklin Street	Distribution System	4	CIP	609.5						1902	$ 48,760.00
Mantua Water System	Franklin Street	Distribution System	4	CIP	446						1902	$ 35,680.00
Mantua Water System	Franklin Street	Distribution System	4	CIP	405.8						1902	$ 32,464.00
Mantua Water System	Hearld Street	Distribution System	4	CIP	430						1902	$ 34,400.00
Mantua Water System	Hearld Street	Distribution System	4	CIP	368						1902	$ 29,440.00
Mantua Water System	Oak Street	Distribution System	4	CIP	380						1902	$ 30,400.00
Mantua Water System	Woodford Street	Distribution System	4	CIP	305						1902	$ 24,400.00
Mantua Water System	Woodford Street	Distribution System	4	CIP	572						1902	$ 45,760.00
Mantua Water System	Woodford Street	Distribution System	4	CIP	370						1924	$ 29,600.00
Mantua Water System	Park Street	Distribution System	4	CIP	100						1957	$ 8,000.00
Mantua Water System	Orchard Street	Distribution System	4	CIP	545						1940	$ 43,600.00
Mantua Water System	Orchard Street	Distribution System	4	CIP	520						1940	$ 41,600.00
Mantua Water System	Easement	Distribution System	4	ACP	380						1950	$ 30,400.00
Mantua Water System	Orchard Street	Distribution System	4	ACP	700						1950	$ 56,000.00
Mantua Water System	Ambler Lane	Distribution System	4	MJCIP	340						1955	$ 27,200.00
Mantua Water System	Ambler Lane	Distribution System	4	MJCIP	240						1955	$ 19,200.00
Mantua Water System	Ambler Lane	Distribution System	4	MJCIP	140						1955	$ 11,200.00
Mantua Water System	Ambler Lane	Distribution System	4	MJCIP	250						1955	$ 20,000.00
Mantua Water System	Ambler Lane	Distribution System	4	MJCIP	110						1955	$ 8,800.00
Mantua Water System	Ambler Lane	Distribution System	4	MJCIP	360						1955	$ 28,800.00
Mantua Water System	Ambler Lane	Distribution System	4	MJCIP	320						1955	$ 25,600.00
Mantua Water System	Ambler Lane	Distribution System	4	MJCIP	220						1955	$ 17,600.00
Mantua Water System	Fernway Drive	Distribution System	4	MJCIP	820						1955	$ 65,600.00
Mantua Water System	Fernway Drive	Distribution System	4	MJCIP	500						1955	$ 40,000.00
Mantua Water System	Glenwood Drive	Distribution System	4	ACP	440						1955	$ 35,200.00
Mantua Water System	Grand Elm Drive	Distribution System	4	ACP	580						1955	$ 46,400.00
Mantua Water System	Elm Street	Distribution System	4	CIP	200						1902	$ 16,000.00
Mantua Water System	E. First Street	Distribution System	4	CIP	387						1926	$ 30,960.00
Mantua Water System	Regan Street	Distribution System	4	CIP	441						1977	$ 35,280.00

Plant	Address	Structure/System	Equipment Description	Make	Model	Serial Number	Electrical	Capacity	Manufacturers Date	Condition	Install Date	2018 Equipment Cost
Mantua Water System	Regan Street	Distribution System	4	CIP	200						1977	$ 16,000.00
Mantua Water System	Regan Street	Distribution System	4	PVC	765						1977	$ 61,200.00
Mantua Water System	Easement	Distribution System	4	C900	166						1989	$ 13,280.00
Mantua Water System	High Street	Distribution System	6	CIP	728						1902	$ 58,240.00
Mantua Water System	High Street	Distribution System	6	CIP	310						1902	$ 24,800.00
Mantua Water System	High School	Distribution System	6	PVC	316						1978	$ 25,280.00
Mantua Water System	High School	Distribution System	6	PVC	804						1978	$ 64,320.00
Mantua Water System	Line Street	Distribution System	6	PVC	1040						1983	$ 83,200.00
Mantua Water System	Line Street	Distribution System	6	PVC	520						1983	$ 41,600.00
Mantua Water System	Line Street	Distribution System	6	PVC	640						1983	$ 51,200.00
Mantua Water System	Prospect Street	Distribution System	6	CIP	238						1902	$ 19,040.00
Mantua Water System	Prospect Street	Distribution System	6	CIP	236						1902	$ 18,880.00
Mantua Water System	Prospect Street	Distribution System	6	CIP	473						1902	$ 37,840.00
Mantua Water System	SR 44	Distribution System	6	CIP	880						1902	$ 70,400.00
Mantua Water System	SR 44	Distribution System	6	CIP	1180						1902	$ 94,400.00
Mantua Water System	SR 44	Distribution System	6	DIP	975						1966	$ 78,000.00
Mantua Water System	SR 44	Distribution System	6	DIP	145						1966	$ 11,600.00
Mantua Water System	High Street	Distribution System	6	CIP	287.3						1902	$ 22,984.00
Mantua Water System	High Street	Distribution System	6	CIP	716.5						1902	$ 57,320.00
Mantua Water System	Prospect Street	Distribution System	6	CIP	801.5						1902	$ 64,120.00
Mantua Water System	Prospect Street	Distribution System	6	CIP	393.6						1902	$ 31,488.00
Mantua Water System	Prospect Street	Distribution System	6	CIP	371						1902	$ 29,680.00
Mantua Water System	Regan Street	Distribution System	6	PVC	425						1977	$ 34,000.00
Mantua Water System	Bramley Drive	Distribution System	6	ACP	425						1972	$ 34,000.00
Mantua Water System	Easement/John Edward	Distribution System	6	C900	240						1989	$ 19,200.00
Mantua Water System	John Edward Drive	Distribution System	6	C900	642						1989	$ 51,360.00
Mantua Water System	Easement/John Edward	Distribution System	8	ACP	1430						1950	$ 114,400.00
Mantua Water System	SR 44	Distribution System	8	ACP	320						1950	$ 25,600.00
Mantua Water System	SR 44	Distribution System	8	DIP	400						1950	$ 32,000.00
Mantua Water System	SR 44	Distribution System	8	CIP	700						1902	$ 56,000.00
Mantua Water System	High Street	Distribution System	8	CIP	360						1970	$ 28,800.00
Mantua Water System	Reservoir Drive	Distribution System	8	PVC	620						1970	$ 49,600.00
Mantua Water System	High Street	Distribution System	8	CIP	493						1902	$ 39,440.00
Mantua Water System	High Street	Distribution System	8	CIP	216.5						1902	$ 17,320.00
Mantua Water System	Fire Line, High Street	Distribution System	8	CIP	160						1902	$ 12,800.00
Mantua Water System	Park Street	Distribution System	8	C900	315						1970	$ 25,200.00
Mantua Water System	Park Street	Distribution System	8	PVC	100						1970	$ 8,000.00
Mantua Water System	SR 44	Distribution System	8	ACP	580						1968	$ 46,400.00
Mantua Water System	Easement	Distribution System	8	DIP	200						1989	$ 16,000.00
Mantua Water System	Easement	Distribution System	8	DIP	60						1989	$ 4,800.00
Mantua Water System	Easement	Distribution System	8	DIP	470						1989	$ 37,600.00
Mantua Water System	Sontag Lane	Distribution System	8	DIP	400						1989	$ 32,000.00
Mantua Water System	Raw Water Line	Distribution System	8	DIP	1195.54						1996	$ 95,643.20
Mantua Water System	Franklin Street	Distribution System	8	PVC	357						2003	$ 28,560.00
Mantua Water System	Franklin Street	Distribution System	8	PVC	538.67						2003	$ 43,093.60
Mantua Water System	Reservoir Drive	Distribution System	10	ACP	620						1966	$ 62,000.00
Mantua Water System	High Street	Distribution System	10	ACP	760						1966	$ 76,000.00
Mantua Water System	Maple Street	Distribution System	10	ACP	840						1966	$ 84,000.00
Mantua Water System	Prospect Street	Distribution System	10	ACP	360						1966	$ 36,000.00
Mantua Water System	Reservoir Drive/BS	Distribution System	12	PVC	360						1970	$ 43,200.00
Mantua Water System	Reservoir Drive	Distribution System	12	PVC	425						1970	$ 51,000.00
Mantua Water System	Easement	Distribution System	12	C900	200						1970	$ 24,000.00
Mantua Water System	Easement	Distribution System	12	C900	180						1970	$ 21,600.00
Mantua Water System	Prospect Street	Distribution System	12	C900	240						1970	$ 28,800.00
Mantua Water System	Prospect Street	Distribution System	12	C900	325						1970	$ 39,000.00

Plant	Address	Structure/System	Equipment Description	Make	Model	Serial Number	Electrical	Capacity	Manufacturers Date	Condition	Install Date	2018 Equipment Cost
Mantua Water System	High Street	Distribution System	12	C900	380						1970	$ 45,600.00
Mantua Water System	Mats Road	Distribution System	12		585						1970	$ 70,200.00
Mantua Water System	Mats Road	Distribution System	12		220						1970	$ 26,400.00
Mantua Water System	Mats Road	Distribution System	12		920						1970	$ 110,400.00
Mantua Water System	Mill Street	Distribution System	12	C900	1200						2000	$ 144,000.00
Mantua Water System	SR 44	Distribution System	12	PVC	1790						2002	$ 214,800.00
Mantua Water System	Easement	Distribution System	12	PVC	220.33						2003	$ 26,439.60
Mantua Water System	Potatoe Fest	Distribution System		Hydrant	Corey (1895-1940s)						1902	$ 5,000.00
Mantua Water System	E Hight Street	Distribution System		Hydrant	Corey (1895-1940s)						1902	$ 5,000.00
Mantua Water System	W High Street	Distribution System		Hydrant	Corey (1895-1940s)						1902	$ 5,000.00
Mantua Water System	W High Street	Distribution System		Hydrant	Corey (1895-1940s)						1902	$ 5,000.00
Mantua Water System	Middle School	Distribution System		Hydrant	Corey (1895-1940s)						1967	$ 5,000.00
Mantua Water System	Gramham &Harrison	Distribution System		Hydrant	Corey (1895-1940s)						1902	$ 5,000.00
Mantua Water System	Orchard &Bash (Plant)	Distribution System		Hydrant	Corey (1895-1940s)						1902	$ 5,000.00
Mantua Water System	SR 44 & School drivewa	Distribution System		Hydrant	Corey (1895-1940s)						1902	$ 5,000.00
Mantua Water System	SR 44 Luthern Chruch	Distribution System		Hydrant	Corey (1895-1940s)						1902	$ 5,000.00
Mantua Water System	SR 44	Distribution System		Hydrant	Corey (1895-1940s)						1902	$ 5,000.00
Mantua Water System	W Prospect	Distribution System		Hydrant	Corey (1895-1940s)						1902	$ 5,000.00
Mantua Water System	Orchard Street	Distribution System		Hydrant	Kennedy (1890s-present)						1940	$ 5,000.00
Mantua Water System	Orchard Street	Distribution System		Hydrant	Kennedy (1890s-present)						1940	$ 5,000.00
Mantua Water System	School South Bus Lot	Distribution System		Hydrant	Kennedy (1890s-present)						1978	$ 5,000.00
Mantua Water System	Mason Lodge	Distribution System		Hydrant	Mueller (1933 - present)						1989	$ 5,000.00
Mantua Water System	John Edward Drive	Distribution System		Hydrant	Mueller (1933 - present)						1989	$ 5,000.00
Mantua Water System	School Front (above lot)	Distribution System		Hydrant	Mueller (1933 - present)						1978	$ 5,000.00
Mantua Water System	School Front (southside	Distribution System		Hydrant	Mueller (1933 - present)						1978	$ 5,000.00
Mantua Water System	Orchard & Line	Distribution System		Hydrant	Mueller (1933 - present)						1983	$ 5,000.00
Mantua Water System	SR 44	Distribution System		Hydrant	Mueller (1933 - present)						1968	$ 5,000.00
Mantua Water System	Orchard & Line	Distribution System		Hydrant	Mueller (1933 - present)						1983	$ 5,000.00
Mantua Water System	SR 44	Distribution System		Hydrant	Mueller (1933 - present)						1968	$ 5,000.00
Mantua Water System	SR 44	Distribution System		Hydrant	Mueller (1933 - present)						1968	$ 5,000.00
Mantua Water System	SR44 &Lamda (west)	Distribution System		Hydrant	Mueller (1933 - present)						1955	$ 5,000.00
Mantua Water System	SR 44 Fire Dept (North)	Distribution System		Hydrant	Mueller (1933 - present)						2003	$ 5,000.00
Mantua Water System	SR 44 Fire Dept (South)	Distribution System		Hydrant	Mueller (1933 - present)						2003	$ 5,000.00
Mantua Water System	SR 44	Distribution System		Hydrant	Mueller (1933 - present)						2003	$ 5,000.00
Mantua Water System	SR 44 & Compass	Distribution System		Hydrant	Mueller (1933 - present)						1968	$ 5,000.00
Mantua Water System	SR 44 & w. Line	Distribution System		Hydrant	Mueller (1933 - present)						1983	$ 5,000.00
Mantua Water System	W. Franklin	Distribution System		Hydrant	Mueller (1933 - present)						1902	$ 5,000.00
Mantua Water System	W Prospect (Ben)	Distribution System		Hydrant	Mueller (1933 - present)						1966	$ 5,000.00
Mantua Water System	W. Prospect	Distribution System		Hydrant	Mueller (1933 - present)						1966	$ 5,000.00
Mantua Water System	W. Prospect	Distribution System		Hydrant	Mueller (1933 - present)						1966	$ 5,000.00
Mantua Water System	Tiffiny Olson (Second St	Distribution System		Hydrant	Mueller (1933 - present)						1902	$ 5,000.00
Mantua Water System	Regan	Distribution System		Hydrant	Mueller (1933 - present)						1977	$ 5,000.00
Mantua Water System	Sontag	Distribution System		Hydrant	Mueller (1933 - present)						1989	$ 5,000.00
Mantua Water System	Park	Distribution System		Hydrant	Mueller (1933 - present)						1902	$ 5,000.00
Mantua Water System	Woodford & Herald	Distribution System		Hydrant	Mueller (1933 - present)						1902	$ 5,000.00
Mantua Water System	Glenwood	Distribution System		Hydrant	Mueller (1933 - present)						1955	$ 5,000.00
Mantua Water System	Ambler Lane	Distribution System		Hydrant	Mueller (1933 - present)						1955	$ 5,000.00
Mantua Water System	Fernway	Distribution System		Hydrant	Mueller (1933 - present)						1955	$ 5,000.00
Mantua Water System	Fernway	Distribution System		Hydrant	Mueller (1933 - present)						1955	$ 5,000.00
Mantua Water System	Fernway	Distribution System		Hydrant	Mueller (1933 - present)						1955	$ 5,000.00
Mantua Water System	Glenwood & SR 44	Distribution System		Hydrant	Mueller (1933 - present)						1955	$ 5,000.00
Mantua Water System	Ambler Lane	Distribution System		Hydrant	Iowa (1900s - 1960s)						1955	$ 5,000.00
Mantua Water System	Ambler Lane	Distribution System		Hydrant	Iowa (1900s - 1960s)						1955	$ 5,000.00
Mantua Water System	Bramley	Distribution System		Hydrant	Ludow (1872-1969)						1972	$ 5,000.00
Mantua Water System	4757 East High Street	Distribution System		Hydrant	American Darling (1969 - present)						1969	$ 5,000.00
Mantua Water System	Suds & Duds (west High	Distribution System		Hydrant	American Darling (1969 - present)						1969	$ 5,000.00
Mantua Water System	School Tower (North)	Distribution System		Hydrant	American Darling (1969 - present)						1978	$ 5,000.00

Plant	Address	Structure/System	Equipment Description	Make	Model	Serial Number	Electrical	Capacity	Manufacturers Date	Condition	Install Date	2018 Equipment Cost
Mantua Water System	School Tower (Bus)	Distribution System		Hydrant	American Darling (1969 - present)						1978	$ 5,000.00
Mantua Water System	Compass (Orchard)	Distribution System		Hydrant	American Darling (1969 - present)						1983	$ 5,000.00
Mantua Water System	Compass (Orchard)	Distribution System		Hydrant	American Darling (1969 - present)						1983	$ 5,000.00
Mantua Water System	SR 44 McDonalds	Distribution System		Hydrant	American Darling (1969 - present)						1969	$ 5,000.00
Mantua Water System	E. Line Str	Distribution System		Hydrant	American Darling (1969 - present)						1969	$ 5,000.00
Mantua Water System	Advance Rehab - Mill St	Distribution System		Hydrant	American Darling (1969 - present)						1969	$ 5,000.00
Mantua Water System	SR 44	Distribution System		Hydrant	American Darling (1969 - present)						1969	$ 5,000.00
Mantua Water System	SR 44	Distribution System		Hydrant	American Darling (1969 - present)						1969	$ 5,000.00
Mantua Water System	Barky Mart - SR 44	Distribution System		Hydrant	American Darling (1969 - present)						1969	$ 5,000.00
Mantua Water System	Maple Ave	Distribution System		Hydrant	American Darling (1969 - present)						1969	$ 5,000.00
Mantua Water System	W. Franklin	Distribution System		Hydrant	American Darling (1969 - present)						2004	$ 5,000.00
Mantua Water System	W. Franklin	Distribution System		Hydrant	American Darling (1969 - present)						2004	$ 5,000.00
Mantua Water System	Mini Park	Distribution System		Hydrant	American Darling (1969 - present)						1969	$ 5,000.00
Mantua Water System	E. Prospect & First	Distribution System		Hydrant	American Darling (1969 - present)						1969	$ 5,000.00
Mantua Water System	E. Prospect & Second	Distribution System		Hydrant	American Darling (1969 - present)						1969	$ 5,000.00
Mantua Water System	E. Prospect	Distribution System		Hydrant	American Darling (1969 - present)						1969	$ 5,000.00
Mantua Water System	E. Franklin	Distribution System		Hydrant	American Darling (1969 - present)						1969	$ 5,000.00
Mantua Water System	Reservior	Distribution System		Hydrant	American Darling (1969 - present)						1969	$ 5,000.00
Mantua Water System	Reservior	Distribution System		Hydrant	American Darling (1969 - present)						1969	$ 5,000.00
Mantua Water System	Reservior	Distribution System		Hydrant	American Darling (1969 - present)						1969	$ 5,000.00
Mantua Water System	Reservior (dead end)	Distribution System		Hydrant	American Darling (1969 - present)						1969	$ 5,000.00
Mantua Water System	Park	Distribution System		Hydrant	American Darling (1969 - present)						1969	$ 5,000.00
Mantua Water System	Park	Distribution System		Hydrant	American Darling (1969 - present)						1969	$ 5,000.00
Mantua Water System	Herald & Park	Distribution System		Hydrant	American Darling (1969 - present)						1969	$ 5,000.00
Mantua Water System	Mats Road	Distribution System		Hydrant							1970	$ 5,000.00
Mantua Water System	John Edward Drive	Distribution System	6	Valve							1986	$ 1,550.00
Mantua Water System	SR 44	Distribution System	6	Valve							1936	$ 1,550.00
Mantua Water System	SR 44	Distribution System	6	Valve							1936	$ 1,550.00
Mantua Water System	Woodford Street	Distribution System	4	Valve							1936	$ 1,160.00
Mantua Water System	Walnut Street	Distribution System	4	Valve							1936	$ 1,160.00
Mantua Water System	Hearald Street	Distribution System	4	Valve							1936	$ 1,160.00
Mantua Water System	Hearald Street	Distribution System	4	Valve							1936	$ 1,160.00
Mantua Water System	East High Street	Distribution System	8	Valve							1936	$ 2,423.00
Mantua Water System	East Second Street	Distribution System	4	Valve							1936	$ 1,160.00
Mantua Water System	East Franklin Street	Distribution System	4	Valve							1936	$ 1,160.00
Mantua Water System	Prospect Street	Distribution System	4	Valve							1936	$ 1,160.00
Mantua Water System	Prospect Street	Distribution System	4	Valve							1936	$ 1,160.00
Mantua Water System	SR 44	Distribution System	6	Valve							1936	$ 1,550.00
Mantua Water System	SR 44	Distribution System	6	Valve							1936	$ 1,550.00
Mantua Water System	Prospect Street	Distribution System	4	Valve							1936	$ 1,160.00
Mantua Water System	Maple	Distribution System	4	Valve							1936	$ 1,160.00
Mantua Water System	Prospect Street	Distribution System	6	Valve							1936	$ 1,550.00
Mantua Water System	West High Street	Distribution System	6	Valve							1936	$ 1,550.00
Mantua Water System	West High Street	Distribution System	6	Valve							1936	$ 1,550.00
Mantua Water System	West Franklin Street	Distribution System	4	Valve							1936	$ 1,160.00
Mantua Water System	West Franklin Street	Distribution System	4	Valve							1936	$ 1,160.00
Mantua Water System	West Franklin Street	Distribution System	4	Valve							1936	$ 1,160.00
Mantua Water System	Oak Street	Distribution System	4	Valve							1936	$ 1,160.00
Mantua Water System	Reservior Street	Distribution System	6	Valve							1936	$ -
Mantua Water System	Reservior Street	Distribution System	6	Valve							1936	$ -
Mantua Water System	Reservior Street	Distribution System	6	Valve							1936	$ -
Mantua Water System	SR 44	Distribution System	8	Valve							1968	$ 2,426.00
Mantua Water System	John Edward Drive	Distribution System	6	Valve							1989	$ 1,550.00
Mantua Water System	Reservior Street	Distribution System	10	Valve							1966	$ 3,850.00
Mantua Water System	Maple Street	Distribution System	10	Valve							1966	$ 3,850.00

Plant	Address	Structure/System	Equipment Description	Make	Model	Serial Number	Electrical	Capacity	Manufacturers Date	Condition	Install Date	2018 Equipment Cost
Mantua Water System	High Street	Distribution System	8	Valve							1966	$ 2,423.00
Mantua Water System	High Street	Distribution System	10	Valve							1966	$ 3,850.00
Mantua Water System	SR 44	Distribution System	12	Valve							2002	$ 4,649.00
Mantua Water System	SR 44	Distribution System	12	Valve							2002	$ 4,649.00
Mantua Water System	SR 44	Distribution System	12	Valve							2002	$ 4,649.00
Mantua Water System	High School	Distribution System	2	Air Relief							2003	$ 800.00
Mantua Water System	High School	Distribution System	12	Valve							2003	$ 4,649.00
Mantua Water System	High School	Distribution System	12	Valve							2003	$ 4,649.00
Mantua Water System	High School	Distribution System	12	Valve							2003	$ 4,649.00
Mantua Water System	High School	Distribution System	12	Valve							2003	$ 4,649.00
Mantua Water System	High School	Distribution System	12	Valve							2003	$ 4,649.00
Mantua Water System	Prospect Street	Distribution System	6	Valve							1983	$ 1,550.00
Mantua Water System	Line Street	Distribution System	6	Valve							1983	$ 1,550.00
Mantua Water System	Line Street	Distribution System	6	Valve							1983	$ 1,550.00
Mantua Water System	Mill Street	Distribution System	6	Valve							2000	$ 1,550.00
Mantua Water System	Mill Street	Distribution System	8	Valve							2000	$ 2,423.00
Mantua Water System	Mill Street	Distribution System	2	Air Relief							2000	$ 800.00
Mantua Water System	Mill Street	Distribution System	12	Valve							2000	$ 4,649.00
Mantua Water System	Reservior Street	Distribution System	12	Valve							2001	$ 4,649.00
Mantua Water System	Reservior Street	Distribution System	8	Valve							2001	$ 2,423.00
Mantua Water System	Reservior Street	Distribution System	12	Valve							2001	$ 4,649.00

Appendix B

Equipment Inventory – Mantua WWTP and Collection System

Plant	Address	Structure/System	Equipment Description	Make	Model	Serial Number	Electrical	Capacity	Manufacturers Date	Condition	Install Date	2018 Equipment Cost
Mantua Wastewater Treatment Plant	Mats Road	Driveway	Driveway, Concrete		19552.74 ft2						1/1/2000	$195,527.40
Mantua Wastewater Treatment Plant	Mats Road	Fence	Fence, Chain Link	6 foot with 3 strand	1850 ft						1/1/2000	$ 92,500.00
Mantua Wastewater Treatment Plant	Mats Road	SCADA									1/1/2000	$ 6,500.00
Mantua Wastewater Treatment Plant	Mats Road	Electrical Service									1/1/2000	$ 47,000.00
Mantua Wastewater Treatment Plant	Mats Road	Gas Service									1/1/2000	$ 1,000.00
Mantua Wastewater Treatment Plant	Mats Road	Water Service									1/1/2000	$ 1,000.00
Mantua Wastewater Treatment Plant	Mats Road	Backup Power	Generator, Diesel	Kohler	500ROZD4			631 KVA 759 amp			8/1/2001	$100,000.00
Mantua Wastewater Treatment Plant	Mats Road	Backup Power	Transfer Switch								1/1/2000	$ 5,000.00
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Muffin Monster, 5 HP	JWC Environmental	TDVC611-29-1-182 TC	91121069		1438-1800 rpm		repaired	1/1/2000	$ 10,000.00
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Manual Bar Screen								1/1/2000	$ 3,000.00
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	wet well	9' 8" x 13' x 14' 8"							1/1/2000	$ 50,000.00
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Manhole Cover, wet well								1/1/2000	**$ 2,000.00**
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Suction Lift Pump, 6-in	Gorman Rupp	T6A3-B/WW	1209018		Imp std			1/1/2000	$ 6,270.00
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Suction Lift Pump, 6-in	Gorman Rupp	T6A3-B/WW	1209021		Imp std			1/1/2000	$ 6,270.00
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Suction Lift Pump, 6-in	Gorman Rupp	T6A3-B/WW	1209017		Imp std			1/1/2000	$ 6,270.00
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Motor, 20 HP	Leeson Electric	284T	1	208-230 460V, 3 ph	1775 rpm	1998		1/1/2000	$ 1,855.00
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Motor, 20 HP		284T		208-230 460V, 3 ph	1775 rpm			1/1/2000	$ 1,855.00
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Motor, 20 HP		284T		208-230 460V, 3 ph	1775 rpm			1/1/2000	$ 1,855.00
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Swing Check Valve, 6-in								1/1/2000	$ 1,500.00
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Swing Check Valve, 6-in								1/1/2000	$ 1,500.00
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Swing Check Valve, 6-in								1/1/2016	$ 1,500.00
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Plug Valve, 6-in								1/1/2000	$ 1,200.00
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Plug Valve, 6-in								1/1/2000	$ 1,200.00
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Plug Valve, 6-in								1/1/2000	$ 1,200.00
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Plug Valve, 8-in								1/1/2000	$ 1,600.00
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Plug Valve, 8-in								1/1/2000	$ 1,600.00
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Air Release (pump prime)	Gorman Rupp							1/1/2000	$ 576.00
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Air Release (pump prime)	Gorman Rupp							1/1/2000	$ 576.00
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Air Release (pump prime)	Gorman Rupp							1/1/2000	$ 576.00
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Stop Plate	Aluminum, 1/4-in	26" x 57"						1/1/2000	$ 700.00
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Heater, pump room	Qmark							1/1/2000	$ 800.00
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Air Conditioner, 2 Ton	Carrier	48Gs-02404031	1900G10365	208-230, 1 ph	40 mbh/32 mBh 600 CFM			1/1/2000	$ 1,100.00
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Building	Block, CMU	1200 sf						1/1/1967	$300,000.00
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Roof	asphalt Shingles	1200 sf						1/1/2000	$ 60,000.00
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Window	48" x 48"							1/1/2000	$ 500.00
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Door, Single								1/1/2000	$ 1,000.00
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Ventilation Louver	8" x 18"							1/1/2000	$ 70.00
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Ventilation Louver	8" x 18"							1/1/2000	$ 70.00
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Door, Single		3' x 7'2"						1/1/2000	$ 1,000.00
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Door, Single		3' x 7'2"						1/1/2000	$ 1,000.00
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Door, Single		3' x 7'2"						1/1/2000	$ 1,000.00
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Door, Single		3' x 7'2"						1/1/2000	$ 1,000.00
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Heater, lab/office	Qmark							1/1/2000	$ 800.00
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Sink	Bake light w/sink approx 10 ft							1/1/2000	$ 300.00
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Toilet								1/1/2000	$ 200.00
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	lab counter, $24/ft									
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Heater, electric wall								1/1/2000	$ 400.00
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Heater, Storage Room	Qmark							1/1/2000	$ 800.00
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Eyewash Station								1/1/2000	$ 635.00
Mantua Wastewater Treatment Plant	Mats Road	Aerated Grit Tank	Structure	Reinforced Concrete, 1.5' thick	8.5' x 32' x 17.25'	35000 gallons					1/1/2000	$ 52,000.00
Mantua Wastewater Treatment Plant	Mats Road	Aerated Grit Tank	Stop Plate	Aluminum, 1/4-in	40" x 31"						1/1/2000	$ 700.00
Mantua Wastewater Treatment Plant	Mats Road	Aerated Grit Tank	Stop Plate	Aluminum, 1/4-in	40" x 31"						1/1/2000	$ 700.00
Mantua Wastewater Treatment Plant	Mats Road	Aerated Grit Tank	Stop Plate	Aluminum, 1/4-in	38" x 31"						1/1/2000	$ 700.00
Mantua Wastewater Treatment Plant	Mats Road	Aerated Grit Tank	Stop Plate	Aluminum, 1/4-in	38" x 31"						1/1/2000	$ 700.00
Mantua Wastewater Treatment Plant	Mats Road	Aerated Grit Tank	Stop Plate	Aluminum, 1/4-in	38" z 43"						1/1/2000	$ 700.00
Mantua Wastewater Treatment Plant	Mats Road	Grit Building	Building	High Bay, Split Face CMU	16' x 11' X 23'						1/1/2000	$ 88,000.00
Mantua Wastewater Treatment Plant	Mats Road	Grit Building	Roof	asphalt Shingles	16' x 11'						1/1/2000	$ 8,800.00
Mantua Wastewater Treatment Plant	Mats Road	Grit Building	Auger/Screw Pump	app 7-in diam, 33 ft							1/1/2000	$ 50,000.00
Mantua Wastewater Treatment Plant	Mats Road	Grit Building	Door, Single		3' x 7'2"						1/1/2000	$ 1,000.00

Plant	Address	Structure/System	Equipment Description	Make	Model	Serial Number	Electrical	Capacity	Manufacturers Date	Condition	Install Date	2018 Equipment Cost
Mantua Wastewater Treatment Plant	Mats Road	Grit Building	Door, Single		3' x 7'2"						1/1/2000	$ 1,000.00
Mantua Wastewater Treatment Plant	Mats Road	Grit Building	Door, Single		3' x 7'2"						1/1/2000	$ 1,000.00
Mantua Wastewater Treatment Plant	Mats Road	Grit Building	Window	36 x 36 Aluminum							1/1/2000	$ 500.00
Mantua Wastewater Treatment Plant	Mats Road	Grit Building	Window	36 x 36 Aluminum							1/1/2000	$ 500.00
Mantua Wastewater Treatment Plant	Mats Road	Grit Building	Window	36 x 36 Aluminum							1/1/2000	$ 500.00
Mantua Wastewater Treatment Plant	Mats Road	Grit Building	Window	36 x 36 Aluminum							1/1/2000	$ 500.00
Mantua Wastewater Treatment Plant	Mats Road	Grit Building	Window	36 x 36 Aluminum							1/1/2000	$ 500.00
Mantua Wastewater Treatment Plant	Mats Road	Grit Building	Window	36 x 36 Aluminum							1/1/2000	$ 500.00
Mantua Wastewater Treatment Plant	Mats Road	Grit Building	Door, OHD		10' x 8'						1/1/2000	$ 600.00
Mantua Wastewater Treatment Plant	Mats Road	Grit Building	Ventilation, Exhaust Fan, 1/3 HP	Cook	100 SQN-B	120 V, 1 Ph	10-in, 800 CFM				1/1/2000	$ 600.00
Mantua Wastewater Treatment Plant	Mats Road	Grit Building	Heater, Electric	Markel, Electric	HLA12 - Hazardous Env.	208 V, 3 ph	5 kW, 10 MBH				1/1/2000	$ 5,400.00
Mantua Wastewater Treatment Plant	Mats Road	Grit Building	Heater, Electric	Markel, Electric	HLA12 - Hazardous Env.	208 V, 3 ph	3 kW, 10 MBH				1/1/2000	$ 5,100.00
Mantua Wastewater Treatment Plant	Mats Road	Influent Flow Meter	Parshall Flume, 6-in	36-in channel							1/1/2000	$ 2,569.95
Mantua Wastewater Treatment Plant	Mats Road	Influent Flow Meter	Stop Plate								1/1/2000	$ 700.00
Mantua Wastewater Treatment Plant	Mats Road	Influent Flow Meter	Weir Gate	downward, aluminum	24" H x 36 W						1/1/2000	$ 5,000.00
Mantua Wastewater Treatment Plant	Mats Road	Flow Splitter	Structure	Reinforced Concrete, 1' thick	18.5' x 9' x 15'	18,682 gallons					1/1/2000	$ 28,000.00
Mantua Wastewater Treatment Plant	Mats Road	Flow Splitter	Stop Plate	Aluminum, 1/4-in	50" x 22"						1/1/2000	$ 700.00
Mantua Wastewater Treatment Plant	Mats Road	Flow Splitter	Stop Plate	Aluminum, 1/4-in	50" x 22"						1/1/2000	$ 700.00
Mantua Wastewater Treatment Plant	Mats Road	Flow Splitter	Stop Plate	Aluminum, 1/4-in	50" x 22"						1/1/2000	$ 700.00
Mantua Wastewater Treatment Plant	Mats Road	Flow Splitter	Stop Plate	Aluminum, 1/4-in	50" x 22"						1/1/2000	$ 700.00
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 1	Structure	Reinforced Concrete, 1' thick	82x41x10.5	160000 gallons					1/1/2000	$ 240,000.00
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 1	Structure	Reinforced Concrete, 1' thick	82x41x10.5	160000 gallons					1/1/2000	$ 240,000.00
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 1	Aerator Moter, 40 HP								1/1/2000	
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 1	Control Panel with Soft Start, 40 HP								1/1/2000	$ 4,825.00
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 1	Aerator Gear Reducer								1/1/2000	
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 1	Mechnical Aerator								1/1/2000	$ 38,985.00
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 1	Hydrostatic Pressure Relief Valve, 4-in			$ 225.54					1/1/2000	$ 376.00
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 1	Hydrostatic Pressure Relief Valve, 4-in								1/1/2000	$ 376.00
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 1	Hydrostatic Pressure Relief Valve, 4-in								1/1/2000	$ 376.00
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 1	Hydrostatic Pressure Relief Valve, 4-in								1/1/2000	$ 376.00
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 1	Hydrostatic Pressure Relief Valve, 4-in								1/1/2000	$ 376.00
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 1	Hydrostatic Pressure Relief Valve, 4-in								1/1/2000	$ 376.00
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 1	Hydrostatic Pressure Relief Valve, 4-in								1/1/2000	$ 376.00
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 1	Hydrostatic Pressure Relief Valve, 4-in								1/1/2000	$ 376.00
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 1	Hydrostatic Pressure Relief Valve, 4-in								1/1/2000	$ 376.00
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 1	Hydrostatic Pressure Relief Valve, 4-in								1/1/2000	$ 376.00
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 1	Hydrostatic Pressure Relief Valve, 4-in								1/1/2000	$ 376.00
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 1	Hydrostatic Pressure Relief Valve, 4-in								1/1/2000	$ 376.00
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 1	Hydrostatic Pressure Relief Valve, 4-in								1/1/2000	$ 376.00
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 1	Hydrostatic Pressure Relief Valve, 4-in								1/1/2000	$ 376.00
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 1	Weir Gate	5'3" x 2.5'							1/1/2000	$ 5,000.00
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 1	Mud Valve, 8-in			3000					1/1/2000	$ 1,600.00
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 1	Mud Valve, 8-in			3000					1/1/2000	$ 1,600.00
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 1	Hatch	Aluminum	36 x 36						1/1/2000	$ 1,300.00
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 2	Aerator Moter, 40 HP								1/1/2000	
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 2	Soft Start, 40 HP								1/1/2000	$ 4,825.00
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 2	Aerator Gear Reducer								1/1/2000	
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 2	Mechnical Aerator								1/1/2000	$ 38,985.00
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 2	Hydrostatic Pressure Relief Valve, 4-in								1/1/2000	$ 376.00
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 2	Hydrostatic Pressure Relief Valve, 4-in								1/1/2000	$ 376.00
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 2	Hydrostatic Pressure Relief Valve, 4-in								1/1/2000	$ 376.00
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 2	Hydrostatic Pressure Relief Valve, 4-in								1/1/2000	$ 376.00
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 2	Hydrostatic Pressure Relief Valve, 4-in								1/1/2000	$ 376.00
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 2	Hydrostatic Pressure Relief Valve, 4-in								1/1/2000	$ 376.00
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 2	Hydrostatic Pressure Relief Valve, 4-in								1/1/2000	$ 376.00
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 2	Hydrostatic Pressure Relief Valve, 4-in								1/1/2000	$ 376.00
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 2	Hydrostatic Pressure Relief Valve, 4-in								1/1/2000	$ 376.00
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 2	Hydrostatic Pressure Relief Valve, 4-in								1/1/2000	$ 376.00
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 2	Hydrostatic Pressure Relief Valve, 4-in								1/1/2000	$ 376.00

Plant	Address	Structure/System	Equipment Description	Make	Model	Serial Number	Electrical	Capacity	Manufacturers Date	Condition	Install Date	2018 Equipment Cost
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 2	Hydrostatic Pressure Relief Valve, 4-in								1/1/2000	$ 376.00
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 2	Hydrostatic Pressure Relief Valve, 4-in								1/1/2000	$ 376.00
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 2	Hydrostatic Pressure Relief Valve, 4-in								1/1/2000	$ 376.00
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 2	Weir Gate	5'3" x 2.5'							1/1/2000	$ 5,000.00
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 2	Mud Valve, 8-in			3000					1/1/2000	$ 1,600.00
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 2	Mud Valve, 8-in			3000					1/1/2000	$ 1,600.00
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 2	Hatch	Aluminum	36 x 36						1/1/2000	$ 1,300.00
Mantua Wastewater Treatment Plant	Mats Road	Equilization Tank 1	Structure	Reinforced Concrete, 1.5' thick	20' x 45' x 17.25'			116135 gallons			1/1/2000	$ 174,000.00
Mantua Wastewater Treatment Plant	Mats Road	Equilization Tank 1	Diffusers	ss							1/1/2000	$ 3,500.00
Mantua Wastewater Treatment Plant	Mats Road	Equilization Tank 1	Butterfly Valve, 4-in Actuated								1/1/2000	$ 1,609.95
Mantua Wastewater Treatment Plant	Mats Road	Equilization Tank 1	Butterfly Valve, 4-in Actuated								1/1/2000	$ 1,609.95
Mantua Wastewater Treatment Plant	Mats Road	Equilization Tank 1	Butterfly Valve, 4-in Actuated								1/1/2000	$ 1,609.95
Mantua Wastewater Treatment Plant	Mats Road	Equilization Tank 2	Structure	Reinforced Concrete, 1.5' thick	20' x 45' x 17.25'			116135 gallons			1/1/2000	$ 174,000.00
Mantua Wastewater Treatment Plant	Mats Road	Equilization Tank 2	Butterfly Valve, 4-in Actuated								1/1/2000	$ 1,609.95
Mantua Wastewater Treatment Plant	Mats Road	Equilization Tank 2	Butterfly Valve, 4-in Actuated								1/1/2000	$ 1,609.95
Mantua Wastewater Treatment Plant	Mats Road	Equilization Tank 2	Butterfly Valve, 4-in Actuated								1/1/2000	$ 1,609.95
Mantua Wastewater Treatment Plant	Mats Road	Equilization Tank 2	Weir Gate		1.5' x 5'						1/1/2000	$ 5,000.00
Mantua Wastewater Treatment Plant	Mats Road	Equilization Tank 2	Diffusers	ss							1/1/2000	$ 3,500.00
Mantua Wastewater Treatment Plant	Mats Road	Aerobice Digestor Tank	Structure	Reinforced Concrete, 1.5' thick	20' x 45' x 17.25'			116135 gallons			1/1/2000	$ 174,000.00
Mantua Wastewater Treatment Plant	Mats Road	Aerobice Digestor Tank	Submersible Pump, X-in, X HP								1/1/2000	$ 3,700.00
Mantua Wastewater Treatment Plant	Mats Road	Aerobice Digestor Tank	Submersible Pump, X-in, X HP								1/1/2000	$ 3,700.00
Mantua Wastewater Treatment Plant	Mats Road	Aerobice Digestor Tank	Diffusers	ss							1/1/2000	$ 6,800.00
Mantua Wastewater Treatment Plant	Mats Road	Aerobice Digestor Tank	Plug Valve, 6-in								1/1/2000	$ 1,200.00
Mantua Wastewater Treatment Plant	Mats Road	Aerobice Digestor Tank	Plug Valve, 6-in								1/1/2000	$ 1,200.00
Mantua Wastewater Treatment Plant	Mats Road	Aerobice Digestor Tank	Ball Valve, 1-in								1/1/2000	$ 32.95
Mantua Wastewater Treatment Plant	Mats Road	Aerobice Digestor Tank	Air Lift, 4-in								1/1/2000	$ 4,400.00
Mantua Wastewater Treatment Plant	Mats Road	Aerobice Digestor Tank	Ball Valve, 3/4-in								1/1/2000	$ 23.95
Mantua Wastewater Treatment Plant	Mats Road	Valve Vault	Manhole, 5-ft Diameter	7' feet							1/1/2000	$ 5,000.00
Mantua Wastewater Treatment Plant	Mats Road	Valve Vault	Hatch	Aluminum							1/1/2000	$ 1,300.00
Mantua Wastewater Treatment Plant	Mats Road	Valve Vault	Manhole, 5-ft Diameter	7' feet							1/1/2000	$ 5,000.00
Mantua Wastewater Treatment Plant	Mats Road	Valve Vault	Hatch	Aluminum							1/1/2000	$ 1,300.00
Mantua Wastewater Treatment Plant	Mats Road	Valve Vault	Plug Valve, 6-in								1/1/2000	$ 1,200.00
Mantua Wastewater Treatment Plant	Mats Road	Valve Vault	Plug Valve, 6-in								1/1/2000	$ 1,200.00
Mantua Wastewater Treatment Plant	Mats Road	Valve Vault	Valve box								1/1/2000	$ 100.00
Mantua Wastewater Treatment Plant	Mats Road	Valve Vault	Valve box								1/1/2000	$ 100.00
Mantua Wastewater Treatment Plant	Mats Road	Valve Vault	Plug Valve, 4-in								1/1/2000	$ 900.00
Mantua Wastewater Treatment Plant	Mats Road	Valve Vault	Swing Check Valve, 4-in								1/1/2000	$ 1,100.00
Mantua Wastewater Treatment Plant	Mats Road	Blower Building	PD Blower	Gardner Denver Sutorbilt	GAHMCPA	S101534		1800 rpm			10/1/2012	$ 7,000.00
Mantua Wastewater Treatment Plant	Mats Road	Blower Building	PD Blower	Gardner Denver Sutorbilt	GAHMCPA	S100386		1800 rpm			1/1/2000	$ 7,000.00
Mantua Wastewater Treatment Plant	Mats Road	Blower Building	PD Blower	Gardner Denver Sutorbilt	GAHMCPA	S441164		1800 rpm			8/1/2014	$ 7,000.00
Mantua Wastewater Treatment Plant	Mats Road	Blower Building	Motor, 75 HP	Baldor	Super-E 365T, f class	C0103205190	230-460V. 3ph	1780 rpm	1992		1/1/2000	$ 6,934.00
Mantua Wastewater Treatment Plant	Mats Road	Blower Building	Motor, 75 HP	Baldor	Super-E 365T, f class	C0103275210	230-460V. 3ph	1780 rpm	1992		1/1/2000	$ 6,934.00
Mantua Wastewater Treatment Plant	Mats Road	Blower Building	Motor, 75 HP	Baldor	Super-E 365T, f class	C0103265185	230-460V. 3ph	1780 rpm	1992		1/1/2000	$ 6,934.00
Mantua Wastewater Treatment Plant	Mats Road	Blower Building	Inlet Silencer								1/1/2000	$ 852.95
Mantua Wastewater Treatment Plant	Mats Road	Blower Building	Inlet Silencer								1/1/2000	$ 852.95
Mantua Wastewater Treatment Plant	Mats Road	Blower Building	Inlet Silencer								1/1/2000	$ 852.95
Mantua Wastewater Treatment Plant	Mats Road	Blower Building	Discharge Silencer								1/1/2000	$ 2,519.95
Mantua Wastewater Treatment Plant	Mats Road	Blower Building	Discharge Silencer								1/1/2000	$ 2,519.95
Mantua Wastewater Treatment Plant	Mats Road	Blower Building	Discharge Silencer								1/1/2000	$ 2,519.95
Mantua Wastewater Treatment Plant	Mats Road	Blower Building	Flow Meter, X-in								1/1/2000	$ 8,000.00
Mantua Wastewater Treatment Plant	Mats Road	Blower Building	Building	Block, Split Face	20 x 32						1/1/2000	$ 160,000.00
Mantua Wastewater Treatment Plant	Mats Road	Blower Building	Roof	Shingles	20 x 32						1/1/2000	$ 32,000.00
Mantua Wastewater Treatment Plant	Mats Road	Blower Building	Heater, Gas	Modine	PV50AE-01-30		115 V, 1 Ph	50 mbh, 60 mbh			1/1/2000	$ 800.00
Mantua Wastewater Treatment Plant	Mats Road	Blower Building	Door, Double		5' x 7'2"						1/1/2000	$ 1,631.00
Mantua Wastewater Treatment Plant	Mats Road	Blower Building	Ventilation Louver	48" x 48"							1/1/2000	$ 1,172.00
Mantua Wastewater Treatment Plant	Mats Road	Blower Building	Ventilation, Exhaust Fan, 1/3 HP	Cook	100SQN-B		120 V, 1 ph	800 CFM			1/1/2000	$ 600.00
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Building	High Bay, Split Face CMU	20' x 20' x 23'						1/1/2000	$ 200,000.00
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Roof	asphalt Shingles	20 x 20						1/1/2000	$ 20,000.00
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Door, Single		3' x 7'2"						1/1/2000	$ 1,000.00
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Door, Single		3' x 7'2"						1/1/2000	$ 1,000.00
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Door, Single		3' x 7'2"						1/1/2000	$ 1,000.00

Plant	Address	Structure/System	Equipment Description	Make	Model	Serial Number	Electrical	Capacity	Manufacturers Date	Condition	Install Date	2018 Equipment Cost
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Furnace, gas	Carrier	58MXA-040-08		115 V, 1 Ph	600 cfm 40 MBH in/37 MBH o			1/1/2000	$ 1,155.00
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Make Up Air Unit, 1/2 HP	Greenheck	TSU-08		120 V, 1 ph	800 CFM			1/1/2000	$ 3,000.00
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Air Conditioner, 1.5 Ton	Carrier	38TKB-018-3		115 V, 1 PH	11 SEER			1/1/2000	$ 980.00
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Ventilation, Exhaust Fan	Cook	100SQN-B		120 V, 1 ph	800 CFM			1/1/2000	$ 600.00
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Ventilation Register	12" x 8"							1/1/2000	$ 4.00
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Ventilation Register	12" x 8"							1/1/2000	$ 4.00
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Water Heater, Electric	A.O. Smith			208 V, 1 Ph	10 gallon			1/1/2000	$ 648.00
Mantua Wastewater Treatment Plant	Mats Road	Clarifier Tank 1	Structure	Reinforced Concrete, 1' thick	30' diameter, 14'3"	75,751 gallons					1/1/2000	$ 114,000.00
Mantua Wastewater Treatment Plant	Mats Road	Clarifier Tank 1	Motor, 3/4 HP				480 V, 3 Ph				1/1/2000	$ 883.00
Mantua Wastewater Treatment Plant	Mats Road	Clarifier Tank 1	Sludge Collection System				480 V, 3 Ph				1/1/2000	$ 95,000.00
Mantua Wastewater Treatment Plant	Mats Road	Clarifier Tank 1	Hydrostatic Pressure Relief Valve, 4-in								1/1/2000	$ 376.00
Mantua Wastewater Treatment Plant	Mats Road	Clarifier Tank 1	Hydrostatic Pressure Relief Valve, 4-in								1/1/2000	$ 376.00
Mantua Wastewater Treatment Plant	Mats Road	Clarifier Tank 1	Hydrostatic Pressure Relief Valve, 4-in								1/1/2000	$ 376.00
Mantua Wastewater Treatment Plant	Mats Road	Clarifier Tank 1	Hydrostatic Pressure Relief Valve, 4-in								1/1/2000	$ 376.00
Mantua Wastewater Treatment Plant	Mats Road	Clarifier Tank 2	Structure	Reinforced Concrete, 1' thick	30' diameter	75,751 gallons					1/1/2000	$ 114,000.00
Mantua Wastewater Treatment Plant	Mats Road	Clarifier Tank 2	Motor, 3/4 HP				480 V, 3 Ph				1/1/2000	$ 883.00
Mantua Wastewater Treatment Plant	Mats Road	Clarifier Tank 2	Sludge Collection System								1/1/2000	$ 95,000.00
Mantua Wastewater Treatment Plant	Mats Road	Clarifier Tank 2	Hydrostatic Pressure Relief Valve, 4-in								1/1/2000	$ 376.00
Mantua Wastewater Treatment Plant	Mats Road	Clarifier Tank 2	Hydrostatic Pressure Relief Valve, 4-in								1/1/2000	$ 376.00
Mantua Wastewater Treatment Plant	Mats Road	Clarifier Tank 2	Hydrostatic Pressure Relief Valve, 4-in								1/1/2000	$ 376.00
Mantua Wastewater Treatment Plant	Mats Road	Clarifier Tank 2	Hydrostatic Pressure Relief Valve, 4-in								1/1/2000	$ 376.00
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Flow Splitter	Reinforced Concrete, 1' thick	16'x 20' x14.35'	34,350 gal					1/1/2000	$ 1,000.00
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Flow Splitter	Hatch, Aluminum	2'x3'						1/1/2000	$ 1,000.00
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Flow Splitter	Hatch, Aluminum	4'x4'						1/1/2000	$ 2,000.00
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Plug Valve, 6-in								1/1/2000	$ 1,200.00
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Plug Valve, 6-in								1/1/2000	$ 1,200.00
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Plug Valve, 6-in								1/1/2000	$ 1,200.00
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Plug Valve, 6-in								1/1/2000	$ 1,200.00
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Valve box								1/1/2000	$ 100.00
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Valve box								1/1/2000	$ 100.00
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Stop Plate	Aluminum, 1/4-in	50" x 22"						1/1/2000	$ 700.00
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Stop Plate	Aluminum, 1/4-in	50" x 22"						1/1/2000	$ 700.00
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Stop Plate	Aluminum, 1/4-in	50" x 22"						1/1/2000	$ 700.00
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Stop Plate	Aluminum, 1/4-in	50" x 22"						1/1/2000	$ 700.00
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	RAS Pump, x-in, 5 HP				480 V, 3 Ph				1/1/2000	$ 7,500.00
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	RAS Pump, x-in, 5 HP				480 V, 3 Ph				1/1/2000	$ 7,500.00
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	VFD, 5 HP				480 V, 3 Ph				1/1/2000	$ 800.00
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	VFD, 5 HP				480 V, 3 Ph				1/1/2000	$ 800.00
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	WAS Pump, x-in, 2 HP				480 V, 3 Ph				1/1/2000	$ 7,400.00
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	WAS Pump, X-in, 2 HP				480 V, 3 Ph				1/1/2000	$ 7,400.00
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Plug Valve, 10-in	was							1/1/2000	$ 2,200.00
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Plug Valve, 6-in	was							1/1/2000	$ 1,200.00
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Plug Valve, 6-in	was							1/1/2000	$ 1,200.00
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Plug Valve, 6-in	was							1/1/2000	$ 1,200.00
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Plug Valve, 6-in	was							1/1/2000	$ 1,200.00
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Plug Valve, 6-in, with stem	tank 1							1/1/2000	$ 1,200.00
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Plug Valve, 6-in, with stem	tank 2							1/1/2000	$ 1,200.00
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Plug Valve, 6-in	ras							1/1/2000	$ 1,200.00
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Plug Valve, 6-in	ras							1/1/2000	$ 1,200.00
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Plug Valve, 8-in	ras							1/1/2000	$ 1,600.00
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Plug Valve, 8-in	ras							1/1/2000	$ 1,600.00
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Plug Valve, 4-in	scum							1/1/2000	$ 900.00
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Swing Check Valve, 4-in	scum							1/1/2000	$ 1,100.00
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Swing Check Valve, 6-in	was							1/1/2000	$ 1,500.00
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Swing Check Valve, 6-in	was							1/1/2000	$ 1,500.00
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Swing Check Valve, 6-in	ras							1/1/2000	$ 1,500.00
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Swing Check Valve, 6-in	ras							1/1/2000	$ 1,500.00
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Sluice Gate, 8-in Flange Back								1/1/2000	$ 1,150.00
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Submersible Pump, 4-in, 5 HP, Scum								1/1/2000	$ 6,700.00

Plant	Address	Structure/System	Equipment Description	Make	Model	Serial Number	Electrical	Capacity	Manufacturers Date	Condition	Install Date	2018 Equipment Cost
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Scum Well								1/1/2000	$ 6,700.00
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Magmeter, 6-in, RAS Flow Meter								1/1/2000	$ 7,475.00
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Magmeter, 6-in, WAS Flow Meter								1/1/2000	$ 7,475.00
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Chemical Tank, HDPE	550 gal, 4' diameter x 6'							1/1/2000	$ 1,500.00
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Ball Valve, 2-in								1/1/2000	$ 132.95
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Pressure Reducing Valve, 3/4-in	pvc							1/1/2000	$ 128.00
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Ball Valve, 3/4-in	pvc							1/1/2000	$ 95.00
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Ball Valve, 3/4-in	pvc							1/1/2000	$ 44.95
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Ball Valve, 3/4-in	pvc							1/1/2000	$ 44.95
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Ball Valve, 3/4-in	pvc							1/1/2000	$ 44.95
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Ball Valve, 3/4-in	pvc							1/1/2000	$ 44.95
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Chemical Pump, metering								1/1/2000	$ 3,500.00
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Chemical Pump, metering								1/1/2000	$ 3,500.00
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Ball Valve, 1/2-in	pvc							1/1/2000	$ 45.95
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Ball Valve, 1/2-in	pvc							1/1/2000	$ 45.95
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Gate Valve, 1/2-in	pvc							1/1/2000	$ 23.37
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Gate Valve, 1/2-in	pvc							1/1/2000	$ 23.37
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Four-Way Valve, 1/2-in	pvc							1/1/2000	$ 100.00
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Four-Way Valve, 1/2-in	pvc							1/1/2000	$ 100.00
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Check Valve, 1/2-in	pvc							1/1/2000	$ 39.20
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Check Valve, 1/2-in	pvc							1/1/2000	$ 39.20
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Eyewash Station	HAWS #7261	Plastic bowl, twin head						1/1/2000	$ 635.00
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Sink, Laundry	Enamel, 4-leg self leveling							1/1/2000	$ 1,000.00
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Sump Pump, 2-in, 1/2 HP				115 V, 1 ph	20 gpm at 25 ft			1/1/2000	$ 440.00
Mantua Wastewater Treatment Plant	Mats Road	Sludge Holding Tanks	Structure	Reinforced Concrete, 1' thick	37.5' diameter x 16 ft			150,000 gallon			1/1/1960	$ 300,000.00
Mantua Wastewater Treatment Plant	Mats Road	Sludge Holding Tanks	Structure		37.5' diameter x 16 ft			150,000 gallon			1/1/1960	$ 300,000.00
Mantua Wastewater Treatment Plant	Mats Road	Sludge Holding Tanks	Plug Valve, 12-in								1/1/2000	$ 2,800.00
Mantua Wastewater Treatment Plant	Mats Road	Sludge Holding Tanks	Plug Valve, 6-in								1/1/2000	$ 1,200.00
Mantua Wastewater Treatment Plant	Mats Road	Sludge Holding Tanks	Plug Valve, 6-in								1/1/2000	$ 1,200.00
Mantua Wastewater Treatment Plant	Mats Road	Sludge Holding Tanks	Plug Valve, 6-in								1/1/2000	$ 1,200.00
Mantua Wastewater Treatment Plant	Mats Road	Sludge Holding Tanks	Plug Valve, 6-in								1/1/2000	$ 1,200.00
Mantua Wastewater Treatment Plant	Mats Road	Sludge Holding Tanks	Valve box								1/1/2000	$ 100.00
Mantua Wastewater Treatment Plant	Mats Road	Sludge Holding Tanks	Valve box								1/1/2000	$ 100.00
Mantua Wastewater Treatment Plant	Mats Road	Sludge Holding Tanks	Valve box								1/1/2000	$ 100.00
Mantua Wastewater Treatment Plant	Mats Road	Sludge Holding Tanks	Valve box								1/1/2000	$ 100.00
Mantua Wastewater Treatment Plant	Mats Road	Sludge Holding Tanks	Valve box								1/1/2000	$ 100.00
Mantua Wastewater Treatment Plant	Mats Road	Post Aeration	Structure	Reinforced Concrete, 1' thick	19' x 16' x 11'	25015 gallons					1/1/2000	$ 37,000.00
Mantua Wastewater Treatment Plant	Mats Road	Post Aeration	Plug Valve, 6-in								1/1/2000	$ 1,200.00
Mantua Wastewater Treatment Plant	Mats Road	Post Aeration	Plug Valve, 6-in								1/1/2000	$ 1,200.00
Mantua Wastewater Treatment Plant	Mats Road	Post Aeration	Diffusers								1/1/2000	$ 500.00
Mantua Wastewater Treatment Plant	Mats Road	Post Aeration	Butterfly Valve, 24-in								1/1/2000	$ 50,000.00
Mantua Wastewater Treatment Plant	Mats Road	Post Aeration	Sluice Gate, 20-in								1/1/2000	$ 5,000.00
Mantua Wastewater Treatment Plant	Mats Road	Post Aeration	Sump pump, X-in, X HP	Flgyt	Z-25		120 v, 1 ph	20 gpm at 15 ft			1/1/2000	$ 1,310.00
Mantua Wastewater Treatment Plant	Mats Road	Post Aeration	Stop Plate	Aluminum, 1/4-in	26" x 36"						1/1/2000	$ 700.00
Mantua Wastewater Treatment Plant	Mats Road	Post Aeration	Stop Plate	Aluminum, 1/4-in	26" x 51"						1/1/2000	$ 700.00
Mantua Wastewater Treatment Plant	Mats Road	Disinfection	Structure	Reinforced Concrete, 1' thick	57' x 7' x6'	19,908 galons					1/1/2000	$ 30,000.00
Mantua Wastewater Treatment Plant	Mats Road	Disinfection	UV, two banks								1/1/2000	$ 183,000.00
Mantua Wastewater Treatment Plant	Mats Road	Disinfection	UV Control Panel								1/1/2000	$ 2,000.00
Mantua Wastewater Treatment Plant	Mats Road	Disinfection	UV Sensor Panel								1/1/2000	
Mantua Wastewater Treatment Plant	Mats Road	Effluent Flow Meter	Magmeter, 14-in								1/1/2000	$ 10,000.00
Mantua Wastewater Treatment Plant	Mats Road	Outfall	Headwall	reinforce concrete, 24-in & 15-in							1/1/2000	$ 600.00
Mantua Wastewater Treatment Plant	Mats Road	Manhole	Manhole, 4 ft Diameter	Manhole SA-1							1/1/2000	$ 5,000.00
Mantua Wastewater Treatment Plant	Mats Road	Manhole	Manhole, 4 ft Diameter	Manhole SA-2							1/1/2000	$ 5,000.00
Mantua Wastewater Treatment Plant	Mats Road	Manhole	Manhole, 4 ft Diameter	Manhole SA-3							1/1/2000	$ 5,000.00
Mantua Wastewater Treatment Plant	Mats Road	Manhole	Manhole, 4 ft Diameter	Manhole SA-4							1/1/2000	$ 5,000.00
Mantua Wastewater Treatment Plant	Mats Road	Manhole	Manhole, 4 ft Diameter	Manhole SA-5							1/1/2000	$ 5,000.00
Mantua Wastewater Treatment Plant	Mats Road	Manhole	Manhole, 4 ft Diameter	Manhole SA-6							1/1/2000	$ 5,000.00
Mantua Wastewater Treatment Plant	Mats Road	Manhole	Manhole, 4 ft Diameter	Manhole SA-7							1/1/2000	$ 5,000.00
Mantua Wastewater Treatment Plant	Mats Road	Manhole Cover									1/1/2000	$ 400.00

Plant	Address	Structure/System	Equipment Description	Make	Model	Serial Number	Electrical	Capacity	Manufacturers Date	Condition	Install Date	2018 Equipment Cost
Mantua Wastewater Treatment Plant	Mats Road	Manhole Cover									1/1/2000	$ 400.00
Mantua Wastewater Treatment Plant	Mats Road	Manhole Cover									1/1/2000	$ 400.00
Mantua Wastewater Treatment Plant	Mats Road	Manhole Cover									1/1/2000	$ 400.00
Mantua Wastewater Treatment Plant	Mats Road	Manhole Cover									1/1/2000	$ 400.00
Mantua Wastewater Treatment Plant	Mats Road	Manhole Cover									1/1/2000	$ 400.00
Mantua Wastewater Treatment Plant	Mats Road	Manhole Cover									1/1/2000	$ 400.00
Mantua Wastewater Treatment Plant	Mats Road	Pump Station - STAMM	Sump pump, 1/3 HP								1/1/2000	$ 234.00
Mantua Wastewater Treatment Plant	Mats Road	Pump Station - STAMM	Level Control, Sealed Mercury Float, primary								1/1/2000	$ 514.00
Mantua Wastewater Treatment Plant	Mats Road	Pump Station - STAMM	Ventilation Blower, 1/6 HP								1/1/2000	$ 200.00
Mantua Wastewater Treatment Plant	Mats Road	Pump Station - STAMM	Heater,								1/1/2000	$ 700.00
Mantua Wastewater Treatment Plant	Mats Road	Pump Station - STAMM	Reprime Valve (Air Release)								1/1/2000	$ 1,200.00
Mantua Wastewater Treatment Plant	Mats Road	Pump Station - STAMM	Reprime Valve (Air Release)								1/1/2000	$ 1,200.00
Mantua Wastewater Treatment Plant	Mats Road	Pump Station - STAMM	Plug Valve, 4-in								1/1/2000	$ 1,200.00
Mantua Wastewater Treatment Plant	Mats Road	Pump Station - STAMM	Plug Valve, 4-in								1/1/2000	$ 900.00
Mantua Wastewater Treatment Plant	Mats Road	Pump Station - STAMM	Plug Valve, 4-in								1/1/2000	$ 900.00
Mantua Wastewater Treatment Plant	Mats Road	Pump Station - STAMM	Swing Check Valve, 4-in								1/1/2000	$ 1,100.00
Mantua Wastewater Treatment Plant	Mats Road	Pump Station - STAMM	Swing Check Valve, 4-in								1/1/2000	$ 1,100.00
Mantua Wastewater Treatment Plant	Mats Road	Pump Station - STAMM	SCADA System								1/1/2000	$ 6,500.00
Mantua Wastewater Treatment Plant	Mats Road	Pump Station - STAMM	Suction lift pump, 4-in	Hydromatic	40 MMP						1/1/2017	$ 5,048.00
Mantua Wastewater Treatment Plant	Mats Road	Pump Station - STAMM	Suction lift pump, 4-in	Hydromatic	40 MMP						1/1/2017	$ 5,048.00
Mantua Wastewater Treatment Plant	Mats Road	Pump Station - STAMM	Electrical Service								1/1/2000	$ 9,400.00
Mantua Wastewater Treatment Plant	Mats Road	Pump Station - STAMM	Pump Motor, 2 HP								1/1/2000	$ 700.00
Mantua Wastewater Treatment Plant	Mats Road	Pump Station - STAMM	Pump Motor, 2 HP								1/1/2000	$ 700.00
Mantua Wastewater Treatment Plant	Mats Road	Pump Station - STAMM	Suction Lines, 4-in								1/1/2000	$ 2,610.00
Mantua Wastewater Treatment Plant	Mats Road	Pump Station - STAMM	Dry Well								1/1/2000	$ 6,000.00
Mantua Wastewater Treatment Plant	Mats Road	Pump Station - STAMM	Hatch, Dry Well								1/1/2000	$ 1,117.00
Mantua Wastewater Treatment Plant	Mats Road	Pump Station - STAMM	Control Panel								1/1/2000	$ 12,200.00
Mantua Wastewater Treatment Plant	Mats Road	Pump Station - STAMM	Manhole Lid, Wet Well								1/1/2000	$ 500.00
Mantua Wastewater Treatment Plant	Mats Road	Pump Station - STAMM	Pipe Manifold, 4-in								1/1/2000	$ 3,500.00
Mantua Wastewater Treatment Plant	Mats Road	Pump Station - STAMM	Wet Well, 5 ft diameter								1/1/2000	$ 6,400.00
North River Pump Station	Main Street SR44	Pump Station	Sump pump, 1/3 HP								1/1/1994	$ 234.00
North River Pump Station	Main Street SR44	Pump Station	Level Control, Sealed Mercury Float, primary								1/1/1994	$ 520.00
North River Pump Station	Main Street SR44	Pump Station	Ventilation Blower, 1/6 HP								1/1/1994	$ 228.00
North River Pump Station	Main Street SR44	Pump Station	Heater,								1/1/1994	$ 700.00
North River Pump Station	Main Street SR44	Pump Station	Reprime Valve (Air Release)								1/1/1994	$ 576.00
North River Pump Station	Main Street SR44	Pump Station	Reprime Valve (Air Release)								1/1/1994	$ 576.00
North River Pump Station	Main Street SR44	Pump Station	Plug Valve, 4-in								1/1/1994	$ 900.00
North River Pump Station	Main Street SR44	Pump Station	Plug Valve, 4-in								1/1/1994	$ 900.00
North River Pump Station	Main Street SR44	Pump Station	Plug Valve, 6-in								1/1/1994	$ 900.00
North River Pump Station	Main Street SR44	Pump Station	Swing Check Valve, 4-in								1/1/1994	$ 1,100.00
North River Pump Station	Main Street SR44	Pump Station	Swing Check Valve, 4-in								1/1/1994	$ 1,100.00
North River Pump Station	Main Street SR44	Pump Station	SCADA System								1/1/1994	$ 6,500.00
North River Pump Station	Main Street SR44	Pump Station	Suction lift pump, 4-in								1/1/1994	$ 5,048.00
North River Pump Station	Main Street SR44	Pump Station	Suction lift pump, 4-in								1/1/1994	$ 5,048.00
North River Pump Station	Main Street SR44	Pump Station	Electrical Service	200 amp, 120/208V 3ph 4 wire							1/1/1994	$ 9,400.00
North River Pump Station	Main Street SR44	Pump Station	Pump Motor, 5 HP								1/1/1994	$ 900.00
North River Pump Station	Main Street SR44	Pump Station	Pump Motor, 5 HP								1/1/1994	$ 900.00
North River Pump Station	Main Street SR44	Pump Station	Magnetic flow meter, 4-in								1/1/1994	$ 5,888.00
North River Pump Station	Main Street SR44	Pump Station	Suction Lines, 4-in								1/1/1994	$ 2,610.00
North River Pump Station	Main Street SR44	Pump Station	Dry Well	Fiberglass Burried							1/1/1994	$ 6,000.00
North River Pump Station	Main Street SR44	Pump Station	Hatch, Dry Well								1/1/1994	$ 1,117.50
North River Pump Station	Main Street SR44	Pump Station	Control Panel								1/1/1994	$ 12,200.00
North River Pump Station	Main Street SR44	Pump Station	Manhole Lid, Wet Well								1/1/1994	$ 500.00
North River Pump Station	Main Street SR44	Pump Station	Pipe Manifold, 6-in								1/1/1994	$ 2,118.80
North River Pump Station	Main Street SR44	Pump Station	Wet Well, 6 ft diameter, with 4' access	9', 13'							1/1/1994	$ 12,000.00
Ambler Pump Station	Ambler Lane (10900)	Pump Station	Sump pump, 1/3 HP								1/1/1979	$ 234.00
Ambler Pump Station	Ambler Lane (10900)	Pump Station	Water Service								1/1/1979	$ 1,000.00
Ambler Pump Station	Ambler Lane (10900)	Pump Station	Level Control, Sealed Mercury Float, primary								1/1/1979	$ 517.17
Ambler Pump Station	Ambler Lane (10900)	Pump Station	Ventilation Blower, 1/6 HP								1/1/1979	$ 200.00

Plant	Address	Structure/System	Equipment Description	Make	Model	Serial Number	Electrical	Capacity	Manufacturers Date	Condition	Install Date	2018 Equipment Cost
Ambler Pump Station	Ambler Lane (10900)	Pump Station	Heater,								1/1/1979	$ 700.00
Ambler Pump Station	Ambler Lane (10900)	Pump Station	Reprime Valve (Air Release)								1/1/1979	$ 576.00
Ambler Pump Station	Ambler Lane (10900)	Pump Station	Reprime Valve (Air Release)								1/1/1979	$ 576.00
Ambler Pump Station	Ambler Lane (10900)	Pump Station	Plug Valve, 4-in								1/1/1979	$ 900.00
Ambler Pump Station	Ambler Lane (10900)	Pump Station	Plug Valve, 4-in								1/1/1979	$ 900.00
Ambler Pump Station	Ambler Lane (10900)	Pump Station	Plug Valve, 4-in								1/1/1979	$ 900.00
Ambler Pump Station	Ambler Lane (10900)	Pump Station	Swing Check Valve, 4-in								1/1/1979	$ 1,100.00
Ambler Pump Station	Ambler Lane (10900)	Pump Station	Swing Check Valve, 4-in								1/1/1979	$ 1,100.00
Ambler Pump Station	Ambler Lane (10900)	Pump Station	SCADA System								1/1/1979	$ 6,500.00
Ambler Pump Station	Ambler Lane (10900)	Pump Station	Suction lift pump, 4-in	Hydromatic	40 MPV	1004699		imp 9 5/32	0514		6/1/2014	$ 5,048.00
Ambler Pump Station	Ambler Lane (10900)	Pump Station	Suction lift pump, 4-in	Hydromatic	40 MPV			imp 9 5/32	0514		6/1/2014	$ 5,048.00
Ambler Pump Station	Ambler Lane (10900)	Pump Station	Electrical Service								1/1/1979	$ 9,400.00
Ambler Pump Station	Ambler Lane (10900)	Pump Station	Pump Motor, 15 HP	Century C	254T	LR4642	230/460 V 3Ph	1750			1/1/1979	$ 1,729.00
Ambler Pump Station	Ambler Lane (10900)	Pump Station	Pump Motor, 15 HP	Gould Centrury	254T		230/460 V 3Ph	1750			1/1/1979	$ 1,729.00
Ambler Pump Station	Ambler Lane (10900)	Pump Station	Suction Lines, 4-in								1/1/1979	$ 2,610.00
Ambler Pump Station	Ambler Lane (10900)	Pump Station	Dry Well	10' x 12' x 7'							1/1/1979	$ 22,680.00
Ambler Pump Station	Ambler Lane (10900)	Pump Station	Hatch, Dry Well	4' x 4'							1/1/1979	$ 1,600.00
Ambler Pump Station	Ambler Lane (10900)	Pump Station	Control Panel								1/1/1979	$ 12,200.00
Ambler Pump Station	Ambler Lane (10900)	Pump Station	Manhole Lid, Wet Well								1/1/1979	$ 500.00
Ambler Pump Station	Ambler Lane (10900)	Pump Station	Pipe Manifold, 4-in								1/1/1979	$ 2,118.00
Ambler Pump Station	Ambler Lane (10900)	Pump Station	Wet Well,	5' x 4' x 17'							1/1/1979	$ 9,000.00
Ambler Pump Station	Ambler Lane (10900)	Pump Station	Roto Phase								1/1/1979	$ 2,200.00
East High Street Park Pump Station	East High Street	Pump Station	Level Control, Sealed Mercury Float, primary								1/1/1998	$ 517.71
East High Street Park Pump Station	East High Street	Pump Station	**Submersible Grinder Pump, 1 1/4-in, 2 HP**	Myers	WG20						1/1/1998	$ 2,000.00
East High Street Park Pump Station	East High Street	Pump Station	Gate Valve, 2-in								1/1/1998	$ 175.00
East High Street Park Pump Station	East High Street	Pump Station	Control Panel								1/1/1998	$ 8,800.00
East High Street Park Pump Station	East High Street	Pump Station	Electrical Service								1/1/1998	$ 10,200.00
East High Street Park Pump Station	East High Street	Pump Station	Piping, 2 in								1/1/1998	$ 1,100.00
East High Street Park Pump Station	East High Street	Pump Station	Slide Rails and Chains								1/1/1998	$ 3,000.00
East High Street Park Pump Station	East High Street	Pump Station	Valve box and Cap, 5 1/4-in								1/1/1998	$ 100.00
East High Street Park Pump Station	East High Street	Pump Station	Wet Well, 4 ft diameter								1/1/1998	$ 4,000.00
East High Street Park Pump Station	East High Street	Pump Station	Manhole Lid, Wet Well								1/1/1998	$ 500.00
Mantua Wastewater Treatment Plant	Mill Street	Collection System	10-in	VCP	103						1966	$ 10,300.00
Mantua Wastewater Treatment Plant	Bramley Drive	Collection System	8-in	VCP	113						1967	$ 9,040.00
Mantua Wastewater Treatment Plant	Bramley Drive	Collection System	8-in	VCP	352						1967	$ 28,160.00
Mantua Wastewater Treatment Plant	E. First Street	Collection System	8-in	VCP	215						1967	$ 17,200.00
Mantua Wastewater Treatment Plant	E. First Street	Collection System	8-in	VCP	180						1967	$ 14,400.00
Mantua Wastewater Treatment Plant	E. First Street	Collection System	8-in	VCP	211						1967	$ 16,880.00
Mantua Wastewater Treatment Plant	E. Second Street	Collection System	8-in	VCP	130						1967	$ 10,400.00
Mantua Wastewater Treatment Plant	E. Second Street	Collection System	8-in	VCP	200						1967	$ 16,000.00
Mantua Wastewater Treatment Plant	Easement Mill Street	Collection System	10-in	CIP	110						1967	$ 11,000.00
Mantua Wastewater Treatment Plant	Easement Village W.W.T.P	Collection System	10-in	VCP	210						1967	$ 21,000.00
Mantua Wastewater Treatment Plant	Easement Village W.W.T.P	Collection System	12-in		165						1967	$ 19,800.00
Mantua Wastewater Treatment Plant	Easement Village W.W.T.P	Collection System	12-in		100						1967	$ 12,000.00
Mantua Wastewater Treatment Plant	Easement Village W.W.T.P	Collection System	12-in	VCP	90						1967	$ 10,800.00
Mantua Wastewater Treatment Plant	Easement Village W.W.T.P	Collection System	4-in	VCP FM	300						1967	$ 12,000.00
Mantua Wastewater Treatment Plant	Easement Village W.W.T.P	Collection System	4-in	CIP FM	360						1967	$ 14,400.00
Mantua Wastewater Treatment Plant	Oak Street	Collection System	8-in	VCP	275						1967	$ 22,000.00
Mantua Wastewater Treatment Plant	Elm Street	Collection System	8-in	VCP	227						1967	$ 18,160.00
Mantua Wastewater Treatment Plant	Elm Street	Collection System	8-in	VCP	115						1967	$ 9,200.00
Mantua Wastewater Treatment Plant	Franklin Street	Collection System	8-in	VCP	356						1967	$ 28,480.00
Mantua Wastewater Treatment Plant	Franklin Street	Collection System	8-in	VCP	368						1967	$ 29,440.00
Mantua Wastewater Treatment Plant	Franklin Street	Collection System	8-in	VCP	440						1967	$ 35,200.00
Mantua Wastewater Treatment Plant	Franklin Street	Collection System	8-in	VCP	355						1967	$ 28,400.00
Mantua Wastewater Treatment Plant	Herald Street	Collection System	8-in	VCP	278						1967	$ 22,240.00
Mantua Wastewater Treatment Plant	Herald Street	Collection System	8-in	VCP	168						1967	$ 13,440.00
Mantua Wastewater Treatment Plant	Herald Street	Collection System	8-in	VCP	385						1967	$ 30,800.00
Mantua Wastewater Treatment Plant	Herald Street	Collection System	6-in	VCP	300						1967	$ 18,000.00
Mantua Wastewater Treatment Plant	High Street	Collection System	8-in	CIP	40						1967	$ 3,200.00

Plant	Address	Structure/System	Equipment Description	Make	Model	Serial Number	Electrical	Capacity	Manufacturers Date	Condition	Install Date	2018 Equipment Cost
Mantua Wastewater Treatment Plant	High Street	Collection System	8-in	VCP	245						1967	$ 19,600.00
Mantua Wastewater Treatment Plant	High Street	Collection System	8-in	VCP	165						1967	$ 13,200.00
Mantua Wastewater Treatment Plant	High Street	Collection System	8-in	VCP	211						1967	$ 16,880.00
Mantua Wastewater Treatment Plant	High Street	Collection System	8-in	VCP	516						1967	$ 41,280.00
Mantua Wastewater Treatment Plant	High Street	Collection System	6-in	VCP	249.5						1967	$ 14,970.00
Mantua Wastewater Treatment Plant	High Street	Collection System	8-in	VCP	326.5						1967	$ 26,120.00
Mantua Wastewater Treatment Plant	High Street	Collection System	8-in	VCP	248						1967	$ 19,840.00
Mantua Wastewater Treatment Plant	High Street	Collection System	8-in	VCP	260						1967	$ 20,800.00
Mantua Wastewater Treatment Plant	High Street	Collection System	8-in	VCP	372						1967	$ 29,760.00
Mantua Wastewater Treatment Plant	High Street	Collection System	8-in	VCP	252						1967	$ 20,160.00
Mantua Wastewater Treatment Plant	High School	Collection System	6-in	VCP	573						1967	$ 34,380.00
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	8-in	VCP	199						1967	$ 15,920.00
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	8-in	VCP	211						1967	$ 16,880.00
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	8-in	VCP	152						1967	$ 12,160.00
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	8-in	VCP	149						1967	$ 11,920.00
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	8-in	VCP	414						1967	$ 33,120.00
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	8-in	VCP	442						1967	$ 35,360.00
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	8-in	VCP	220						1967	$ 17,600.00
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	8-in	VCP	216						1967	$ 17,280.00
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	10-in	VCP	281						1967	$ 28,100.00
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	10-in	VCP	568						1967	$ 56,800.00
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	10-in	VCP	157						1967	$ 15,700.00
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	10-in	VCP	172						1967	$ 17,200.00
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	10-in	VCP	82						1967	$ 8,200.00
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	8-in	CIP	369						1967	$ 29,520.00
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	8-in	CIP	149						1967	$ 11,920.00
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	6-in	CIP/FM	290						1967	$ 17,400.00
Mantua Wastewater Treatment Plant	Maple Street	Collection System	8-in	VCP	115						1967	$ 9,200.00
Mantua Wastewater Treatment Plant	Maple Street	Collection System	8-in	VCP	207						1967	$ 16,560.00
Mantua Wastewater Treatment Plant	Orchard Street	Collection System	10-in	VCP	169						1967	$ 16,900.00
Mantua Wastewater Treatment Plant	Park Street	Collection System	8-in	VCP	448						1967	$ 35,840.00
Mantua Wastewater Treatment Plant	Park Street	Collection System	8-in	VCP	380						1967	$ 30,400.00
Mantua Wastewater Treatment Plant	Prospect Street	Collection System	8-in	VCP	675						1967	$ 54,000.00
Mantua Wastewater Treatment Plant	Prospect Street	Collection System	8-in	VCP	817						1967	$ 65,360.00
Mantua Wastewater Treatment Plant	Prospect Street	Collection System	8-in	VCP	270						1967	$ 21,600.00
Mantua Wastewater Treatment Plant	Prospect Street	Collection System	8-in	VCP	440						1967	$ 35,200.00
Mantua Wastewater Treatment Plant	Prospect Street	Collection System	8-in	VCP	374						1967	$ 29,920.00
Mantua Wastewater Treatment Plant	Prospect Street	Collection System	8-in	VCP	135						1967	$ 10,800.00
Mantua Wastewater Treatment Plant	Prospect Street	Collection System	8-in	VCP	234						1967	$ 18,720.00
Mantua Wastewater Treatment Plant	Prospect Street	Collection System	8-in	VCP	217						1967	$ 17,360.00
Mantua Wastewater Treatment Plant	Prospect Street	Collection System	10-in	VCP	151						1967	$ 15,100.00
Mantua Wastewater Treatment Plant	Prospect Street	Collection System	10-in	VCP	230						1967	$ 23,000.00
Mantua Wastewater Treatment Plant	Prospect Street	Collection System	8-in	VCP	360						1967	$ 28,800.00
Mantua Wastewater Treatment Plant	Regan Street	Collection System	8-in	VCP	581						1972	$ 46,480.00
Mantua Wastewater Treatment Plant	Regan Street	Collection System	8-in	VCP	400						1972	$ 32,000.00
Mantua Wastewater Treatment Plant	Regan Street	Collection System	8-in	ESC	110						1972	$ 8,800.00
Mantua Wastewater Treatment Plant	Regan Street	Collection System	8-in	ESC	265						1972	$ 21,200.00
Mantua Wastewater Treatment Plant	Regan Street	Collection System	8-in	ESC	209						1972	$ 16,720.00
Mantua Wastewater Treatment Plant	Resevoir Drive	Collection System	8-in	VCP	104						1967	$ 8,320.00
Mantua Wastewater Treatment Plant	Resevoir Drive	Collection System	8-in	VCP	995						1967	$ 79,600.00
Mantua Wastewater Treatment Plant	Walnut Street	Collection System	8-in	VCP	504						1967	$ 40,320.00
Mantua Wastewater Treatment Plant	Walnut Street	Collection System	8-in	VCP	372						1967	$ 29,760.00
Mantua Wastewater Treatment Plant	Woodford Street	Collection System	8-in	VCP	480						1967	$ 38,400.00
Mantua Wastewater Treatment Plant	Woodford Street	Collection System	8-in	VCP	372						1967	$ 29,760.00
Mantua Wastewater Treatment Plant	Line Street	Collection System	8-in	PVC	304						1983	$ 24,320.00
Mantua Wastewater Treatment Plant	Line Street	Collection System	8-in	PVC	105						1983	$ 8,400.00
Mantua Wastewater Treatment Plant	Line Street	Collection System	8-in	PVC	89						1983	$ 7,120.00
Mantua Wastewater Treatment Plant	Line Street	Collection System	8-in	PVC	142						1983	$ 11,360.00
Mantua Wastewater Treatment Plant	Line Street	Collection System	8-in	PVC	115						1983	$ 9,200.00

Plant	Address	Structure/System	Equipment Description	Make	Model	Serial Number	Electrical	Capacity	Manufacturers Date	Condition	Install Date	2018 Equipment Cost
Mantua Wastewater Treatment Plant	Line Street	Collection System	8-in	PVC	136						1983	$ 10,880.00
Mantua Wastewater Treatment Plant	Mats Road	Collection System	8-in	PVC	100						1983	$ 8,000.00
Mantua Wastewater Treatment Plant	Mats Road	Collection System	8-in	PVC	150						1983	$ 12,000.00
Mantua Wastewater Treatment Plant	Mats Road	Collection System	8-in	PVC	397						1983	$ 31,760.00
Mantua Wastewater Treatment Plant	Mats Road	Collection System	8-in	PVC	237						1983	$ 18,960.00
Mantua Wastewater Treatment Plant	Mats Road	Collection System	8-in	PVC	215						1983	$ 17,200.00
Mantua Wastewater Treatment Plant	Orchard Street	Collection System	8-in	PVC							1983	$ -
Mantua Wastewater Treatment Plant	Orchard Street	Collection System	8-in	PVC	100						1983	$ 8,000.00
Mantua Wastewater Treatment Plant	Orchard Street	Collection System	8-in	PVC	216						1983	$ 17,280.00
Mantua Wastewater Treatment Plant	Orchard Street	Collection System	8-in	PVC	274						1983	$ 21,920.00
Mantua Wastewater Treatment Plant	Ambler Lane/Glenwood Drive	Collection System	4-in	PVC FM	800						1979	$ 32,000.00
Mantua Wastewater Treatment Plant	Easement Village W.W.T.P	Collection System	6-in	PVC FM	890						1994	$ 53,400.00
Mantua Wastewater Treatment Plant	Easement Mill Street	Collection System	12-in	PVC	70						2000	$ 8,400.00
Mantua Wastewater Treatment Plant	Easement Mill Street	Collection System	12-in	PVC	400						2000	$ 48,000.00
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	12-in	PVC	271						2000	$ 32,520.00
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	12-in	PVC	212						2000	$ 25,440.00
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	12-in	PVC	50						2000	$ 6,000.00
Mantua Wastewater Treatment Plant	Mill Street	Collection System	12-in	PVC	254						2000	$ 30,480.00
Mantua Wastewater Treatment Plant	Mill Street	Collection System	12-in	PVC	283						2000	$ 33,960.00
Mantua Wastewater Treatment Plant	Mill Street	Collection System	12-in	PVC	283						2000	$ 33,960.00
Mantua Wastewater Treatment Plant	St. Joseph Drive	Collection System	8-in	VCP	299						1967	$ 23,920.00
Mantua Wastewater Treatment Plant	St. Joseph Drive	Collection System	8-in	VCP	220						1967	$ 17,600.00
Mantua Wastewater Treatment Plant	St. Joseph Drive	Collection System	8-in	VCP	1420						1967	$ 113,600.00
Mantua Wastewater Treatment Plant	Woodford Street	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	High Street	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	High Street	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	Herald Street	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	Walnut Street	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	Herald Street	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	Herald Street	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	Walnut Street	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	High Street	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	Prospect Street	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	Woodford Street	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	Woodford Street	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	Park Street	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	Park Street	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	High Street	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	High Street	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	High Street	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	Prospect Drive/Maple	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	Prospect Drive/Elm	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	Prospect Street	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	Easement West of Main Stree	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	Prospect Street	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	Prospect Street	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	High Street	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	High Street	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	High Street	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	Resevoir Drive	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	Bramley Drive	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	Bramley Drive	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	Resevoir Drive	Collection System	Manhole, 4 ft								1967	$ 5,000.00

Plant	Address	Structure/System	Equipment Description	Make	Model	Serial Number	Electrical	Capacity	Manufacturers Date	Condition	Install Date	2018 Equipment Cost
Mantua Wastewater Treatment Plant	High Street	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	High Street	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	High Street	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	Franklin Street	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	Franklin Street	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	Franklin Street	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	Franklin Street	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	Grand Elm Street	Collection System	Manhole, 4 ft								1977	$ 5,000.00
Mantua Wastewater Treatment Plant	Glenwood Drive	Collection System	Manhole, 4 ft								1979	$ 5,000.00
Mantua Wastewater Treatment Plant	Glenwood Drive	Collection System	Manhole, 4 ft								1979	$ 5,000.00
Mantua Wastewater Treatment Plant	Glenwood Drive	Collection System	Manhole, 4 ft								1979	$ 5,000.00
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	Glenwood Drive	Collection System	Manhole, 4 ft								2004	$ 5,000.00
Mantua Wastewater Treatment Plant	Glenwood Drive	Collection System	Manhole, 4 ft								2004	$ 5,000.00
Mantua Wastewater Treatment Plant	Glenwood Drive	Collection System	Manhole, 4 ft								2004	$ 5,000.00
Mantua Wastewater Treatment Plant	Ambler Lane	Collection System	Manhole, 4 ft								2004	$ 5,000.00
Mantua Wastewater Treatment Plant	Ambler Lane	Collection System	Manhole, 4 ft								2004	$ 5,000.00
Mantua Wastewater Treatment Plant	Ambler Lane	Collection System	Manhole, 4 ft								1977	$ 5,000.00
Mantua Wastewater Treatment Plant	St. Joseph Drive	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	St. Joseph Drive	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	Easement West of Main Stree	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	St. Joseph Drive	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	St. Joseph Drive	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	St. Joseph Drive	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	High Street	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	E. First Street	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	Mill Street	Collection System	Manhole, 4 ft								2000	$ 5,000.00
Mantua Wastewater Treatment Plant	Mill Street	Collection System	Manhole, 4 ft								2000	$ 5,000.00
Mantua Wastewater Treatment Plant	Easement Mill Street	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	Easement Mill Street	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	Prospect Street	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	Prospect Street	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	Prospect Street	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	E. Second Street	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	E. Second Street	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	E. First Street	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	E. First Street	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	Prospect Street	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	Prospect Street	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	Mill Street	Collection System	Manhole, 4 ft								2000	$ 5,000.00
Mantua Wastewater Treatment Plant	Mill Street	Collection System	Manhole, 4 ft								2000	$ 5,000.00
Mantua Wastewater Treatment Plant	Regan Street	Collection System	Manhole, 4 ft								1972	$ 5,000.00
Mantua Wastewater Treatment Plant	Line Street	Collection System	Manhole, 4 ft								1983	$ 5,000.00
Mantua Wastewater Treatment Plant	Mats Road	Collection System	Manhole, 4 ft								1983	$ 5,000.00
Mantua Wastewater Treatment Plant	Mats Road	Collection System	Manhole, 4 ft								1983	$ 5,000.00
Mantua Wastewater Treatment Plant	Mats Road	Collection System	Manhole, 4 ft								1983	$ 5,000.00
Mantua Wastewater Treatment Plant	Mats Road	Collection System	Manhole, 4 ft								1983	$ 5,000.00
Mantua Wastewater Treatment Plant	Mats Road	Collection System	Manhole, 4 ft								1983	$ 5,000.00
Mantua Wastewater Treatment Plant	Orchard Street	Collection System	Manhole, 4 ft								1983	$ 5,000.00
Mantua Wastewater Treatment Plant	Orchard Street	Collection System	Manhole, 4 ft								1983	$ 5,000.00

Plant	Address	Structure/System	Equipment Description	Make	Model	Serial Number	Electrical	Capacity	Manufacturers Date	Condition	Install Date	2018 Equipment Cost
Mantua Wastewater Treatment Plant	Orchard Street	Collection System	Manhole, 4 ft								1983	$ 5,000.00
Mantua Wastewater Treatment Plant	Easement Village W.W.T.P	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	Regan Street	Collection System	Manhole, 4 ft								1972	$ 5,000.00
Mantua Wastewater Treatment Plant	Easement Village W.W.T.P	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	Easement Village W.W.T.P	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	Easement Village W.W.T.P	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	Easement Village W.W.T.P	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	Orchard Street	Collection System	Manhole, 4 ft								1983	$ 5,000.00
Mantua Wastewater Treatment Plant	Orchard Street	Collection System	Manhole, 4 ft								1983	$ 5,000.00
Mantua Wastewater Treatment Plant	Orchard Street	Collection System	Manhole, 4 ft								1983	$ 5,000.00
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	Manhole, 4 ft								2000	$ 5,000.00
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	Manhole, 4 ft								2000	$ 5,000.00
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	Manhole, 4 ft								2000	$ 5,000.00
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	Manhole, 4 ft								2000	$ 5,000.00
Mantua Wastewater Treatment Plant	Regan Street	Collection System	Manhole, 4 ft								1972	$ 5,000.00
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	Manhole, 4 ft								1967	$ 5,000.00
Mantua Wastewater Treatment Plant	Regan Street	Collection System	Manhole, 4 ft								1972	$ 5,000.00
Mantua Wastewater Treatment Plant	Line Street	Collection System	Manhole, 4 ft								1983	$ 5,000.00
Mantua Wastewater Treatment Plant	Line Street	Collection System	Manhole, 4 ft								1983	$ 5,000.00
Mantua Wastewater Treatment Plant	Line Street	Collection System	Manhole, 4 ft								1983	$ 5,000.00
Mantua Wastewater Treatment Plant	Line Street	Collection System	Manhole, 4 ft								1983	$ 5,000.00
Mantua Wastewater Treatment Plant	Line Street	Collection System	Manhole, 4 ft								1983	$ 5,000.00
Mantua Wastewater Treatment Plant	Line Street	Collection System	Manhole, 4 ft								1983	$ 5,000.00
Mantua Wastewater Treatment Plant	Ambler Lane	Collection System	8-in	PVC	322						1977	$ 25,760.00
Mantua Wastewater Treatment Plant	Ambler Lane	Collection System	8-in	PVC	287						1977	$ 22,960.00
Mantua Wastewater Treatment Plant	Ambler Lane	Collection System	8-in	PVC	94						1977	$ 7,520.00
Mantua Wastewater Treatment Plant	Ambler Lane	Collection System	8-in	PVC	71						1977	$ 5,680.00
Mantua Wastewater Treatment Plant	Easement Glenwood Drive	Collection System	6-in	PVC	69						1977	$ 4,140.00
Mantua Wastewater Treatment Plant	Easement Glenwood Drive	Collection System	6-in	PVC	305						1977	$ 18,300.00
Mantua Wastewater Treatment Plant	Easement Glenwood Drive	Collection System	6-in	PVC	145						1977	$ 8,700.00
Mantua Wastewater Treatment Plant	Glenwood Drive	Collection System	6-in	PVC	71						1977	$ 4,260.00
Mantua Wastewater Treatment Plant	Grand Elm Drive	Collection System	6-in	PVC	339						1977	$ 20,340.00

Appendix C

CIP Budgeting Spreadsheet

Plant	Address	Structure/System	Equipment Description	Make	Model	Install Date	2018 Equipment Cost	Age	PCWR Estimated Life	Projected End of Life	% Residual Life	Project Year	Estimated Equipment Repair Cost	1 st Repeated Repair Year	Projected Cost	2nd Repeated Repair Year	Projected Cost	3rd Repeated Repair Year	Projected Cost	4th Repeated Repair Year	Projected Cost	5th Repeated Repair Year	Projected Cost	6th Repeated Repair Year	Projected Cost
Mantua Water Treatment Plant	Mats Road	Driveway	Driveway, Concrete	6620 ft2		1/1/1997	$ 66,200.00	21	40	2037	48%	2037	$ 116,082.10	2077	-	2117	-	2157	-	2197	-	2237	-	2277	-
Mantua Water Treatment Plant	Mats Road	Fence	Fence, Wood	7 foot	120 ft	1/1/1997	$ 7,200.00	21	20	2017	-5%	2019	$ 7,416.00	2039	$ 13,394.12	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	SCADA				1/1/2015	$ 6,695.00	3	20	2035	85%	2035	$ 11,065.81	2055	-	2075	-	2095	-	2115	-	2135	-	2155	-
Mantua Water Treatment Plant	Mats Road	Electrical Service				1/1/1997	$ 19,600.00	21	50	2047	58%	2047	$ 46,188.68	2097	-	2147	-	2197	-	2247	-	2297	-	2347	-
Mantua Water Treatment Plant	Mats Road	Gas Service				1/1/1997	$ 1,000.00	21	75	2072	72%	2072	-	2147	-	2222	-	2297	-	2372	-	2447	-	2522	-
Mantua Water Treatment Plant	Mats Road	Backup Power	Generator, Diesel	Kohler	Kohler 150	1/1/1997	$ 49,800.00	21	40	2037	48%	2037	$ 87,324.60	2077	-	2117	-	2157	-	2197	-	2237	-	2277	-
Mantua Water Treatment Plant	Mats Road	Backup Power	Transfer Switch			1/1/1997	$ 5,000.00	21	20	2017	-5%	2019	$ 5,150.00	2039	$ 9,301.47	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	Building		3236.3 ft2		1/1/1997	$ 809,000.00	21	100	2097	21%	2097	-	2197	-	2297	-	2397	-	2497	-	2597	-	2697	-
Mantua Water Treatment Plant	Mats Road	Roof		3236.3 ft2		1/1/1997	$ 161,800.00	21	20	2017	-5%	2019	$ 166,654.00	2039	$ 300,995.66	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	High Service Pumps	Butterfly Valve, 6-in			1/1/1997	$ 1,347.00	21	35	2032	40%	2032	$ 2,037.46	2067	-	2102	-	2137	-	2172	-	2207	-	2242	-
Mantua Water Treatment Plant	Mats Road	High Service Pumps	Butterfly Valve, 6-in			1/1/1997	$ 1,347.00	21	35	2032	40%	2032	$ 2,037.46	2067	-	2102	-	2137	-	2172	-	2207	-	2242	-
Mantua Water Treatment Plant	Mats Road	High Service Pumps	Butterfly Valve, 6-in			1/1/1997	$ 1,347.00	21	35	2032	40%	2032	$ 2,037.46	2067	-	2102	-	2137	-	2172	-	2207	-	2242	-
Mantua Water Treatment Plant	Mats Road	Backwash Pump	Butterfly Valve, 6-in			1/1/1997	$ 1,347.00	21	35	2032	40%	2032	$ 2,037.46	2067	-	2102	-	2137	-	2172	-	2207	-	2242	-
Mantua Water Treatment Plant	Mats Road	Backwash Pump	Butterfly Valve, 6-in			1/1/1997	$ 1,347.00	21	35	2032	40%	2032	$ 2,037.46	2067	-	2102	-	2137	-	2172	-	2207	-	2242	-
Mantua Water Treatment Plant	Mats Road	High Service Pumps	Butterfly Valve, 12-in			1/1/1997	$ 2,617.00	21	35	2032	40%	2032	$ 3,958.45	2067	-	2102	-	2137	-	2172	-	2207	-	2242	-
Mantua Water Treatment Plant	Mats Road	High Service Pumps	Butterfly Valve, 12-in			1/1/1997	$ 2,617.00	21	35	2032	40%	2032	$ 3,958.45	2067	-	2102	-	2137	-	2172	-	2207	-	2242	-
Mantua Water Treatment Plant	Mats Road	High Service Pumps	Butterfly Valve, 12-in			1/1/1997	$ 2,617.00	21	35	2032	40%	2032	$ 3,958.45	2067	-	2102	-	2137	-	2172	-	2207	-	2242	-
Mantua Water Treatment Plant	Mats Road	High Service Pumps	Hydraulic Check Valve, 6-in	Ross Control Valve	40WR	1/1/1997	$ 4,472.00	21	20	2017	-5%	2019	$ 4,606.16	2039	$ 8,319.24	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	High Service Pumps	Hydraulic Check Valve, 6-in	Ross Control Valve	40WR	1/1/1997	$ 4,472.00	21	20	2017	-5%	2019	$ 4,606.16	2039	$ 8,319.24	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	High Service Pumps	Hydraulic Check Valve, 6-in	Ross Control Valve	40WR	1/1/1997	$ 4,472.00	21	20	2017	-5%	2019	$ 4,606.16	2039	$ 8,319.24	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	Backwash Pump	Swing Check Valve, 6-in			1/1/1997	$ 6,551.00	21	20	2017	-5%	2019	$ 6,747.53	2039	$ 12,186.79	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	Backwash Pump	Swing Check Valve, 6-in			1/1/1997	$ 6,551.00	21	20	2017	-5%	2019	$ 6,747.53	2039	$ 12,186.79	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	Conference	Door			1/1/1997	$ 700.00	21	20	2017	-5%	2019	$ 721.00	2039	$ 1,302.21	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	Entrance	Door			1/1/1997	$ 700.00	21	20	2017	-5%	2019	$ 721.00	2039	$ 1,302.21	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	Bathroom	Door			1/1/1997	$ 700.00	21	20	2017	-5%	2019	$ 721.00	2039	$ 1,302.21	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	Control	Door			1/1/1997	$ 700.00	21	20	2017	-5%	2019	$ 721.00	2039	$ 1,302.21	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	Permanganate	Door			1/1/1997	$ 700.00	21	20	2017	-5%	2019	$ 721.00	2039	$ 1,302.21	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	Electrical	Door			1/1/1997	$ 700.00	21	20	2017	-5%	2019	$ 721.00	2039	$ 1,302.21	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	Chlorine	Door			1/1/1997	$ 700.00	21	20	2017	-5%	2019	$ 721.00	2039	$ 1,302.21	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	Process	Door			1/1/1997	$ 700.00	21	20	2017	-5%	2019	$ 721.00	2039	$ 1,302.21	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	Process	Door			1/1/1997	$ 700.00	21	20	2017	-5%	2019	$ 721.00	2039	$ 1,302.21	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	Conference	Window			1/1/1997	$ 600.00	21	50	2047	58%	2047	$ 1,413.94	2097	-	2147	-	2197	-	2247	-	2297	-	2347	-
Mantua Water Treatment Plant	Mats Road	Conference	Window			1/1/1997	$ 600.00	21	50	2047	58%	2047	$ 1,413.94	2097	-	2147	-	2197	-	2247	-	2297	-	2347	-
Mantua Water Treatment Plant	Mats Road	Chlorine	Window			1/1/1997	$ 600.00	21	50	2047	58%	2047	$ 1,413.94	2097	-	2147	-	2197	-	2247	-	2297	-	2347	-
Mantua Water Treatment Plant	Mats Road	Control	Window			1/1/1997	$ 600.00	21	50	2047	58%	2047	$ 1,413.94	2097	-	2147	-	2197	-	2247	-	2297	-	2347	-
Mantua Water Treatment Plant	Mats Road	Process	Overhead Door	12' x12'		1/1/1997	$ 1,200.00	21	20	2017	-5%	2019	$ 1,236.00	2039	$ 2,232.35	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	Entrance	Window			1/1/1997	$ 600.00	21	50	2047	58%	2047	$ 1,413.94	2097	-	2147	-	2197	-	2247	-	2297	-	2347	-
Mantua Water Treatment Plant	Mats Road	Entrance	Window			1/1/1997	$ 600.00	21	50	2047	58%	2047	$ 1,413.94	2097	-	2147	-	2197	-	2247	-	2297	-	2347	-
Mantua Water Treatment Plant	Mats Road	Ventilation Louver		16" x 32"		1/1/1997	$ 400.00	21	100	2097	79%	2097	-	2197	-	2297	-	2397	-	2497	-	2597	-	2697	-
Mantua Water Treatment Plant	Mats Road	Ventilation Louver		24" X 40"		1/1/1997	$ 478.00	21	100	2097	79%	2097	-	2197	-	2297	-	2397	-	2497	-	2597	-	2697	-
Mantua Water Treatment Plant	Mats Road	Ventilation Louver		24" X 40"		1/1/1997	$ 478.00	21	100	2097	79%	2097	-	2197	-	2297	-	2397	-	2497	-	2597	-	2697	-
Mantua Water Treatment Plant	Mats Road	Ventilation Louver		24" X 40"		1/1/1997	$ 478.00	21	100	2097	79%	2097	-	2197	-	2297	-	2397	-	2497	-	2597	-	2697	-
Mantua Water Treatment Plant	Mats Road	Well No. 1	Submersible Pump, 6-in, 10 HP			1/1/1997	$ 10,000.00	21	15	2012	-40%	2019	$ 10,300.00	2034	$ 240,705.97	2049	$ 375,012.05	2064	-	2079	-	2094	-	2109	-
Mantua Water Treatment Plant	Mats Road	Well No. 1	Control Panel			1/1/1997	$ 2,000.00	21	20	2017	-5%	2019	$ 2,060.00	2039		2059		2079		2099		2119		2139	
Mantua Water Treatment Plant	Mats Road	Well No. 1	Well, 10-in	98 ft		1/1/1997	$ 150,000.00	21	35	2032	40%	2032	$ 226,888.46	2067		2102		2137		2172		2207		2242	
Mantua Water Treatment Plant	Mats Road	Well No. 1	Isolation valve, 6-in			1/1/1997	$ 1,550.00	21	35	2032	40%	2032	$ 2,344.51	2067		2102		2137		2172		2207		2242	
Mantua Water Treatment Plant	Mats Road	Well No. 1	Isolation valve, 6-in			1/1/1997	$ 1,550.00	21	35	2032	40%	2032	$ 2,344.51	2067		2102		2137		2172		2207		2242	
Mantua Water Treatment Plant	Mats Road	Well No. 1	Valve Box			1/1/1997	$ 100.00	21	50	2047	58%	2047	$ 235.66	2097	-	2147	-	2197	-	2247	-	2297	-	2347	-
Mantua Water Treatment Plant	Mats Road	Well No. 1	Valve Box			1/1/1997	$ 100.00	21	50	2047	58%	2047	$ 235.66	2097	-	2147	-	2197	-	2247	-	2297	-	2347	-
Mantua Water Treatment Plant	Mats Road	Well No. 2	Submersible Pump, 6-in, 10 HP			1/1/1997	$ 10,000.00	21	15	2012	-40%	2019	$ 10,300.00	2034	$ 16,047.06	2049	$ 25,000.80	2064	-	2079	-	2094	-	2109	-
Mantua Water Treatment Plant	Mats Road	Well No. 2	Control Panel			1/1/1997	$ 2,000.00	21	20	2017	-5%	2019	$ 2,060.00	2039	$ 3,720.59	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	Well No. 2	Well, 10-in			1/1/1997	$ 150,000.00	21	35	2032	40%	2032	$ 226,888.46	2067	-	2102	-	2137	-	2172	-	2207	-	2242	-
Mantua Water Treatment Plant	Mats Road	Well No. 2	Isolation valve, 6-in			1/1/1997	$ 1,550.00	21	35	2032	40%	2032	$ 2,344.51	2067	-	2102	-	2137	-	2172	-	2207	-	2242	-
Mantua Water Treatment Plant	Mats Road	Well No. 2	Isolation valve, 6-in			1/1/1997	$ 1,550.00	21	35	2032	40%	2032	$ 2,344.51	2067	-	2102	-	2137	-	2172	-	2207	-	2242	-
Mantua Water Treatment Plant	Mats Road	Well No. 2	Valve Box			1/1/1997	$ 100.00	21	50	2047	58%	2047	$ 235.66	2097	-	2147	-	2197	-	2247	-	2297	-	2347	-
Mantua Water Treatment Plant	Mats Road	Well No. 2	Valve Box			1/1/1997	$ 100.00	21	50	2047	58%	2047	$ 235.66	2097	-	2147	-	2197	-	2247	-	2297	-	2347	-
Mantua Water Treatment Plant	Mats Road	Well No. 3	Submersible Pump, 6-in, 10 HP			1/1/2017	$ 10,000.00	1	15	2032	93%	2032	$ 15,125.90	2047	$ 23,565.66	2062	-	2077	-	2092	-	2107	-	2122	-
Mantua Water Treatment Plant	Mats Road	Well No. 3	Control Panel			1/1/1997	$ 2,000.00	21	20	2017	-5%	2019	$ 2,060.00	2039	$ 3,720.59	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	Well No. 3	Well, 10-in			1/1/1997	$ 150,000.00	21	35	2032	40%	2032	$ 226,888.46	2067	-	2102	-	2137	-	2172	-	2207	-	2242	-
Mantua Water Treatment Plant	Mats Road	Well No. 3	Isolation valve, 6-in			1/1/1997	$ 1,550.00	21	35	2032	40%	2032	$ 2,344.51	2067	-	2102	-	2137	-	2172	-	2207	-	2242	-
Mantua Water Treatment Plant	Mats Road	Well No. 3	Isolation valve, 6-in			1/1/1997	$ 1,550.00	21	35	2032	40%	2032	$ 2,344.51	2067	-	2102	-	2137	-	2172	-	2207	-	2242	-
Mantua Water Treatment Plant	Mats Road	Well No. 3	Valve Box			1/1/1997	$ 100.00	21	50	2047	58%	2047	$ 235.66	2097	-	2147	-	2197	-	2247	-	2297	-	2347	-
Mantua Water Treatment Plant	Mats Road	Well No. 3	Valve Box			1/1/1997	$ 100.00	21	50	2047	58%	2047	$ 235.66	2097	-	2147	-	2197	-	2247	-	2297	-	2347	-
Mantua Water Treatment Plant	Mats Road	Raw Water Line	Gate Valve, 8-in			1/1/1997	$ 2,423.00	21	35	2032	40%	2032	$ 3,665.00	2067	-	2102	-	2137	-	2172	-	2207	-	2242	-
Mantua Water Treatment Plant	Mats Road	Raw Water Line	Gate Valve, 6-in			1/1/1997	$ 15,550.00	21	35	2032	40%	2032	$ 23,520.77	2067	-	2102	-	2137	-	2172	-	2207	-	2242	-
Mantua Water Treatment Plant	Mats Road	Raw Water Line	Valve Box			1/1/1997	$ 100.00	21	50	2047	58%	2047	$ 235.66	2097	-	2147	-	2197	-	2247	-	2297	-	2347	-
Mantua Water Treatment Plant	Mats Road	Raw Water Line	Valve Box			1/1/1997	$ 100.00	21	50	2047	58%	2047	$ 235.66	2097	-	2147	-	2197	-	2247	-	2297	-	2347	-
Mantua Water Treatment Plant	Mats Road	Raw Water Line	Hydrant			1/1/1997	$ 5,000.00	21	40	2037	48%	2037	$ 8,767.53	2077	-	2117	-	2157	-	2197	-	2237	-	2277	-
Mantua Water Treatment Plant	Mats Road	Pressure Filter No. 3	Vessel, 10 ft	Tonka		1/1/1997	$ 66,250.00	3	20	2017	85%	2019	$ 68,237.50	2039	$ 123,244.52	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	Pressure Filter No. 3	Filter Media			1/1/2015	$ 25,000.00	21	15	2030	-40%	2030	$ 35,644.02	2045	$ 55,532.23	2060	-	2075	-	2090	-	2105	-	2120	-
Mantua Water Treatment Plant	Mats Road	Pressure Filter No. 3	Distributers/Strainers			1/1/1997	$ 8,750.00	21	20	2017	-5%	2019	$ 9,012.50	2039	$ 16,277.58	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	Pressure Filter No. 3	Piping			1/1/1997	$ 30,000.00	21	40	2037	48%	2037	$ 52,605.18	2077	-	2117	-	2157	-	2197	-	2237	-	2277	-
Mantua Water Treatment Plant	Mats Road	Pressure Filter No. 2	Vessel, 10 ft	Tonka		1/1/1997	$ 66,250.00	3	20	2017	85%	2019	$ 68,237.50	2039	$ 123,244.52	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	Pressure Filter No. 2	Filter Media			1/1/2015	$ 25,000.00	21	15	2030	-40%	2030	$ 35,644.02	2045	$ 55,532.23	2060	-	2075	-	2090	-	2105	-	2120	-
Mantua Water Treatment Plant	Mats Road	Pressure Filter No. 2	Distributers/Strainers			1/1/1997	$ 8,750.00	21	20	2017	-5%	2019	$ 9,012.50	2039	$ 16,277.58	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	Pressure Filter No. 2	Piping			1/1/1997	$ 30,000.00	21	40	2037	48%	2037	$ 52,605.18	2077	-	2117	-	2157	-	2197	-	2237	-	2277	-
Mantua Water Treatment Plant	Mats Road	Pressure Filter No. 1	Vessel, 10 ft	Tonka		1/1/1997	$ 66,250.00	3	20	2017	85%	2019	$ 68,237.50	2039	$ 123,244.52	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	Pressure Filter No. 1	Filter Media			1/1/2015	$ 25,000.00	21	15	2030	-40%	2030	$ 35,644.02	2045	$ 55,532.23	2060	-	2075	-	2090	-	2105	-	2120	-
Mantua Water Treatment Plant	Mats Road	Pressure Filter No. 1	Distributers/Strainers			1/1/1997	$ 8,750.00	21	20	2017	-5%	2019	$ 9,012.50	2039	$ 16,277.58	2059	-	2079	-	2099	-	2119	-	2139	-

Plant	Address	Structure/System	Equipment Description	Make	Model	Install Date	2018 Equipment Cost	Age	PCWR Estimated Life	Projected End of Life	% Residual Life	Project Year	Estimated Equipment Repair Cost	1 st Repeated Repair Year	Projected Cost	2nd Repeated Repair Year	Projected Cost	3rd Repeated Repair Year	Projected Cost	4th Repeated Repair Year	Projected Cost	5th Repeated Repair Year	Projected Cost	6th Repeated Repair Year	Projected Cost
Mantua Water Treatment Plant	Mats Road	Pressure Filter No. 1	Piping			1/1/1997	$ 30,000.00	21	40	2037	48%	2037	$ 52,605.18	2077	-	2117	-	2157	-	2197	-	2237	-	2277	-
Mantua Water Treatment Plant	Mats Road	Raw Water Inluent	Actuated Butterfly Valve, 6-in	Keystone	Epic Torc	1/1/1997	$ 2,050.00	21	20	2017	-5%	2019	$ 2,111.50	2039	$ 3,813.60	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	Raw Water Inluent	Actuated Butterfly Valve, 6-in	Keystone	Epic Torc	1/1/1997	$ 2,050.00	21	20	2017	-5%	2019	$ 2,111.50	2039	$ 3,813.60	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	Raw Water Inluent	Actuated Butterfly Valve, 6-in	Keystone	Epic Torc	1/1/1997	$ 2,050.00	21	20	2017	-5%	2019	$ 2,111.50	2039	$ 3,813.60	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	Filter Effluent Line	Actuated Butterfly Valve, 6-in	Keystone	Epic Torc	1/1/1997	$ 2,050.00	21	20	2017	-5%	2019	$ 2,111.50	2039	$ 3,813.60	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	Filter Effluent Line	Actuated Butterfly Valve, 6-in	Keystone	Epic Torc	1/1/1997	$ 2,050.00	21	20	2017	-5%	2019	$ 2,111.50	2039	$ 3,813.60	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	Filter Effluent Line	Actuated Butterfly Valve, 6-in	Keystone	Epic Torc	1/1/1997	$ 2,050.00	21	20	2017	-5%	2019	$ 2,111.50	2039	$ 3,813.60	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	Filter Effluent Line	Butterfly Valve, 6-in			1/1/1997		21	20	2017	-5%	2019	$ -	2039	$ -	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	Backwash Waste	Actuated Butterfly Valve, 12-in	Keystone	Epic Torc	1/1/1997	$ 4,050.00	21	20	2017	-5%	2019	$ 4,171.50	2039	$ 7,534.19	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	Backwash Waste	Actuated Butterfly Valve, 12-in	Keystone	Epic Torc	1/1/1997	$ 4,050.00	21	20	2017	-5%	2019	$ 4,171.50	2039	$ 7,534.19	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	Backwash Waste	Actuated Butterfly Valve, 12-in	Keystone	Epic Torc	1/1/1997	$ 4,050.00	21	20	2017	-5%	2019	$ 4,171.50	2039	$ 7,534.19	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	Backwash Waste	Actuated Butterfly Valve, 6-in	Keystone	Epic Torc	1/1/1997	$ 2,050.00	21	20	2017	-5%	2019	$ 2,111.50	2039	$ 3,813.60	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	Backwash Waste	Actuated Butterfly Valve, 6-in	Keystone	Epic Torc	1/1/1997	$ 2,050.00	21	20	2017	-5%	2019	$ 2,111.50	2039	$ 3,813.60	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	Backwash Waste	Actuated Butterfly Valve, 6-in	Keystone	Epic Torc	1/1/1997	$ 2,050.00	21	20	2017	-5%	2019	$ 2,111.50	2039	$ 3,813.60	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	Air Line	Actuated Butterfly Valve, 6-in	Keystone	Epic Torc	1/1/1997	$ 2,050.00	21	20	2017	-5%	2019	$ 2,111.50	2039	$ 3,813.60	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	Air Line	Actuated Butterfly Valve, 6-in	Keystone	Epic Torc	1/1/1997	$ 2,050.00	21	20	2017	-5%	2019	$ 2,111.50	2039	$ 3,813.60	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	Air Line	Actuated Butterfly Valve, 6-in	Keystone	Epic Torc	1/1/1997	$ 2,050.00	21	20	2017	-5%	2019	$ 2,111.50	2039	$ 3,813.60	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	Drain	Gate Valve, 2.5-in			1/1/1997	$ 600.00	21	20	2017	-5%	2019	$ 618.00	2039	$ 1,116.18	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	Drain	Gate Valve, 2.5-in			1/1/1997	$ 600.00	21	20	2017	-5%	2019	$ 618.00	2039	$ 1,116.18	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	Drain	Gate Valve, 2.5-in			1/1/1997	$ 600.00	21	20	2017	-5%	2019	$ 618.00	2039	$ 1,116.18	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	Clear Well	Structure	Reinforced Concret	23' x 41' x 16.3'	1/1/1997	$ 58,712.00	21	100	2097	79%	2097	-	2197	-	2297	-	2397	-	2497	-	2597	-	2697	-
Mantua Water Treatment Plant	Mats Road	Clear Well	Sluice Gate	1.5' x 1.5'		1/1/1997	$ 5,000.00	21	20	2017	-5%	2019	$ 5,150.00	2039	$ 9,301.47	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	Clear Well	Level Transducer			1/1/1997	$ 3,000.00	21	20	2017	-5%	2019	$ 3,090.00	2039	$ 5,580.88	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	Raw Water Meter	Magameter, 8-in			1/1/1997	$ 6,000.00	21	30	2027	30%	2027	$ 7,828.64	2057	-	2087	-	2117	-	2147	-	2177	-	2207	-
Mantua Water Treatment Plant	Mats Road	Finished Water Meter	Magameter, 8-in			1/1/1997	$ 6,000.00	21	30	2027	30%	2027	$ 7,828.64	2057	-	2087	-	2117	-	2147	-	2177	-	2207	-
Mantua Water Treatment Plant	Mats Road		Gate Valve, 6-in			1/1/1997	$ 1,581.00	21	15	2012	-40%	2019	$ 1,628.43	2034	$ 2,537.04	2049	$ 3,952.63	2064	-	2079	-	2094	-	2109	-
Mantua Water Treatment Plant	Mats Road		Gate Valve, 6-in			1/1/1997	$ 1,581.00	21	20	2017	-5%	2019	$ 1,628.43	2039	$ 2,941.13	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road		Gate Valve, 6-in			1/1/1997	$ 1,581.00	21	30	2027	30%	2027	$ 2,062.85	2057	-	2087	-	2117	-	2147	-	2177	-	2207	-
Mantua Water Treatment Plant	Mats Road	High Service Pump	Pump, 6-in			1/1/1997	$ 15,000.00	21	20	2017	-5%	2019	$ 15,450.00	2039	$ 27,904.42	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	High Service Pump	Pump, 6-in			1/1/1997	$ 15,000.00	21	20	2017	-5%	2019	$ 15,450.00	2039	$ 27,904.42	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	High Service Pump	Pump, 6-in			1/1/1997	$ 15,000.00	21	20	2017	-5%	2019	$ 15,450.00	2039	$ 27,904.42	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	High Service Pump	Soft Start, 40 HP			1/1/1997	$ 4,000.00	21	20	2017	-5%	2019	$ 4,120.00	2039	$ 7,441.18	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	High Service Pump	Soft Start, 40 HP			1/1/1997	$ 4,000.00	21	20	2017	-5%	2019	$ 4,120.00	2039	$ 7,441.18	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	High Service Pump	Soft Start, 40 HP			1/1/1997	$ 4,000.00	21	20	2017	-5%	2019	$ 4,120.00	2039	$ 7,441.18	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	High Service Pump	Pump Motor, 40 HP	US Motors		1/1/1997	$ 4,944.00	21	20	2017	-5%	2019	$ 5,092.32	2039	$ 9,197.30	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	High Service Pump	Pump Motor, 40 HP	US Motors		1/1/1997	$ 4,944.00	21	20	2017	-5%	2019	$ 5,092.32	2039	$ 9,197.30	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	High Service Pump	Pump Motor, 40 HP	US Motors		1/1/1997	$ 4,944.00	21	20	2017	-5%	2019	$ 5,092.32	2039	$ 9,197.30	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	High Service Pump	Control Panel			1/1/1997	$ 2,000.00	21	20	2017	-5%	2019	$ 2,060.00	2039	$ 3,720.59	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	Phospate Feed	Day Tank, 55 Gallon			1/1/1997	$ 211.00	21	15	2012	-40%	2019	$ 217.33	2034	$ 338.59	2049	$ 527.52	2064	-	2079	-	2094	-	2109	-
Mantua Water Treatment Plant	Mats Road	Phospate Feed	Day Tank, 55 Gallon			1/1/1997	$ 211.00	21	15	2012	-40%	2019	$ 217.33	2034	$ 338.59	2049	$ 527.52	2064	-	2079	-	2094	-	2109	-
Mantua Water Treatment Plant	Mats Road	Phospate Feed	Tank Mixer			1/1/1997		21	15	2012	-40%	2019	$ -	2034	$ -	2049	$ -	2064	-	2079	-	2094	-	2109	-
Mantua Water Treatment Plant	Mats Road	Phospate Feed	Tank Mixer			1/1/1997		21	15	2012	-40%	2019	$ -	2034	$ -	2049	$ -	2064	-	2079	-	2094	-	2109	-
Mantua Water Treatment Plant	Mats Road	Phospate Feed	Chemical Metering Pump			1/1/1997		21	15	2012	-40%	2019	$ -	2034	$ -	2049	$ -	2064	-	2079	-	2094	-	2109	-
Mantua Water Treatment Plant	Mats Road	Phospate Feed	Chemical Metering Pump			1/1/1997		21	15	2012	-40%	2019	$ -	2034	$ -	2049	$ -	2064	-	2079	-	2094	-	2109	-
Mantua Water Treatment Plant	Mats Road	Phospate Feed	Ball Valve, 1/2-in	PVC		1/1/1997		21	20	2017	-5%	2019	$ -	2039	$ -	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	Phospate Feed	Ball Check Valve, 1/2-in	PVC		1/1/1997		21	20	2017	-5%	2019	$ -	2039	$ -	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	Phospate Feed	Ball Check Valve, 1/2-in	PVC		1/1/1997		21	20	2017	-5%	2019	$ -	2039	$ -	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	Phospate Feed	Ball Valve, 1/2-in	PVC		1/1/1997		21	20	2017	-5%	2019	$ -	2039	$ -	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	Potassium Permangante Feed	Chemical Metering Pump	LMI Milto Roy	B111490 SI	1/1/1997	$ 3,500.00	21	7	2004	-200%	2019	$ 3,605.00	2026	$ 4,433.70	2033	$ 5,452.89	2040	$ 6,706.36	2047	$ 8,247.98	2054	-	2061	-
Mantua Water Treatment Plant	Mats Road	Potassium Permangante Feed	Chemical Metering Pump	LMI Milto Roy	B111490 SI	2/9/2014	$ 3,500.00	4	7	2021	43%	2021	$ 3,824.54	2028	$ 4,703.71	2035	$ 5,784.97	2042	$ 7,114.78	2049	$ 8,750.28	2056	-	2063	-
Mantua Water Treatment Plant	Mats Road	Potassium Permangante Feed	Day Tank, 100 Gallon			1/1/1997	$ 500.00	21	15	2012	-40%	2019	$ 515.00	2034	$ 802.35	2049	$ 1,250.04	2064	-	2079	-	2094	-	2109	-
Mantua Water Treatment Plant	Mats Road	Potassium Permangante Feed	Day Tank, 100 Gallon			1/1/1997	$ 500.00	21	15	2012	-40%	2019	$ 515.00	2034	$ 802.35	2049	$ 1,250.04	2064	-	2079	-	2094	-	2109	-
Mantua Water Treatment Plant	Mats Road	Potassium Permangante Feed	Tank Mixer	Lightning		1/1/1997	$ 1,500.00	21	7	2004	-200%	2019	$ 1,545.00	2026	$ 1,900.16	2033	$ 2,336.95	2040	$ 2,874.16	2047	$ 3,534.85	2054	-	2061	-
Mantua Water Treatment Plant	Mats Road	Potassium Permangante Feed	Tank Mixer	Lightning		1/1/1997	$ 1,500.00	21	7	2004	-200%	2019	$ 1,545.00	2026	$ 1,900.16	2033	$ 2,336.95	2040	$ 2,874.16	2047	$ 3,534.85	2054	-	2061	-
Mantua Water Treatment Plant	Mats Road	Potassium Permangante Feed	Vault, 5 ft Diameter	Concrete		1/1/1997	$ 2,600.00	21	50	2047	58%	2047	$ 6,127.07	2097	-	2147	-	2197	-	2247	-	2297	-	2347	-
Mantua Water Treatment Plant	Mats Road	Potassium Permangante Feed	Manhole, Lid			1/1/1997	$ 500.00	21	50	2047	58%	2047	$ 1,178.28	2097	-	2147	-	2197	-	2247	-	2297	-	2347	-
Mantua Water Treatment Plant	Mats Road	Potassium Permangante Feed	Ball Valve, 3/4-in			1/1/1997	$ 172.00	21	20	2017	-5%	2019	$ 177.16	2039	$ 319.97	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	Potassium Permangante Feed	Ball Valve, 3/4-in			1/1/1997	$ 172.00	21	20	2017	-5%	2019	$ 177.16	2039	$ 319.97	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	Potassium Permangante Feed	Sump Pump, ?-in ? HP				$ 500.00						$ 0.00												
Mantua Water Treatment Plant	Mats Road	Backwash Pump	Pump, 6-in			1/1/1997	$ 17,000.00	21	20	2017	-5%	2019	$ 17,510.00	2039	$ 31,625.01	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	Backwash Pump	Pump Motor, 10 HP			1/1/1997	$ 4,944.00	21	20	2017	-5%	2019	$ 5,092.32	2039	$ 9,197.30	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	Backwash Pump	Pump, 6-in			1/1/1997	$ 17,000.00	21	20	2017	-5%	2019	$ 17,510.00	2039	$ 31,625.01	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	Backwash Pump	Pump Motor, 10 HP			1/1/1997	$ 4,944.00	21	20	2017	-5%	2019	$ 5,092.32	2039	$ 9,197.30	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	Backwash Pump	Control Panel	Tonka		1/1/1997	$ 2,000.00	21	20	2017	-5%	2019	$ 2,060.00	2039	$ 3,720.59	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	Chlorine Feed	Ball Valve, 1/2-in	PVC		1/1/1997	$ 90.00	21	20	2017	-5%	2019	$ 92.70	2039	$ 167.43	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	Chlorine Feed	Vacuum Regulator			1/1/1997	$ 1,112.00	21	7	2004	-200%	2019	$ 1,145.36	2026	$ 1,408.65	2033	$ 1,732.46	2040	$ 2,130.71	2047	$ 2,620.50	2054	-	2061	-
Mantua Water Treatment Plant	Mats Road	Chlorine Feed	Vacuum Regulator			1/1/1997	$ 1,112.00	21	7	2004	-200%	2019	$ 1,145.36	2026	$ 1,408.65	2033	$ 1,732.46	2040	$ 2,130.71	2047	$ 2,620.50	2054	-	2061	-
Mantua Water Treatment Plant	Mats Road	Chlorine Feed	Double Check Valve, 3/4-in			1/1/1997	$ 165.00	21	7	2004	-200%	2019	$ 169.95	2026	$ 209.02	2033	$ 257.06	2040	$ 316.16	2047	$ 388.83	2054	-	2061	-
Mantua Water Treatment Plant	Mats Road	Chlorine Feed	Scale			1/1/1997	$ 2,099.00	21	15	2012	-40%	2019	$ 2,161.97	2034	$ 3,368.28	2049	$ 5,247.67	2064	-	2079	-	2094	-	2109	-
Mantua Water Treatment Plant	Mats Road	Chlorine Feed	Scale			1/1/1997	$ 2,099.00	21	15	2012	-40%	2019	$ 2,161.97	2034	$ 3,368.28	2049	$ 5,247.67	2064	-	2079	-	2094	-	2109	-
Mantua Water Treatment Plant	Mats Road	Chlorine Feed	Chlorinator			1/1/1997	$ 4,517.00	21	7	2004	-200%	2019	$ 4,652.51	2026	$ 5,722.00	2033	$ 7,037.34	2040	$ 8,655.04	2047	$ 10,644.61	2054	-	2061	-
Mantua Water Treatment Plant	Mats Road	Chlorine Feed	Chlorinator			1/1/1997	$ 4,517.00	21	7	2004	-200%	2019	$ 4,652.51	2026	$ 5,722.00	2033	$ 7,037.34	2040	$ 8,655.04	2047	$ 10,644.61	2054	-	2061	-
Mantua Water Treatment Plant	Mats Road	Chlorine Feed	Automatic Switch			1/1/1997	$ 1,316.00	21	7	2004	-200%	2019	$ 1,355.48	2026	$ 1,667.07	2033	$ 2,050.29	2040	$ 2,521.59	2047	$ 3,101.24	2054	-	2061	-
Mantua Water Treatment Plant	Mats Road	Chlorine Feed	Throttling Valve, 3/4-in			1/1/1997	$ 500.00	21	7	2004	-200%	2019	$ 515.00	2026	$ 633.39	2033	$ 778.98	2040	$ 958.05	2047	$ 1,178.28	2054	-	2061	-
Mantua Water Treatment Plant	Mats Road	Chlorine Feed	Ejector, 3/4-in			1/1/1997	$ 469.00	21	7	2004	-200%	2019	$ 483.07	2026	$ 594.12	2033	$ 730.69	2040	$ 898.65	2047	$ 1,105.23	2054	-	2061	-
Mantua Water Treatment Plant	Mats Road	Chlorine Feed	Rotameter			1/1/1997	$ 500.00	21	7	2004	-200%	2019	$ 515.00	2026	$ 633.39	2033	$ 778.98	2040	$ 958.05	2047	$ 1,178.28	2054	-	2061	-
Mantua Water Treatment Plant	Mats Road	Chlorine Feed	Ejector, 3/4-in			1/1/1997	$ 469.00	21	7	2004	-200%	2019	$ 483.07	2026	$ 594.12	2033	$ 730.69	2040	$ 898.65	2047	$ 1,105.23	2054	-	2061	-
Mantua Water Treatment Plant	Mats Road	Chlorine Feed	Rotameter			1/1/1997	$ 500.00	21	7	2004	-200%	2019	$ 515.00	2026	$ 633.39	2033	$ 778.98	2040	$ 958.05	2047	$ 1,178.28	2054	-	2061	-
Mantua Water Treatment Plant	Mats Road	Chlorine Feed	Ball Valve, 1/2-in	PVC		1/1/1997	$ 90.00	21	7	2004	-200%	2019	$ 92.70	2026	$ 114.01	2033	$ 140.22	2040	$ 172.45	2047	$ 212.09	2054	-	2061	-

Plant	Address	Structure/System	Equipment Description	Make	Model	Install Date	2018 Equipment Cost	Age	PCWR Estimated Life	Projected End of Life	% Residual Life	Project Year	Estimated Equipment Repair Cost	1 st Repeated Repair Year	Projected Cost	2nd Repeated Repair Year	Projected Cost	3rd Repeated Repair Year	Projected Cost	4th Repeated Repair Year	Projected Cost	5th Repeated Repair Year	Projected Cost	6th Repeated Repair Year	Projected Cost
Mantua Water Treatment Plant	Mats Road	Chlorine Feed	Solenoid Valve, 1/2-in			1/1/1997	$ 650.00	21	7	2004	-200%	2019	$ 669.50	2026	$ 823.40	2033	$ 1,012.68	2040	$ 1,245.47	2047	$ 1,531.77	2054	-	2061	-
Mantua Water Treatment Plant	Mats Road	Chlorine Feed	Solenoid Valve, 1/2-in			1/1/1997	$ 650.00	21	7	2004	-200%	2019	$ 669.50	2026	$ 823.40	2033	$ 1,012.68	2040	$ 1,245.47	2047	$ 1,531.77	2054	-	2061	-
Mantua Water Treatment Plant	Mats Road	Chlorine Feed	Ball Valve, 1/2-in	PVC		1/1/1997	$ 90.00	21	7	2004	-200%	2019	$ 92.70	2026	$ 114.01	2033	$ 140.22	2040	$ 172.45	2047	$ 212.09	2054	-	2061	-
Mantua Water Treatment Plant	Mats Road	Chlorine Feed	Ball Valve, 1/2-in	PVC		1/1/1997	$ 90.00	21	7	2004	-200%	2019	$ 92.70	2026	$ 114.01	2033	$ 140.22	2040	$ 172.45	2047	$ 212.09	2054	-	2061	-
Mantua Water Treatment Plant	Mats Road	Chlorine Feed	Vault, 5 ft Diameter			1/1/1997	$ 2,600.00	21	50	2047	58%	2047	$ 6,127.07	2097	-	2147	-	2197	-	2247	-	2297	-	2347	-
Mantua Water Treatment Plant	Mats Road	Chlorine Feed	Manhole, Lid			1/1/1997	$ 500.00	21	50	2047	58%	2047	$ 1,178.28	2097	-	2147	-	2197	-	2247	-	2297	-	2347	-
Mantua Water Treatment Plant	Mats Road	Chlorine Feed	Ball Valve, 1/2-in			1/1/1997	$ 172.00	21	30	2027	30%	2027	$ 224.42	2057	-	2087	-	2117	-	2147	-	2177	-	2207	-
Mantua Water Treatment Plant	Mats Road	Clear Well	Hatch	24" x 24 "		1/1/1997	$ 619.00	21	50	2047	58%	2047	$ 1,458.71	2097	-	2147	-	2197	-	2247	-	2297	-	2347	-
Mantua Water Treatment Plant	Mats Road	Air Wash	Blower, 2.5-in	Sutorbuilt	3LP GABLBPA	1/1/1997	$ 2,500.00	21	20	2017	-5%	2019	$ 2,575.00	2039	$ 4,650.74	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	Air Wash	Blower Motor, 10 HP			1/1/1997	$ 1,200.00	21	20	2017	-5%	2019	$ 1,236.00	2039	$ 2,232.35	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	Air Wash	Pressure relief, 4-in			1/1/1997	$ 315.00	21	20	2017	-5%	2019	$ 324.45	2039	$ 585.99	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	Air Wash	Check valve, 4-in			1/1/1997	$ 1,144.95	21	20	2017	-5%	2019	$ 1,179.30	2039	$ 2,129.94	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	Air Wash	Inlet/Outlet Sliencer/Stand/belt guard			1/1/1997	$ 1,459.95	21	20	2017	-5%	2019	$ 1,503.75	2039	$ 2,715.94	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road	EQ Tank	Structure	Concrete	20' x 19' x 14.5'	1/1/1997	$ 150,000.00	21	50	2047	58%	2047	$ 353,484.83	2097	-	2147	-	2197	-	2247	-	2297	-	2347	-
Mantua Water Treatment Plant	Mats Road	EQ Tank	Hatch	Aluminum	5' x 3'	1/1/1997	$ 2,026.00	21	50	2047	58%	2047	$ 4,774.40	2097	-	2147	-	2197	-	2247	-	2297	-	2347	-
Mantua Water Treatment Plant	Mats Road	EQ Tank	Sump Pump, 2-in 2 HP			1/1/1997	$ 1,800.00	21	7	2004	-200%	2019	$ 1,854.00	2026	$ 2,280.19	2033	$ 2,804.34	2040	$ 3,448.99	2047	$ 4,241.82	2054	-	2061	-
Mantua Water Treatment Plant	Mats Road	EQ Tank	Guide Bars			1/1/1997	$ 5,000.00	21	50	2047	58%	2047	$ 11,782.83	2097	-	2147	-	2197	-	2247	-	2297	-	2347	-
Mantua Water Treatment Plant	Mats Road		Toilet			1/1/1997	$ 200.00	21	50	2047	58%	2047	$ 471.31	2097	-	2147	-	2197	-	2247	-	2297	-	2347	-
Mantua Water Treatment Plant	Mats Road		Sink			1/1/1997	$ 500.00	21	50	2047	58%	2047	$ 1,178.28	2097	-	2147	-	2197	-	2247	-	2297	-	2347	-
Mantua Water Treatment Plant	Mats Road		water heater, gas	30 gal		1/1/1997	$ 3,000.00	21	15	2012	-40%	2019	$ 3,090.00	2034	$ 4,814.12	2049	$ 7,500.24	2064	-	2079	-	2094	-	2109	-
Mantua Water Treatment Plant	Mats Road		wall mounted water cooler			1/1/1997	$ 1,500.00	21	50	2047	58%	2047	$ 3,534.85	2097	-	2147	-	2197	-	2247	-	2297	-	2347	-
Mantua Water Treatment Plant	Mats Road		Shower			1/1/1997	$ 500.00	21	50	2047	58%	2047	$ 1,178.28	2097	-	2147	-	2197	-	2247	-	2297	-	2347	-
Mantua Water Treatment Plant	Mats Road		Eyewash			1/1/1997	$ 1,000.00	21	50	2047	58%	2047	$ 2,356.57	2097	-	2147	-	2197	-	2247	-	2297	-	2347	-
Mantua Water Treatment Plant	Mats Road		Dehumidifer	Bry-Air	1500CFM 227 lb	1/1/1997	$ 23,000.00	21	20	2017	-5%	2019	$ 23,690.00	2039	$ 42,786.78	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road		Air Conditioner	Carrier	3 Ton	1/1/1997	$ 3,000.00	21	20	2017	-5%	2019	$ 3,090.00	2039	$ 5,580.88	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road		Furnance, Gas	Carrier	58MXA	1/1/1997	$ 3,205.00	21	20	2017	-5%	2019	$ 3,301.15	2039	$ 5,962.24	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road		Heater, Electric	Merkel	2 KW, 6.6 MBH	1/1/1997	$ 800.00	21	20	2017	-5%	2019	$ 824.00	2039	$ 1,488.24	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road		Ventalation, Exhaust Fan, 1/4 HP	Cook	700 cfm	1/1/1997	$ 1,500.00	21	20	2017	-5%	2019	$ 1,545.00	2039	$ 2,790.44	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road		Ventalation, Exhaust Fan, Ceiling	Cook	100 cfm	1/1/1997	$ 1,300.00	21	20	2017	-5%	2019	$ 1,339.00	2039	$ 2,418.38	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road		Ventalation, Exhaust Fan, Ceiling		150 cfm	1/1/1997	$ 1,300.00	21	20	2017	-5%	2019	$ 1,339.00	2039	$ 2,418.38	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road		Ventalation, Intake	Cook	PR-8, .4 sq ft	1/1/1997	$ 1,000.00	21	20	2017	-5%	2019	$ 1,030.00	2039	$ 1,860.29	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road		Heater, Radiant Heat Tubs			1/1/1997	$ 2,000.00	21	20	2017	-5%	2019	$ 2,060.00	2039	$ 3,720.59	2059	-	2079	-	2099	-	2119	-	2139	-
Mantua Water Treatment Plant	Mats Road		mop sink			1/1/1997	$ 800.00	21	50	2047	58%	2047	$ 1,885.25	2097	-	2147	-	2197	-	2247	-	2297	-	2347	-
Mantua Water System	Reservoir Street	Booster Station	Electrical Service, Med Svc. Three Phase	400 amp, 480 V, 3 ph, 4 wire		1/1/2004	$ 19,600.00	14	50	2054	72%	2054	-	2104	-	2154	-	2204	-	2254	-	2304	-	2354	-
Mantua Water System	Reservoir Street	Booster Station	Generator, Diesel			1/1/2004	$ 54,800.00	14	40	2044	65%	2044	$ 118,181.20	2084	-	2124	-	2164	-	2204	-	2244	-	2284	-
Mantua Water System	Reservoir Street	Booster Station	Switch Gear			1/1/2004	$ 5,000.00	14	20	2024	30%	2024	$ 5,970.26	2044	$ 10,782.96	2064	-	2084	-	2104	-	2124	-	2144	-
Mantua Water System	Reservoir Street	Booster Station	SCADA System			1/1/2004	$ 6,500.00	14	10	2014	-40%	2019	$ 6,695.00	2029	$ 8,997.52	2039	$ 12,091.91	2049	$ 16,250.52	2059	-	2069	-	2079	-
Mantua Water System	Reservoir Street	Booster Station	Building	Split Face block	18' X 20 '	1/1/2004	$ 90,000.00	14	100	2104	86%	2104	-	2204	-	2304	-	2404	-	2504	-	2604	-	2704	-
Mantua Water System	Reservoir Street	Booster Station	Roof	Shingles	18' X 20 '	1/1/2004	$ 18,000.00	14	25	2029	44%	2029	$ 24,916.21	2054	-	2079	-	2104	-	2129	-	2154	-	2179	-
Mantua Water System	Reservoir Street	Booster Station	Driveway, gravel		1000 ft2	1/1/2004	$ 1,500.00	14	5	2009	-180%	2019	$ 1,545.00	2024	$ 1,791.08	2029	$ 2,076.35	2034	$ 2,407.06	2039	$ 2,790.44	2044	$ 3,234.89	2049	$ 3,750.12
Mantua Water System	Reservoir Street	Booster Station	Fence, wood		52 ft	1/1/2004	$ 2,600.00	14	20	2024	30%	2024	$ 3,104.54	2044	$ 5,607.14	2064	-	2084	-	2104	-	2124	-	2144	-
Mantua Water System	Reservoir Street	Booster Station	Door			1/1/2004	$ 700.00	14	20	2024	30%	2024	$ 835.84	2044	$ 1,509.61	2064	-	2084	-	2104	-	2124	-	2144	-
Mantua Water System	Reservoir Street	Booster Station	Overhead Door			1/1/2004	$ 600.00	14	20	2024	30%	2024	$ 716.43	2044	$ 1,293.95	2064	-	2084	-	2104	-	2124	-	2144	-
Mantua Water System	Reservoir Street	Booster Station	Heater, Electric	Merkel	HFB5105N	1/1/2004	$ 700.00	14	15	2019	7%	2019	$ 721.00	2034	$ 1,123.29	2049	$ 1,750.06	2064	-	2079	-	2094	-	2109	-
Mantua Water System	Reservoir Street	Booster Station	Ventilation Exhaust Fan, 1/4 HP	Cook	APD 20P11D	1/1/2004	$ 500.00	14	15	2019	7%	2019	$ 515.00	2034	$ 802.35	2049	$ 1,250.04	2064	-	2079	-	2094	-	2109	-
Mantua Water System	Reservoir Street	Booster Station	Ventilation Louver Auto Adjusta	Riskin	ELC6375D	1/1/2004	$ 1,000.00	14	15	2019	7%	2019	$ 1,030.00	2034	$ 1,604.71	2049	$ 2,500.08	2064	-	2079	-	2094	-	2109	-
Mantua Water System	Reservoir Street	Booster Station	Control Panel, Lg Svc.	Allen Bradely		1/1/2004	$ 27,200.00	14	50	2054	72%	2054	-	2104	-	2154	-	2204	-	2254	-	2304	-	2354	-
Mantua Water System	Reservoir Street	Booster Station	Pump, 2-in to 1-in	Sterling Fluid Systmes	c810AMBF	1/1/2004	$ 3,000.00	14	30	2034	53%	2034	$ 4,814.12	2064	-	2094	-	2124	-	2154	-	2184	-	2214	-
Mantua Water System	Reservoir Street	Booster Station	Pump, 2-in to 1-in			1/1/2004	$ 3,000.00	14	30	2034	53%	2034	$ 4,814.12	2064	-	2094	-	2124	-	2154	-	2184	-	2214	-
Mantua Water System	Reservoir Street	Booster Station	Pump, 2-in to 1-in			1/1/2004	$ 3,000.00	14	30	2034	53%	2034	$ 4,814.12	2064	-	2094	-	2124	-	2154	-	2184	-	2214	-
Mantua Water System	Reservoir Street	Booster Station	Pump, 5-in to 4-in			1/1/2004	$ 7,080.00	14	30	2034	53%	2034	$ 11,361.32	2064	-	2094	-	2124	-	2154	-	2184	-	2214	-
Mantua Water System	Reservoir Street	Booster Station	VFD, 10 HP			1/1/2004	$ 1,000.00	14	15	2019	7%	2019	$ 1,030.00	2034	$ 1,604.71	2049	$ 2,500.08	2064	-	2079	-	2094	-	2109	-
Mantua Water System	Reservoir Street	Booster Station	VFD, 10 HP			1/1/2004	$ 1,000.00	14	15	2019	7%	2019	$ 1,030.00	2034	$ 1,604.71	2049	$ 2,500.08	2064	-	2079	-	2094	-	2109	-
Mantua Water System	Reservoir Street	Booster Station	VFD, 10 HP			1/1/2004	$ 1,000.00	14	15	2019	7%	2019	$ 1,030.00	2034	$ 1,604.71	2049	$ 2,500.08	2064	-	2079	-	2094	-	2109	-
Mantua Water System	Reservoir Street	Booster Station	VFD, 60 HP			1/1/2004	$ 6,000.00	14	15	2019	7%	2019	$ 6,180.00	2034	$ 9,628.24	2049	$ 15,000.48	2064	-	2079	-	2094	-	2109	-
Mantua Water System	Reservoir Street	Booster Station	Pump Motor, 10 HP	Baldor	Super E	1/1/2004	$ 1,085.00	14	30	2034	53%	2034	$ 1,741.11	2064	-	2094	-	2124	-	2154	-	2184	-	2214	-
Mantua Water System	Reservoir Street	Booster Station	Pump Motor, 10 HP	Baldor	Super E	1/1/2004	$ 1,085.00	14	30	2034	53%	2034	$ 1,741.11	2064	-	2094	-	2124	-	2154	-	2184	-	2214	-
Mantua Water System	Reservoir Street	Booster Station	Pump Motor, 10 HP	Baldor	Super E	1/1/2004	$ 1,085.00	14	30	2034	53%	2034	$ 1,741.11	2064	-	2094	-	2124	-	2154	-	2184	-	2214	-
Mantua Water System	Reservoir Street	Booster Station	Pump Motor, 60 HP	Baldor	Super E 364 JP	1/1/2004	$ 3,575.00	14	30	2034	53%	2034	$ 5,736.83	2064	-	2094	-	2124	-	2154	-	2184	-	2214	-
Mantua Water System	Reservoir Street	Booster Station	Butterfly Valve, 3-in			1/1/2004	$ 1,314.00	14	50	2054	72%	2054	-	2104	-	2154	-	2204	-	2254	-	2304	-	2354	-
Mantua Water System	Reservoir Street	Booster Station	Butterfly Valve, 3-in			1/1/2004	$ 1,314.00	14	50	2054	72%	2054	-	2104	-	2154	-	2204	-	2254	-	2304	-	2354	-
Mantua Water System	Reservoir Street	Booster Station	Butterfly Valve, 3-in			1/1/2004	$ 1,314.00	14	50	2054	72%	2054	-	2104	-	2154	-	2204	-	2254	-	2304	-	2354	-
Mantua Water System	Reservoir Street	Booster Station	Butterfly Valve, 8-in			1/1/2004	$ 1,667.00	14	50	2054	72%	2054	-	2104	-	2154	-	2204	-	2254	-	2304	-	2354	-
Mantua Water System	Reservoir Street	Booster Station	Butterfly Valve, 8-in			1/1/2004	$ 1,667.00	14	50	2054	72%	2054	-	2104	-	2154	-	2204	-	2254	-	2304	-	2354	-
Mantua Water System	Reservoir Street	Booster Station	Butterfly Valve, 6-in			1/1/2004	$ 1,347.00	14	50	2054	72%	2054	-	2104	-	2154	-	2204	-	2254	-	2304	-	2354	-
Mantua Water System	Reservoir Street	Booster Station	Contol Valve, 6-in			1/1/2004	$ 4,000.00	14	20	2024	30%	2024	$ 4,776.21	2044	$ 8,626.37	2064	-	2084	-	2104	-	2124	-	2144	-
Mantua Water System	Reservoir Street	Booster Station	Flow Meter, 4-in			1/1/2004	$ 8,100.00	14	40	2044	65%	2044	$ 17,468.39	2084	-	2124	-	2164	-	2204	-	2244	-	2284	-
Mantua Water System	Reservoir Street	Booster Station	Vault, Valve	Manhole, 4 ft diamter	5 ft	1/1/2004	$ 1,700.00	14	50	2054	72%	2054	-	2104	-	2154	-	2204	-	2254	-	2304	-	2354	-
Mantua Water System	Reservoir Street	Booster Station	Swing Check Valve, 12-in			1/1/2004	$ 17,795.00	14	20	2024	30%	2024	$ 21,248.16	2044	$ 38,376.54	2064	-	2084	-	2104	-	2124	-	2144	-
Mantua Water System	Reservoir Street	Booster Station	Manhole Cover, Valve Vault			1/1/2004	$ 500.00	14	50	2054	72%	2054	-	2104	-	2154	-	2204	-	2254	-	2304	-	2354	-
Mantua Water System	Reservoir Street	Booster Station	Gate Valve, 6-in			1/1/2004	$ 1,648.00	14	50	2054	72%	2054	-	2104	-	2154	-	2204	-	2254	-	2304	-	2354	-
Mantua Water System	Reservoir Street	Booster Station	Gate Valve, 8-in			1/1/2004	$ 2,628.00	14	50	2054	72%	2054	-	2104	-	2154	-	2204	-	2254	-	2304	-	2354	-
Mantua Water System	Reservoir Street	Booster Station	Gate Valve, 8-in			1/1/2004	$ 2,628.00	14	50	2054	72%	2054	-	2104	-	2154	-	2204	-	2254	-	2304	-	2354	-
Mantua Water System	Reservoir Street	Booster Station	Gate Valve, 8-in			1/1/2004	$ 2,628.00	14	50	2054	72%	2054	-	2104	-	2154	-	2204	-	2254	-	2304	-	2354	-
Mantua Water System	Reservoir Street	Booster Station	Gate Valve, 8-in			1/1/2004	$ 2,628.00	14	50	2054	72%	2054	-	2104	-	2154	-	2204	-	2254	-	2304	-	2354	-
Mantua Water System	Reservoir Street	Booster Station	Gate Valve, 12-in			1/1/2004	$ 5,028.00	14	50	2054	72%	2054	-	2104	-	2154	-	2204	-	2254	-	2304	-	2354	-
Mantua Water System	Reservoir Street	Booster Station	Gate Valve, 12-in			1/1/2004	$ 5,028.00	14	50	2054	72%	2054	-	2104	-	2154	-	2204	-	2254	-	2304	-	2354	-
Mantua Water System	Reservoir Street	Booster Station	Valve Box			1/1/2004	$ 100.00	14	50	2054	72%	2054	-	2104	-	2154	-	2204	-	2254	-	2304	-	2354	-

Plant	Address	Structure/System	Equipment Description	Make	Model	Install Date	2018 Equipment Cost	Age	PCWR Estimated Life	Projected End of Life	% Residual Life	Project Year	Estimated Equipment Repair Cost	1 st Repeated Repair Year	Projected Cost	2nd Repeated Repair Year	Projected Cost	3rd Repeated Repair Year	Projected Cost	4th Repeated Repair Year	Projected Cost	5th Repeated Repair Year	Projected Cost	6th Repeated Repair Year	Projected Cost
Mantua Water System	Reservoir Street	Booster Station	Valve Box			1/1/2004	$ 100.00	14	50	2054	72%	2054	-	2104	-	2154	-	2204	-	2254	-	2304	-	2354	-
Mantua Water System	Reservoir Street	Booster Station	Valve Box			1/1/2004	$ 100.00	14	50	2054	72%	2054	-	2104	-	2154	-	2204	-	2254	-	2304	-	2354	-
Mantua Water System	Reservoir Street	Booster Station	Valve Box			1/1/2004	$ 100.00	14	50	2054	72%	2054	-	2104	-	2154	-	2204	-	2254	-	2304	-	2354	-
Mantua Water System	Reservoir Street	Booster Station	Valve Box			1/1/2004	$ 100.00	14	50	2054	72%	2054	-	2104	-	2154	-	2204	-	2254	-	2304	-	2354	-
Mantua Water System	Reservoir Street	Booster Station	Valve Box			1/1/2004	$ 100.00	14	50	2054	72%	2054	-	2104	-	2154	-	2204	-	2254	-	2304	-	2354	-
Mantua Water System	Reservoir Street	Booster Station	Vault, Valve	Manhole, 4 ft diamter	5 ft	1/1/2004	$ 1,700.00	14	50	2054	72%	2054	-	2104	-	2154	-	2204	-	2254	-	2304	-	2354	-
Mantua Water System	Reservoir Street	Booster Station	Swing Check Valve, 12-in			1/1/2004	$ 17,795.00	14	20	2024	30%	2024	$ 21,248.16	2044	$ 38,376.54	2064	-	2084	-	2104	-	2124	-	2144	-
Mantua Water System	Reservoir Street	Booster Station	Manhole Cover, Valve Vault			1/1/2004	$ 500.00	14	50	2054	72%	2054	-	2104	-	2154	-	2204	-	2254	-	2304	-	2354	-
Mantua Water System	Reservoir Street	Booster Station	Gate Valve, 12-in			1/1/2004	$ 5,028.00	14	50	2054	72%	2054	-	2104	-	2154	-	2204	-	2254	-	2304	-	2354	-
Mantua Water System	Reservoir Street	Booster Station	Gate Valve, 12-in			1/1/2004	$ 5,028.00	14	50	2054	72%	2054	-	2104	-	2154	-	2204	-	2254	-	2304	-	2354	-
Mantua Water System	Reservoir Street	Booster Station	Valve Box			1/1/2004	$ 100.00	14	50	2054	72%	2054	-	2104	-	2154	-	2204	-	2254	-	2304	-	2354	-
Mantua Water System	Reservoir Street	Booster Station	Valve Box			1/1/2004	$ 100.00	14	50	2054	72%	2054	-	2104	-	2154	-	2204	-	2254	-	2304	-	2354	-
Mantua Water System	Reservoir Street	Reservior	250,000 Gallon			1/1/1909	$ 750,000.00	109	100	2009	-9%	2019	$ 772,500.00	2119	-	2219	-	2319	-	2419	-	2519	-	2619	-
Mantua Water System	Franklin Street	Distribution System	1		260	1902	$ 20,800.00	116	50	1952	-132%	2019	$ 21,424.00												
Mantua Water System	High School	Distribution System	4	CIP	520	1955	$ 41,600.00	63	50	2005	-26%	2019	$ 42,848.00												
Mantua Water System	SR 44	Distribution System	4	CIP	1080	1902	$ 86,400.00	116	50	1952	-132%	2019	$ 88,992.00												
Mantua Water System	SR 44	Distribution System	4	CIP	300	1902	$ 24,000.00	116	50	1952	-132%	2019	$ 24,720.00												
Mantua Water System	Fernway Drive	Distribution System	4	PVC	300	1970	$ 24,000.00	48	50	2020	4%	2020	$ 25,461.60												
Mantua Water System	Walnut Street	Distribution System	4	PVC	586	1970	$ 46,880.00	48	50	2020	4%	2020	$ 49,734.99												
Mantua Water System	High Street	Distribution System	4	CIP	960	1902	$ 76,800.00	116	50	1952	-132%	2019	$ 79,104.00												
Mantua Water System	Prospect Street	Distribution System	4	CIP	388.5	1902	$ 31,080.00	116	50	1952	-132%	2019	$ 32,012.40												
Mantua Water System	E. Second Street	Distribution System	4	CIP	355	1902	$ 28,400.00	116	50	1952	-132%	2019	$ 29,252.00												
Mantua Water System	Franklin Street	Distribution System	4	CIP	609.5	1902	$ 48,760.00	116	50	1952	-132%	2019	$ 50,222.80												
Mantua Water System	Franklin Street	Distribution System	4	CIP	446	1902	$ 35,680.00	116	50	1952	-132%	2019	$ 36,750.40												
Mantua Water System	Franklin Street	Distribution System	4	CIP	405.8	1902	$ 32,464.00	116	50	1952	-132%	2019	$ 33,437.92												
Mantua Water System	Hearld Street	Distribution System	4	CIP	430	1902	$ 34,400.00	116	50	1952	-132%	2019	$ 35,432.00												
Mantua Water System	Hearld Street	Distribution System	4	CIP	368	1902	$ 29,440.00	116	50	1952	-132%	2019	$ 30,323.20												
Mantua Water System	Oak Street	Distribution System	4	CIP	380	1902	$ 30,400.00	116	50	1952	-132%	2019	$ 31,312.00												
Mantua Water System	Woodford Street	Distribution System	4	CIP	305	1902	$ 24,400.00	116	50	1952	-132%	2019	$ 25,132.00												
Mantua Water System	Woodford Street	Distribution System	4	CIP	572	1902	$ 45,760.00	116	50	1952	-132%	2019	$ 47,132.80												
Mantua Water System	Woodford Street	Distribution System	4	CIP	370	1924	$ 29,600.00	94	50	1974	-88%	2019	$ 30,488.00												
Mantua Water System	Park Street	Distribution System	4	CIP	100	1957	$ 8,000.00	61	50	2007	-22%	2019	$ 8,240.00												
Mantua Water System	Orchard Street	Distribution System	4	CIP	545	1940	$ 43,600.00	78	50	1990	-56%	2019	$ 44,908.00												
Mantua Water System	Orchard Street	Distribution System	4	CIP	520	1940	$ 41,600.00	78	50	1990	-56%	2019	$ 42,848.00												
Mantua Water System	Easement	Distribution System	4	ACP	380	1950	$ 30,400.00	68	50	2000	-36%	2019	$ 31,312.00												
Mantua Water System	Orchard Street	Distribution System	4	ACP	700	1950	$ 56,000.00	68	50	2000	-36%	2019	$ 57,680.00												
Mantua Water System	Ambler Lane	Distribution System	4	MJCIP	340	1955	$ 27,200.00	63	50	2005	-26%	2019	$ 28,016.00												
Mantua Water System	Ambler Lane	Distribution System	4	MJCIP	240	1955	$ 19,200.00	63	50	2005	-26%	2019	$ 19,776.00												
Mantua Water System	Ambler Lane	Distribution System	4	MJCIP	140	1955	$ 11,200.00	63	50	2005	-26%	2019	$ 11,536.00												
Mantua Water System	Ambler Lane	Distribution System	4	MJCIP	250	1955	$ 20,000.00	63	50	2005	-26%	2019	$ 20,600.00												
Mantua Water System	Ambler Lane	Distribution System	4	MJCIP	110	1955	$ 8,800.00	63	50	2005	-26%	2019	$ 9,064.00												
Mantua Water System	Ambler Lane	Distribution System	4	MJCIP	360	1955	$ 28,800.00	63	50	2005	-26%	2019	$ 29,664.00												
Mantua Water System	Ambler Lane	Distribution System	4	MJCIP	320	1955	$ 25,600.00	63	50	2005	-26%	2019	$ 26,368.00												
Mantua Water System	Ambler Lane	Distribution System	4	MJCIP	220	1955	$ 17,600.00	63	50	2005	-26%	2019	$ 18,128.00												
Mantua Water System	Fernway Drive	Distribution System	4	MJCIP	820	1955	$ 65,600.00	63	50	2005	-26%	2019	$ 67,568.00												
Mantua Water System	Fernway Drive	Distribution System	4	MJCIP	500	1955	$ 40,000.00	63	50	2005	-26%	2019	$ 41,200.00												
Mantua Water System	Glenwood Drive	Distribution System	4	ACP	440	1955	$ 35,200.00	63	50	2005	-26%	2019	$ 36,256.00												
Mantua Water System	Grand Elm Drive	Distribution System	4	ACP	580	1955	$ 46,400.00	63	50	2005	-26%	2019	$ 47,792.00												
Mantua Water System	Elm Street	Distribution System	4	CIP	200	1902	$ 16,000.00	116	50	1952	-132%	2019	$ 16,480.00												
Mantua Water System	E. First Street	Distribution System	4	CIP	387	1926	$ 30,960.00	92	50	1976	-84%	2019	$ 31,888.80												
Mantua Water System	Regan Street	Distribution System	4	CIP	441	1977	$ 35,280.00	41	50	2027	18%	2027	$ 46,032.40												
Mantua Water System	Regan Street	Distribution System	4	CIP	200	1977	$ 16,000.00	41	50	2027	18%	2027	$ 20,876.37												
Mantua Water System	Regan Street	Distribution System	4	PVC	765	1977	$ 61,200.00	41	50	2027	18%	2027	$ 79,852.12												
Mantua Water System	Easement	Distribution System	4	C900	166	1989	$ 13,280.00	29	50	2039	42%	2039	$ 24,704.71												
Mantua Water System	High Street	Distribution System	6	CIP	728	1902	$ 58,240.00	116	50	1952	-132%	2019	$ 59,987.20												
Mantua Water System	High Street	Distribution System	6	CIP	310	1902	$ 24,800.00	116	50	1952	-132%	2019	$ 25,544.00												
Mantua Water System	High School	Distribution System	6	PVC	316	1978	$ 25,280.00	40	50	2028	20%	2028	$ 33,974.21												
Mantua Water System	High School	Distribution System	6	PVC	804	1978	$ 64,320.00	40	50	2028	20%	2028	$ 86,440.70												
Mantua Water System	Line Street	Distribution System	6	PVC	1040	1983	$ 83,200.00	35	50	2033	30%	2033	$ 129,622.89												
Mantua Water System	Line Street	Distribution System	6	PVC	520	1983	$ 41,600.00	35	50	2033	30%	2033	$ 64,811.44												
Mantua Water System	Line Street	Distribution System	6	PVC	640	1983	$ 51,200.00	35	50	2033	30%	2033	$ 79,767.93												
Mantua Water System	Prospect Street	Distribution System	6	CIP	238	1902	$ 19,040.00	116	50	1952	-132%	2019	$ 19,611.20												
Mantua Water System	Prospect Street	Distribution System	6	CIP	236	1902	$ 18,880.00	116	50	1952	-132%	2019	$ 19,446.40												
Mantua Water System	Prospect Street	Distribution System	6	CIP	473	1902	$ 37,840.00	116	50	1952	-132%	2019	$ 38,975.20												
Mantua Water System	SR 44	Distribution System	6	CIP	880	1902	$ 70,400.00	116	50	1952	-132%	2019	$ 72,512.00												
Mantua Water System	SR 44	Distribution System	6	CIP	1180	1902	$ 94,400.00	116	50	1952	-132%	2019	$ 97,232.00												
Mantua Water System	SR 44	Distribution System	6	DIP	975	1966	$ 78,000.00	52	50	2016	-4%	2019	$ 80,340.00												
Mantua Water System	SR 44	Distribution System	6	DIP	145	1966	$ 11,600.00	52	50	2016	-4%	2019	$ 11,948.00												
Mantua Water System	High Street	Distribution System	6	CIP	287.3	1902	$ 22,984.00	116	50	1952	-132%	2019	$ 23,673.52												
Mantua Water System	High Street	Distribution System	6	CIP	716.5	1902	$ 57,320.00	116	50	1952	-132%	2019	$ 59,039.60												
Mantua Water System	Prospect Street	Distribution System	6	CIP	801.5	1902	$ 64,120.00	116	50	1952	-132%	2019	$ 66,043.60												
Mantua Water System	Prospect Street	Distribution System	6	CIP	393.6	1902	$ 31,488.00	116	50	1952	-132%	2019	$ 32,432.64												
Mantua Water System	Prospect Street	Distribution System	6	CIP	371	1902	$ 29,680.00	116	50	1952	-132%	2019	$ 30,570.40												
Mantua Water System	Regan Street	Distribution System	6	PVC	425	1977	$ 34,000.00	41	50	2027	18%	2027	$ 44,362.29												
Mantua Water System	Bramley Drive	Distribution System	6	ACP	425	1972	$ 34,000.00	46	50	2022	8%	2022	$ 38,267.30												
Mantua Water System	Easement/John Edward D	Distribution System	6	C900	240	1989	$ 19,200.00	29	50	2039	42%	2039	$ 35,717.66												
Mantua Water System	John Edward Drive	Distribution System	6	C900	642	1989	$ 51,360.00	29	50	2039	42%	2039	$ 95,544.73												
Mantua Water System	Easement/John Edward D	Distribution System	8	ACP	1430	1950	$ 114,400.00	68	50	2000	-36%	2019	$ 117,832.00												
Mantua Water System	SR 44	Distribution System	8	ACP	320	1950	$ 25,600.00	68	50	2000	-36%	2019	$ 26,368.00												

Plant	Address	Structure/System	Equipment Description	Make	Model	Install Date	2018 Equipment Cost	Age	PCWR Estimated Life	Projected End of Life	% Residual Life	Project Year	Estimated Equipment Repair Cost	1 st Repeated Repair Year	Projected Cost	2nd Repeated Repair Year	Projected Cost	3rd Repeated Repair Year	Projected Cost	4th Repeated Repair Year	Projected Cost	5th Repeated Repair Year	Projected Cost	6th Repeated Repair Year	Projected Cost
Mantua Water System	SR 44	Distribution System	8	DIP	400	1950	$ 32,000.00	68	50	2000	-36%	2019	$ 32,960.00												
Mantua Water System	SR 44	Distribution System	8	CIP	700	1902	$ 56,000.00	116	50	1952	-132%	2019	$ 57,680.00												
Mantua Water System	High Street	Distribution System	8	CIP	360	1970	$ 28,800.00	48	50	2020	4%	2020	$ 30,553.92												
Mantua Water System	Reservoir Drive	Distribution System	8	PVC	620	1970	$ 49,600.00	48	50	2020	4%	2020	$ 52,620.64												
Mantua Water System	High Street	Distribution System	8	CIP	493	1902	$ 39,440.00	116	50	1952	-132%	2019	$ 40,623.20												
Mantua Water System	High Street	Distribution System	8	CIP	216.5	1902	$ 17,320.00	116	50	1952	-132%	2019	$ 17,839.60												
Mantua Water System	Fire Line, High Street	Distribution System	8	CIP	160	1902	$ 12,800.00	116	50	1952	-132%	2019	$ 13,184.00												
Mantua Water System	Park Street	Distribution System	8	C900	315	1970	$ 25,200.00	48	50	2020	4%	2020	$ 26,734.68												
Mantua Water System	Park Street	Distribution System	8	PVC	100	1970	$ 8,000.00	48	50	2020	4%	2020	$ 8,487.20												
Mantua Water System	SR 44	Distribution System	8	ACP	580	1968	$ 46,400.00	50	50	2018	0%	2019	$ 47,792.00												
Mantua Water System	Easement	Distribution System	8	DIP	200	1989	$ 16,000.00	29	50	2039	42%	2039	$ 29,764.71												
Mantua Water System	Easement	Distribution System	8	DIP	60	1989	$ 4,800.00	29	50	2039	42%	2039	$ 8,929.41												
Mantua Water System	Easement	Distribution System	8	DIP	470	1989	$ 37,600.00	29	50	2039	42%	2039	$ 69,947.08												
Mantua Water System	Sontag Lane	Distribution System	8	DIP	400	1989	$ 32,000.00	29	50	2039	42%	2039	$ 59,529.43												
Mantua Water System	Raw Water Line	Distribution System	8	DIP	1195.54	1996	$ 95,643.20	22	50	2046	56%	2046	$ 218,824.72												
Mantua Water System	Franklin Street	Distribution System	8	PVC	357	2003	$ 28,560.00	15	50	2053	70%	2053	$ 80,363.91												
Mantua Water System	Franklin Street	Distribution System	8	PVC	538.67	2003	$ 43,093.60	15	50	2053	70%	2053	$ 121,259.46												
Mantua Water System	Reservoir Drive	Distribution System	10	ACP	620	1966	$ 62,000.00	52	50	2016	-4%	2019	$ 63,860.00												
Mantua Water System	High Street	Distribution System	10	ACP	760	1966	$ 76,000.00	52	50	2016	-4%	2019	$ 78,280.00												
Mantua Water System	Maple Street	Distribution System	10	ACP	840	1966	$ 84,000.00	52	50	2016	-4%	2019	$ 86,520.00												
Mantua Water System	Prospect Street	Distribution System	10	ACP	360	1966	$ 36,000.00	52	50	2016	-4%	2019	$ 37,080.00												
Mantua Water System	Reservoir Drive/BS	Distribution System	12	PVC	360	1970	$ 43,200.00	48	50	2020	4%	2020	$ 45,830.88												
Mantua Water System	Reservoir Drive	Distribution System	12	PVC	425	1970	$ 51,000.00	48	50	2020	4%	2020	$ 54,105.90												
Mantua Water System	Easement	Distribution System	12	C900	200	1970	$ 24,000.00	48	50	2020	4%	2020	$ 25,461.60												
Mantua Water System	Easement	Distribution System	12	C900	180	1970	$ 21,600.00	48	50	2020	4%	2020	$ 22,915.44												
Mantua Water System	Prospect Street	Distribution System	12	C900	240	1970	$ 28,800.00	48	50	2020	4%	2020	$ 30,553.92												
Mantua Water System	Prospect Street	Distribution System	12	C900	325	1970	$ 39,000.00	48	50	2020	4%	2020	$ 41,375.10												
Mantua Water System	High Street	Distribution System	12	C900	380	1970	$ 45,600.00	48	50	2020	4%	2020	$ 48,377.04												
Mantua Water System	Mats Road	Distribution System	12		585	1970	$ 70,200.00	48	50	2020	4%	2020	$ 74,475.18												
Mantua Water System	Mats Road	Distribution System	12		220	1970	$ 26,400.00	48	50	2020	4%	2020	$ 28,007.76												
Mantua Water System	Mats Road	Distribution System	12		920	1970	$ 110,400.00	48	50	2020	4%	2020	$ 117,123.36												
Mantua Water System	Mill Street	Distribution System	12	C900	1200	2000	$ 144,000.00	18	50	2050	64%	2050	$ 370,811.92												
Mantua Water System	SR 44	Distribution System	12	PVC	1790	2002	$ 214,800.00	16	50	2052	68%	2052	$ 586,813.26												
Mantua Water System	Easement	Distribution System	12	PVC	220.33	2003	$ 26,439.60	15	50	2053	70%	2053	$ 74,397.40												
Mantua Water System	Potatoe Fest	Distribution System		Hydrant	Corey (1895-19	1902	$ 5,000.00	116	40	1942	-190%	2019	$ 5,150.00												
Mantua Water System	E Hight Street	Distribution System		Hydrant	Corey (1895-19	1902	$ 5,000.00	116	40	1942	-190%	2019	$ 5,150.00												
Mantua Water System	W High Street	Distribution System		Hydrant	Corey (1895-19	1902	$ 5,000.00	116	40	1942	-190%	2019	$ 5,150.00												
Mantua Water System	W High Street	Distribution System		Hydrant	Corey (1895-19	1902	$ 5,000.00	116	40	1942	-190%	2019	$ 5,150.00												
Mantua Water System	Middle School	Distribution System		Hydrant	Corey (1895-19	1967	$ 5,000.00	51	40	2007	-28%	2019	$ 5,150.00												
Mantua Water System	Gramham &Harrison	Distribution System		Hydrant	Corey (1895-19	1902	$ 5,000.00	116	40	1942	-190%	2019	$ 5,150.00												
Mantua Water System	Orchard &Bash (Plant)	Distribution System		Hydrant	Corey (1895-19	1902	$ 5,000.00	116	40	1942	-190%	2019	$ 5,150.00												
Mantua Water System	SR 44 & School driveway	Distribution System		Hydrant	Corey (1895-19	1902	$ 5,000.00	116	40	1942	-190%	2019	$ 5,150.00												
Mantua Water System	SR 44 Luthern Chruch	Distribution System		Hydrant	Corey (1895-19	1902	$ 5,000.00	116	40	1942	-190%	2019	$ 5,150.00												
Mantua Water System	SR 44	Distribution System		Hydrant	Corey (1895-19	1902	$ 5,000.00	116	40	1942	-190%	2019	$ 5,150.00												
Mantua Water System	W Prospect	Distribution System		Hydrant	Corey (1895-19	1902	$ 5,000.00	116	40	1942	-190%	2019	$ 5,150.00												
Mantua Water System	Orchard Street	Distribution System		Hydrant	Kennedy (1890s	1940	$ 5,000.00	78	40	1980	-95%	2019	$ 5,150.00												
Mantua Water System	Orchard Street	Distribution System		Hydrant	Kennedy (1890s	1940	$ 5,000.00	78	40	1980	-95%	2019	$ 5,150.00												
Mantua Water System	School South Bus Lot	Distribution System		Hydrant	Kennedy (1890s	1978	$ 5,000.00	40	40	2018	0%	2019	$ 5,150.00												
Mantua Water System	Mason Lodge	Distribution System		Hydrant	Mueller (1933 -	1989	$ 5,000.00	29	40	2029	28%	2029	$ 6,921.17												
Mantua Water System	John Edward Drive	Distribution System		Hydrant	Mueller (1933 -	1989	$ 5,000.00	29	40	2029	28%	2029	$ 6,921.17												
Mantua Water System	School Front (above lot)	Distribution System		Hydrant	Mueller (1933 -	1978	$ 5,000.00	40	40	2018	0%	2019	$ 5,150.00												
Mantua Water System	School Front (southside)	Distribution System		Hydrant	Mueller (1933 -	1978	$ 5,000.00	40	40	2018	0%	2019	$ 5,150.00												
Mantua Water System	Orchard & Line	Distribution System		Hydrant	Mueller (1933 -	1983	$ 5,000.00	35	40	2023	13%	2023	$ 5,796.37												
Mantua Water System	SR 44	Distribution System		Hydrant	Mueller (1933 -	1968	$ 5,000.00	50	40	2008	-25%	2019	$ 5,150.00												
Mantua Water System	SR 44	Distribution System		Hydrant	Mueller (1933 -	1968	$ 5,000.00	50	40	2008	-25%	2019	$ 5,150.00												
Mantua Water System	SR44 &Lamda (west)	Distribution System		Hydrant	Mueller (1933 -	1955	$ 5,000.00	63	40	1995	-58%	2019	$ 5,150.00												
Mantua Water System	SR 44 Fire Dept (North)	Distribution System		Hydrant	Mueller (1933 -	2003	$ 5,000.00	15	40	2043	63%	2043	$ 10,468.89												
Mantua Water System	SR 44 Fire Dept (South)	Distribution System		Hydrant	Mueller (1933 -	2003	$ 5,000.00	15	40	2043	63%	2043	$ 10,468.89												
Mantua Water System	SR 44	Distribution System		Hydrant	Mueller (1933 -	2003	$ 5,000.00	15	40	2043	63%	2043	$ 10,468.89												
Mantua Water System	SR 44 & Compass	Distribution System		Hydrant	Mueller (1933 -	1968	$ 5,000.00	50	40	2008	-25%	2019	$ 5,150.00												
Mantua Water System	SR 44 & w. Line	Distribution System		Hydrant	Mueller (1933 -	1983	$ 5,000.00	35	40	2023	13%	2023	$ 5,796.37												
Mantua Water System	W. Franklin	Distribution System		Hydrant	Mueller (1933 -	1902	$ 5,000.00	116	40	1942	-190%	2019	$ 5,150.00												
Mantua Water System	W Prospect (Ben)	Distribution System		Hydrant	Mueller (1933 -	1966	$ 5,000.00	52	40	2006	-30%	2019	$ 5,150.00												
Mantua Water System	W. Prospect	Distribution System		Hydrant	Mueller (1933 -	1966	$ 5,000.00	52	40	2006	-30%	2019	$ 5,150.00												
Mantua Water System	W. Prospect	Distribution System		Hydrant	Mueller (1933 -	1966	$ 5,000.00	52	40	2006	-30%	2019	$ 5,150.00												
Mantua Water System	Tiffiny Olson (Second St)	Distribution System		Hydrant	Mueller (1933 -	1902	$ 5,000.00	116	40	1942	-190%	2019	$ 5,150.00												
Mantua Water System	Regan	Distribution System		Hydrant	Mueller (1933 -	1977	$ 5,000.00	41	40	2017	-3%	2019	$ 5,150.00												
Mantua Water System	Sontag	Distribution System		Hydrant	Mueller (1933 -	1989	$ 5,000.00	29	40	2029	28%	2029	$ 6,921.17												
Mantua Water System	Park	Distribution System		Hydrant	Mueller (1933 -	1902	$ 5,000.00	116	40	1942	-190%	2019	$ 5,150.00												
Mantua Water System	Woodford & Herald	Distribution System		Hydrant	Mueller (1933 -	1902	$ 5,000.00	116	40	1942	-190%	2019	$ 5,150.00												
Mantua Water System	Glenwood	Distribution System		Hydrant	Mueller (1933 -	1955	$ 5,000.00	63	40	1995	-58%	2019	$ 5,150.00												
Mantua Water System	Ambler Lane	Distribution System		Hydrant	Mueller (1933 -	1955	$ 5,000.00	63	40	1995	-58%	2019	$ 5,150.00												
Mantua Water System	Fernway	Distribution System		Hydrant	Mueller (1933 -	1955	$ 5,000.00	63	40	1995	-58%	2019	$ 5,150.00												
Mantua Water System	Fernway	Distribution System		Hydrant	Mueller (1933 -	1955	$ 5,000.00	63	40	1995	-58%	2019	$ 5,150.00												
Mantua Water System	Fernway	Distribution System		Hydrant	Mueller (1933 -	1955	$ 5,000.00	63	40	1995	-58%	2019	$ 5,150.00												
Mantua Water System	Glenwood & SR 44	Distribution System		Hydrant	Mueller (1933 -	1955	$ 5,000.00	63	40	1995	-58%	2019	$ 5,150.00												
Mantua Water System	Ambler Lane	Distribution System		Hydrant	Iowa (1900s - 19	1955	$ 5,000.00	63	40	1995	-58%	2019	$ 5,150.00												
Mantua Water System	Ambler Lane	Distribution System		Hydrant	Iowa (1900s - 19	1955	$ 5,000.00	63	40	1995	-58%	2019	$ 5,150.00												
Mantua Water System	Bramley	Distribution System		Hydrant	Ludow (1872-19	1972	$ 5,000.00	46	40	2012	-15%	2019	$ 5,150.00												

Plant	Address	Structure/System	Equipment Description	Make	Model	Install Date	2018 Equipment Cost	Age	PCWR Estimated Life	Projected End of Life	% Residual Life	Project Year	Estimated Equipment Repair Cost	1 st Repeated Repair Year	Projected Cost	2nd Repeated Repair Year	Projected Cost	3rd Repeated Repair Year	Projected Cost	4th Repeated Repair Year	Projected Cost	5th Repeated Repair Year	Projected Cost	6th Repeated Repair Year	Projected Cost
Mantua Water System	4757 East High Street	Distribution System		Hydrant	American Darlir	1969	$ 5,000.00	49	40	2009	-23%	2019	$ 5,150.00												
Mantua Water System	Suds & Duds (west High &	Distribution System		Hydrant	American Darlir	1969	$ 5,000.00	49	40	2009	-23%	2019	$ 5,150.00												
Mantua Water System	School Tower (North)	Distribution System		Hydrant	American Darlir	1978	$ 5,000.00	40	40	2018	0%	2019	$ 5,150.00												
Mantua Water System	School Tower (Bus)	Distribution System		Hydrant	American Darlir	1978	$ 5,000.00	40	40	2018	0%	2019	$ 5,150.00												
Mantua Water System	Compass (Orchard)	Distribution System		Hydrant	American Darlir	1983	$ 5,000.00	35	40	2023	13%	2023	$ 5,796.37												
Mantua Water System	Compass (Orchard)	Distribution System		Hydrant	American Darlir	1983	$ 5,000.00	35	40	2023	13%	2023	$ 5,796.37												
Mantua Water System	SR 44 McDonalds	Distribution System		Hydrant	American Darlir	1969	$ 5,000.00	49	40	2009	-23%	2019	$ 5,150.00												
Mantua Water System	E. Line Str	Distribution System		Hydrant	American Darlir	1969	$ 5,000.00	49	40	2009	-23%	2019	$ 5,150.00												
Mantua Water System	Advance Rehab - Mill St	Distribution System		Hydrant	American Darlir	1969	$ 5,000.00	49	40	2009	-23%	2019	$ 5,150.00												
Mantua Water System	SR 44	Distribution System		Hydrant	American Darlir	1969	$ 5,000.00	49	40	2009	-23%	2019	$ 5,150.00												
Mantua Water System	SR 44	Distribution System		Hydrant	American Darlir	1969	$ 5,000.00	49	40	2009	-23%	2019	$ 5,150.00												
Mantua Water System	Barky Mart - SR 44	Distribution System		Hydrant	American Darlir	1969	$ 5,000.00	49	40	2009	-23%	2019	$ 5,150.00												
Mantua Water System	Maple Ave	Distribution System		Hydrant	American Darlir	1969	$ 5,000.00	49	40	2009	-23%	2019	$ 5,150.00												
Mantua Water System	W. Franklin	Distribution System		Hydrant	American Darlir	2004	$ 5,000.00	14	40	2044	65%	2044	$ 10,782.96												
Mantua Water System	W. Franklin	Distribution System		Hydrant	American Darlir	2004	$ 5,000.00	14	40	2044	65%	2044	$ 10,782.96												
Mantua Water System	Mini Park	Distribution System		Hydrant	American Darlir	1969	$ 5,000.00	49	40	2009	-23%	2019	$ 5,150.00												
Mantua Water System	E. Prospect & First	Distribution System		Hydrant	American Darlir	1969	$ 5,000.00	49	40	2009	-23%	2019	$ 5,150.00												
Mantua Water System	E. Prospect & Second	Distribution System		Hydrant	American Darlir	1969	$ 5,000.00	49	40	2009	-23%	2019	$ 5,150.00												
Mantua Water System	E. Prospect	Distribution System		Hydrant	American Darlir	1969	$ 5,000.00	49	40	2009	-23%	2019	$ 5,150.00												
Mantua Water System	E. Franklin	Distribution System		Hydrant	American Darlir	1969	$ 5,000.00	49	40	2009	-23%	2019	$ 5,150.00												
Mantua Water System	Reservior	Distribution System		Hydrant	American Darlir	1969	$ 5,000.00	49	40	2009	-23%	2019	$ 5,150.00												
Mantua Water System	Reservior	Distribution System		Hydrant	American Darlir	1969	$ 5,000.00	49	40	2009	-23%	2019	$ 5,150.00												
Mantua Water System	Reservior	Distribution System		Hydrant	American Darlir	1969	$ 5,000.00	49	40	2009	-23%	2019	$ 5,150.00												
Mantua Water System	Reservior (dead end)	Distribution System		Hydrant	American Darlir	1969	$ 5,000.00	49	40	2009	-23%	2019	$ 5,150.00												
Mantua Water System	Park	Distribution System		Hydrant	American Darlir	1969	$ 5,000.00	49	40	2009	-23%	2019	$ 5,150.00												
Mantua Water System	Park	Distribution System		Hydrant	American Darlir	1969	$ 5,000.00	49	40	2009	-23%	2019	$ 5,150.00												
Mantua Water System	Herald & Park	Distribution System		Hydrant	American Darlir	1969	$ 5,000.00	49	40	2009	-23%	2019	$ 5,150.00												
Mantua Water System	Mats Road	Distribution System		Hydrant		1970	$ 5,000.00	48	40	2010	-20%	2019	$ 5,150.00												
Mantua Water System	John Edward Drive	Distribution System	6	Valve		1986	$ 1,550.00	32	35	2021	9%	2021	$ 1,693.73												
Mantua Water System	SR 44	Distribution System	6	Valve		1936	$ 1,550.00	82	35	1971	-134%	2019	$ 1,596.50												
Mantua Water System	SR 44	Distribution System	6	Valve		1936	$ 1,550.00	82	35	1971	-134%	2019	$ 1,596.50												
Mantua Water System	Woodford Street	Distribution System	4	Valve		1936	$ 1,160.00	82	35	1971	-134%	2019	$ 1,194.80												
Mantua Water System	Walnut Street	Distribution System	4	Valve		1936	$ 1,160.00	82	35	1971	-134%	2019	$ 1,194.80												
Mantua Water System	Hearald Street	Distribution System	4	Valve		1936	$ 1,160.00	82	35	1971	-134%	2019	$ 1,194.80												
Mantua Water System	Hearald Street	Distribution System	4	Valve		1936	$ 1,160.00	82	35	1971	-134%	2019	$ 1,194.80												
Mantua Water System	East High Street	Distribution System	8	Valve		1936	$ 2,423.00	82	35	1971	-134%	2019	$ 2,495.69												
Mantua Water System	East Second Street	Distribution System	4	Valve		1936	$ 1,160.00	82	35	1971	-134%	2019	$ 1,194.80												
Mantua Water System	East Franklin Street	Distribution System	4	Valve		1936	$ 1,160.00	82	35	1971	-134%	2019	$ 1,194.80												
Mantua Water System	Prospect Street	Distribution System	4	Valve		1936	$ 1,160.00	82	35	1971	-134%	2019	$ 1,194.80												
Mantua Water System	Prospect Street	Distribution System	4	Valve		1936	$ 1,160.00	82	35	1971	-134%	2019	$ 1,194.80												
Mantua Water System	SR 44	Distribution System	6	Valve		1936	$ 1,550.00	82	35	1971	-134%	2019	$ 1,596.50												
Mantua Water System	SR 44	Distribution System	6	Valve		1936	$ 1,550.00	82	35	1971	-134%	2019	$ 1,596.50												
Mantua Water System	Prospect Street	Distribution System	4	Valve		1936	$ 1,160.00	82	35	1971	-134%	2019	$ 1,194.80												
Mantua Water System	Maple	Distribution System	4	Valve		1936	$ 1,160.00	82	35	1971	-134%	2019	$ 1,194.80												
Mantua Water System	Prospect Street	Distribution System	6	Valve		1936	$ 1,550.00	82	35	1971	-134%	2019	$ 1,596.50												
Mantua Water System	West High Street	Distribution System	6	Valve		1936	$ 1,550.00	82	35	1971	-134%	2019	$ 1,596.50												
Mantua Water System	West High Street	Distribution System	6	Valve		1936	$ 1,550.00	82	35	1971	-134%	2019	$ 1,596.50												
Mantua Water System	West Franklin Street	Distribution System	4	Valve		1936	$ 1,160.00	82	35	1971	-134%	2019	$ 1,194.80												
Mantua Water System	West Franklin Street	Distribution System	4	Valve		1936	$ 1,160.00	82	35	1971	-134%	2019	$ 1,194.80												
Mantua Water System	West Franklin Street	Distribution System	4	Valve		1936	$ 1,160.00	82	35	1971	-134%	2019	$ 1,194.80												
Mantua Water System	Oak Street	Distribution System	4	Valve		1936	$ 1,160.00	82	35	1971	-134%	2019	$ 1,194.80												
Mantua Water System	Reservior Street	Distribution System	6	Valve		1936	$ -	82	35	1971	-134%	2019	$ -												
Mantua Water System	Reservior Street	Distribution System	6	Valve		1936	$ -	82	35	1971	-134%	2019	$ -												
Mantua Water System	Reservior Street	Distribution System	6	Valve		1936	$ -	82	35	1971	-134%	2019	$ -												
Mantua Water System	SR 44	Distribution System	8	Valve		1968	$ 2,426.00	50	35	2003	-43%	2019	$ 2,498.78												
Mantua Water System	John Edward Drive	Distribution System	6	Valve		1989	$ 1,550.00	29	35	2024	17%	2024	$ 1,850.78												
Mantua Water System	Reservior Street	Distribution System	10	Valve		1966	$ 3,850.00	52	35	2001	-49%	2019	$ 3,965.50												
Mantua Water System	Maple Street	Distribution System	10	Valve		1966	$ 3,850.00	52	35	2001	-49%	2019	$ 3,965.50												
Mantua Water System	High Street	Distribution System	8	Valve		1966	$ 2,423.00	52	35	2001	-49%	2019	$ 2,495.69												
Mantua Water System	High Street	Distribution System	10	Valve		1966	$ 3,850.00	52	35	2001	-49%	2019	$ 3,965.50												
Mantua Water System	SR 44	Distribution System	12	Valve		2002	$ 4,649.00	16	35	2037	54%	2037	$ 8,152.05												
Mantua Water System	SR 44	Distribution System	12	Valve		2002	$ 4,649.00	16	35	2037	54%	2037	$ 8,152.05												
Mantua Water System	SR 44	Distribution System	12	Valve		2002	$ 4,649.00	16	35	2037	54%	2037	$ 8,152.05												
Mantua Water System	High School	Distribution System	2	Air Relief		2003	$ 800.00	15	35	2038	57%	2038	$ 1,444.89												
Mantua Water System	High School	Distribution System	12	Valve		2003	$ 4,649.00	15	35	2038	57%	2038	$ 8,396.61												
Mantua Water System	High School	Distribution System	12	Valve		2003	$ 4,649.00	15	35	2038	57%	2038	$ 8,396.61												
Mantua Water System	High School	Distribution System	12	Valve		2003	$ 4,649.00	15	35	2038	57%	2038	$ 8,396.61												
Mantua Water System	High School	Distribution System	12	Valve		2003	$ 4,649.00	15	35	2038	57%	2038	$ 8,396.61												
Mantua Water System	High School	Distribution System	12	Valve		2003	$ 4,649.00	15	35	2038	57%	2038	$ 8,396.61												
Mantua Water System	Prospect Street	Distribution System	6	Valve		1983	$ 1,550.00	35	35	2018	0%	2019	$ 1,596.50												
Mantua Water System	Line Street	Distribution System	6	Valve		1983	$ 1,550.00	35	35	2018	0%	2019	$ 1,596.50												
Mantua Water System	Line Street	Distribution System	6	Valve		1983	$ 1,550.00	35	35	2018	0%	2019	$ 1,596.50												
Mantua Water System	Mill Street	Distribution System	6	Valve		2000	$ 1,550.00	18	35	2035	49%	2035	$ 2,561.91												
Mantua Water System	Mill Street	Distribution System	8	Valve		2000	$ 2,423.00	18	35	2035	49%	2035	$ 4,004.85												
Mantua Water System	Mill Street	Distribution System	2	Air Relief		2000	$ 800.00	18	35	2035	49%	2035	$ 1,322.28												
Mantua Water System	Mill Street	Distribution System	12	Valve		2000	$ 4,649.00	18	35	2035	49%	2035	$ 7,684.09												
Mantua Water System	Reservior Street	Distribution System	12	Valve		2001	$ 4,649.00	17	35	2036	51%	2036	$ 7,914.61												
Mantua Water System	Reservior Street	Distribution System	8	Valve		2001	$ 2,423.00	17	35	2036	51%	2036	$ 4,125.00												
Mantua Water System	Reservior Street	Distribution System	12	Valve		2001	$ 4,649.00	17	35	2036	51%	2036	$ 7,914.61												

Plant	Address	Structure/System	Equipment Description	Make	Model	Install Date	2018 Equipment Cost	Age	PCWR Estimated Life	Projected End of Life	% Residual Life	Project Year	Estimated Equipment Repair Cost	1 st Repeated Repair Year	Projected Cost	2nd Repeated Repair Year	Projected Cost	3rd Repeated Repair Year	Projected Cost	4th Repeated Repair Year	Projected Cost	5th Repeated Repair Year	Projected Cost	6th Repeated Repair Year	Projected Cost
Mantua Wastewater Treatment Plant	Mats Road	Driveway	Driveway, Concrete		19552.74 ft2	1/1/2000	$195,527.40	18	40	2040	55%	2040	$374,650.72	2080	-	2120	-	2160	-	2200	-	2240	-	2280	-
Mantua Wastewater Treatment Plant	Mats Road	Fence	Fence, Chain Link	6 foot with 3 strand	1850 ft	1/1/2000	$ 92,500.00	18	20	2020	10%	2020	$ 98,133.25	2040	$177,239.57	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	SCADA				1/1/2000	$ 6,500.00	18	20	2020	10%	2020	$ 6,895.85	2040	$ 12,454.67	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Electrical Service				1/1/2000	$ 47,000.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Gas Service				1/1/2000	$ 1,000.00	18	75	2075	76%	2075	-	2150	-	2225	-	2300	-	2375	-	2450	-	2525	-
Mantua Wastewater Treatment Plant	Mats Road	Water Service				1/1/2000	$ 1,000.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Backup Power	Generator, Diesel	Kohler	500ROZD4	8/1/2001	$100,000.00	17	40	2041	58%	2041	$197,358.65	2081	-	2121	-	2161	-	2201	-	2241	-	2281	-
Mantua Wastewater Treatment Plant	Mats Road	Backup Power	Transfer Switch			1/1/2000	$ 5,000.00	18	20	2020	10%	2020	$ 5,304.50	2040	$ 9,580.52	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Muffin Monster, 5 HP	JWC Environmental	TDVC611-29-1-182 TC	1/1/2000	$ 10,000.00	18	10	2010	-80%	2019	$ 10,300.00	2029	$ 13,842.34	2039	$ 18,602.95	2049	$25,000.80	2059	-	2069	-	2079	-
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Manual Bar Screen			1/1/2000	$ 3,000.00	18	20	2020	10%	2020	$ 3,182.70	2040	$ 5,748.31	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	wet well	9' 8" x 13' x 14' 8"		1/1/2000	$ 50,000.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Manhole Cover, wet well			1/1/2000	**$ 2,000.00**	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Suction Lift Pump, 6-in	Gorman Rupp	T6A3-B/WW	1/1/2000	$ 6,270.00	18	30	2030	40%	2030	$ 8,939.52	2060	-	2090	-	2120	-	2150	-	2180	-	2210	-
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Suction Lift Pump, 6-in	Gorman Rupp	T6A3-B/WW	1/1/2000	$ 6,270.00	18	30	2030	40%	2030	$ 8,939.52	2060	-	2090	-	2120	-	2150	-	2180	-	2210	-
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Suction Lift Pump, 6-in	Gorman Rupp	T6A3-B/WW	1/1/2000	$ 6,270.00	18	30	2030	40%	2030	$ 8,939.52	2060	-	2090	-	2120	-	2150	-	2180	-	2210	-
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Motor, 20 HP	Leeson Electric	284T	1/1/2000	$ 1,855.00	18	30	2030	40%	2030	$ 2,644.79	2060	-	2090	-	2120	-	2150	-	2180	-	2210	-
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Motor, 20 HP		284T	1/1/2000	$ 1,855.00	18	30	2030	40%	2030	$ 2,644.79	2060	-	2090	-	2120	-	2150	-	2180	-	2210	-
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Motor, 20 HP		284T	1/1/2000	$ 1,855.00	18	30	2030	40%	2030	$ 2,644.79	2060	-	2090	-	2120	-	2150	-	2180	-	2210	-
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Swing Check Valve, 6-in			1/1/2000	$ 1,500.00	18	20	2020	10%	2020	$ 1,591.35	2040	$ 2,874.16	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Swing Check Valve, 6-in			1/1/2000	$ 1,500.00	18	20	2020	10%	2020	$ 1,591.35	2040	$ 2,874.16	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Swing Check Valve, 6-in			1/1/2016	$ 1,500.00	2	20	2036	90%	2036	$ 2,553.65	2056	-	2076	-	2096	-	2116	-	2136	-	2156	-
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Plug Valve, 6-in			1/1/2000	$ 1,200.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Plug Valve, 6-in			1/1/2000	$ 1,200.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Plug Valve, 6-in			1/1/2000	$ 1,200.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Plug Valve, 8-in			1/1/2000	$ 1,600.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Plug Valve, 8-in			1/1/2000	$ 1,600.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Air Release (pump prime)	Gorman Rupp		1/1/2000	$ 576.00	18	20	2020	10%	2020	$ 611.08	2040	$ 1,103.68	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Air Release (pump prime)	Gorman Rupp		1/1/2000	$ 576.00	18	20	2020	10%	2020	$ 611.08	2040	$ 1,103.68	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Air Release (pump prime)	Gorman Rupp		1/1/2000	$ 576.00	18	20	2020	10%	2020	$ 611.08	2040	$ 1,103.68	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Stop Plate	Aluminum, 1/4-in	26" x 57"	1/1/2000	$ 700.00	18	20	2020	10%	2020	$ 742.63	2040	$ 1,341.27	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Heater, pump room	Qmark		1/1/2000	$ 800.00	18	10	2010	-80%	2019	$ 824.00	2029	$ 1,107.39	2039	$ 1,488.24	2049	$ 2,000.06	2059	-	2069	-	2079	-
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Air Conditioner, 2 Ton	Carrier	48Gs-02404031	1/1/2000	$ 1,100.00	18	20	2020	10%	2020	$ 1,166.99	2040	$ 2,107.71	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Building	Block, CMU	1200 sf	1/1/1967	$300,000.00	51	100	2067	49%	2067	-	2167	-	2267	-	2367	-	2467	-	2567	-	2667	-
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Roof	asphalt Shingles	1200 sf	1/1/2000	$ 60,000.00	18	25	2025	28%	2025	$ 73,792.43	2050	-	2075	-	2100	-	2125	-	2150	-	2175	-
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Window	48" x 48"		1/1/2000	$ 500.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Door, Single			1/1/2000	$ 1,000.00	18	20	2020	10%	2020	$ 1,060.90	2040	$ 1,916.10	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Ventilation Louver	8" x 18"		1/1/2000	$ 70.00	18	100	2100	82%	2100	-	2200	-	2300	-	2400	-	2500	-	2600	-	2700	-
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Ventilation Louver	8" x 18"		1/1/2000	$ 70.00	18	100	2100	82%	2100	-	2200	-	2300	-	2400	-	2500	-	2600	-	2700	-
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Door, Single		3' x 7'2"	1/1/2000	$ 1,000.00	18	20	2020	10%	2020	$ 1,060.90	2040	$ 1,916.10	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Door, Single		3' x 7'2"	1/1/2000	$ 1,000.00	18	20	2020	10%	2020	$ 1,060.90	2040	$ 1,916.10	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Door, Single		3' x 7'2"	1/1/2000	$ 1,000.00	18	20	2020	10%	2020	$ 1,060.90	2040	$ 1,916.10	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Door, Single		3' x 7'2"	1/1/2000	$ 1,000.00	18	20	2020	10%	2020	$ 1,060.90	2040	$ 1,916.10	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Heater, lab/office	Qmark		1/1/2000	$ 800.00	18	10	2010	-80%	2019	$ 824.00	2029	$ 1,107.39	2039	$ 1,488.24	2049	$ 2,000.06	2059	-	2069	-	2079	-
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Sink	Bake light w/sink approx 10 ft		1/1/2000	$ 300.00																		
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Toilet			1/1/2000	$ 200.00																		
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	lab counter, $24/ft																						
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Heater, electric wall			1/1/2000	$ 400.00																		
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Heater, Storage Room	Qmark		1/1/2000	$ 800.00																		
Mantua Wastewater Treatment Plant	Mats Road	Headworks Building	Eyewash Station			1/1/2000	$ 635.00																		
Mantua Wastewater Treatment Plant	Mats Road	Aerated Grit Tank	Structure	Reinforced Concrete, 1.5' thick	8.5' x 32' x 17.25'	1/1/2000	$ 52,000.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Aerated Grit Tank	Stop Plate	Aluminum, 1/4-in	40" x 31"	1/1/2000	$ 700.00	18	20	2020	10%	2020	$ 742.63	2040	$ 1,341.27	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Aerated Grit Tank	Stop Plate	Aluminum, 1/4-in	40" x 31"	1/1/2000	$ 700.00	18	20	2020	10%	2020	$ 742.63	2040	$ 1,341.27	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Aerated Grit Tank	Stop Plate	Aluminum, 1/4-in	38" x 31"	1/1/2000	$ 700.00	18	20	2020	10%	2020	$ 742.63	2040	$ 1,341.27	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Aerated Grit Tank	Stop Plate	Aluminum, 1/4-in	38" x 31"	1/1/2000	$ 700.00	18	20	2020	10%	2020	$ 742.63	2040	$ 1,341.27	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Aerated Grit Tank	Stop Plate	Aluminum, 1/4-in	38" z 43"	1/1/2000	$ 700.00	18	20	2020	10%	2020	$ 742.63	2040	$ 1,341.27	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Grit Building	Building	High Bay, Split Face CMU	16' x 11' X 23'	1/1/2000	$ 88,000.00	18	100	2100	82%	2100	-	2200	-	2300	-	2400	-	2500	-	2600	-	2700	-
Mantua Wastewater Treatment Plant	Mats Road	Grit Building	Roof	asphalt Shingles	16' x 11'	1/1/2000	$ 8,800.00	18	25	2025	28%	2025	$ 10,822.89	2050	-	2075	-	2100	-	2125	-	2150	-	2175	-
Mantua Wastewater Treatment Plant	Mats Road	Grit Building	Auger/Screw Pump	app 7-in diam, 33 ft		1/1/2000	$ 50,000.00	18	15	2015	-20%	2019	$ 51,500.00	2034	$ 80,235.32	2049	$125,004.02	2064	-	2079	-	2094	-	2109	-
Mantua Wastewater Treatment Plant	Mats Road	Grit Building	Door, Single		3' x 7'2"	1/1/2000	$ 1,000.00	18	20	2020	10%	2020	$ 1,060.90	2040	$ 1,916.10	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Grit Building	Door, Single		3' x 7'2"	1/1/2000	$ 1,000.00	18	20	2020	10%	2020	$ 1,060.90	2040	$ 1,916.10	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Grit Building	Door, Single		3' x 7'2"	1/1/2000	$ 1,000.00	18	20	2020	10%	2020	$ 1,060.90	2040	$ 1,916.10	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Grit Building	Window	36 x 36 Aluminum		1/1/2000	$ 500.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Grit Building	Window	36 x 36 Aluminum		1/1/2000	$ 500.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Grit Building	Window	36 x 36 Aluminum		1/1/2000	$ 500.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Grit Building	Window	36 x 36 Aluminum		1/1/2000	$ 500.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Grit Building	Window	36 x 36 Aluminum		1/1/2000	$ 500.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Grit Building	Window	36 x 36 Aluminum		1/1/2000	$ 500.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Grit Building	Door, OHD		10' x 8'	1/1/2000	$ 600.00	18	30	2030	40%	2030	$ 855.46	2060	-	2090	-	2120	-	2150	-	2180	-	2210	-
Mantua Wastewater Treatment Plant	Mats Road	Grit Building	Ventilation, Exhaust Fan, 1/3 HP	Cook	100 SQN-B	1/1/2000	$ 600.00	18	15	2015	-20%	2019	$ 618.00	2034	$ 962.82	2049	$ 1,500.05	2064	-	2079	-	2094	-	2109	-
Mantua Wastewater Treatment Plant	Mats Road	Grit Building	Heater, Electric	Markel, Electric	HLA12 - Hazardous Env.	1/1/2000	$ 5,400.00	18	10	2010	-80%	2019	$ 5,562.00	2029	$ 7,474.86	2039	$ 10,045.59	2049	$13,500.43	2059	-	2069	-	2079	-
Mantua Wastewater Treatment Plant	Mats Road	Grit Building	Heater, Electric	Markel, Electric	HLA12 - Hazardous Env.	1/1/2000	$ 5,100.00	18	10	2010	-80%	2019	$ 5,253.00	2029	$ 7,059.59	2039	$ 9,487.50	2049	$12,750.41	2059	-	2069	-	2079	-
Mantua Wastewater Treatment Plant	Mats Road	Influent Flow Meter	Parshall Flume, 6-in	36-in channel		1/1/2000	$ 2,569.95	18	20	2020	10%	2020	$ 2,726.46	2040	$ 4,924.29	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Influent Flow Meter	Stop Plate			1/1/2000	$ 700.00	18	20	2020	10%	2020	$ 742.63	2040	$ 1,341.27	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Influent Flow Meter	Weir Gate	downward, aluminum	24" H x 36 W	1/1/2000	$ 5,000.00	18	20	2020	10%	2020	$ 5,304.50	2040	$ 9,580.52	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Flow Splitter	Structure	Reinforced Concrete, 1' thick	18.5' x 9' x 15'	1/1/2000	$ 28,000.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Flow Splitter	Stop Plate	Aluminum, 1/4-in	50" x 22"	1/1/2000	$ 700.00	18	20	2020	10%	2020	$ 742.63	2040	$ 1,341.27	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Flow Splitter	Stop Plate	Aluminum, 1/4-in	50" x 22"	1/1/2000	$ 700.00	18	20	2020	10%	2020	$ 742.63	2040	$ 1,341.27	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Flow Splitter	Stop Plate	Aluminum, 1/4-in	50" x 22"	1/1/2000	$ 700.00	18	20	2020	10%	2020	$ 742.63	2040	$ 1,341.27	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Flow Splitter	Stop Plate	Aluminum, 1/4-in	50" x 22"	1/1/2000	$ 700.00	18	20	2020	10%	2020	$ 742.63	2040	$ 1,341.27	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 1	Structure	Reinforced Concrete, 1' thick	82x41x10.5	1/1/2000	$240,000.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 1	Structure	Reinforced Concrete, 1' thick	82x41x10.5	1/1/2000	$240,000.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 1	Aerator Moter, 40 HP			1/1/2000		18	30	2030	40%	2030	$ -	2060	-	2090	-	2120	-	2150	-	2180	-	2210	-
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 1	Control Panel with Soft Start, 40 HP			1/1/2000	$ 4,825.00	18	15	2015	-20%	2019	$ 4,969.75	2034	$ 7,742.71	2049	$ 12,062.89	2064	-	2079	-	2094	-	2109	-

Plant	Address	Structure/System	Equipment Description	Make	Model	Install Date	2018 Equipment Cost	Age	PCWR Estimated Life	Projected End of Life	% Residual Life	Project Year	Estimated Equipment Repair Cost	1 st Repeated Repair Year	Projected Cost	2nd Repeated Repair Year	Projected Cost	3rd Repeated Repair Year	Projected Cost	4th Repeated Repair Year	Projected Cost	5th Repeated Repair Year	Projected Cost	6th Repeated Repair Year	Projected Cost
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 1	Aerator Gear Reducer			1/1/2000		18	20	2020	10%	2020	$ -	2040	$ -	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 1	Mechnical Aerator			1/1/2000	$ 38,985.00	18	30	2030	40%	2030	$ 55,583.29	2060	-	2090	-	2120	-	2150	-	2180	-	2210	-
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 1	Hydrostatic Pressure Relief Valve, 4-in			1/1/2000	$ 376.00	18	20	2020	10%	2020	$ 398.90	2040	$ 720.45	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 1	Hydrostatic Pressure Relief Valve, 4-in			1/1/2000	$ 376.00	18	20	2020	10%	2020	$ 398.90	2040	$ 720.45	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 1	Hydrostatic Pressure Relief Valve, 4-in			1/1/2000	$ 376.00	18	20	2020	10%	2020	$ 398.90	2040	$ 720.45	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 1	Hydrostatic Pressure Relief Valve, 4-in			1/1/2000	$ 376.00	18	20	2020	10%	2020	$ 398.90	2040	$ 720.45	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 1	Hydrostatic Pressure Relief Valve, 4-in			1/1/2000	$ 376.00	18	20	2020	10%	2020	$ 398.90	2040	$ 720.45	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 1	Hydrostatic Pressure Relief Valve, 4-in			1/1/2000	$ 376.00	18	20	2020	10%	2020	$ 398.90	2040	$ 720.45	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 1	Hydrostatic Pressure Relief Valve, 4-in			1/1/2000	$ 376.00	18	20	2020	10%	2020	$ 398.90	2040	$ 720.45	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 1	Hydrostatic Pressure Relief Valve, 4-in			1/1/2000	$ 376.00	18	20	2020	10%	2020	$ 398.90	2040	$ 720.45	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 1	Hydrostatic Pressure Relief Valve, 4-in			1/1/2000	$ 376.00	18	20	2020	10%	2020	$ 398.90	2040	$ 720.45	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 1	Hydrostatic Pressure Relief Valve, 4-in			1/1/2000	$ 376.00	18	20	2020	10%	2020	$ 398.90	2040	$ 720.45	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 1	Hydrostatic Pressure Relief Valve, 4-in			1/1/2000	$ 376.00	18	20	2020	10%	2020	$ 398.90	2040	$ 720.45	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 1	Hydrostatic Pressure Relief Valve, 4-in			1/1/2000	$ 376.00	18	20	2020	10%	2020	$ 398.90	2040	$ 720.45	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 1	Hydrostatic Pressure Relief Valve, 4-in			1/1/2000	$ 376.00	18	20	2020	10%	2020	$ 398.90	2040	$ 720.45	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 1	Hydrostatic Pressure Relief Valve, 4-in			1/1/2000	$ 376.00	18	20	2020	10%	2020	$ 398.90	2040	$ 720.45	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 1	Weir Gate	5'3" x 2.5'		1/1/2000	$ 5,000.00	18	20	2020	10%	2020	$ 5,304.50	2040	$ 9,580.52	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 1	Mud Valve, 8-in			1/1/2000	$ 1,600.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 1	Mud Valve, 8-in			1/1/2000	$ 1,600.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 1	Hatch	Aluminum	36 x 36	1/1/2000	$ 1,300.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 2	Aerator Moter, 40 HP			1/1/2000		18	30	2030	40%	2030	$ -	2060	-	2090	-	2120	-	2150	-	2180	-	2210	-
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 2	Soft Start, 40 HP			1/1/2000	$ 4,825.00	18	15	2015	-20%	2019	$ 4,969.75	2034	$ 7,742.71	2049	$ 12,062.89	2064	-	2079	-	2094	-	2109	-
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 2	Aerator Gear Reducer			1/1/2000		18	20	2020	10%	2020	$ -	2040	$ -	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 2	Mechnical Aerator			1/1/2000	$ 38,985.00	18	30	2030	40%	2030	$ 55,583.29	2060	-	2090	-	2120	-	2150	-	2180	-	2210	-
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 2	Hydrostatic Pressure Relief Valve, 4-in			1/1/2000	$ 376.00	18	20	2020	10%	2020	$ 398.90	2040	$ 720.45	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 2	Hydrostatic Pressure Relief Valve, 4-in			1/1/2000	$ 376.00	18	20	2020	10%	2020	$ 398.90	2040	$ 720.45	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 2	Hydrostatic Pressure Relief Valve, 4-in			1/1/2000	$ 376.00	18	20	2020	10%	2020	$ 398.90	2040	$ 720.45	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 2	Hydrostatic Pressure Relief Valve, 4-in			1/1/2000	$ 376.00	18	20	2020	10%	2020	$ 398.90	2040	$ 720.45	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 2	Hydrostatic Pressure Relief Valve, 4-in			1/1/2000	$ 376.00	18	20	2020	10%	2020	$ 398.90	2040	$ 720.45	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 2	Hydrostatic Pressure Relief Valve, 4-in			1/1/2000	$ 376.00	18	20	2020	10%	2020	$ 398.90	2040	$ 720.45	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 2	Hydrostatic Pressure Relief Valve, 4-in			1/1/2000	$ 376.00	18	20	2020	10%	2020	$ 398.90	2040	$ 720.45	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 2	Hydrostatic Pressure Relief Valve, 4-in			1/1/2000	$ 376.00	18	20	2020	10%	2020	$ 398.90	2040	$ 720.45	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 2	Hydrostatic Pressure Relief Valve, 4-in			1/1/2000	$ 376.00	18	20	2020	10%	2020	$ 398.90	2040	$ 720.45	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 2	Hydrostatic Pressure Relief Valve, 4-in			1/1/2000	$ 376.00	18	20	2020	10%	2020	$ 398.90	2040	$ 720.45	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 2	Hydrostatic Pressure Relief Valve, 4-in			1/1/2000	$ 376.00	18	20	2020	10%	2020	$ 398.90	2040	$ 720.45	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 2	Hydrostatic Pressure Relief Valve, 4-in			1/1/2000	$ 376.00	18	20	2020	10%	2020	$ 398.90	2040	$ 720.45	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 2	Hydrostatic Pressure Relief Valve, 4-in			1/1/2000	$ 376.00	18	20	2020	10%	2020	$ 398.90	2040	$ 720.45	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 2	Hydrostatic Pressure Relief Valve, 4-in			1/1/2000	$ 376.00	18	20	2020	10%	2020	$ 398.90	2040	$ 720.45	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 2	Weir Gate	5'3" x 2.5'		1/1/2000	$ 5,000.00	18	20	2020	10%	2020	$ 5,304.50	2040	$ 9,580.52	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 2	Mud Valve, 8-in			1/1/2000	$ 1,600.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 2	Mud Valve, 8-in			1/1/2000	$ 1,600.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Oxidation Ditch 2	Hatch	Aluminum	36 x 36	1/1/2000	$ 1,300.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Equilization Tank 1	Structure	Reinforced Concrete, 1.5' thick	20' x 45' x 17.25'	1/1/2000	$174,000.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Equilization Tank 1	Diffusers	ss		1/1/2000	$ 3,500.00	18	20	2020	10%	2020	$ 3,713.15	2040	$ 6,706.36	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Equilization Tank 1	Butterfly Valve, 4-in Actuated			1/1/2000	$ 1,609.95	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Equilization Tank 1	Butterfly Valve, 4-in Actuated			1/1/2000	$ 1,609.95	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Equilization Tank 1	Butterfly Valve, 4-in Actuated			1/1/2000	$ 1,609.95	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Equilization Tank 2	Structure	Reinforced Concrete, 1.5' thick	20' x 45' x 17.25'	1/1/2000	$174,000.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Equilization Tank 2	Butterfly Valve, 4-in Actuated			1/1/2000	$ 1,609.95	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Equilization Tank 2	Butterfly Valve, 4-in Actuated			1/1/2000	$ 1,609.95	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Equilization Tank 2	Butterfly Valve, 4-in Actuated			1/1/2000	$ 1,609.95	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Equilization Tank 2	Weir Gate		1.5' x 5'	1/1/2000	$ 5,000.00	18	20	2020	10%	2020	$ 5,304.50	2040	$ 9,580.52	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Equilization Tank 2	Diffusers	ss		1/1/2000	$ 3,500.00	18	20	2020	10%	2020	$ 3,713.15	2040	$ 6,706.36	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Aerobice Digestor Tank	Structure	Reinforced Concrete, 1.5' thick	20' x 45' x 17.25'	1/1/2000	$174,000.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Aerobice Digestor Tank	Submersible Pump, X-in, X HP			1/1/2000	$ 3,700.00	18	15	2015	-20%	2019	$ 3,811.00	2034	$ 5,937.41	2049	$ 9,250.30	2064	-	2079	-	2094	-	2109	-
Mantua Wastewater Treatment Plant	Mats Road	Aerobice Digestor Tank	Submersible Pump, X-in, X HP			1/1/2000	$ 3,700.00	18	15	2015	-20%	2019	$ 3,811.00	2034	$ 5,937.41	2049	$ 9,250.30	2064	-	2079	-	2094	-	2109	-
Mantua Wastewater Treatment Plant	Mats Road	Aerobice Digestor Tank	Diffusers	ss		1/1/2000	$ 6,800.00	18	20	2020	10%	2020	$ 7,214.12	2040	$ 13,029.50	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Aerobice Digestor Tank	Plug Valve, 6-in			1/1/2000	$ 1,200.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Aerobice Digestor Tank	Plug Valve, 6-in			1/1/2000	$ 1,200.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Aerobice Digestor Tank	Ball Valve, 1-in			1/1/2000	$ 32.95	18	30	2030	40%	2030	$ 46.98	2060	-	2090	-	2120	-	2150	-	2180	-	2210	-
Mantua Wastewater Treatment Plant	Mats Road	Aerobice Digestor Tank	Air Lift, 4-in			1/1/2000	$ 4,400.00	18	20	2020	10%	2020	$ 4,667.96	2040	$ 8,430.85	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Aerobice Digestor Tank	Ball Valve, 3/4-in			1/1/2000	$ 23.95	18	30	2030	40%	2030	$ 34.15	2060	-	2090	-	2120	-	2150	-	2180	-	2210	-
Mantua Wastewater Treatment Plant	Mats Road	Valve Vault	Manhole, 5-ft Diameter	7' feet		1/1/2000	$ 5,000.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Valve Vault	Hatch	Aluminum		1/1/2000	$ 1,300.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Valve Vault	Plug Valve, 6-in			1/1/2000	$ 1,200.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Valve Vault	Plug Valve, 6-in			1/1/2000	$ 1,200.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Valve Vault	Valve box			1/1/2000	$ 100.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Valve Vault	Valve box			1/1/2000	$ 100.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Valve Vault	Plug Valve, 4-in			1/1/2000	$ 900.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Valve Vault	Swing Check Valve, 4-in			1/1/2000	$ 1,100.00	18	20	2020	10%	2020	$ 1,166.99	2040	$ 2,107.71	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Blower Building	PD Blower	Gardner Denver Sutorbilt	GAHMCPA	10/1/2012	$ 7,000.00	6	30	2042	80%	2042	$ 14,229.56	2072	-	2102	-	2132	-	2162	-	2192	-	2222	-
Mantua Wastewater Treatment Plant	Mats Road	Blower Building	PD Blower	Gardner Denver Sutorbilt	GAHMCPA	1/1/2000	$ 7,000.00	18	30	2030	40%	2030	$ 9,980.33	2060	-	2090	-	2120	-	2150	-	2180	-	2210	-
Mantua Wastewater Treatment Plant	Mats Road	Blower Building	PD Blower	Gardner Denver Sutorbilt	GAHMCPA	8/1/2014	$ 7,000.00	4	30	2044	87%	2044	$ 15,096.14	2074	-	2104	-	2134	-	2164	-	2194	-	2224	-
Mantua Wastewater Treatment Plant	Mats Road	Blower Building	Motor, 75 HP	Baldor	Super-E 365T, f class	1/1/2000	$ 6,934.00	18	30	2030	40%	2030	$ 9,886.23	2060	-	2090	-	2120	-	2150	-	2180	-	2210	-
Mantua Wastewater Treatment Plant	Mats Road	Blower Building	Motor, 75 HP	Baldor	Super-E 365T, f class	1/1/2000	$ 6,934.00	18	30	2030	40%	2030	$ 9,886.23	2060	-	2090	-	2120	-	2150	-	2180	-	2210	-
Mantua Wastewater Treatment Plant	Mats Road	Blower Building	Motor, 75 HP	Baldor	Super-E 365T, f class	1/1/2000	$ 6,934.00	18	30	2030	40%	2030	$ 9,886.23	2060	-	2090	-	2120	-	2150	-	2180	-	2210	-
Mantua Wastewater Treatment Plant	Mats Road	Blower Building	Inlet Silencer			1/1/2000	$ 852.95	18	30	2030	40%	2030	$ 1,216.10	2060	-	2090	-	2120	-	2150	-	2180	-	2210	-
Mantua Wastewater Treatment Plant	Mats Road	Blower Building	Inlet Silencer			1/1/2000	$ 852.95	18	30	2030	40%	2030	$ 1,216.10	2060	-	2090	-	2120	-	2150	-	2180	-	2210	-
Mantua Wastewater Treatment Plant	Mats Road	Blower Building	Inlet Silencer			1/1/2000	$ 852.95	18	30	2030	40%	2030	$ 1,216.10	2060	-	2090	-	2120	-	2150	-	2180	-	2210	-
Mantua Wastewater Treatment Plant	Mats Road	Blower Building	Discharge Silencer			1/1/2000	$ 2,519.95	18	30	2030	40%	2030	$ 3,592.85	2060	-	2090	-	2120	-	2150	-	2180	-	2210	-
Mantua Wastewater Treatment Plant	Mats Road	Blower Building	Discharge Silencer			1/1/2000	$ 2,519.95	18	30	2030	40%	2030	$ 3,592.85	2060	-	2090	-	2120	-	2150	-	2180	-	2210	-
Mantua Wastewater Treatment Plant	Mats Road	Blower Building	Discharge Silencer			1/1/2000	$ 2,519.95	18	30	2030	40%	2030	$ 3,592.85	2060	-	2090	-	2120	-	2150	-	2180	-	2210	-
Mantua Wastewater Treatment Plant	Mats Road	Blower Building	Flow Meter, X-in			1/1/2000	$ 8,000.00	18	40	2040	55%	2040	$ 15,328.83	2080	-	2120	-	2160	-	2200	-	2240	-	2280	-

Plant	Address	Structure/System	Equipment Description	Make	Model	Install Date	2018 Equipment Cost	Age	PCWR Estimated Life	Projected End of Life	% Residual Life	Project Year	Estimated Equipment Repair Cost	1 st Repeated Repair Year	Projected Cost	2nd Repeated Repair Year	Projected Cost	3rd Repeated Repair Year	Projected Cost	4th Repeated Repair Year	Projected Cost	5th Repeated Repair Year	Projected Cost	6th Repeated Repair Year	Projected Cost
Mantua Wastewater Treatment Plant	Mats Road	Blower Building	Building	Block, Split Face	20 x 32	1/1/2000	$160,000.00	18	100	2100	82%	2100	-	2200	-	2300	-	2400	-	2500	-	2600	-	2700	-
Mantua Wastewater Treatment Plant	Mats Road	Blower Building	Roof	Shingles	20 x 32	1/1/2000	$ 32,000.00	18	25	2025	28%	2025	$ 39,355.96	2050	-	2075	-	2100	-	2125	-	2150	-	2175	-
Mantua Wastewater Treatment Plant	Mats Road	Blower Building	Heater, Gas	Modine	PV50AE-01-30	1/1/2000	$ 800.00	18	30	2030	40%	2030	$ 1,140.61	2060	-	2090	-	2120	-	2150	-	2180	-	2210	-
Mantua Wastewater Treatment Plant	Mats Road	Blower Building	Door, Double		5' x 7'2"	1/1/2000	$ 1,631.00	18	20	2020	10%	2020	$ 1,730.33	2040	$ 3,125.16	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Blower Building	Ventilation Louver	48" x 48"		1/1/2000	$ 1,172.00	18	100	2100	82%	2100	-	2200	-	2300	-	2400	-	2500	-	2600	-	2700	-
Mantua Wastewater Treatment Plant	Mats Road	Blower Building	Ventilation, Exhaust Fan, 1/3 HP	Cook	100SQN-B	1/1/2000	$ 600.00	18	15	2015	-20%	2019	$ 618.00	2034	$ 962.82	2049	$ 1,500.05	2064	-	2079	-	2094	-	2109	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Building	High Bay, Split Face CMU	20' x 20' x 23'	1/1/2000	$200,000.00	18	100	2100	82%	2100	-	2200	-	2300	-	2400	-	2500	-	2600	-	2700	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Roof	asphalt Shingles	20 x 20	1/1/2000	$ 20,000.00	18	25	2025	28%	2025	$ 24,597.48	2050	-	2075	-	2100	-	2125	-	2150	-	2175	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Door, Single		3' x 7'2"	1/1/2000	$ 1,000.00	18	20	2020	10%	2020	$ 1,060.90	2040	$ 1,916.10	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Door, Single		3' x 7'2"	1/1/2000	$ 1,000.00	18	20	2020	10%	2020	$ 1,060.90	2040	$ 1,916.10	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Door, Single		3' x 7'2"	1/1/2000	$ 1,000.00	18	20	2020	10%	2020	$ 1,060.90	2040	$ 1,916.10	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Furnace, gas	Carrier	58MXA-040-08	1/1/2000	$ 1,155.00	18	20	2020	10%	2020	$ 1,225.34	2040	$ 2,213.10	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Make Up Air Unit, 1/2 HP	Greenheck	TSU-08	1/1/2000	$ 3,000.00	18	20	2020	10%	2020	$ 3,182.70	2040	$ 5,748.31	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Air Conditioner, 1.5 Ton	Carrier	38TKB-018-3	1/1/2000	$ 980.00	18	20	2020	10%	2020	$ 1,039.68	2040	$ 1,877.78	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Ventilation, Exhaust Fan	Cook	100SQN-B	1/1/2000	$ 600.00	18	15	2015	-20%	2019	$ 618.00	2034	$ 962.82	2049	$ 1,500.05	2064	-	2079	-	2094	-	2109	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Ventilation Register	12" x 8"		1/1/2000	$ 4.00	18	100	2100	82%	2100	-	2200	-	2300	-	2400	-	2500	-	2600	-	2700	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Ventilation Register	12" x 8"		1/1/2000	$ 4.00	18	100	2100	82%	2100	-	2200	-	2300	-	2400	-	2500	-	2600	-	2700	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Water Heater, Electric	A.O. Smith		1/1/2000	$ 648.00	18	15	2015	-20%	2019	$ 667.44	2034	$ 1,039.85	2049	$ 1,620.05	2064	-	2079	-	2094	-	2109	-
Mantua Wastewater Treatment Plant	Mats Road	Clarifier Tank 1	Structure	Reinforced Concrete, 1' thick	30' diameter, 14'3"	1/1/2000	$114,000.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Clarifier Tank 1	Motor, 3/4 HP			1/1/2000	$ 883.00	18	30	2030	40%	2030	$ 1,258.95	2060	-	2090	-	2120	-	2150	-	2180	-	2210	-
Mantua Wastewater Treatment Plant	Mats Road	Clarifier Tank 1	Sludge Collection System			1/1/2000	$ 95,000.00	18	30	2030	40%	2030	$135,447.28	2060	-	2090	-	2120	-	2150	-	2180	-	2210	-
Mantua Wastewater Treatment Plant	Mats Road	Clarifier Tank 1	Hydrostatic Pressure Relief Valve, 4-in			1/1/2000	$ 376.00	18	20	2020	10%	2020	$ 398.90	2040	$ 720.45	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Clarifier Tank 1	Hydrostatic Pressure Relief Valve, 4-in			1/1/2000	$ 376.00	18	20	2020	10%	2020	$ 398.90	2040	$ 720.45	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Clarifier Tank 1	Hydrostatic Pressure Relief Valve, 4-in			1/1/2000	$ 376.00	18	20	2020	10%	2020	$ 398.90	2040	$ 720.45	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Clarifier Tank 1	Hydrostatic Pressure Relief Valve, 4-in			1/1/2000	$ 376.00	18	20	2020	10%	2020	$ 398.90	2040	$ 720.45	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Clarifier Tank 2	Structure	Reinforced Concrete, 1' thick	30' diameter	1/1/2000	$114,000.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Clarifier Tank 2	Motor, 3/4 HP			1/1/2000	$ 883.00	18	30	2030	40%	2030	$ 1,258.95	2060	-	2090	-	2120	-	2150	-	2180	-	2210	-
Mantua Wastewater Treatment Plant	Mats Road	Clarifier Tank 2	Sludge Collection System			1/1/2000	$ 95,000.00	18	30	2030	40%	2030	$135,447.28	2060	-	2090	-	2120	-	2150	-	2180	-	2210	-
Mantua Wastewater Treatment Plant	Mats Road	Clarifier Tank 2	Hydrostatic Pressure Relief Valve, 4-in			1/1/2000	$ 376.00	18	20	2020	10%	2020	$ 398.90	2040	$ 720.45	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Clarifier Tank 2	Hydrostatic Pressure Relief Valve, 4-in			1/1/2000	$ 376.00	18	20	2020	10%	2020	$ 398.90	2040	$ 720.45	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Clarifier Tank 2	Hydrostatic Pressure Relief Valve, 4-in			1/1/2000	$ 376.00	18	20	2020	10%	2020	$ 398.90	2040	$ 720.45	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Clarifier Tank 2	Hydrostatic Pressure Relief Valve, 4-in			1/1/2000	$ 376.00	18	20	2020	10%	2020	$ 398.90	2040	$ 720.45	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Flow Splitter	Reinforced Concrete, 1' thick	16'x 20' x14.35'	1/1/2000	$ 1,000.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Flow Splitter	Hatch, Aluminum	2'x3'	1/1/2000	$ 1,000.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Flow Splitter	Hatch, Aluminum	4'x4'	1/1/2000	$ 2,000.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Plug Valve, 6-in			1/1/2000	$ 1,200.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Plug Valve, 6-in			1/1/2000	$ 1,200.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Plug Valve, 6-in			1/1/2000	$ 1,200.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Plug Valve, 6-in			1/1/2000	$ 1,200.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Valve box			1/1/2000	$ 100.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Valve box			1/1/2000	$ 100.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Stop Plate	Aluminum, 1/4-in	50" x 22"	1/1/2000	$ 700.00	18	20	2020	10%	2020	$ 742.63	2040	$ 1,341.27	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Stop Plate	Aluminum, 1/4-in	50" x 22"	1/1/2000	$ 700.00	18	20	2020	10%	2020	$ 742.63	2040	$ 1,341.27	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Stop Plate	Aluminum, 1/4-in	50" x 22"	1/1/2000	$ 700.00	18	20	2020	10%	2020	$ 742.63	2040	$ 1,341.27	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Stop Plate	Aluminum, 1/4-in	50" x 22"	1/1/2000	$ 700.00	18	20	2020	10%	2020	$ 742.63	2040	$ 1,341.27	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	RAS Pump, x-in, 5 HP			1/1/2000	$ 7,500.00	18	20	2020	10%	2020	$ 7,956.75	2040	$ 14,370.78	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	RAS Pump, x-in, 5 HP			1/1/2000	$ 7,500.00	18	20	2020	10%	2020	$ 7,956.75	2040	$ 14,370.78	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	VFD, 5 HP			1/1/2000	$ 800.00	18	15	2015	-20%	2019	$ 824.00	2034	$ 1,283.77	2049	$ 2,000.06	2064	-	2079	-	2094	-	2109	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	VFD, 5 HP			1/1/2000	$ 800.00	18	15	2015	-20%	2019	$ 824.00	2034	$ 1,283.77	2049	$ 2,000.06	2064	-	2079	-	2094	-	2109	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	WAS Pump, x-in, 2 HP			1/1/2000	$ 7,400.00	18	20	2020	10%	2020	$ 7,850.66	2040	$ 14,179.17	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	WAS Pump, X-in, 2 HP			1/1/2000	$ 7,400.00	18	20	2020	10%	2020	$ 7,850.66	2040	$ 14,179.17	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Plug Valve, 10-in	was		1/1/2000	$ 2,200.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Plug Valve, 6-in	was		1/1/2000	$ 1,200.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Plug Valve, 6-in	was		1/1/2000	$ 1,200.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Plug Valve, 6-in	was		1/1/2000	$ 1,200.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Plug Valve, 6-in	was		1/1/2000	$ 1,200.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Plug Valve, 6-in, with stem	tank 1		1/1/2000	$ 1,200.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Plug Valve, 6-in, with stem	tank 2		1/1/2000	$ 1,200.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Plug Valve, 6-in	ras		1/1/2000	$ 1,200.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Plug Valve, 6-in	ras		1/1/2000	$ 1,200.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Plug Valve, 8-in	ras		1/1/2000	$ 1,600.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Plug Valve, 8-in	ras		1/1/2000	$ 1,600.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Plug Valve, 4-in	scum		1/1/2000	$ 900.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Swing Check Valve, 4-in	scum		1/1/2000	$ 1,100.00	18	20	2020	10%	2020	$ 1,166.99	2040	$ 2,107.71	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Swing Check Valve, 6-in	was		1/1/2000	$ 1,500.00	18	20	2020	10%	2020	$ 1,591.35	2040	$ 2,874.16	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Swing Check Valve, 6-in	was		1/1/2000	$ 1,500.00	18	20	2020	10%	2020	$ 1,591.35	2040	$ 2,874.16	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Swing Check Valve, 6-in	ras		1/1/2000	$ 1,500.00	18	20	2020	10%	2020	$ 1,591.35	2040	$ 2,874.16	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Swing Check Valve, 6-in	ras		1/1/2000	$ 1,500.00	18	20	2020	10%	2020	$ 1,591.35	2040	$ 2,874.16	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Sluice Gate, 8-in Flange Back			1/1/2000	$ 1,150.00	18	20	2020	10%	2020	$ 1,220.04	2040	$ 2,203.52	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Submersible Pump, 4-in, 5 HP, Scum			1/1/2000	$ 6,700.00	18	15	2015	-20%	2019	$ 6,901.00	2034	$ 10,751.53	2049	$ 16,750.54	2064	-	2079	-	2094	-	2109	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Scum Well			1/1/2000	$ 6,700.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Magmeter, 6-in, RAS Flow Meter			1/1/2000	$ 7,475.00	18	40	2040	55%	2040	$ 14,322.87	2080	-	2120	-	2160	-	2200	-	2240	-	2280	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Magmeter, 6-in, WAS Flow Meter			1/1/2000	$ 7,475.00	18	40	2040	55%	2040	$ 14,322.87	2080	-	2120	-	2160	-	2200	-	2240	-	2280	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Chemical Tank, HDPE	550 gal, 4' diameter x 6'		1/1/2000	$ 1,500.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Ball Valve, 2-in			1/1/2000	$ 132.95	18	20	2020	10%	2020	$ 141.05	2040	$ 254.75	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Pressure Reducing Valve, 3/4-in	pvc		1/1/2000	$ 128.00	18	20	2020	10%	2020	$ 135.80	2040	$ 245.26	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Ball Valve, 3/4-in	pvc		1/1/2000	$ 95.00	18	20	2020	10%	2020	$ 100.79	2040	$ 182.03	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Ball Valve, 3/4-in	pvc		1/1/2000	$ 44.95	18	20	2020	10%	2020	$ 47.69	2040	$ 86.13	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Ball Valve, 3/4-in	pvc		1/1/2000	$ 44.95	18	20	2020	10%	2020	$ 47.69	2040	$ 86.13	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Ball Valve, 3/4-in	pvc		1/1/2000	$ 44.95	18	20	2020	10%	2020	$ 47.69	2040	$ 86.13	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Ball Valve, 3/4-in	pvc		1/1/2000	$ 44.95	18	20	2020	10%	2020	$ 47.69	2040	$ 86.13	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Chemical Pump, metering			1/1/2000	$ 3,500.00	18	10	2010	-80%	2019	$ 3,605.00	2029	$ 4,844.82	2039	$ 6,511.03	2049	$ 8,750.28	2059	-	2069	-	2079	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Chemical Pump, metering			1/1/2000	$ 3,500.00	18	10	2010	-80%	2019	$ 3,605.00	2029	$ 4,844.82	2039	$ 6,511.03	2049	$ 8,750.28	2059	-	2069	-	2079	-

Plant	Address	Structure/System	Equipment Description	Make	Model	Install Date	2018 Equipment Cost	Age	PCWR Estimated Life	Projected End of Life	% Residual Life	Project Year	Estimated Equipment Repair Cost	1 st Repeated Repair Year	Projected Cost	2nd Repeated Repair Year	Projected Cost	3rd Repeated Repair Year	Projected Cost	4th Repeated Repair Year	Projected Cost	5th Repeated Repair Year	Projected Cost	6th Repeated Repair Year	Projected Cost
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Ball Valve, 1/2-in	pvc		1/1/2000	$ 45.95	18	20	2020	10%	2020	$ 48.75	2040	$ 88.04	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Ball Valve, 1/2-in	pvc		1/1/2000	$ 45.95	18	20	2020	10%	2020	$ 48.75	2040	$ 88.04	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Gate Valve, 1/2-in	pvc		1/1/2000	$ 23.37	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Gate Valve, 1/2-in	pvc		1/1/2000	$ 23.37	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Four-Way Valve, 1/2-in	pvc		1/1/2000	$ 100.00	18	20	2020	10%	2020	$ 106.09	2040	$ 191.61	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Four-Way Valve, 1/2-in	pvc		1/1/2000	$ 100.00	18	20	2020	10%	2020	$ 106.09	2040	$ 191.61	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Check Valve, 1/2-in	pvc		1/1/2000	$ 39.20	18	20	2020	10%	2020	$ 41.59	2040	$ 75.11	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Check Valve, 1/2-in	pvc		1/1/2000	$ 39.20	18	20	2020	10%	2020	$ 41.59	2040	$ 75.11	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Eyewash Station	HAWS #7261	Plastic bowl, twin head	1/1/2000	$ 635.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Sink, Laundry	Enamel, 4-leg self leveling		1/1/2000	$ 1,000.00	18	100	2100	82%	2100	-	2200	-	2300	-	2400	-	2500	-	2600	-	2700	-
Mantua Wastewater Treatment Plant	Mats Road	RAS Building	Sump Pump, 2-in, 1/2 HP			1/1/2000	$ 440.00	18	15	2015	-20%	2019	$ 453.20	2034	$ 706.07	2049	$ 1,100.04	2064	-	2079	-	2094	-	2109	-
Mantua Wastewater Treatment Plant	Mats Road	Sludge Holding Tanks	Structure	Reinforced Concrete, 1' thick	37.5' diameter x 16 ft	1/1/1960	$300,000.00	58	50	2010	-16%	2019	$309,000.00	2069	-	2119	-	2169	-	2219	-	2269	-	2319	-
Mantua Wastewater Treatment Plant	Mats Road	Sludge Holding Tanks	Structure		37.5' diameter x 16 ft	1/1/1960	$300,000.00	58	50	2010	-16%	2019	$309,000.00	2069	-	2119	-	2169	-	2219	-	2269	-	2319	-
Mantua Wastewater Treatment Plant	Mats Road	Sludge Holding Tanks	Plug Valve, 12-in			1/1/2000	$ 2,800.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Sludge Holding Tanks	Plug Valve, 6-in			1/1/2000	$ 1,200.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Sludge Holding Tanks	Plug Valve, 6-in			1/1/2000	$ 1,200.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Sludge Holding Tanks	Plug Valve, 6-in			1/1/2000	$ 1,200.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Sludge Holding Tanks	Plug Valve, 6-in			1/1/2000	$ 1,200.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Sludge Holding Tanks	Valve box			1/1/2000	$ 100.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Sludge Holding Tanks	Valve box			1/1/2000	$ 100.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Sludge Holding Tanks	Valve box			1/1/2000	$ 100.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Sludge Holding Tanks	Valve box			1/1/2000	$ 100.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Sludge Holding Tanks	Valve box			1/1/2000	$ 100.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Post Aeration	Structure	Reinforced Concrete, 1' thick	19' x 16' x 11'	1/1/2000	$ 37,000.00	18	100	2100	82%	2100	-	2200	-	2300	-	2400	-	2500	-	2600	-	2700	-
Mantua Wastewater Treatment Plant	Mats Road	Post Aeration	Plug Valve, 6-in			1/1/2000	$ 1,200.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Post Aeration	Plug Valve, 6-in			1/1/2000	$ 1,200.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Post Aeration	Diffusers			1/1/2000	$ 500.00	18	15	2015	-20%	2019	$ 515.00	2034	$ 802.35	2049	$ 1,250.04	2064	-	2079	-	2094	-	2109	-
Mantua Wastewater Treatment Plant	Mats Road	Post Aeration	Butterfly Valve, 24-in			1/1/2000	$ 50,000.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Post Aeration	Sluice Gate, 20-in			1/1/2000	$ 5,000.00	18	20	2020	10%	2020	$ 5,304.50	2040	$ 9,580.52	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Post Aeration	Sump pump, X-in, X HP	Flgyt	Z-25	1/1/2000	$ 1,310.00	18	15	2015	-20%	2019	$ 1,349.30	2034	$ 2,102.17	2049	$ 3,275.11	2064	-	2079	-	2094	-	2109	-
Mantua Wastewater Treatment Plant	Mats Road	Post Aeration	Stop Plate	Aluminum, 1/4-in	26" x 36"	1/1/2000	$ 700.00	18	20	2020	10%	2020	$ 742.63	2040	$ 1,341.27	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Post Aeration	Stop Plate	Aluminum, 1/4-in	26" x 51"	1/1/2000	$ 700.00	18	20	2020	10%	2020	$ 742.63	2040	$ 1,341.27	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Disinfection	Structure	Reinforced Concrete, 1' thick	57' x 7' x6'	1/1/2000	$ 30,000.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Disinfection	UV, two banks			1/1/2000	$183,000.00	18	15	2015	-20%	2019	$188,490.00	2034	$293,661.28	2049	$457,514.70	2064	-	2079	-	2094	-	2109	-
Mantua Wastewater Treatment Plant	Mats Road	Disinfection	UV Control Panel			1/1/2000	$ 2,000.00	18	15	2015	-20%	2019	$ 2,060.00	2034	$ 3,209.41	2049	$ 5,000.16	2064	-	2079	-	2094	-	2109	-
Mantua Wastewater Treatment Plant	Mats Road	Disinfection	UV Sensor Panel			1/1/2000		18	15	2015	-20%	2019	$ -	2034	$ -	2049	$ -	2064	-	2079	-	2094	-	2109	-
Mantua Wastewater Treatment Plant	Mats Road	Effluent Flow Meter	Magmeter, 14-in			1/1/2000	$ 10,000.00	18	40	2040	55%	2040	$ 19,161.03	2080	-	2120	-	2160	-	2200	-	2240	-	2280	-
Mantua Wastewater Treatment Plant	Mats Road	Outfall	Headwall	reinforce concrete, 24-in & 15-in		1/1/2000	$ 600.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Manhole	Manhole, 4 ft Diameter	Manhole SA-1		1/1/2000	$ 5,000.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Manhole	Manhole, 4 ft Diameter	Manhole SA-2		1/1/2000	$ 5,000.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Manhole	Manhole, 4 ft Diameter	Manhole SA-3		1/1/2000	$ 5,000.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Manhole	Manhole, 4 ft Diameter	Manhole SA-4		1/1/2000	$ 5,000.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Manhole	Manhole, 4 ft Diameter	Manhole SA-5		1/1/2000	$ 5,000.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Manhole	Manhole, 4 ft Diameter	Manhole SA-6		1/1/2000	$ 5,000.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Manhole	Manhole, 4 ft Diameter	Manhole SA-7		1/1/2000	$ 5,000.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Manhole Cover				1/1/2000	$ 400.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Manhole Cover				1/1/2000	$ 400.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Manhole Cover				1/1/2000	$ 400.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Manhole Cover				1/1/2000	$ 400.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Manhole Cover				1/1/2000	$ 400.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Manhole Cover				1/1/2000	$ 400.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Manhole Cover				1/1/2000	$ 400.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Pump Station - STAMM	Sump pump, 1/3 HP			1/1/2000	$ 234.00	18	7	2007	-157%	2019	$ 241.02	2026	$ 296.42	2033	$ 364.56	2040	$ 448.37	2047	$ 551.44	2054	-	2061	-
Mantua Wastewater Treatment Plant	Mats Road	Pump Station - STAMM	Level Control, Sealed Mercury Float, primary			1/1/2000	$ 514.00	18	7	2007	-157%	2019	$ 529.42	2026	$ 651.12	2033	$ 800.80	2040	$ 984.88	2047	$1,211.27	2054	-	2061	-
Mantua Wastewater Treatment Plant	Mats Road	Pump Station - STAMM	Ventilation Blower, 1/6 HP			1/1/2000	$ 200.00	18	20	2020	10%	2020	$ 212.18	2040	$ 383.22	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Pump Station - STAMM	Heater,			1/1/2000	$ 700.00	18	20	2020	10%	2020	$ 742.63	2040	$ 1,341.27	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Pump Station - STAMM	Reprime Valve (Air Release)			1/1/2000	$ 1,200.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Pump Station - STAMM	Reprime Valve (Air Release)			1/1/2000	$ 1,200.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Pump Station - STAMM	Plug Valve, 4-in			1/1/2000	$ 1,200.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Pump Station - STAMM	Plug Valve, 4-in			1/1/2000	$ 900.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Pump Station - STAMM	Plug Valve, 4-in			1/1/2000	$ 900.00	18	7	2007	-157%	2019	$ 927.00	2026	$ 1,140.09	2033	$ 1,402.17	2040	$ 1,724.49	2047	$2,120.91	2054	-	2061	-
Mantua Wastewater Treatment Plant	Mats Road	Pump Station - STAMM	Swing Check Valve, 4-in			1/1/2000	$ 1,100.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Pump Station - STAMM	Swing Check Valve, 4-in			1/1/2000	$ 1,100.00	18	20	2020	10%	2020	$ 1,166.99	2040	$ 2,107.71	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Pump Station - STAMM	SCADA System			1/1/2000	$ 6,500.00	18	20	2020	10%	2020	$ 6,895.85	2040	$ 12,454.67	2060	-	2080	-	2100	-	2120	-	2140	-
Mantua Wastewater Treatment Plant	Mats Road	Pump Station - STAMM	Suction lift pump, 4-in	Hydromatic	40 MMP	1/1/2017	$ 5,048.00	1	30	2047	97%	2047	$ 11,895.94	2077	-	2107	-	2137	-	2167	-	2197	-	2227	-
Mantua Wastewater Treatment Plant	Mats Road	Pump Station - STAMM	Suction lift pump, 4-in	Hydromatic	40 MMP	1/1/2017	$ 5,048.00	1	30	2047	97%	2047	$ 11,895.94	2077	-	2107	-	2137	-	2167	-	2197	-	2227	-
Mantua Wastewater Treatment Plant	Mats Road	Pump Station - STAMM	Electrical Service			1/1/2000	$ 9,400.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Pump Station - STAMM	Pump Motor, 2 HP			1/1/2000	$ 700.00	18	30	2030	40%	2030	$ 998.03	2060	-	2090	-	2120	-	2150	-	2180	-	2210	-
Mantua Wastewater Treatment Plant	Mats Road	Pump Station - STAMM	Pump Motor, 2 HP			1/1/2000	$ 700.00	18	30	2030	40%	2030	$ 998.03	2060	-	2090	-	2120	-	2150	-	2180	-	2210	-
Mantua Wastewater Treatment Plant	Mats Road	Pump Station - STAMM	Suction Lines, 4-in			1/1/2000	$ 2,610.00	18	40	2040	55%	2040	$ 5,001.03	2080	-	2120	-	2160	-	2200	-	2240	-	2280	-
Mantua Wastewater Treatment Plant	Mats Road	Pump Station - STAMM	Dry Well			1/1/2000	$ 6,000.00	18	50	2050	64%	2050	-	2100	-	2150	-	2200	-	2250	-	2300	-	2350	-
Mantua Wastewater Treatment Plant	Mats Road	Pump Station - STAMM	Hatch, Dry Well			1/1/2000	$ 1,117.00	18	50	2050	64%	2050		2100		2150		2200		2250		2300		2350	
Mantua Wastewater Treatment Plant	Mats Road	Pump Station - STAMM	Control Panel			1/1/2000	$ 12,200.00	18	50	2050	64%	2050		2100		2150		2200		2250		2300		2350	
Mantua Wastewater Treatment Plant	Mats Road	Pump Station - STAMM	Manhole Lid, Wet Well			1/1/2000	$ 500.00	18	50	2050	64%	2050		2100		2150		2200		2250		2300		2350	
Mantua Wastewater Treatment Plant	Mats Road	Pump Station - STAMM	Pipe Manifold, 4-in			1/1/2000	$ 3,500.00	18	50	2050	64%	2050		2100		2150		2200		2250		2300		2350	
Mantua Wastewater Treatment Plant	Mats Road	Pump Station - STAMM	Wet Well, 5 ft diameter			1/1/2000	$ 6,400.00	18	60	2060	70%	2060		2120		2180		2240		2300		2360		2420	
North River Pump Station	Main Street SR44	Pump Station	Sump pump, 1/3 HP			1/1/1994	$ 234.00	24	7	2001	-243%	2019	$ 241.02	2026	$ 296.42	2033	$ 364.56	2040	$ 448.37	2047	$ 551.44	2054	-	2061	-
North River Pump Station	Main Street SR44	Pump Station	Level Control, Sealed Mercury Float, primary			1/1/1994	$ 520.00	24	7	2001	-243%	2019	$ 535.60	2026	$ 658.72	2033	$ 810.14	2040	$ 996.37	2047	$1,225.41	2054	-	2061	-
North River Pump Station	Main Street SR44	Pump Station	Ventilation Blower, 1/6 HP			1/1/1994	$ 228.00	24	15	2009	-60%	2019	$ 234.84	2034	$ 365.87	2049	$ 570.02	2064	-	2079	-	2094	-	2109	-
North River Pump Station	Main Street SR44	Pump Station	Heater,			1/1/1994	$ 700.00	24	20	2014	-20%	2019	$ 721.00	2039	$ 1,302.21	2059	-	2079	-	2099	-	2119	-	2139	-
North River Pump Station	Main Street SR44	Pump Station	Reprime Valve (Air Release)			1/1/1994	$ 576.00	24	20	2014	-20%	2019	$ 593.28	2039	$ 1,071.53	2059	-	2079	-	2099	-	2119	-	2139	-
North River Pump Station	Main Street SR44	Pump Station	Reprime Valve (Air Release)			1/1/1994	$ 576.00	24	20	2014	-20%	2019	$ 593.28	2039	$ 1,071.53	2059	-	2079	-	2099	-	2119	-	2139	-
North River Pump Station	Main Street SR44	Pump Station	Plug Valve, 4-in			1/1/1994	$ 900.00	24	20	2014	-20%	2019	$ 927.00	2039	$ 1,674.27	2059	-	2079	-	2099	-	2119	-	2139	-

Plant	Address	Structure/System	Equipment Description	Make	Model	Install Date	2018 Equipment Cost	Age	PCWR Estimated Life	Projected End of Life	% Residual Life	Project Year	Estimated Equipment Repair Cost	1 st Repeated Repair Year	Projected Cost	2nd Repeated Repair Year	Projected Cost	3rd Repeated Repair Year	Projected Cost	4th Repeated Repair Year	Projected Cost	5th Repeated Repair Year	Projected Cost	6th Repeated Repair Year	Projected Cost
North River Pump Station	Main Street SR44	Pump Station	Plug Valve, 4-in			1/1/1994	$ 900.00	24	20	2014	-20%	2019	$ 927.00	2039	$ 1,674.27	2059	-	2079	-	2099	-	2119	-	2139	-
North River Pump Station	Main Street SR44	Pump Station	Plug Valve, 6-in			1/1/1994	$ 900.00	24	20	2014	-20%	2019	$ 927.00	2039	$ 1,674.27	2059	-	2079	-	2099	-	2119	-	2139	-
North River Pump Station	Main Street SR44	Pump Station	Swing Check Valve, 4-in			1/1/1994	$ 1,100.00	24	20	2014	-20%	2019	$ 1,133.00	2039	$ 2,046.32	2059	-	2079	-	2099	-	2119	-	2139	-
North River Pump Station	Main Street SR44	Pump Station	Swing Check Valve, 4-in			1/1/1994	$ 1,100.00	24	20	2014	-20%	2019	$ 1,133.00	2039	$ 2,046.32	2059	-	2079	-	2099	-	2119	-	2139	-
North River Pump Station	Main Street SR44	Pump Station	SCADA System			1/1/1994	$ 6,500.00	24	20	2014	-20%	2019	$ 6,695.00	2039	$ 12,091.91	2059	-	2079	-	2099	-	2119	-	2139	-
North River Pump Station	Main Street SR44	Pump Station	Suction lift pump, 4-in			1/1/1994	$ 5,048.00	24	30	2024	20%	2024	$ 6,027.58	2054	-	2084	-	2114	-	2144	-	2174	-	2204	-
North River Pump Station	Main Street SR44	Pump Station	Suction lift pump, 4-in			1/1/1994	$ 5,048.00	24	30	2024	20%	2024	$ 6,027.58	2054	-	2084	-	2114	-	2144	-	2174	-	2204	-
North River Pump Station	Main Street SR44	Pump Station	Electrical Service	200 amp, 120/208V 3ph 4 wire		1/1/1994	$ 9,400.00	24	35	2029	31%	2029	$ 13,011.80	2064	-	2099	-	2134	-	2169	-	2204	-	2239	-
North River Pump Station	Main Street SR44	Pump Station	Pump Motor, 5 HP			1/1/1994	$ 900.00	24	30	2024	20%	2024	$ 1,074.65	2054	-	2084	-	2114	-	2144	-	2174	-	2204	-
North River Pump Station	Main Street SR44	Pump Station	Pump Motor, 5 HP			1/1/1994	$ 900.00	24	30	2024	20%	2024	$ 1,074.65	2054	-	2084	-	2114	-	2144	-	2174	-	2204	-
North River Pump Station	Main Street SR44	Pump Station	Magnetic flow meter, 4-in			1/1/1994	$ 5,888.00	24	40	2034	40%	2034	$ 9,448.51	2074	-	2114	-	2154	-	2194	-	2234	-	2274	-
North River Pump Station	Main Street SR44	Pump Station	Suction Lines, 4-in			1/1/1994	$ 2,610.00	24	40	2034	40%	2034	$ 4,188.28	2074	-	2114	-	2154	-	2194	-	2234	-	2274	-
North River Pump Station	Main Street SR44	Pump Station	Dry Well	Fiberglass Burried		1/1/1994	$ 6,000.00	24	40	2034	40%	2034	$ 9,628.24	2074	-	2114	-	2154	-	2194	-	2234	-	2274	-
North River Pump Station	Main Street SR44	Pump Station	Hatch, Dry Well			1/1/1994	$ 1,117.50	24	50	2044	52%	2044	$ 2,409.99	2094	-	2144	-	2194	-	2244	-	2294	-	2344	-
North River Pump Station	Main Street SR44	Pump Station	Control Panel			1/1/1994	$ 12,200.00	24	50	2044	52%	2044	$ 26,310.41	2094	-	2144	-	2194	-	2244	-	2294	-	2344	-
North River Pump Station	Main Street SR44	Pump Station	Manhole Lid, Wet Well			1/1/1994	$ 500.00	24	50	2044	52%	2044	$ 1,078.30	2094	-	2144	-	2194	-	2244	-	2294	-	2344	-
North River Pump Station	Main Street SR44	Pump Station	Pipe Manifold, 6-in			1/1/1994	$ 2,118.80	24	50	2044	52%	2044	$ 4,569.39	2094	-	2144	-	2194	-	2244	-	2294	-	2344	-
North River Pump Station	Main Street SR44	Pump Station	Wet Well, 6 ft diameter, with 4' access	9', 13'		1/1/1994	$ 12,000.00	24	60	2054	60%	2054	-	2114	-	2174	-	2234	-	2294	-	2354	-	2414	-
Ambler Pump Station	Ambler Lane (10900)	Pump Station	Sump pump, 1/3 HP			1/1/1979	$ 234.00	39	7	1986	-457%	2019	$ 241.02	2026	$ 296.42	2033	$ 364.56	2040	$ 448.37	2047	$ 551.44	2054	-	2061	-
Ambler Pump Station	Ambler Lane (10900)	Pump Station	Water Service			1/1/1979	$ 1,000.00	39	50	2029	22%	2029	$ 1,384.23	2079	-	2129	-	2179	-	2229	-	2279	-	2329	-
Ambler Pump Station	Ambler Lane (10900)	Pump Station	Level Control, Sealed Mercury Float, primary			1/1/1979	$ 517.17	39	7	1986	-457%	2019	$ 532.69	2026	$ 655.14	2033	$ 805.73	2040	$ 990.95	2047	$1,218.74	2054	-	2061	-
Ambler Pump Station	Ambler Lane (10900)	Pump Station	Ventilation Blower, 1/6 HP			1/1/1979	$ 200.00	39	15	1994	-160%	2019	$ 206.00	2034	$ 320.94	2049	$ 500.02	2064	-	2079	-	2094	-	2109	-
Ambler Pump Station	Ambler Lane (10900)	Pump Station	Heater,			1/1/1979	$ 700.00	39	20	1999	-95%	2019	$ 721.00	2039	$ 1,302.21	2059	-	2079	-	2099	-	2119	-	2139	-
Ambler Pump Station	Ambler Lane (10900)	Pump Station	Reprime Valve (Air Release)			1/1/1979	$ 576.00	39	20	1999	-95%	2019	$ 593.28	2039	$ 1,071.53	2059	-	2079	-	2099	-	2119	-	2139	-
Ambler Pump Station	Ambler Lane (10900)	Pump Station	Reprime Valve (Air Release)			1/1/1979	$ 576.00	39	20	1999	-95%	2019	$ 593.28	2039	$ 1,071.53	2059	-	2079	-	2099	-	2119	-	2139	-
Ambler Pump Station	Ambler Lane (10900)	Pump Station	Plug Valve, 4-in			1/1/1979	$ 900.00	39	20	1999	-95%	2019	$ 927.00	2039	$ 1,674.27	2059	-	2079	-	2099	-	2119	-	2139	-
Ambler Pump Station	Ambler Lane (10900)	Pump Station	Plug Valve, 4-in			1/1/1979	$ 900.00	39	20	1999	-95%	2019	$ 927.00	2039	$ 1,674.27	2059	-	2079	-	2099	-	2119	-	2139	-
Ambler Pump Station	Ambler Lane (10900)	Pump Station	Plug Valve, 4-in			1/1/1979	$ 900.00	39	20	1999	-95%	2019	$ 927.00	2039	$ 1,674.27	2059	-	2079	-	2099	-	2119	-	2139	-
Ambler Pump Station	Ambler Lane (10900)	Pump Station	Swing Check Valve, 4-in			1/1/1979	$ 1,100.00	39	20	1999	-95%	2019	$ 1,133.00	2039	$ 2,046.32	2059	-	2079	-	2099	-	2119	-	2139	-
Ambler Pump Station	Ambler Lane (10900)	Pump Station	Swing Check Valve, 4-in			1/1/1979	$ 1,100.00	39	20	1999	-95%	2019	$ 1,133.00	2039	$ 2,046.32	2059	-	2079	-	2099	-	2119	-	2139	-
Ambler Pump Station	Ambler Lane (10900)	Pump Station	SCADA System			1/1/1979	$ 6,500.00	39	20	1999	-95%	2019	$ 6,695.00	2039	$ 12,091.91	2059	-	2079	-	2099	-	2119	-	2139	-
Ambler Pump Station	Ambler Lane (10900)	Pump Station	Suction lift pump, 4-in	Hydromatic	40 MPV	6/1/2014	$ 5,048.00	4	30	2044	87%	2044	$ 10,886.47	2074	-	2104	-	2134	-	2164	-	2194	-	2224	-
Ambler Pump Station	Ambler Lane (10900)	Pump Station	Suction lift pump, 4-in	Hydromatic	40 MPV	6/1/2014	$ 5,048.00	4	30	2044	87%	2044	$ 10,886.47	2074	-	2104	-	2134	-	2164	-	2194	-	2224	-
Ambler Pump Station	Ambler Lane (10900)	Pump Station	Electrical Service			1/1/1979	$ 9,400.00	39	50	2029	22%	2029	$ 13,011.80	2079	-	2129	-	2179	-	2229	-	2279	-	2329	-
Ambler Pump Station	Ambler Lane (10900)	Pump Station	Pump Motor, 15 HP	Century C	254T	1/1/1979	$ 1,729.00	39	30	2009	-30%	2019	$ 1,780.87	2049	$ 4,322.64	2079	-	2109	-	2139	-	2169	-	2199	-
Ambler Pump Station	Ambler Lane (10900)	Pump Station	Pump Motor, 15 HP	Gould Centrury	254T	1/1/1979	$ 1,729.00	39	30	2009	-30%	2019	$ 1,780.87	2049	$ 4,322.64	2079	-	2109	-	2139	-	2169	-	2199	-
Ambler Pump Station	Ambler Lane (10900)	Pump Station	Suction Lines, 4-in			1/1/1979	$ 2,610.00	39	40	2019	3%	2019	$ 2,688.30	2059	-	2099	-	2139	-	2179	-	2219	-	2259	-
Ambler Pump Station	Ambler Lane (10900)	Pump Station	Dry Well	10' x 12' x 7'		1/1/1979	$ 22,680.00	39	100	2079	61%	2079	-	2179	-	2279	-	2379	-	2479	-	2579	-	2679	-
Ambler Pump Station	Ambler Lane (10900)	Pump Station	Hatch, Dry Well	4' x 4'		1/1/1979	$ 1,600.00	39	50	2029	22%	2029	$ 2,214.77	2079	-	2129	-	2179	-	2229	-	2279	-	2329	-
Ambler Pump Station	Ambler Lane (10900)	Pump Station	Control Panel			1/1/1979	$ 12,200.00	39	50	2029	22%	2029	$ 16,887.65	2079	-	2129	-	2179	-	2229	-	2279	-	2329	-
Ambler Pump Station	Ambler Lane (10900)	Pump Station	Manhole Lid, Wet Well			1/1/1979	$ 500.00	39	50	2029	22%	2029	$ 692.12	2079	-	2129	-	2179	-	2229	-	2279	-	2329	-
Ambler Pump Station	Ambler Lane (10900)	Pump Station	Pipe Manifold, 4-in			1/1/1979	$ 2,118.00	39	50	2029	22%	2029	$ 2,931.81	2079	-	2129	-	2179	-	2229	-	2279	-	2329	-
Ambler Pump Station	Ambler Lane (10900)	Pump Station	Wet Well,	5' x 4' x 17'		1/1/1979	$ 9,000.00	39	60	2039	35%	2039	$ 16,742.65	2099	-	2159	-	2219	-	2279	-	2339	-	2399	-
Ambler Pump Station	Ambler Lane (10900)	Pump Station	Roto Phase			1/1/1979	$ 2,200.00	39	20	1999	-95%	2019	$ 2,266.00	2039	$ 4,092.65	2059	-	2079	-	2099	-	2119	-	2139	-
East High Street Park Pump Station	East High Street	Pump Station	Level Control, Sealed Mercury Float, primary			1/1/1998	$ 517.71	20	7	2005	-186%	2019	$ 533.24	2026	$ 655.82	2033	$ 806.58	2040	$ 991.99	2047	$1,220.02	2054	-	2061	-
East High Street Park Pump Station	East High Street	Pump Station	**Submersible Grinder Pump, 1 1/4-in, 2 HP**	Myers	WG20	1/1/1998	$ 2,000.00	20	10	2008	-100%	2019	$ 2,060.00	2029	$ 2,768.47	2039	$ 3,720.59	2049	$ 5,000.16	2059	-	2069	-	2079	-
East High Street Park Pump Station	East High Street	Pump Station	Gate Valve, 2-in			1/1/1998	$ 175.00	20	20	2018	0%	2019	$ 180.25	2039	$ 325.55	2059	-	2079	-	2099	-	2119	-	2139	-
East High Street Park Pump Station	East High Street	Pump Station	Control Panel			1/1/1998	$ 8,800.00	20	50	2048	60%	2048	$ 21,359.91	2098	-	2148	-	2198	-	2248	-	2298	-	2348	-
East High Street Park Pump Station	East High Street	Pump Station	Electrical Service			1/1/1998	$ 10,200.00	20	50	2048	60%	2048	$ 24,758.08	2098	-	2148	-	2198	-	2248	-	2298	-	2348	-
East High Street Park Pump Station	East High Street	Pump Station	Piping, 2 in			1/1/1998	$ 1,100.00	20	50	2048	60%	2048	$ 2,669.99	2098	-	2148	-	2198	-	2248	-	2298	-	2348	-
East High Street Park Pump Station	East High Street	Pump Station	Slide Rails and Chains			1/1/1998	$ 3,000.00	20	50	2048	60%	2048	$ 7,281.79	2098	-	2148	-	2198	-	2248	-	2298	-	2348	-
East High Street Park Pump Station	East High Street	Pump Station	Valve box and Cap, 5 1/4-in			1/1/1998	$ 100.00	20	50	2048	60%	2048	$ 242.73	2098	-	2148	-	2198	-	2248	-	2298	-	2348	-
East High Street Park Pump Station	East High Street	Pump Station	Wet Well, 4 ft diameter			1/1/1998	$ 4,000.00	20	60	2058	67%	2058	-	2118	-	2178	-	2238	-	2298	-	2358	-	2418	-
East High Street Park Pump Station	East High Street	Pump Station	Manhole Lid, Wet Well			1/1/1998	$ 500.00	20	50	2048	100%	2048	$ 1,213.63	2098	-	2148	-	2198	-	2248	-	2298	-	2348	-
Mantua Wastewater Treatment Plant	Mill Street	Collection System	10-in	VCP	103	1966	$ 10,300.00	52	50	50	-4%	2019	$ 10,609.00												
Mantua Wastewater Treatment Plant	Bramley Drive	Collection System	8-in	VCP	113	1967	$ 9,040.00	51	50	50	-2%	2019	$ 9,311.20												
Mantua Wastewater Treatment Plant	Bramley Drive	Collection System	8-in	VCP	352	1967	$ 28,160.00	51	50	50	-2%	2019	$ 29,004.80												
Mantua Wastewater Treatment Plant	E. First Street	Collection System	8-in	VCP	215	1967	$ 17,200.00	51	50	50	-2%	2019	$ 17,716.00												
Mantua Wastewater Treatment Plant	E. First Street	Collection System	8-in	VCP	180	1967	$ 14,400.00	51	50	50	-2%	2019	$ 14,832.00												
Mantua Wastewater Treatment Plant	E. First Street	Collection System	8-in	VCP	211	1967	$ 16,880.00	51	50	50	-2%	2019	$ 17,386.40												
Mantua Wastewater Treatment Plant	E. Second Street	Collection System	8-in	VCP	130	1967	$ 10,400.00	51	50	50	-2%	2019	$ 10,712.00												
Mantua Wastewater Treatment Plant	E. Second Street	Collection System	8-in	VCP	200	1967	$ 16,000.00	51	50	50	-2%	2019	$ 16,480.00												
Mantua Wastewater Treatment Plant	Easement Mill Street	Collection System	10-in	CIP	110	1967	$ 11,000.00	51	50	50	-2%	2019	$ 11,330.00												
Mantua Wastewater Treatment Plant	Easement Village W.W.T.P	Collection System	10-in	VCP	210	1967	$ 21,000.00	51	50	50	-2%	2019	$ 21,630.00												
Mantua Wastewater Treatment Plant	Easement Village W.W.T.P	Collection System	12-in		165	1967	$ 19,800.00	51	50	50	-2%	2019	$ 20,394.00												
Mantua Wastewater Treatment Plant	Easement Village W.W.T.P	Collection System	12-in		100	1967	$ 12,000.00	51	50	50	-2%	2019	$ 12,360.00												
Mantua Wastewater Treatment Plant	Easement Village W.W.T.P	Collection System	12-in	VCP	90	1967	$ 10,800.00	51	50	50	-2%	2019	$ 11,124.00												
Mantua Wastewater Treatment Plant	Easement Village W.W.T.P	Collection System	4-in	VCP FM	300	1967	$ 12,000.00	51	50	50	-2%	2019	$ 12,360.00												
Mantua Wastewater Treatment Plant	Easement Village W.W.T.P	Collection System	4-in	CIP FM	360	1967	$ 14,400.00	51	50	50	-2%	2019	$ 14,832.00												
Mantua Wastewater Treatment Plant	Oak Street	Collection System	8-in	VCP	275	1967	$ 22,000.00	51	50	50	-2%	2019	$ 22,660.00												
Mantua Wastewater Treatment Plant	Elm Street	Collection System	8-in	VCP	227	1967	$ 18,160.00	51	50	50	-2%	2019	$ 18,704.80												
Mantua Wastewater Treatment Plant	Elm Street	Collection System	8-in	VCP	115	1967	$ 9,200.00	51	50	50	-2%	2019	$ 9,476.00												
Mantua Wastewater Treatment Plant	Franklin Street	Collection System	8-in	VCP	356	1967	$ 28,480.00	51	50	50	-2%	2019	$ 29,334.40												
Mantua Wastewater Treatment Plant	Franklin Street	Collection System	8-in	VCP	368	1967	$ 29,440.00	51	50	50	-2%	2019	$ 30,323.20												
Mantua Wastewater Treatment Plant	Franklin Street	Collection System	8-in	VCP	440	1967	$ 35,200.00	51	50	50	-2%	2019	$ 36,256.00												
Mantua Wastewater Treatment Plant	Franklin Street	Collection System	8-in	VCP	355	1967	$ 28,400.00	51	50	50	-2%	2019	$ 29,252.00												
Mantua Wastewater Treatment Plant	Herald Street	Collection System	8-in	VCP	278	1967	$ 22,240.00	51	50	50	-2%	2019	$ 22,907.20												
Mantua Wastewater Treatment Plant	Herald Street	Collection System	8-in	VCP	168	1967	$ 13,440.00	51	50	50	-2%	2019	$ 13,843.20												
Mantua Wastewater Treatment Plant	Herald Street	Collection System	8-in	VCP	385	1967	$ 30,800.00	51	50	50	-2%	2019	$ 31,724.00												
Mantua Wastewater Treatment Plant	Herald Street	Collection System	6-in	VCP	300	1967	$ 18,000.00	51	50	50	-2%	2019	$ 18,540.00												
Mantua Wastewater Treatment Plant	High Street	Collection System	8-in	CIP	40	1967	$ 3,200.00	51	50	50	-2%	2019	$ 3,296.00												
Mantua Wastewater Treatment Plant	High Street	Collection System	8-in	VCP	245	1967	$ 19,600.00	51	50	50	-2%	2019	$ 20,188.00												
Mantua Wastewater Treatment Plant	High Street	Collection System	8-in	VCP	165	1967	$ 13,200.00	51	50	50	-2%	2019	$ 13,596.00												

Plant	Address	Structure/System	Equipment Description	Make	Model	Install Date	2018 Equipment Cost	Age	PCWR Estimated Life	Projected End of Life	% Residual Life	Project Year	Estimated Equipment Repair Cost	1 st Repeated Repair Year	Projected Cost	2nd Repeated Repair Year	Projected Cost	3rd Repeated Repair Year	Projected Cost	4th Repeated Repair Year	Projected Cost	5th Repeated Repair Year	Projected Cost	6th Repeated Repair Year	Projected Cost
Mantua Wastewater Treatment Plant	High Street	Collection System	8-in	VCP	211	1967	$ 16,880.00	51	50	50	-2%	2019	$ 17,386.40												
Mantua Wastewater Treatment Plant	High Street	Collection System	8-in	VCP	516	1967	$ 41,280.00	51	50	50	-2%	2019	$ 42,518.40												
Mantua Wastewater Treatment Plant	High Street	Collection System	6-in	VCP	249.5	1967	$ 14,970.00	51	50	50	-2%	2019	$ 15,419.10												
Mantua Wastewater Treatment Plant	High Street	Collection System	8-in	VCP	326.5	1967	$ 26,120.00	51	50	50	-2%	2019	$ 26,903.60												
Mantua Wastewater Treatment Plant	High Street	Collection System	8-in	VCP	248	1967	$ 19,840.00	51	50	50	-2%	2019	$ 20,435.20												
Mantua Wastewater Treatment Plant	High Street	Collection System	8-in	VCP	260	1967	$ 20,800.00	51	50	50	-2%	2019	$ 21,424.00												
Mantua Wastewater Treatment Plant	High Street	Collection System	8-in	VCP	372	1967	$ 29,760.00	51	50	50	-2%	2019	$ 30,652.80												
Mantua Wastewater Treatment Plant	High Street	Collection System	8-in	VCP	252	1967	$ 20,160.00	51	50	50	-2%	2019	$ 20,764.80												
Mantua Wastewater Treatment Plant	High School	Collection System	6-in	VCP	573	1967	$ 34,380.00	51	50	50	-2%	2019	$ 35,411.40												
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	8-in	VCP	199	1967	$ 15,920.00	51	50	50	-2%	2019	$ 16,397.60												
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	8-in	VCP	211	1967	$ 16,880.00	51	50	50	-2%	2019	$ 17,386.40												
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	8-in	VCP	152	1967	$ 12,160.00	51	50	50	-2%	2019	$ 12,524.80												
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	8-in	VCP	149	1967	$ 11,920.00	51	50	50	-2%	2019	$ 12,277.60												
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	8-in	VCP	414	1967	$ 33,120.00	51	50	50	-2%	2019	$ 34,113.60												
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	8-in	VCP	442	1967	$ 35,360.00	51	50	50	-2%	2019	$ 36,420.80												
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	8-in	VCP	220	1967	$ 17,600.00	51	50	50	-2%	2019	$ 18,128.00												
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	8-in	VCP	216	1967	$ 17,280.00	51	50	50	-2%	2019	$ 17,798.40												
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	10-in	VCP	281	1967	$ 28,100.00	51	50	50	-2%	2019	$ 28,943.00												
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	10-in	VCP	568	1967	$ 56,800.00	51	50	50	-2%	2019	$ 58,504.00												
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	10-in	VCP	157	1967	$ 15,700.00	51	50	50	-2%	2019	$ 16,171.00												
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	10-in	VCP	172	1967	$ 17,200.00	51	50	50	-2%	2019	$ 17,716.00												
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	10-in	VCP	82	1967	$ 8,200.00	51	50	50	-2%	2019	$ 8,446.00												
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	8-in	CIP	369	1967	$ 29,520.00	51	50	50	-2%	2019	$ 30,405.60												
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	8-in	CIP	149	1967	$ 11,920.00	51	50	50	-2%	2019	$ 12,277.60												
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	6-in	CIP/FM	290	1967	$ 17,400.00	51	50	50	-2%	2019	$ 17,922.00												
Mantua Wastewater Treatment Plant	Maple Street	Collection System	8-in	VCP	115	1967	$ 9,200.00	51	50	50	-2%	2019	$ 9,476.00												
Mantua Wastewater Treatment Plant	Maple Street	Collection System	8-in	VCP	207	1967	$ 16,560.00	51	50	50	-2%	2019	$ 17,056.80												
Mantua Wastewater Treatment Plant	Orchard Street	Collection System	10-in	VCP	169	1967	$ 16,900.00	51	50	50	-2%	2019	$ 17,407.00												
Mantua Wastewater Treatment Plant	Park Street	Collection System	8-in	VCP	448	1967	$ 35,840.00	51	50	50	-2%	2019	$ 36,915.20												
Mantua Wastewater Treatment Plant	Park Street	Collection System	8-in	VCP	380	1967	$ 30,400.00	51	50	50	-2%	2019	$ 31,312.00												
Mantua Wastewater Treatment Plant	Prospect Street	Collection System	8-in	VCP	675	1967	$ 54,000.00	51	50	50	-2%	2019	$ 55,620.00												
Mantua Wastewater Treatment Plant	Prospect Street	Collection System	8-in	VCP	817	1967	$ 65,360.00	51	50	50	-2%	2019	$ 67,320.80												
Mantua Wastewater Treatment Plant	Prospect Street	Collection System	8-in	VCP	270	1967	$ 21,600.00	51	50	50	-2%	2019	$ 22,248.00												
Mantua Wastewater Treatment Plant	Prospect Street	Collection System	8-in	VCP	440	1967	$ 35,200.00	51	50	50	-2%	2019	$ 36,256.00												
Mantua Wastewater Treatment Plant	Prospect Street	Collection System	8-in	VCP	374	1967	$ 29,920.00	51	50	50	-2%	2019	$ 30,817.60												
Mantua Wastewater Treatment Plant	Prospect Street	Collection System	8-in	VCP	135	1967	$ 10,800.00	51	50	50	-2%	2019	$ 11,124.00												
Mantua Wastewater Treatment Plant	Prospect Street	Collection System	8-in	VCP	234	1967	$ 18,720.00	51	50	50	-2%	2019	$ 19,281.60												
Mantua Wastewater Treatment Plant	Prospect Street	Collection System	8-in	VCP	217	1967	$ 17,360.00	51	50	50	-2%	2019	$ 17,880.80												
Mantua Wastewater Treatment Plant	Prospect Street	Collection System	10-in	VCP	151	1967	$ 15,100.00	51	50	50	-2%	2019	$ 15,553.00												
Mantua Wastewater Treatment Plant	Prospect Street	Collection System	10-in	VCP	230	1967	$ 23,000.00	51	50	50	-2%	2019	$ 23,690.00												
Mantua Wastewater Treatment Plant	Prospect Street	Collection System	8-in	VCP	360	1967	$ 28,800.00	51	50	50	-2%	2019	$ 29,664.00												
Mantua Wastewater Treatment Plant	Regan Street	Collection System	8-in	VCP	581	1972	$ 46,480.00	46	50	50	8%	2022	$ 52,313.65												
Mantua Wastewater Treatment Plant	Regan Street	Collection System	8-in	VCP	400	1972	$ 32,000.00	46	50	50	8%	2022	$ 36,016.28												
Mantua Wastewater Treatment Plant	Regan Street	Collection System	8-in	ESC	110	1972	$ 8,800.00	46	50	50	8%	2022	$ 9,904.48												
Mantua Wastewater Treatment Plant	Regan Street	Collection System	8-in	ESC	265	1972	$ 21,200.00	46	50	50	8%	2022	$ 23,860.79												
Mantua Wastewater Treatment Plant	Regan Street	Collection System	8-in	ESC	209	1972	$ 16,720.00	46	50	50	8%	2022	$ 18,818.51												
Mantua Wastewater Treatment Plant	Resevoir Drive	Collection System	8-in	VCP	104	1967	$ 8,320.00	51	50	50	-2%	2019	$ 8,569.60												
Mantua Wastewater Treatment Plant	Resevoir Drive	Collection System	8-in	VCP	995	1967	$ 79,600.00	51	50	50	-2%	2019	$ 81,988.00												
Mantua Wastewater Treatment Plant	Walnut Street	Collection System	8-in	VCP	504	1967	$ 40,320.00	51	50	50	-2%	2019	$ 41,529.60												
Mantua Wastewater Treatment Plant	Walnut Street	Collection System	8-in	VCP	372	1967	$ 29,760.00	51	50	50	-2%	2019	$ 30,652.80												
Mantua Wastewater Treatment Plant	Woodford Street	Collection System	8-in	VCP	480	1967	$ 38,400.00	51	50	50	-2%	2019	$ 39,552.00												
Mantua Wastewater Treatment Plant	Woodford Street	Collection System	8-in	VCP	372	1967	$ 29,760.00	51	50	50	-2%	2019	$ 30,652.80												
Mantua Wastewater Treatment Plant	Line Street	Collection System	8-in	PVC	304	1983	$ 24,320.00	35	50	50	30%	2033	$ 37,889.77												
Mantua Wastewater Treatment Plant	Line Street	Collection System	8-in	PVC	105	1983	$ 8,400.00	35	50	50	30%	2033	$ 13,086.93												
Mantua Wastewater Treatment Plant	Line Street	Collection System	8-in	PVC	89	1983	$ 7,120.00	35	50	50	30%	2033	$ 11,092.73												
Mantua Wastewater Treatment Plant	Line Street	Collection System	8-in	PVC	142	1983	$ 11,360.00	35	50	50	30%	2033	$ 17,698.51												
Mantua Wastewater Treatment Plant	Line Street	Collection System	8-in	PVC	115	1983	$ 9,200.00	35	50	50	30%	2033	$ 14,333.30												
Mantua Wastewater Treatment Plant	Line Street	Collection System	8-in	PVC	136	1983	$ 10,880.00	35	50	50	30%	2033	$ 16,950.69												
Mantua Wastewater Treatment Plant	Mats Road	Collection System	8-in	PVC	100	1983	$ 8,000.00	35	50	50	30%	2023	$ 9,274.19												
Mantua Wastewater Treatment Plant	Mats Road	Collection System	8-in	PVC	150	1983	$ 12,000.00	35	50	50	30%	2023	$ 13,911.29												
Mantua Wastewater Treatment Plant	Mats Road	Collection System	8-in	PVC	397	1983	$ 31,760.00	35	50	50	30%	2033	$ 49,481.05												
Mantua Wastewater Treatment Plant	Mats Road	Collection System	8-in	PVC	237	1983	$ 18,960.00	35	50	50	30%	2033	$ 29,539.06												
Mantua Wastewater Treatment Plant	Mats Road	Collection System	8-in	PVC	215	1983	$ 17,200.00	35	50	50	30%	2033	$ 26,797.04												
Mantua Wastewater Treatment Plant	Orchard Street	Collection System	8-in	PVC		1983	$ -	35	50	50	30%	2033	$ -												
Mantua Wastewater Treatment Plant	Orchard Street	Collection System	8-in	PVC	100	1983	$ 8,000.00	35	50	50	30%	2033	$ 12,463.74												
Mantua Wastewater Treatment Plant	Orchard Street	Collection System	8-in	PVC	216	1983	$ 17,280.00	35	50	50	30%	2033	$ 26,921.68												
Mantua Wastewater Treatment Plant	Orchard Street	Collection System	8-in	PVC	274	1983	$ 21,920.00	35	50	50	30%	2023	$ 25,411.29												
Mantua Wastewater Treatment Plant	Ambler Lane/Glenwood Drive	Collection System	4-in	PVC FM	800	1979	$ 32,000.00	39	50	50	22%	2029	$ 44,295.48												
Mantua Wastewater Treatment Plant	Easement Village W.W.T.P	Collection System	6-in	PVC FM	890	1994	$ 53,400.00	24	50	50	52%	2022	$ 60,102.17												
Mantua Wastewater Treatment Plant	Easement Mill Street	Collection System	12-in	PVC	70	2000	$ 8,400.00	18	50	50	64%	2050	$ 21,630.70												
Mantua Wastewater Treatment Plant	Easement Mill Street	Collection System	12-in	PVC	400	2000	$ 48,000.00	18	50	50	64%	2050	$ 123,603.97												
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	12-in	PVC	271	2000	$ 32,520.00	18	50	50	64%	2050	$ 83,741.69												
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	12-in	PVC	212	2000	$ 25,440.00	18	50	50	64%	2050	$ 65,510.11												
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	12-in	PVC	50	2000	$ 6,000.00	18	50	50	64%	2050	$ 15,450.50												
Mantua Wastewater Treatment Plant	Mill Street	Collection System	12-in	PVC	254	2000	$ 30,480.00	18	50	50	64%	2050	$ 78,488.52												
Mantua Wastewater Treatment Plant	Mill Street	Collection System	12-in	PVC	283	2000	$ 33,960.00	18	50	50	64%	2050	$ 87,449.81												
Mantua Wastewater Treatment Plant	Mill Street	Collection System	12-in	PVC	283	2000	$ 33,960.00	18	50	50	64%	2050	$ 87,449.81												
Mantua Wastewater Treatment Plant	St. Joseph Drive	Collection System	8-in	VCP	299	1967	$ 23,920.00	51	50	50	-2%	2019	$ 24,637.60												
Mantua Wastewater Treatment Plant	St. Joseph Drive	Collection System	8-in	VCP	220	1967	$ 17,600.00	51	50	50	-2%	2019	$ 18,128.00												
Mantua Wastewater Treatment Plant	St. Joseph Drive	Collection System	8-in	VCP	1420	1967	$ 113,600.00	51	50	50	-2%	2019	$ 117,008.00												
Mantua Wastewater Treatment Plant	Woodford Street	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	High Street	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	High Street	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												

Plant	Address	Structure/System	Equipment Description	Make	Model	Install Date	2018 Equipment Cost	Age	PCWR Estimated Life	Projected End of Life	% Residual Life	Project Year	Estimated Equipment Repair Cost	1 st Repeated Repair Year	Projected Cost	2nd Repeated Repair Year	Projected Cost	3rd Repeated Repair Year	Projected Cost	4th Repeated Repair Year	Projected Cost	5th Repeated Repair Year	Projected Cost	6th Repeated Repair Year	Projected Cost
Mantua Wastewater Treatment Plant	Herald Street	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	Walnut Street	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	Herald Street	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	Herald Street	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	Walnut Street	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	High Street	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	Prospect Street	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	Woodford Street	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	Woodford Street	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	Park Street	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	Park Street	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	High Street	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	High Street	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	High Street	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	Prospect Drive/Maple	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	Prospect Drive/Elm	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	Prospect Street	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	Easement West of Main St Near HS	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	Prospect Street	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	Prospect Street	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	High Street	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	High Street	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	High Street	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	Resevoir Drive	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	Bramley Drive	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	Bramley Drive	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	Resevoir Drive	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	High Street	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	High Street	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	High Street	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	Franklin Street	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	Franklin Street	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	Franklin Street	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	Franklin Street	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	Grand Elm Street	Collection System	Manhole, 4 ft			1977	$ 5,000.00	41	50	50	18%	2027	$ 6,523.87												
Mantua Wastewater Treatment Plant	Glenwood Drive	Collection System	Manhole, 4 ft			1979	$ 5,000.00	39	50	50	22%	2029	$ 6,921.17												
Mantua Wastewater Treatment Plant	Glenwood Drive	Collection System	Manhole, 4 ft			1979	$ 5,000.00	39	50	50	22%	2029	$ 6,921.17												
Mantua Wastewater Treatment Plant	Glenwood Drive	Collection System	Manhole, 4 ft			1979	$ 5,000.00	39	50	50	22%	2029	$ 6,921.17												
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	Glenwood Drive	Collection System	Manhole, 4 ft			2004	$ 5,000.00	14	50	50	72%	2054	$ 14,491.39												
Mantua Wastewater Treatment Plant	Glenwood Drive	Collection System	Manhole, 4 ft			2004	$ 5,000.00	14	50	50	72%	2054	$ 14,491.39												
Mantua Wastewater Treatment Plant	Glenwood Drive	Collection System	Manhole, 4 ft			2004	$ 5,000.00	14	50	50	72%	2054	$ 14,491.39												
Mantua Wastewater Treatment Plant	Ambler Lane	Collection System	Manhole, 4 ft			2004	$ 5,000.00	14	50	50	72%	2054	$ 14,491.39												
Mantua Wastewater Treatment Plant	Ambler Lane	Collection System	Manhole, 4 ft			2004	$ 5,000.00	14	50	50	72%	2054	$ 14,491.39												
Mantua Wastewater Treatment Plant	Ambler Lane	Collection System	Manhole, 4 ft			1977	$ 5,000.00	41	50	50	18%	2027	$ 6,523.87												
Mantua Wastewater Treatment Plant	St. Joseph Drive	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	St. Joseph Drive	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	Easement West of Main Street	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	St. Joseph Drive	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	St. Joseph Drive	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	St. Joseph Drive	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	High Street	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	E. First Street	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	Mill Street	Collection System	Manhole, 4 ft			2000	$ 5,000.00	18	50	50	64%	2050	$ 12,875.41												
Mantua Wastewater Treatment Plant	Mill Street	Collection System	Manhole, 4 ft			2000	$ 5,000.00	18	50	50	64%	2050	$ 12,875.41												
Mantua Wastewater Treatment Plant	Easement Mill Street	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	Easement Mill Street	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	Prospect Street	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	Prospect Street	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	Prospect Street	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	E. Second Street	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	E. Second Street	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	E. First Street	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	E. First Street	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	Prospect Street	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	Prospect Street	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	Mill Street	Collection System	Manhole, 4 ft			2000	$ 5,000.00	18	50	50	64%	2050	$ 12,875.41												
Mantua Wastewater Treatment Plant	Mill Street	Collection System	Manhole, 4 ft			2000	$ 5,000.00	18	50	50	64%	2050	$ 12,875.41												

Plant	Address	Structure/System	Equipment Description	Make	Model	Install Date	2018 Equipment Cost	Age	PCWR Estimated Life	Projected End of Life	% Residual Life	Project Year	Estimated Equipment Repair Cost	1 st Repeated Repair Year	Projected Cost	2nd Repeated Repair Year	Projected Cost	3rd Repeated Repair Year	Projected Cost	4th Repeated Repair Year	Projected Cost	5th Repeated Repair Year	Projected Cost	6th Repeated Repair Year	Projected Cost
Mantua Wastewater Treatment Plant	Regan Street	Collection System	Manhole, 4 ft			1972	$ 5,000.00	46	50	50	8%	2022	$ 5,627.54												
Mantua Wastewater Treatment Plant	Line Street	Collection System	Manhole, 4 ft			1983	$ 5,000.00	35	50	50	30%	2033	$ 7,789.84												
Mantua Wastewater Treatment Plant	Mats Road	Collection System	Manhole, 4 ft			1983	$ 5,000.00	35	50	50	30%	2033	$ 7,789.84												
Mantua Wastewater Treatment Plant	Mats Road	Collection System	Manhole, 4 ft			1983	$ 5,000.00	35	50	50	30%	2033	$ 7,789.84												
Mantua Wastewater Treatment Plant	Mats Road	Collection System	Manhole, 4 ft			1983	$ 5,000.00	35	50	50	30%	2033	$ 7,789.84												
Mantua Wastewater Treatment Plant	Mats Road	Collection System	Manhole, 4 ft			1983	$ 5,000.00	35	50	50	30%	2033	$ 7,789.84												
Mantua Wastewater Treatment Plant	Mats Road	Collection System	Manhole, 4 ft			1983	$ 5,000.00	35	50	50	30%	2033	$ 7,789.84												
Mantua Wastewater Treatment Plant	Orchard Street	Collection System	Manhole, 4 ft			1983	$ 5,000.00	35	50	50	30%	2033	$ 7,789.84												
Mantua Wastewater Treatment Plant	Orchard Street	Collection System	Manhole, 4 ft			1983	$ 5,000.00	35	50	50	30%	2033	$ 7,789.84												
Mantua Wastewater Treatment Plant	Orchard Street	Collection System	Manhole, 4 ft			1983	$ 5,000.00	35	50	50	30%	2033	$ 7,789.84												
Mantua Wastewater Treatment Plant	Easement Village W.W.T.P	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	Regan Street	Collection System	Manhole, 4 ft			1972	$ 5,000.00	46	50	50	8%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	Easement Village W.W.T.P	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	Easement Village W.W.T.P	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	Easement Village W.W.T.P	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	Easement Village W.W.T.P	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	Orchard Street	Collection System	Manhole, 4 ft			1983	$ 5,000.00	35	50	50	30%	2033	$ 7,789.84												
Mantua Wastewater Treatment Plant	Orchard Street	Collection System	Manhole, 4 ft			1983	$ 5,000.00	35	50	50	30%	2033	$ 7,789.84												
Mantua Wastewater Treatment Plant	Orchard Street	Collection System	Manhole, 4 ft			1983	$ 5,000.00	35	50	50	30%	2033	$ 7,789.84												
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	Manhole, 4 ft			2000	$ 5,000.00	18	50	50	64%	2050	$ 12,875.41												
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	Manhole, 4 ft			2000	$ 5,000.00	18	50	50	64%	2050	$ 12,875.41												
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	Manhole, 4 ft			2000	$ 5,000.00	18	50	50	64%	2050	$ 12,875.41												
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	Manhole, 4 ft			2000	$ 5,000.00	18	50	50	64%	2050	$ 12,875.41												
Mantua Wastewater Treatment Plant	Regan Street	Collection System	Manhole, 4 ft			1972	$ 5,000.00	46	50	50	8%	2022	$ 5,627.54												
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	Main Street Sr.44	Collection System	Manhole, 4 ft			1967	$ 5,000.00	51	50	50	-2%	2019	$ 5,150.00												
Mantua Wastewater Treatment Plant	Regan Street	Collection System	Manhole, 4 ft			1972	$ 5,000.00	46	50	50	8%	2022	$ 5,627.54												
Mantua Wastewater Treatment Plant	Line Street	Collection System	Manhole, 4 ft			1983	$ 5,000.00	35	50	50	30%	2033	$ 7,789.84												
Mantua Wastewater Treatment Plant	Line Street	Collection System	Manhole, 4 ft			1983	$ 5,000.00	35	50	50	30%	2033	$ 7,789.84												
Mantua Wastewater Treatment Plant	Line Street	Collection System	Manhole, 4 ft			1983	$ 5,000.00	35	50	50	30%	2033	$ 7,789.84												
Mantua Wastewater Treatment Plant	Line Street	Collection System	Manhole, 4 ft			1983	$ 5,000.00	35	50	50	30%	2033	$ 7,789.84												
Mantua Wastewater Treatment Plant	Line Street	Collection System	Manhole, 4 ft			1983	$ 5,000.00	35	50	50	30%	2033	$ 7,789.84												
Mantua Wastewater Treatment Plant	Line Street	Collection System	Manhole, 4 ft			1983	$ 5,000.00	35	50	50	30%	2033	$ 7,789.84												
Mantua Wastewater Treatment Plant	Ambler Lane	Collection System	8-in	PVC	322	1977	$ 25,760.00	41	50	50	18%	2027	$ 33,610.96												
Mantua Wastewater Treatment Plant	Ambler Lane	Collection System	8-in	PVC	287	1977	$ 22,960.00	41	50	50	18%	2027	$ 29,957.59												
Mantua Wastewater Treatment Plant	Ambler Lane	Collection System	8-in	PVC	94	1977	$ 7,520.00	41	50	50	18%	2027	$ 9,811.89												
Mantua Wastewater Treatment Plant	Ambler Lane	Collection System	8-in	PVC	71	1977	$ 5,680.00	41	50	50	18%	2027	$ 7,411.11												
Mantua Wastewater Treatment Plant	Easement Glenwood Drive	Collection System	6-in	PVC	69	1977	$ 4,140.00	41	50	50	18%	2027	$ 5,401.76												
Mantua Wastewater Treatment Plant	Easement Glenwood Drive	Collection System	6-in	PVC	305	1977	$ 18,300.00	41	50	50	18%	2027	$ 23,877.35												
Mantua Wastewater Treatment Plant	Easement Glenwood Drive	Collection System	6-in	PVC	145	1977	$ 8,700.00	41	50	50	18%	2027	$ 11,351.53												
Mantua Wastewater Treatment Plant	Glenwood Drive	Collection System	6-in	PVC	71	1977	$ 4,260.00	41	50	50	18%	2027	$ 5,558.33												
Mantua Wastewater Treatment Plant	Grand Elm Drive	Collection System	6-in	PVC	339	1977	$ 20,340.00	41	50	50	18%	2027	$ 26,539.09												

Appendix D

Village of Mantua CAFR Reports and Financial Forecast

VILLAGE OF MANTUA
PORTAGE COUNTY

COMBINED STATEMENT OF CASH RECEIPTS, CASH DISBURSEMENTS, AND CHANGES IN FUND CASH BALANCES
PROPRIETARY AND SIMILAR FIDUCIARY FUND TYPES
FOR THE YEAR ENDED DECEMBER 31, 1999

	Proprietary Fund Type	Fiduciary Fund Type	Totals (Memorandum Only)
	Enterprise	Nonexpendable Trust	
Operating Cash Receipts:			
Charges for Services	$487,869	$1,350	$489,219
Total Operating Cash Receipts	487,869	1,350	489,219
Operating Cash Disbursements:			
Personal Services	87,561		87,561
Contractual Services	58,909		58,909
Supplies and Materials	51,233		51,233
Capital Outlay	146,679		146,679
Total Operating Cash Disbursements	344,382		344,382
Operating Income	143,487	1,350	144,837
Non-Operating Cash Receipts:			
Intergovernmental Receipts	5,270		5,270
Other Non-Operating Receipts	108,287		108,287
Total Non-Operating Cash Receipts	113,557		113,557
Non-Operating Cash Disbursements:			
Debt Service	130,166		130,166
Other Non-Operating Cash Disbursements	62,107		62,107
Total Non-Operating Cash Disbursements	192,273		192,273
Excess of Receipts Over/(Under) Disbursements Before Interfund Transfers and Advances	64,771	1,350	66,121
Transfers-In	211,525		211,525
Transfers-Out	(211,525)		(211,525)
Net Receipts Over Disbursements	64,771	1,350	66,121
Fund Cash Balances, January 1	750,989	38,030	789,019
Fund Cash Balances, December 31	**$815,760**	**$39,380**	**$855,140**
Reserve for Encumbrances, December 31	$38,212		$38,212

The notes to the financial statements are an integral part of this statement.

VILLAGE OF MANTUA
PORTAGE COUNTY

COMBINED STATEMENT OF CASH RECEIPTS, CASH DISBURSEMENTS, AND
CHANGES IN FUND CASH BALANCES
PROPRIETARY AND SIMILAR FIDUCIARY FUND TYPES
FOR THE YEAR ENDED DECEMBER 31, 2000

	Proprietary Fund Type	Fiduciary Fund Type	Totals (Memorandum Only)
	Enterprise	Nonexpendable Trust	
Operating Cash Receipts:			
Charges for Services	$610,892		$610,892
Interest Earnings		$2,920	2,920
Miscellaneous	332		332
Total Operating Cash Receipts	611,224	2,920	614,144
Operating Cash Disbursements:			
Personal Services	95,402		95,402
Fringe Benefits	53,242		53,242
Contractual Services	54,801		54,801
Supplies and Materials	52,444		52,444
Miscellaneous	22,275		22,275
Capital Outlay	468,979		468,979
Total Operating Cash Disbursements	747,143		747,143
Operating Income/(Loss)	(135,919)	2,920	(132,999)
Non-Operating Cash Receipts:			
Fines, Licenses, and Permits	1,976		1,976
Other Non-Operating Receipts	12,678		12,678
Total Non-Operating Cash Receipts	14,654		14,654
Non-Operating Cash Disbursements:			
Debt Service	133,716		133,716
Other Non-Operating Cash Disbursements	158,113		158,113
Total Non-Operating Cash Disbursements	291,829		291,829
Excess of Receipts Over/(Under) Disbursements Before Interfund Transfers and Advances	(413,094)	2,920	(410,174)
Transfers-In	33,648		33,648
Transfers-Out	(33,648)		(33,648)
Net Receipts Over/(Under) Disbursements	(413,094)	2,920	(410,174)
Fund Cash Balances, January 1	815,760	39,380	855,140
Fund Cash Balances, December 31	**$402,666**	**$42,300**	**$444,966**
Reserve for Encumbrances, December 31	$12,898		$12,898

The notes to the financial statements are an integral part of this statement.

VILLAGE OF MANTUA
PORTAGE COUNTY

COMBINED STATEMENT OF CASH RECEIPTS, CASH DISBURSEMENTS, AND CHANGES IN FUND CASH BALANCES - ALL PROPRIETARY AND SIMILAR FIDUCIARY FUND TYPES FOR THE YEAR ENDED DECEMBER 31, 2001

	Proprietary Fund Types	Fiduciary Fund Types	Totals (Memorandum Only)
	Enterprise	Nonexpendable Trust	
Operating Cash Receipts:			
Charges for Services	$750,097	$0	$750,097
Fines, Licenses and Permits	165		165
Miscellaneous	284	1,400	1,684
Total Operating Cash Receipts	750,546	1,400	751,946
Operating Cash Disbursements:			
Personal Services	97,948		97,948
Fringe Benefits	55,582		55,582
Contractual Services	81,674		81,674
Supplies and Materials	76,238	1,400	77,638
Other	4,388		4,388
Capital Outlay	881,341		881,341
Total Operating Cash Disbursements	1,197,171	1,400	1,198,571
Operating Income/(Loss)	(446,625)	0	(446,625)
Non-Operating Cash Receipts:			
Earnings on Investments		2,179	2,179
Intergovernmental Receipts	210,645		210,645
Proceeds from Notes and Bonds	562,704		562,704
Other Non-Operating Receipts	129,297		129,297
Total Non-Operating Cash Receipts	902,646	2,179	904,825
Non-Operating Cash Disbursements:			
Debt Service	166,145		166,145
Other Non-Operating Cash Disbursements	154,008		154,008
Total Non-Operating Cash Disbursements	320,153	0	320,153
Excess of Receipts Over/(Under) Disbursements Before Interfund Transfers and Advances	135,868	2,179	138,047
Transfers-In	262,274		262,274
Transfers-Out	(262,274)		(262,274)
	0		0
Net Receipts Over/(Under) Disbursements	135,868	2,179	138,047
Fund Cash Balances, January 1, 2001	402,666	42,300	444,966
Fund Cash Balances, December 31, 2001	**$538,534**	**$44,479**	**$583,013**
Reserve for Encumbrances, December 31, 2001	$78,271	$0	$78,271

The notes to the financial statements are an integral part of this statement.

VILLAGE OF MANTUA
PORTAGE COUNTY

COMBINED STATEMENT OF CASH RECEIPTS, CASH DISBURSEMENTS, AND CHANGES IN FUND CASH BALANCES - ALL PROPRIETARY AND SIMILAR FIDUCIARY FUND TYPES FOR THE YEAR ENDED DECEMBER 31, 2002

	Proprietary Fund Types	Fiduciary Fund Types	
	Enterprise	Nonexpendable Trust	Totals (Memorandum Only)
Operating Cash Receipts:			
Charges for Services	$436,188	$0	$436,188
Fines, Licenses, and Permits	105		105
Miscellaneous	120		120
Total Operating Cash Receipts	436,413	0	436,413
Operating Cash Disbursements:			
Personal Services	106,518		106,518
Fringe Benefits	39,011		39,011
Contractual Services	59,254		59,254
Supplies and Materials	68,219		68,219
Other	114		114
Capital Outlay	532,592		532,592
Total Operating Cash Disbursements	805,708	0	805,708
Operating Income/(Loss)	(369,295)	0	(369,295)
Non-Operating Cash Receipts:			
Earnings on Investment	820	2,722	3,542
Intergovernmental Receipts	33,069	21,000	54,069
Proceeds from Notes and Bonds	601,517		601,517
Other Non-Operating Receipts	4,442		4,442
Total Non-Operating Cash Receipts	639,848	23,722	663,570
Non-Operating Cash Disbursements:			
Debt Service	341,412		341,412
Total Non-Operating Cash Disbursements	341,412	0	341,412
Excess of Receipts Over/(Under) Disbursements Before Interfund Transfers and Advances	(70,859)	23,722	(47,137)
Transfers-In	207,864		207,864
Transfers-Out	(207,220)		(207,220)
Net Receipts Over/(Under) Disbursements	(70,215)	23,722	(46,493)
Fund Cash Balances, January 1, 2002	538,534	44,479	583,013
Fund Cash Balances, December 31, 2002	**$468,319**	**$68,201**	**$536,520**
Reserve for Encumbrances, December 31, 2002	$100,636	$0	$100,636

The notes to the financial statements are an integral part of this statement.

VILLAGE OF MANTUA
PORTAGE COUNTY

COMBINED STATEMENT OF CASH RECEIPTS, CASH DISBURSEMENTS, AND CHANGES IN FUND CASH BALANCES - ALL PROPRIETARY AND SIMILAR FIDUCIARY FUND TYPES
FOR THE YEAR ENDED DECEMBER 31, 2003

	Proprietary Fund Types	Fiduciary Fund Types	Totals (Memorandum Only)
	Enterprise	Nonexpendable Trust	
Operating Cash Receipts:			
Charges for Services	$483,729	$0	$483,729
Fines, Licenses and Permits	$322		322
Total Operating Cash Receipts	484,051	0	484,051
Operating Cash Disbursements:			
Personal Services	118,396		118,396
Fringe Benefits	46,680		46,680
Contractual Services	83,462		83,462
Supplies and Materials	58,312		58,312
Capital Outlay	736,549		736,549
Total Operating Cash Disbursements	1,043,399	0	1,043,399
Operating Income/(Loss)	(559,348)	0	(559,348)
Non-Operating Cash Receipts:			
Earnings on Investments	2,978	2,238	5,216
Proceeds from Notes	755,797		755,797
Miscellaneous Receipts	1,818		1,818
Other Non-Operating Receipts	4,185		4,185
Total Non-Operating Cash Receipts	764,778	2,238	767,016
Non-Operating Cash Disbursements:			
Redemption of Principal	217,639		217,639
Interest and Fiscal Charges	39,805		39,805
Total Non-Operating Cash Disbursements	257,444	0	257,444
Excess of Receipts Over/(Under) Disbursements Before Interfund Transfers and Advances	(52,014)	2,238	(49,776)
Advances-In		25,000	25,000
Advances-Out		(25,000)	(25,000)
Net Receipts Over/(Under) Disbursements	(52,014)	2,238	(49,776)
Fund Cash Balances, January 1	468,319	68,200	536,519
Fund Cash Balances, December 31	**$416,305**	**$70,438**	**$486,743**
Reserve for Encumbrances, December 31	$438,548	$0	$438,548

The notes to the financial statements are an integral part of this statement.

VILLAGE OF MANTUA
PORTAGE COUNTY

COMBINED STATEMENT OF CASH RECEIPTS, CASH DISBURSEMENTS, AND CHANGES IN FUND CASH BALANCES - ALL PROPRIETARY AND SIMILAR FIDUCIARY FUND TYPES
FOR THE YEAR ENDED DECEMBER 31, 2004

	Proprietary Fund Types	Fiduciary Fund Types	Totals (Memorandum Only)
	Enterprise	Nonexpendable Trust	
Operating Cash Receipts:			
Charges for Services	$790,223	$0	$790,223
Fines, Licenses and Permits	5,023		$5,023
Miscellaneous	5,360		5,360
Total Operating Cash Receipts	800,606	0	800,606
Operating Cash Disbursements:			
Personal Services	121,987		121,987
Fringe Benefits	53,226		53,226
Contractual Services	74,821	13,813	88,634
Supplies and Materials	64,190		64,190
Capital Outlay	1,191,748		1,191,748
Total Operating Cash Disbursements	1,505,972	13,813	1,519,785
Operating Income/(Loss)	(705,366)	(13,813)	(719,179)
Non-Operating Cash Receipts:			
Earnings on Investments	2,496	2,322	4,818
Proceeds from Notes	1,156,881		1,156,881
Miscellaneous Receipts	1,253		1,253
Other Non-Operating Receipts	100		100
Total Non-Operating Cash Receipts	1,160,730	2,322	1,163,052
Non-Operating Cash Disbursements:			
Redemption of Principal	620,529		620,529
Interest and Fiscal Charges	115,442		115,442
Total Non-Operating Cash Disbursements	735,971	0	735,971
Excess of Receipts Over/(Under) Disbursements Before Interfund Transfers and Advances	(280,607)	(11,491)	(292,098)
Advances-In	227,000		227,000
Advances-Out	(190,000)		(190,000)
Net Receipts Over/(Under) Disbursements	(243,607)	(11,491)	(255,098)
Fund Cash Balances, January 1	416,305	70,438	486,743
Fund Cash Balances, December 31	**$172,698**	**$58,947**	**$231,645**
Reserve for Encumbrances, December 31	$71,343	$800	$72,143

The notes to the financial statements are an integral part of this statement.

VILLAGE OF MANTUA
PORTAGE COUNTY

COMBINED STATEMENT OF CASH RECEIPTS, CASH DISBURSEMENTS, AND CHANGES IN FUND CASH BALANCES - ALL PROPRIETARY AND FIDUCIARY FUND TYPES
FOR THE YEAR ENDED DECEMBER 31, 2005

	Proprietary Fund Types	Fiduciary Fund Types	Totals (Memorandum Only)
	Enterprise	Agency	
Operating Cash Receipts:			
Charges for Services	$786,925		$786,925
Fines, Licenses and Permits	912		912
Miscellaneous	6,590	$169	6,759
Total Operating Cash Receipts	794,427	169	794,596
Operating Cash Disbursements:			
Personal Services	119,873		119,873
Employee Fringe Benefits	57,064		57,064
Contractual Services	83,019	15	83,034
Supplies and Materials	57,415	4,840	62,255
Other		815	815
Total Operating Cash Disbursements	317,371	5,670	323,041
Operating Income/(Loss)	477,056	(5,501)	471,555
Non-Operating Cash Receipts:			
Earnings on Investments	413		413
Sale of Notes	143,277		143,277
Miscellaneous Receipts	196	12,048	12,244
Other Non-Operating Cash Receipts	4,817		4,817
Total Non-Operating Cash Receipts	148,703	12,048	160,751
Non-Operating Cash Disbursements:			
Capital Outlay	245,250	2,248	247,498
Redemption of Principal	432,310		432,310
Interest and Other Fiscal Charges	78,908		78,908
Total Non-Operating Cash Disbursements	756,468	2,248	758,716
Excess of Receipts Over/(Under) Disbursements Before Interfund Transfers and Advances	(130,709)	4,299	(126,410)
Transfers-In	352,544		352,544
Transfers-Out	(302,544)		(302,544)
Advances-In	55,000		55,000
Advances-Out	(55,000)		(55,000)
Net Receipts Over/(Under) Disbursements	(80,709)	4,299	(76,410)
Fund Cash Balances, January 1	172,698	5,744	178,442
Fund Cash Balances, December 31	**$91,989**	**$10,043**	**$102,032**
Reserve for Encumbrances, December 31	$0	$0	$0

The notes to the financial statements are an integral part of this statement.

VILLAGE OF MANTUA
PORTAGE COUNTY

COMBINED STATEMENT OF CASH RECEIPTS, CASH DISBURSEMENTS, AND CHANGES IN FUND CASH BALANCES - ALL PROPRIETARY AND FIDUCIARY FUND TYPES
FOR THE YEAR ENDED DECEMBER 31, 2006

	Proprietary Fund Type	Fiduciary Fund Type	Totals (Memorandum Only)
	Enterprise	Agency	
Operating Cash Receipts:			
Charges for Services	$780,059		$780,059
Fines, Licenses and Permits	180		180
Miscellaneous	10,174		10,174
Total Operating Cash Receipts	790,413	$0	790,413
Operating Cash Disbursements:			
Personal Services	118,165		118,165
Employee Fringe Benefits	46,340		46,340
Contractual Services	72,959		72,959
Supplies and Materials	51,742	265	52,007
Total Operating Cash Disbursements	289,206	265	289,471
Operating Income/(Loss)	501,207	(265)	500,942
Non-Operating Cash Receipts:			
Earnings on Investments	219		219
Sale of Notes	31,600		31,600
Other Non-Operating Cash Receipts	1,290		1,290
Total Non-Operating Cash Receipts	33,109	0	33,109
Non-Operating Cash Disbursements:			
Capital Outlay	63,795		63,795
Redemption of Principal	419,268		419,268
Interest and Other Fiscal Charges	73,078		73,078
Total Non-Operating Cash Disbursements	556,141	0	556,141
Excess of Receipts Over/(Under) Disbursements Before Interfund Transfers and Advances	(21,825)	(265)	(22,090)
Transfers-In	368,092		368,092
Transfers-Out	(318,092)		(318,092)
Net Receipts Over/(Under) Disbursements	28,175	(265)	27,910
Fund Cash Balances, January 1	91,989	10,043	102,032
Fund Cash Balances, December 31	**$120,164**	**$9,778**	**$129,942**
Reserve for Encumbrances, December 31	$45,195	$0	$45,195

The notes to the financial statements are an integral part of this statement.

VILLAGE OF MANTUA
PORTAGE COUNTY

COMBINED STATEMENT OF CASH RECEIPTS, CASH DISBURSEMENTS, AND CHANGES IN FUND CASH BALANCES - ALL PROPRIETARY AND FIDUCIARY FUND TYPES
FOR THE YEAR ENDED DECEMBER 31, 2007

	Proprietary Fund Type	Fiduciary Fund Type	Totals (Memorandum Only)
	Enterprise	Agency	
Operating Cash Receipts:			
Charges for Services	$805,382		$805,382
Fines, Licenses and Permits	249		249
Miscellaneous	8,265		8,265
Total Operating Cash Receipts	813,896	$0	813,896
Operating Cash Disbursements:			
Personal Services	128,348		128,348
Employee Fringe Benefits	64,436		64,436
Contractual Services	90,088	40	90,128
Supplies and Materials	57,601		57,601
Total Operating Cash Disbursements	340,473	40	340,513
Operating Income/(Loss)	473,423	(40)	473,383
Non-Operating Cash Receipts/Disbursements:			
Earnings on Investments	223		223
Other Non-Operating Cash Receipts	347		347
Capital Outlay	(21,155)		(21,155)
Redemption of Principal	(121,682)		(121,682)
Interest and Other Fiscal Charges	(361,061)		(361,061)
Total Non-Operating Cash Disbursements	(503,328)	0	(503,328)
Excess of Receipts Over/(Under) Disbursements Before Interfund Transfers and Advances	(29,905)	(40)	(29,945)
Transfers-In	383,232		383,232
Transfers-Out	(383,232)		(383,232)
Net Receipts Over/(Under) Disbursements	(29,905)	(40)	(29,945)
Fund Cash Balances, January 1	120,164	9,778	129,942
Fund Cash Balances, December 31	**$90,259**	**$9,738**	**$99,997**
Reserve for Encumbrances, December 31	$34,924	$15	$34,939

The notes to the financial statements are an integral part of this statement.

VILLAGE OF MANTUA
PORTAGE COUNTY

COMBINED STATEMENT OF CASH RECEIPTS, CASH DISBURSEMENTS, AND CHANGES IN FUND CASH BALANCES - ALL PROPRIETARY AND FIDUCIARY FUND TYPES FOR THE YEAR ENDED DECEMBER 31, 2008

	Proprietary Fund Type	Fiduciary Fund Type	Totals (Memorandum Only)
	Enterprise	Agency	
Operating Cash Receipts:			
Charges for Services	$718,454		$718,454
Fines, Licenses and Permits	385		385
Miscellaneous	41,414		41,414
Total Operating Cash Receipts	760,253	$0	760,253
Operating Cash Disbursements:			
Personal Services	136,034		136,034
Employee Fringe Benefits	50,779		50,779
Contractual Services	100,960	30	100,990
Supplies and Materials	56,144	2,440	58,584
Other		1,562	1,562
Total Operating Cash Disbursements	343,917	4,032	347,949
Operating Income/(Loss)	416,336	(4,032)	412,304
Non-Operating Cash Receipts/Disbursements:			
Earnings on Investments	56		56
Other Non-Operating Cash Receipts	1,085		1,085
Capital Outlay	(42,543)	(500)	(43,043)
Redemption of Principal	(374,123)		(374,123)
Interest and Other Fiscal Charges	(62,825)		(62,825)
Total Non-Operating Cash Disbursements	(478,350)	(500)	(478,850)
Excess of Receipts Over/(Under) Disbursements Before Interfund Transfers and Advances	(62,014)	(4,532)	(66,546)
Transfers-In	252,864		252,864
Transfers-Out	(252,864)		(252,864)
Net Receipts Over/(Under) Disbursements	(62,014)	(4,532)	(66,546)
Fund Cash Balances, January 1	90,259	9,738	99,997
Fund Cash Balances, December 31	**$28,245**	**$5,206**	**$33,451**
Reserve for Encumbrances, December 31	$17,253		$17,253

The notes to the financial statements are an integral part of this statement.

VILLAGE OF MANTUA
PORTAGE COUNTY

COMBINED STATEMENT OF CASH RECEIPTS, CASH DISBURSEMENTS, AND CHANGES IN FUND CASH BALANCES - ALL PROPRIETARY AND FIDUCIARY FUND TYPES
FOR THE YEAR ENDED DECEMBER 31, 2009

	Proprietary Fund Types	Fiduciary Fund Type	Totals (Memorandum Only)
	Enterprise	Agency	
Operating Cash Receipts:			
Charges for Services	$640,241	$0	$640,241
Fines, Licenses and Permits	$553		553
Miscellaneous	8,394		8,394
Total Operating Cash Receipts	649,188	0	649,188
Operating Cash Disbursements:			
Personal Services	109,447		109,447
Employee Fringe Benefits	34,105		34,105
Contractual Services	108,044		108,044
Supplies and Materials	63,499	297	63,796
Total Operating Cash Disbursements	315,095	297	315,392
Operating Income/(Loss)	334,093	(297)	333,796
Non-Operating Cash Receipts:			
Special Assessments	7,310		7,310
Miscellaneous Receipts		277	277
Other Non-Operating Cash Receipts	1,766		1,766
Total Non-Operating Cash Receipts	9,076	277	9,353
Non-Operating Cash Disbursements:			
Capital Outlay	2,179		2,179
Redemption of Principal	401,968		401,968
Interest and Other Fiscal Charges	56,535		56,535
Other Non-Operating Cash Disbursements		219	219
Total Non-Operating Cash Disbursements	460,682	219	460,901
Excess of Receipts Over/(Under) Disbursements Before Interfund Transfers and Advances	(117,513)	(239)	(117,752)
Transfers-In	178,981		178,981
Transfers-Out	(178,981)		(178,981)
Advances-In	52,000		52,000
Net Receipts Over/(Under) Disbursements	(65,513)	(239)	(65,752)
Fund Cash Balances, January 1	28,245	5,206	33,451
Fund Cash Balances, December 31	**($37,268)**	**$4,967**	**($32,301)**
Reserve for Encumbrances, December 31	$1,929	$0	$1,929

The notes to the financial statements are an integral part of this statement.

VILLAGE OF MANTUA
PORTAGE COUNTY

COMBINED STATEMENT OF CASH RECEIPTS, CASH DISBURSEMENTS, AND
CHANGES IN FUND CASH BALANCES - ALL PROPRIETARY AND FIDUCIARY FUND TYPES
FOR THE YEAR ENDED DECEMBER 31, 2010

	Proprietary Fund Types	Fiduciary Fund Type	Totals (Memorandum Only)
	Enterprise	Agency	
Operating Cash Receipts:			
Charges for Services	$670,717	$0	$670,717
Fines, Licenses and Permits	$147		147
Miscellaneous	7,844		7,844
Total Operating Cash Receipts	678,708	0	678,708
Operating Cash Disbursements:			
Personal Services	91,657		91,657
Employee Fringe Benefits	36,207		36,207
Contractual Services	88,394		88,394
Supplies and Materials	53,240		53,240
Other		35	35
Total Operating Cash Disbursements	269,498	35	269,533
Operating Income/(Loss)	409,210	(35)	409,175
Non-Operating Cash Receipts:			
Special Assessments	3,960		3,960
Other Non-Operating Cash Receipts	44,237		44,237
Total Non-Operating Cash Receipts	48,197	0	48,197
Non-Operating Cash Disbursements:			
Capital Outlay	3,052		3,052
Redemption of Principal	406,424		406,424
Interest and Other Fiscal Charges	52,079		52,079
Total Non-Operating Cash Disbursements	461,555	0	461,555
Excess of Receipts Over/(Under) Disbursements Before Interfund Transfers and Advances	(4,148)	(35)	(4,183)
Transfers-In	248,209		248,209
Transfers-Out	(242,209)		(242,209)
			0
Advances-In	46,431		46,431
Net Receipts Over/(Under) Disbursements	48,283	(35)	48,248
Fund Cash Balances, January 1 (See Note 2)	(36,902)	4,967	(31,935)
Fund Cash Balances, December 31	**$11,381**	**$4,932**	**$16,313**
Reserve for Encumbrances, December 31	$2,471	$0	$2,471

The notes to the financial statements are an integral part of this statement

VILLAGE OF MANTUA
PORTAGE COUNTY

COMBINED STATEMENT OF RECEIPTS, DISBURSEMENTS
AND CHANGES IN FUND BALANCES (CASH BASIS)
ALL PROPRIETARY AND FIDUCIARY FUND TYPES
FOR THE YEAR ENDED DECEMBER 31, 2011

	Proprietary Fund Type	Fiduciary Fund Type	Totals
	Enterprise	Agency	(Memorandum Only)
Operating Cash Receipts			
Charges for Services	$744,821	$0	$744,821
Special Assessments	10,515		10,515
Miscellaneous	11,252		11,252
Total Operating Cash Receipts	766,588	0	766,588
Operating Cash Disbursements			
Personal Services	87,447		87,447
Employee Fringe Benefits	31,665		31,665
Contractual Services	90,478	30	90,508
Supplies and Materials	6,087		6,087
Other	40,753		40,753
Total Operating Cash Disbursements	256,430	30	256,460
Operating Income (Loss)	510,158	(30)	510,128
Non-Operating Receipts (Disbursements)			
Capital Outlay	(31,826)		(31,826)
Principal Retirement	(410,962)		(410,962)
Interest and Other Fiscal Charges	(47,540)		(47,540)
Other Financing Sources	23,785		23,785
Total Non-Operating Receipts (Disbursements)	(466,543)	0	(466,543)
Income (Loss) before Capital Contributions, Special Item, Extraordinary Item, Transfers and Advances	43,615	(30)	43,585
Transfers In	341,759		341,759
Transfers Out	(341,759)		(341,759)
Advances Out	(6,171)		(6,171)
Net Change in Fund Cash Balances	37,444	(30)	37,414
Fund Cash Balances, January 1	11,381	4,932	16,313
Fund Cash Balances, December 31	$48,825	$4,902	$53,727

The notes to the financial statements are an integral part of this statement.

VILLAGE OF MANTUA
PORTAGE COUNTY

COMBINED STATEMENT OF RECEIPTS, DISBURSEMENTS
AND CHANGES IN FUND BALANCES (CASH BASIS)
ALL PROPRIETARY AND FIDUCIARY FUND TYPES
FOR THE YEAR ENDED DECEMBER 31, 2012

	Proprietary Fund Type	Fiduciary Fund Type	Totals
	Enterprise	Agency	(Memorandum Only)
Operating Cash Receipts			
Charges for Services	$752,130	$0	$752,130
Special Assessments	9,460		9,460
Miscellaneous	7,281		7,281
Total Operating Cash Receipts	768,871	0	768,871
Operating Cash Disbursements			
Personal Services	104,603		104,603
Employee Fringe Benefits	37,435		37,435
Contractual Services	91,359	15	91,374
Supplies and Materials	6,635		6,635
Other	51,693		51,693
Total Operating Cash Disbursements	291,725	15	291,740
Operating Income (Loss)	477,146	(15)	477,131
Non-Operating Receipts (Disbursements)			
Capital Outlay	(43,729)	(70)	(43,799)
Principal Retirement	(410,294)		(410,294)
Interest and Other Fiscal Charges	(42,774)		(42,774)
Other Financing Sources	46,140		46,140
Total Non-Operating Receipts (Disbursements)	(450,657)	(70)	(450,727)
Income (Loss) before Capital Contributions, Special Item, Extraordinary Item, Transfers and Advances	26,489	(85)	26,404
Transfers In	440,699		440,699
Transfers Out	(440,699)		(440,699)
Advances Out	(12,343)		(12,343)
Net Change in Fund Cash Balances	14,146	(85)	14,061
Fund Cash Balances, January 1	48,825	4,902	53,727
Fund Cash Balances, December 31	$62,971	$4,817	$67,788

The notes to the financial statements are an integral part of this statement.

VILLAGE OF MANTUA
PORTAGE COUNTY

COMBINED STATEMENT OF RECEIPTS, DISBURSEMENTS
AND CHANGES IN FUND BALANCES
ALL PROPRIETARY AND FIDUCIARY FUND TYPES
FOR THE YEAR ENDED DECEMBER 31, 2013

	Proprietary Fund Types	Fiduciary Fund Types	Totals (Memorandum Only)
	Enterprise	Agency	
Operating Cash Receipts			
Charges for Services	$ 673,272	$ -	$ 673,272
Miscellaneous	6,817	-	6,817
Total Operating Cash Receipts	680,089	-	680,089
Operating Cash Disbursements			
Personal Services	88,542	-	88,542
Fringe Benefits	29,299	-	29,299
Contractual Services	136,539	45	136,584
Supplies and Materials	79,611	20	79,631
Other	60	-	60
Total Operating Cash Disbursements	334,051	65	334,116
Operating Income (Loss)	346,038	(65)	345,973
Non-Operating Receipts (Disbursements)			
Intergovernmental Receipts	48,810	-	48,810
Special Assessments	8,049	-	8,049
Capital Outlay	(21,229)	(70)	(21,299)
Principal Retirement	(412,618)	-	(412,618)
Interest and Other Fiscal Charges	(38,637)	-	(38,637)
Other Financing Sources	32,140	-	32,140
Total Non-Operating Receipts (Disbursements)	(383,485)	(70)	(383,555)
Income (Loss) before Transfers and Advances	(37,447)	(135)	(37,582)
Transfers In	457,426	-	457,426
Transfers Out	(412,426)	-	(412,426)
Advances Out	(12,343)	-	(12,343)
Net Change in Fund Cash Balance	(4,790)	(135)	(4,925)
Fund Cash Balances, January 1	62,971	4,817	67,788
Fund Cash Balances, December 31	$ 58,181	$ 4,682	$ 62,863

The notes to the financial statements are an integral part of this statement.

VILLAGE OF MANTUA
PORTAGE COUNTY

COMBINED STATEMENT OF RECEIPTS, DISBURSEMENTS
AND CHANGES IN FUND BALANCES
ALL PROPRIETARY AND FIDUCIARY FUND TYPES
FOR THE YEAR ENDED DECEMBER 31, 2014

	Proprietary Fund Types Enterprise	Fiduciary Fund Types Agency	Totals (Memorandum Only)
Operating Cash Receipts			
Charges for Services	$ 738,492	$ -	$ 738,492
Miscellaneous	7,806	-	7,806
Total Operating Cash Receipts	746,298	-	746,298
Operating Cash Disbursements			
Personal Services	89,846	-	89,846
Fringe Benefits	21,203	-	21,203
Contractual Services	150,716	-	150,716
Supplies and Materials	74,403	-	74,403
Total Operating Cash Disbursements	336,168	-	336,168
Operating Income (Loss)	410,130	-	410,130
Non-Operating Receipts (Disbursements)			
Intergovernmental Receipts	28,020	-	28,020
Special Assessments	15,345	-	15,345
Capital Outlay	(80,827)	(70)	(80,897)
Principal Retirement	(417,016)	-	(417,016)
Interest and Other Fiscal Charges	(34,238)	-	(34,238)
Other Financing Sources	24,773	-	24,773
Total Non-Operating Receipts (Disbursements)	(463,943)	(70)	(464,013)
Income (Loss) before Transfers and Advances	(53,813)	(70)	(53,883)
Transfers In	522,038	-	522,038
Transfers Out	(428,038)	-	(428,038)
Advances Out	(11,793)	-	(11,793)
Net Change in Fund Cash Balance	28,394	(70)	28,324
Fund Cash Balances, January 1	58,181	4,682	62,863
Fund Cash Balances, December 31	$ 86,575	$ 4,612	$ 91,187

The notes to the financial statements are an integral part of this statement.

VILLAGE OF MANTUA
PORTAGE COUNTY

COMBINED STATEMENT OF RECEIPTS, DISBURSEMENTS
AND CHANGES IN FUND BALANCES
ALL PROPRIETARY AND FIDUCIARY FUND TYPES
FOR THE YEAR ENDED DECEMBER 31, 2015

	Proprietary Fund Types	Fiduciary Fund Types	Totals (Memorandum Only)
	Enterprise	Agency	
Operating Cash Receipts			
Charges for Services	$ 649,750	$ -	$ 649,750
Miscellaneous	7,323	-	7,323
Total Operating Cash Receipts	657,073	-	657,073
Operating Cash Disbursements			
Personal Services	86,408	-	86,408
Fringe Benefits	24,668	-	24,668
Contractual Services	133,984	15	133,999
Supplies and Materials	49,505	-	49,505
Total Operating Cash Disbursements	294,565	15	294,580
Operating Income (Loss)	362,508	(15)	362,493
Non-Operating Receipts (Disbursements)			
Intergovernmental Receipts	101,676	-	101,676
Special Assessments	21,930	-	21,930
Capital Outlay	(115,658)	(35)	(115,693)
Principal Retirement	(421,486)	-	(421,486)
Interest and Other Fiscal Charges	(29,770)	-	(29,770)
Other Financing Sources	27,380	-	27,380
Total Non-Operating Receipts (Disbursements)	(415,928)	(35)	(415,963)
Income (Loss) before Transfers	(53,420)	(50)	(53,470)
Transfers In	453,039	-	453,039
Transfers Out	(428,039)	-	(428,039)
Net Change in Fund Cash Balance	(28,420)	(50)	(28,470)
Fund Cash Balances, January 1	86,575	4,612	91,187
Fund Cash Balances, December 31	$ 58,155	$ 4,562	$ 62,717

The notes to the financial statements are an integral part of this statement.

VILLAGE OF MANTUA
PORTAGE COUNTY

COMBINED STATEMENT OF RECEIPTS, DISBURSEMENTS
AND CHANGES IN FUND BALANCES
ALL PROPRIETARY AND FIDUCIARY FUND TYPES
FOR THE YEAR ENDED DECEMBER 31, 2016

	Proprietary Fund Types Enterprise	Fiduciary Fund Types Agency	Totals (Memorandum Only)
Operating Cash Receipts			
Charges for Services	$ 655,063	$ -	$ 655,063
Miscellaneous	6,190	-	6,190
Total Operating Cash Receipts	661,253	-	661,253
Operating Cash Disbursements			
Personal Services	104,047	-	104,047
Fringe Benefits	26,608	-	26,608
Contractual Services	122,735	15	122,750
Supplies and Materials	43,040	-	43,040
Total Operating Cash Disbursements	296,430	15	296,445
Operating Income (Loss)	364,823	(15)	364,808
Non-Operating Receipts (Disbursements)			
Intergovernmental Receipts	64,504	-	64,504
Special Assessments	21,461	-	21,461
Capital Outlay	(85,651)	-	(85,651)
Principal Retirement	(426,027)	-	(426,027)
Interest and Other Fiscal Charges	(25,229)	-	(25,229)
Other Financing Sources	23,232	-	23,232
Total Non-Operating Receipts (Disbursements)	(427,710)	-	(427,710)
Income (Loss) before Transfers	(62,887)	(15)	(62,902)
Transfers In	488,039	-	488,039
Transfers Out	(428,039)	-	(428,039)
Net Change in Fund Cash Balance	(2,887)	(15)	(2,902)
Fund Cash Balances, January 1	58,155	4,562	62,717
Fund Cash Balances, December 31	$ 55,268	$ 4,547	$ 59,815

The notes to the financial statements are an integral part of this statement.

Appendix E

Ohio EPA Monthly Operating Report

ıntlıly Operating Report (MOR) Statistics for: Mantua WWTP; 3PB00031 (permit #)

	Year	# of Obs.	# Below Detection	Minimum	Percentiles 5th	25th	50th	75th	95th	99th	Maximum	Mean
ıtoring Station 001; Reporting Code: 00010; Parameter Name: Water Temperature (C)												
Summer	2003	86	0	13	14.25	18	19	20	21	21.3	23	18.547
Summer	2004	88	0	16	16	18	19	20	21	21	21	18.852
Summer	2005	88	0	15	17	19	20	21	22	23	23	20
Summer	2006	87	0	16	17	18	19	20.5	21.7	22	22	19.299
Summer	2007	86	0	16	18	19	19	20	21.75	22	22	19.419
Summer	2008	86	0	16	17	18	19	20	21	22	22	19.07
Summer	2009	88	0	15	16	18	18	20	21.65	22	22	18.534
Summer	2010	88	0	17	17	18	20	21	22	22	22	19.682
Summer	2011	88	0	15	16.35	18	20	21	22	23	23	19.58
Summer	2012	85	0	16	16	18	21	22	23	23.16	24	20.2
Summer	2013	85	0	15	15	18	21	22	23	24.16	25	19.906
Summer	2014	87	0	16	16	19	20	20	21	21.14	22	19.184
Summer	2015	87	0	17	17.3	19	20	21	22	22.14	23	19.701
Summer	2016	88	0	16	17	19	21	22.25	23	23	23	20.727
Summer	2017	85	0	16	16.2	19	20	21	23	23.16	24	19.906
Summer Overall	2003-2018	1302	0	13	16	18	20	21	22	23	25	19.506
Winter	2003	43	0	2	4	4	5	6.5	7.9	8	8	5.2558
Winter	2004	64	0	1	3	5	7	9	10	10.37	11	6.8594
Winter	2005	64	0	6	8	8	9	11	12	12	12	9.4531
Winter	2006	64	0	6	7	8	9	10	11	11.37	12	8.8594
Winter	2007	64	0	6	6	8.75	11	11	13	13.37	14	10.156
Winter	2008	65	0	6	7	8	8	10	11	12	12	8.7846
Winter	2009	65	0	4	6	7	8	9	10	10.36	11	7.9538
Winter	2010	62	0	5	6	7	7	8.75	11	11	11	7.7419
Winter	2011	64	0	3	5	6	7	8	9	10	10	6.9063
Winter	2012	65	0	6	7	8	9	10	11	12	12	9.2308
Winter	2013	61	0	5	5	7	8	9	11	12	12	8.2295
Winter	2014	65	0	2	3	4	5	7	9.8	10.72	12	5.5231
Winter	2015	65	0	1	2	5	6	8	9	10	10	5.9846
Winter	2016	62	0	2	3	4.25	6.5	10	11.95	12.39	13	7.1774
Winter	2017	63	0	6	7.1	8	9	10	12.9	13	13	9.4286
Winter	2018	60	0	1	2	4	6	8	11	12	12	5.9333
Winter Overall	2003-2018	996	0	1	3	6	8	9	11	13	14	7.7731
Annual	2003	260	1	0	4	9	13	18	20	21	23	12.758
Annual	2004	261	0	1	5	10	14	18	20	21	21	13.494
Annual	2005	260	0	6	8	9.75	13	19	21	22	23	14.108
Annual	2006	260	0	6	8	11	14	18	21	22	22	14.462
Annual	2007	260	0	6	7	11	14	19	21	22	22	14.569
Annual	2008	261	0	6	7	9	13	18	21	21	22	13.46
Annual	2009	260	0	4	6.95	9	13	18	20	22	22	13.254
Annual	2010	260	0	5	6	8	13	18	21	22	22	13.535
Annual	2011	260	0	3	6	9	13	18.25	22	22.41	23	13.623
Annual	2012	255	0	6	8	10	14	19	23	23	24	14.475
Annual	2013	256	0	5	6	8	13	18.25	22.25	24	25	13.348
Annual	2014	261	0	2	3	7	13	19	21	21	22	12.395
Annual	2015	258	0	1	4	9	13	19	21	22	23	13.341
Annual	2016	256	0	2	4	9	14	19	23	23	23	14.066
Annual	2017	255	0	2	8	10	14	19	21.3	23	24	14.247
Annual	2018	105	0	1	2	6	8	12	16	18.88	20	8.819
Annual Overall	2003-2018	3988	1	0	5.35	9	13	18	21	23	25	13.546
Monitoring Station 001; Reporting Code: 00300; Parameter Name: Dissolved Oxygen (mg/l)												
Summer	2003	86	0	4.2	5.4	5.6	6	6.4	7	7.8	7.8	6.0326
Summer	2004	88	0	10.8	10.9	11.2	11.65	12	12.565	12.713	12.8	11.636
Summer	2005	88	0	7.2	7.935	8.4	8.8	9.3	10.165	10.5	10.5	8.8852
Summer	2006	87	0	7.8	8	8.4	8.7	9	10.81	11.656	12	8.8276
Summer	2007	86	0	5.9	8	8.325	8.6	8.9	9.3	9.515	9.6	8.5977
Summer	2008	86	0	8.2	8.5	8.7	8.9	9.175	9.4	9.63	9.8	8.9395
Summer	2009	88	0	7	8.035	8.3	8.7	9.2	9.665	10	10	8.7659
Summer	2010	88	0	7.5	8	8.4	8.7	9	9.4	10.026	10.2	8.708

Monthly Operating Report (MOR) Statistics for: Mantua WWTP; 3PB00031 (permit #)

Season	Year	# of Obs.	# Below Detection	Minimum	Percentiles 5th	25th	50th	75th	95th	99th	Maximum	Mean
Summer	2011	88	0	7.7	8.2	8.575	9.05	9.6	10.465	10.713	10.8	9.1352
Summer	2012	85	0	6.7	7.22	7.6	8	8.2	8.5	8.764	9.1	7.8824
Summer	2013	85	0	7.6	7.8	8.2	8.5	8.8	9.18	9.548	9.8	8.4859
Summer	2014	87	0	7.9	8.03	8.4	8.7	8.9	9.1	9.314	9.4	8.6425
Summer	2015	87	0	8	8.6	8.8	9	9.1	9.2	9.214	9.3	8.931
Summer	2016	88	0	7.9	8.4	8.6	8.8	8.9	9.2	9.339	9.6	8.7659
Summer	2017	85	0	7.3	7.6	8	8.1	8.2	8.4	8.816	8.9	8.0529
Summer Overall	2003-2018	1302	0	4.2	6.4	8.2	8.7	9	11.2	12.1	12.8	8.6932
Winter	2003	43	0	5	5.64	6.8	7.2	7.4	8.9	10.916	11	7.2093
Winter	2004	64	0	7.6	8	8.15	8.3	8.6	9.34	10	10	8.4031
Winter	2005	64	0	7.6	8.015	8.575	8.9	9.7	10.955	11.611	11.8	9.175
Winter	2006	64	0	10.4	10.7	10.9	11.15	11.4	11.7	11.874	12	11.155
Winter	2007	64	0	7.7	8.315	10	10.75	11.4	11.785	12.074	12.2	10.528
Winter	2008	65	0	9.3	10.02	10.6	10.9	11.1	11.68	11.944	12.2	10.868
Winter	2009	65	0	8	8.82	10.6	11	11.4	11.8	12.416	12.8	10.812
Winter	2010	62	0	10.3	10.61	11.2	11.5	11.7	12.3	12.4	12.4	11.469
Winter	2011	64	0	10.6	11	11.5	11.75	12	12.4	12.511	12.7	11.739
Winter	2012	65	0	10.1	10.2	10.5	11	11.3	11.6	12.812	13.9	10.952
Winter	2013	61	0	7.4	7.8	8.1	8.4	8.7	9.3	9.74	10.1	8.4738
Winter	2014	65	0	8.9	9.32	10.7	11.1	11.5	12.18	48.152	111	12.54
Winter	2015	65	0	9	9.1	9.7	10.6	11.1	12.18	12.5	12.5	10.509
Winter	2016	62	0	10.1	10.2	10.5	10.8	11.3	11.79	11.978	12.1	10.882
Winter	2017	63	0	8.9	9.41	10.2	10.3	10.6	10.9	11.138	11.2	10.314
Winter	2018	60	0	9.8	10.195	10.7	11.1	11.3	11.405	11.5	11.5	10.948
Winter Overall	2003-2018	996	0	5	7.8	9.6	10.7	11.3	12	12.4	111	10.444
Annual	2003	259	0	3.2	5.4	6	7	7.6	8.2	9	11	6.9073
Annual	2004	261	0	7	8	9	11	11.9	14.5	15	15.8	10.726
Annual	2005	260	0	7	8	8.6	9.1	9.9	11.3	12.041	12.2	9.3085
Annual	2006	260	0	7.7	8	8.7	9.4	10.7	11.505	11.741	12	9.6396
Annual	2007	260	0	5.9	8.195	8.8	9.6	10.8	11.6	12.082	12.5	9.7523
Annual	2008	261	0	8	8.5	9	10	10.6	11.2	11.88	13.1	9.89
Annual	2009	260	0	7	8.2	9.1	10.2	10.8	11.7	12.882	13.1	10.018
Annual	2010	260	0	7.5	8.2	9	9.7	10.85	11.8	12.341	12.4	9.9242
Annual	2011	260	0	7.7	8.4	9.4	10.3	11.2	12	12.4	12.7	10.277
Annual	2012	255	0	6.7	7.4	8.1	8.5	10.4	11.4	11.646	13.9	9.1118
Annual	2013	256	0	7.2	7.6	8	8.6	9.125	10.725	11.245	111	9.1031
Annual	2014	261	0	7.9	8.2	8.9	9.7	10.7	11.5	12.14	12.8	9.7667
Annual	2015	258	0	7.7	8.7	9	9.8	10.6	11.515	12.286	12.5	9.8659
Annual	2016	256	0	7.9	8.5	8.9	9.8	10.6	11.3	11.8	12.1	9.7664
Annual	2017	255	0	7.3	7.87	8.1	9	10.3	10.8	11.3	11.4	9.1831
Annual	2018	105	0	8.7	8.92	10	10.6	11	11.4	11.5	11.5	10.399
Annual Overall	2003-2018	3987	0	3.2	7.4	8.6	9.5	10.6	11.7	12.6	111	9.5739

Monitoring Station 001; Reporting Code: 00400; Parameter Name: pH (S.U.)

Summer	2003	88	0	6.9	7	7	7	7.1	7.2	7.2	7.2	7.0455
Summer	2004	88	0	6.8	6.9	7	7.1	7.1	7.2	7.3	7.3	7.0784
Summer	2005	88	0	7.1	7.2	7.3	7.5	7.6	7.8	7.813	7.9	7.4659
Summer	2006	87	0	6.8	7.1	7.2	7.2	7.3	7.5	7.628	7.8	7.2552
Summer	2007	86	0	6.8	6.8	7	7.1	7.3	7.5	7.7	7.7	7.1302
Summer	2008	86	0	6.8	6.9	7	7	7.1	7.3	7.415	7.5	7.0465
Summer	2009	88	0	6.9	6.9	7	7	7	7.1	7.2	7.2	6.9932
Summer	2010	88	0	6.5	6.7	6.9	7	7	7.1	7.1	7.1	6.9432
Summer	2011	88	0	6.7	6.8	6.8	6.9	6.9	7	7.113	7.2	6.8886
Summer	2012	85	0	6.7	6.8	6.9	7	7.2	7.3	7.4	7.4	7.0212
Summer	2013	85	0	7.1	7.2	7.4	7.5	7.7	7.9	8.1	8.1	7.5259
Summer	2014	87	0	7.2	7.3	7.4	7.5	7.6	7.8	7.9	7.9	7.5172
Summer	2015	87	0	7.4	7.8	7.8	7.9	8	8.1	8.1	8.1	7.908
Summer	2016	88	0	7.3	7.6	7.8	7.9	8	8.2	8.2	8.2	7.8852
Summer	2017	85	0	7.6	7.7	7.8	7.9	8.1	8.1	8.2	8.2	7.9212
Summer Overall	2003-2018	1304	0	6.5	6.9	7	7.2	7.6	8	8.1	8.2	7.3072
Winter	2003	43	0	6.9	6.9	6.9	7	7	7.19	7.316	7.4	6.9907
Winter	2004	64	0	7	7	7	7.1	7.1	7.3	7.6	7.6	7.1156

Monthly Operating Report (MOR) Statistics for: Mantua WWTP; 3PB00031 (permit #)

Season	Year	# of Obs.	# Below Detection	Minimum	Percentiles 5th	25th	50th	75th	95th	99th	Maximum	Mean
Winter	2005	64	0	6.9	7	7.1	7.15	7.3	7.685	7.8	7.8	7.2109
Winter	2006	64	0	7.1	7.4	7.5	7.55	7.6	7.7	7.737	7.8	7.5406
Winter	2007	64	0	6.6	7.1	7.3	7.4	7.5	7.6	7.7	7.7	7.3906
Winter	2008	65	0	6.6	6.7	6.9	7	7.3	7.5	7.672	7.8	7.0754
Winter	2009	65	0	6.7	6.72	6.9	7	7	7.3	7.6	7.6	6.9646
Winter	2010	62	0	6.3	6.3	6.6	6.8	6.9	7	7	7	6.7565
Winter	2011	64	0	6.7	6.7	6.8	6.9	6.9	7	7	7	6.8563
Winter	2012	65	0	6.8	6.9	6.9	6.9	7	7.08	7.1	7.1	6.9477
Winter	2013	61	0	6.6	6.7	6.8	6.8	6.9	6.9	7.04	7.1	6.8426
Winter	2014	65	0	6.8	7.3	7.5	7.6	7.7	7.88	8.044	8.3	7.5662
Winter	2015	65	0	7.5	7.6	7.7	7.8	7.8	7.9	7.936	8	7.7862
Winter	2016	62	0	7.6	7.605	7.8	7.9	7.9	8	8.039	8.1	7.8661
Winter	2017	63	0	7.4	7.5	7.6	7.7	7.8	7.9	8	8	7.7143
Winter	2018	60	0	7.1	7.6	7.7	7.8	7.9	8	8	8	7.7883
Winter Overall	2003-2018	996	0	6.3	6.8	6.9	7.2	7.625	7.9	8	8.3	7.2804
Annual	2003	261	0	6.9	6.9	7	7	7.1	7.2	7.4	7.8	7.0391
Annual	2004	261	0	6.8	6.9	7	7.1	7.1	7.2	7.6	7.7	7.0843
Annual	2005	260	0	6.9	7.1	7.2	7.3	7.5	7.7	7.841	7.9	7.3696
Annual	2006	260	0	6.7	7.1	7.2	7.4	7.5	7.605	7.741	7.8	7.3865
Annual	2007	260	0	6.6	6.8	7	7.2	7.4	7.5	7.6	7.7	7.1788
Annual	2008	261	0	6.7	6.8	7	7.1	7.2	7.4	7.54	7.8	7.0816
Annual	2009	260	0	6.3	6.8	6.9	7	7	7.1	7.3	7.6	6.9596
Annual	2010	260	0	6.3	6.6	6.8	6.9	7	7.1	7.1	7.2	6.8981
Annual	2011	260	0	6.7	6.7	6.8	6.9	6.9	7	7.1	7.2	6.8635
Annual	2012	255	0	6.6	6.8	6.9	7	7.1	7.6	7.992	8.2	7.0361
Annual	2013	256	0	6.6	6.8	6.9	7.4	7.6	7.8	7.945	8.1	7.2926
Annual	2014	261	0	6.6	7.3	7.4	7.5	7.8	7.9	8	8.3	7.5851
Annual	2015	258	0	7.4	7.6	7.8	7.9	8	8.1	8.1	8.1	7.8562
Annual	2016	256	0	7.3	7.675	7.8	7.9	7.9	8.1	8.2	8.2	7.8605
Annual	2017	255	0	7.4	7.6	7.7	7.8	8	8.1	8.2	8.2	7.8557
Annual	2018	105	0	7.1	7.5	7.6	7.7	7.8	7.9	8	8	7.7
Annual Overall	2003-2018	3989	0	6.3	6.8	7	7.2	7.6	8	8.1	8.3	7.2993

Monitoring Station 001; Reporting Code: 00530; Parameter Name: Total Suspended Solids (mg/l)

Summer	2003	33	0	2	2.6	3	5	7	12.4	13.68	14	5.697
Summer	2004	36	0	0	2	3	4	6	7.25	9.95	11	4.3611
Summer	2005	36	0	2	2	2.75	3	4	5.25	7.3	8	3.4167
Summer	2006	35	0	2	2	3	4	6	7	7	7	4.2286
Summer	2007	35	0	2	2	3	3	4	5.3	8.64	10	3.7143
Summer	2008	34	0	1	2	3	4	5	7	7	7	4.3824
Summer	2009	35	0	2	3	4	4	6	7	7.66	8	4.7143
Summer	2010	35	0	2	2	3	4	5	6.3	7	7	4
Summer	2011	36	0	1	2	3	4	29	221.75	251.45	263	49.778
Summer	2012	34	0	2	2	5	7	8	10	10	10	6.6176
Summer	2013	34	0	2	2	2.25	4	5.75	9.35	10.67	11	4.5294
Summer	2014	34	0	2	2	3	4	6	8.35	9	9	4.5294
Summer	2015	35	0	2	2	3	4	5	6.3	7.66	8	4
Summer	2016	36	0	2	3	3.75	4	6	8	8.65	9	4.7222
Summer	2017	35	0	2	2.7	4	4	5	6	6	6	4.3143
Summer Overall	2003-2018	523	0	0	2	3	4	6	9	169.02	263	7.6214
Winter	2003	18	0	1	1.85	3.25	5	8	14.15	14.83	15	6.1111
Winter	2004	26	0	3	3	3	4	5	7	8.5	9	4.4231
Winter	2005	26	0	3	3	3	4	5	6	7.5	8	4.3077
Winter	2006	25	0	2	2.2	3	4	6	10.8	12.52	13	5.24
Winter	2007	26	0	1	2	3	4	6	7	7	7	4.4231
Winter	2008	26	0	2	2	3	3.5	4.75	7.5	8	8	3.8846
Winter	2009	26	0	3	3	4	5	6	8	8.75	9	5.3077
Winter	2010	24	0	3	3	3.75	4.5	6	7.85	10.31	11	4.9167
Winter	2011	20	0	2	2.95	4	4	5.25	7.2	10.24	11	4.75
Winter	2012	26	0	2	3	4	5.5	6.75	8	8.75	9	5.3846
Winter	2013	26	0	4	5	7	8	9.75	11	11.75	12	8.1538
Winter	2014	26	0	1	2	3	5.5	6.75	12.75	15.5	16	5.6538

Monthly Operating Report (MOR) Statistics for: Mantua WWTP; 3PB00031 (permit #)

Season	Year	# of Obs.	# Below Detection	Minimum	Percentiles 5th	25th	50th	75th	95th	99th	Maximum	Mean
Winter	2015	26	0	4	4	5	6.5	7	9.75	10	10	6.4231
Winter	2016	26	0	3	3	4.25	6	7	8	9.5	10	5.8077
Winter	2017	25	0	2	2.2	3	5	8	8	9.52	10	5.12
Winter	2018	25	0	3	3	5	5	6	8	8.76	9	5.48
Winter Overall	2003-2018	397	0	1	2	4	5	7	10	13.04	16	5.3325
Annual	2003	104	0	0.6	2	3	5	7	12.85	15	17	5.6019
Annual	2004	106	0	0	2	3	4	6	8.75	10.9	14	4.8208
Annual	2005	104	0	0	2	3	4	5	6.85	8	8	3.8365
Annual	2006	104	0	1	2	3	4	6	8.85	11	13	4.4808
Annual	2007	104	0	2	2	3	4	5	7	9	10	4.2019
Annual	2008	105	0	1	2	3	4	5	7	8	24	4.6
Annual	2009	103	0	2	3	4	5	6	8	8	9	4.9223
Annual	2010	103	0	2	2	3	4	5	7	8.98	11	4.3107
Annual	2011	91	0	1	2	3	4	5.5	187.5	233.3	263	22.462
Annual	2012	101	0	2	3	5	7	9	12	20	25	7.3168
Annual	2013	104	0	2	2	4	6	8	11	12	12	6.0192
Annual	2014	105	0	1	2	3	5	7	9	13.84	16	5.2762
Annual	2015	105	0	2	2	3	5	7	10.8	12	12	5.2571
Annual	2016	104	0	2	2.15	4	5	7	8	9	10	5.1923
Annual	2017	104	0	2	2	3	4	5	7	8	10	4.4423
Annual	2018	44	0	2	2	4	5	6	7.85	8.57	9	4.7727
Annual Overall	2003-2018	1591	0	0	2	3	4	6	9	15	263	6.0067
Monitoring Station	**001;**	**Reporting Code:**		**00550;**		**Parameter Name:**		**Oil and Grease, Total (mg/l)**				
Annual	2003	11	0	2.5	2.5	2.5	2.5	2.55	3.2	3.52	3.6	2.6364
Annual	2004	12	0	2.5	2.5	2.5	2.5	2.5	4.67	5.814	6.1	2.8833
Annual	2005	12	0	2.5	2.5	2.5	2.5	2.5	3.68	3.856	3.9	2.7
Annual	2006	12	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Annual	2007	12	0	2	2.275	2.5	2.5	3.1	4.22	4.924	5.1	2.9167
Annual	2008	12	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Annual	2009	12	0	2.5	2.5	2.5	2.5	2.5	3.675	4.335	4.5	2.7083
Annual	2010	5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Annual Overall	2003-2010	88	0	2	2.5	2.5	2.5	2.5	3.565	5.23	6.1	2.6818
Monitoring Station	**001;**	**Reporting Code:**		**00552;**		**Parameter Name:**		**Oil and Grease, Hexane Extr Method (mg/l)**				
Annual	2010	7	0	2.5	2.5	2.5	2.5	2.5	3.2	3.44	3.5	2.6429
Annual	2011	12	0	2.5	2.5	2.5	2.5	2.5	2.745	2.789	2.8	2.5417
Annual	2012	12	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Annual	2013	12	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Annual	2014	12	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Annual	2015	12	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Annual	2016	12	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Annual	2017	12	0	2.5	2.5	2.5	2.5	2.5	3.175	3.835	4	2.625
Annual	2018	5	0	2.5	2.5	2.5	2.5	2.5	3.14	3.268	3.3	2.66
Annual Overall	2010-2018	96	0	2.5	2.5	2.5	2.5	2.5	2.55	3.525	4	2.5396
Monitoring Station	**001;**	**Reporting Code:**		**00610;**		**Parameter Name:**		**Nitrogen, Ammonia (NH3) (mg/l)**				
Summer	2003	35	0	0.04	0.05	0.07	0.12	0.15	0.193	0.2792	0.32	0.11657
Summer	2004	36	0	0.04	0.04	0.06	0.08	0.1225	0.195	0.2985	0.33	0.098889
Summer	2005	35	0	0.03	0.057	0.07	0.16	0.22	0.308	0.6008	0.73	0.17114
Summer	2006	34	0	0.03	0.03	0.08	0.11	0.1675	0.277	0.3905	0.44	0.13324
Summer	2007	34	0	0.03	0.04	0.07	0.09	0.1475	0.292	0.8457	1.08	0.13853
Summer	2008	35	0	0.03	0.03	0.05	0.08	0.115	0.226	2.8272	4.16	0.20743
Summer	2009	36	0	0.03	0.03	0.045	0.065	0.0825	0.1425	1.5165	2.22	0.12722
Summer	2010	36	0	0.03	0.03	0.0375	0.09	0.1325	0.4275	0.6985	0.8	0.12833
Summer	2011	35	0	0.03	0.03	0.08	0.11	1.17	17.55	18.864	19	2.4643
Summer	2012	33	0	0.03	0.03	0.1	0.2	0.5	2.96	14.464	19.2	1.0442
Summer	2013	34	0	0.03	0.03	0.03	0.03	0.04	0.084	0.2373	0.3	0.045588
Summer	2014	35	0	0.03	0.03	0.04	0.05	0.06	0.073	0.08	0.08	0.049714
Summer	2015	36	0	0.02	0.02	0.02	0.03	0.03	0.04	0.8655	1.31	0.063333

Monthly Operating Report (MOR) Statistics for: Mantua WWTP; 3PB00031 (permit #)

Season	Year	# of Obs.	# Below Detection	Minimum	Percentiles 5th	25th	50th	75th	95th	99th	Maximum	Mean
Summer	2016	35	0	0.04	0.04	0.05	0.06	0.08	0.113	0.1332	0.14	0.067257
Summer	2017	34	0	0.03	0.04	0.05	0.06	0.08	0.395	4.7025	6.6	0.27853
Summer Overall	2003-2018	523	0	0.02	0.03	0.04	0.07	0.13	0.509	8.2848	19.2	0.3406
Winter	2003	16	0	0.05	0.0575	0.1075	0.225	1.7775	5.525	7.313	7.76	1.4931
Winter	2004	26	0	0.03	0.03	0.04	0.05	0.07	0.0875	0.1575	0.18	0.058077
Winter	2005	25	0	0.04	0.04	0.05	0.06	0.07	0.106	0.1784	0.2	0.0688
Winter	2006	25	0	0.03	0.03	0.04	0.05	0.06	0.078	2.018	2.63	0.1512
Winter	2007	26	0	0.04	0.04	0.05	0.06	0.07	0.0875	0.0975	0.1	0.061154
Winter	2008	26	0	0.03	0.03	0.03	0.03	0.04	0.0975	0.4625	0.58	0.058846
Winter	2009	26	0	0.03	0.03	0.03	0.04	0.06	0.2925	1.035	1.28	0.11885
Winter	2010	26	0	0.013	0.03	0.03	0.06	0.0875	0.1675	0.2325	0.25	0.069731
Winter	2011	25	0	0.03	0.03	0.04	0.07	0.09	0.206	1.93	2.47	0.1716
Winter	2012	26	0	0.03	0.03	0.07	0.1	0.16	0.8525	2.86	3.5	0.29808
Winter	2013	26	0	0.03	0.03	0.0325	0.05	0.0775	0.115	0.75	0.96	0.090385
Winter	2014	26	0	0.03	0.03	0.04	0.045	0.0575	0.07	0.0775	0.08	0.047692
Winter	2015	26	0	0.03	0.03	0.03	0.03	0.04	0.145	0.4275	0.52	0.061538
Winter	2016	25	0	0.03	0.03	0.03	0.04	0.08	1.356	2.0408	2.18	0.216
Winter	2017	26	0	0.03	0.03	0.03	0.03	0.04	5.95	8.55	8.8	0.68654
Winter	2018	26	0	0.03	0.03	0.04	0.05	0.05	0.1075	0.11	0.11	0.052308
Winter Overall	2003-2018	402	0	0.013	0.03	0.03	0.05	0.07	0.514	3.698	8.8	0.2009
Annual	2003	104	0	0.03	0.03	0.05	0.07	0.1325	1.431	4.7476	7.76	0.31654
Annual	2004	104	0	0.03	0.03	0.05	0.07	0.08	0.15	0.2382	0.33	0.076058
Annual	2005	104	0	0.03	0.04	0.05	0.07	0.13	0.26	0.7186	2.63	0.1299
Annual	2006	104	0	0.03	0.03	0.05	0.06	0.1	0.23	0.3967	0.44	0.087019
Annual	2007	104	0	0.03	0.03	0.05	0.06	0.08	0.1885	0.3667	1.08	0.085192
Annual	2008	106	0	0.03	0.03	0.03	0.04	0.07	0.2125	1.964	4.16	0.1317
Annual	2009	104	0	0.03	0.03	0.03	0.05	0.07	0.2455	0.5725	2.22	0.090865
Annual	2010	104	0	0.013	0.03	0.04	0.06	0.1	0.197	0.5067	0.8	0.086183
Annual	2011	106	0	0.03	0.03	0.05	0.08	0.2275	10.48	18.58	19	1.4347
Annual	2012	105	0	0.02	0.03	0.05	0.12	0.5	4.48	14.704	19.2	0.93619
Annual	2013	106	0	0.03	0.03	0.03	0.04	0.07	0.2675	0.9465	13.3	0.20189
Annual	2014	105	0	0.03	0.03	0.03	0.04	0.05	0.078	0.1188	0.2	0.046095
Annual	2015	104	0	0.02	0.02	0.03	0.03	0.05	0.465	1.3082	1.31	0.11019
Annual	2016	103	0	0.03	0.03	0.03	0.04	0.07	0.138	7.6876	8.8	0.24965
Annual	2017	104	0	0.03	0.03	0.03	0.04	0.06	0.1485	2.3147	6.6	0.14413
Annual	2018	45	0	0.03	0.032	0.05	0.06	0.11	1.13	1.924	2.1	0.19622
Annual Overall	2003-2018	1612	0	0.013	0.03	0.04	0.05	0.09	0.5945	6.4592	19.2	0.27434

Monitoring Station 001; Reporting Code: 00630; Parameter Name: Nitrite Plus Nitrate, Total (mg/l)

Summer	2003	4	0	0.79	3.0205	11.943	16.285	18.513	22.359	23.128	23.32	14.17
Summer	2004	4	0	6.3	7.005	9.825	12.85	15.2	16.4	16.64	16.7	12.175
Summer	2005	4	0	12.63	12.881	13.883	15.2	17.45	20.69	21.338	21.5	16.133
Summer	2006	4	0	17.71	17.755	17.935	24.505	34.83	44.022	45.86	46.32	28.26
Summer	2007	4	0	10.8	11.928	16.44	18.365	18.45	18.546	18.565	18.57	16.525
Summer	2008	4	0	14.65	14.679	14.793	16.385	18.05	18.338	18.396	18.41	16.458
Summer	2009	4	0	1.88	3.257	8.765	12.18	14.025	15.765	16.113	16.2	10.61
Summer	2010	4	0	10.95	10.958	10.988	11.365	12.365	13.889	14.194	14.27	11.988
Summer	2011	4	0	0.7	1.747	5.935	8.64	12.675	20.055	21.531	21.9	9.97
Summer	2012	4	0	41.9	42.275	43.775	47.75	54.875	63.935	65.747	66.2	50.9
Summer	2013	4	0	34.6	36.91	46.15	50.9	54.3	60.3	61.5	61.8	49.55
Summer	2014	4	0	34.9	36.565	43.225	54.25	63.025	64.285	64.537	64.6	52
Summer	2015	4	0	27.1	28.195	32.575	37.35	43.75	52.03	53.686	54.1	38.975
Summer	2016	4	0	26.6	26.765	27.425	31.65	37.85	43.25	44.33	44.6	33.625
Summer	2017	4	0	21.2	21.68	23.6	30.2	38.875	45.775	47.155	47.5	32.275
Summer Overall	2003-2018	60	0	0.7	6.079	14.293	18.49	37.075	61.835	65.256	66.2	26.241
Winter	2003	2	0	17.81	17.882	18.17	18.53	18.89	19.178	19.236	19.25	18.53
Winter	2004	3	0	12	12.29	13.45	14.9	16.925	18.545	18.869	18.95	15.283
Winter	2005	3	0	7.6	7.9	9.1	10.6	17.1	22.3	23.34	23.6	13.933
Winter	2006	3	0	10	11.07	15.35	20.7	21.1	21.42	21.484	21.5	17.4
Winter	2007	3	0	11.29	11.471	12.195	13.1	14.115	14.927	15.089	15.13	13.173
Winter	2008	3	0	10.01	10.039	10.155	10.3	12.155	13.639	13.936	14.01	11.44
Winter	2009	3	0	5.53	6.009	7.925	10.32	10.685	10.977	11.035	11.05	8.9667

Monthly Operating Report (MOR) Statistics for: Mantua WWTP; 3PB00031 (permit #)

Season	Year	# of Obs.	# Below Detection	Minimum	Percentiles 5th	25th	50th	75th	95th	99th	Maximum	Mean
Winter	2010	3	0	9.6	9.806	10.63	11.66	15	17.672	18.206	18.34	13.2
Winter	2011	3	0	12.78	12.8	12.88	12.98	14.59	15.878	16.136	16.2	13.987
Winter	2012	3	0	16.5	17.58	21.9	27.3	27.95	28.47	28.574	28.6	24.133
Winter	2013	3	0	49.7	50.85	55.45	61.2	63.1	64.62	64.924	65	58.633
Winter	2014	3	0	25.6	28	37.6	49.6	50.35	50.95	51.07	51.1	42.1
Winter	2015	3	0	37.1	37.4	38.6	40.1	52.6	62.6	64.6	65.1	47.433
Winter	2016	3	0	22.8	23.76	27.6	32.4	36	38.88	39.456	39.6	31.6
Winter	2017	3	0	22.9	22.99	23.35	23.8	27.5	30.46	31.052	31.2	25.967
Winter	2018	3	0	20.7	21.31	23.75	26.8	28.6	30.04	30.328	30.4	25.967
Winter Overall	2003-2018	47	0	5.53	9.72	12.39	19.25	29.5	58.17	65.054	65.1	23.973
Annual	2003	12	0	0.79	8.281	16.598	19.1	22.165	30.18	36.516	38.1	19.357
Annual	2004	12	0	6.3	8.8135	11.75	14.8	18.55	26.935	30.195	31.01	16.057
Annual	2005	12	0	7.6	9.25	13.808	17.3	23.503	36.886	42.641	44.08	20.127
Annual	2006	12	0	10	11.705	15.128	19.355	30.303	45.066	46.069	46.32	23.664
Annual	2007	12	0	10.26	10.557	11.973	14.57	16.97	18.482	18.552	18.57	14.629
Annual	2008	12	0	3.247	6.9667	10.315	13.5	15.813	18.146	18.357	18.41	12.978
Annual	2009	12	0	0.91	1.4435	9.67	13.415	16.5	17.823	18.237	18.34	11.883
Annual	2010	12	0	9.6	10.343	11.495	13.22	16.413	18.585	20.037	20.4	13.88
Annual	2011	12	0	0.7	1.36	4.5575	9.575	12.83	18.93	21.306	21.9	9.3233
Annual	2012	12	0	10.1	10.32	28.275	44.25	56.3	65.54	66.068	66.2	41.833
Annual	2013	12	0	34.6	39.385	47.675	49.85	60.75	63.915	65.983	66.5	51.883
Annual	2014	12	0	23.1	24.475	33.275	48.55	62.8	64.215	64.523	64.6	46.25
Annual	2015	12	0	27.1	28.97	34.325	38.35	42.675	59.05	63.89	65.1	40.242
Annual	2016	12	0	22.8	23.35	27.425	34	43.475	57.94	61.988	63	37.017
Annual	2017	12	0	6.9	10.42	22.475	29.4	32.4	60.865	73.933	77.2	30.817
Annual	2018	5	0	11.4	12.9	18.9	19.1	20.7	25.58	26.556	26.8	19.38
Annual Overall	2003-2018	185	0	0.7	6.42	13.3	19.1	35.6	62.36	66.248	77.2	25.817

Monitoring Station 001; Reporting Code: 00665; Parameter Name: Phosphorus, Total (P) (mg/l)

Summer	2003	7	0	0.34	0.376	0.51	0.63	0.755	0.812	0.8264	0.83	0.61857
Summer	2004	4	0	0.26	0.296	0.44	0.51	0.5375	0.5795	0.5879	0.59	0.4675
Summer	2005	4	0	0.2	0.239	0.395	0.5	0.605	0.761	0.7922	0.8	0.5
Summer	2006	4	0	0.34	0.34	0.34	0.355	0.3975	0.4635	0.4767	0.48	0.3825
Summer	2007	4	0	0.28	0.3025	0.3925	0.44	0.4925	0.5945	0.6149	0.62	0.445
Summer	2008	4	0	0.2	0.2165	0.2825	0.325	0.3475	0.3655	0.3691	0.37	0.305
Summer	2009	4	0	0.26	0.281	0.365	0.4	0.435	0.519	0.5358	0.54	0.4
Summer	2010	4	0	0.34	0.346	0.37	0.405	0.435	0.447	0.4494	0.45	0.4
Summer	2011	4	0	0.24	0.276	0.42	0.5	0.5575	0.6475	0.6655	0.67	0.4775
Summer	2012	4	0	0.32	0.3335	0.3875	0.54	0.7025	0.7805	0.7961	0.8	0.55
Summer	2013	4	0	0.21	0.21	0.21	0.235	0.3	0.396	0.4152	0.42	0.275
Summer	2014	4	0	0.3	0.312	0.36	0.405	0.455	0.515	0.527	0.53	0.41
Summer	2015	4	0	0.25	0.259	0.295	0.355	0.43	0.502	0.5164	0.52	0.37
Summer	2016	4	0	0.35	0.365	0.425	0.475	0.5225	0.5765	0.5873	0.59	0.4725
Summer	2017	4	0	0.2	0.2165	0.2825	0.325	0.3575	0.3995	0.4079	0.41	0.315
Summer Overall	2003-2018	63	0	0.2	0.21	0.33	0.41	0.52	0.767	0.8114	0.83	0.43508
Winter	2003	2	0	0.23	0.2355	0.2575	0.285	0.3125	0.3345	0.3389	0.34	0.285
Winter	2004	10	0	0.17	0.1835	0.23	0.275	0.29	0.322	0.3364	0.34	0.26
Winter	2005	3	0	0.21	0.214	0.23	0.25	0.58	0.844	0.8968	0.91	0.45667
Winter	2006	3	0	0.23	0.232	0.24	0.25	0.25	0.25	0.25	0.25	0.24333
Winter	2007	3	0	0.2	0.2	0.2	0.2	0.21	0.218	0.2196	0.22	0.20667
Winter	2008	3	0	0.23	0.234	0.25	0.27	0.28	0.288	0.2896	0.29	0.26333
Winter	2009	3	0	0.28	0.281	0.285	0.29	0.3	0.308	0.3096	0.31	0.29333
Winter	2010	3	0	0.2	0.206	0.23	0.26	0.275	0.287	0.2894	0.29	0.25
Winter	2011	3	0	0.2	0.214	0.27	0.34	0.34	0.34	0.34	0.34	0.29333
Winter	2012	3	0	0.2	0.204	0.22	0.24	0.395	0.519	0.5438	0.55	0.33
Winter	2013	3	0	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Winter	2014	3	0	0.2	0.212	0.26	0.32	0.4	0.464	0.4768	0.48	0.33333
Winter	2015	3	0	0.26	0.268	0.3	0.34	0.34	0.34	0.34	0.34	0.31333
Winter	2016	3	0	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Winter	2017	3	0	0.2	0.2	0.2	0.2	0.21	0.218	0.2196	0.22	0.20667
Winter	2018	3	0	0.15	0.155	0.175	0.2	0.265	0.317	0.3274	0.33	0.22667
Winter Overall	2003-2018	54	0	0.15	0.2	0.2	0.245	0.29	0.389	0.7192	0.91	0.27074

Monthly Operating Report (MOR) Statistics for: Mantua WWTP; 3PB00031 (permit #)

Season	Year	# of Obs.	# Below Detection	Minimum	Percentiles 5th	25th	50th	75th	95th	99th	Maximum	Mean
Annual	2003	26	0	0.17	0.23	0.29	0.345	0.49	0.7625	0.815	0.83	0.41615
Annual	2004	15	0	0.2	0.2	0.22	0.29	0.47	0.59	0.59	0.59	0.346
Annual	2005	12	0	0.2	0.2165	0.25	0.32	0.48	0.8495	0.8979	0.91	0.41417
Annual	2006	12	0	0.22	0.22	0.245	0.275	0.34	0.4195	0.4679	0.48	0.3
Annual	2007	12	0	0.2	0.2	0.2	0.285	0.3625	0.5265	0.6013	0.62	0.31083
Annual	2008	12	0	0.2	0.2	0.2225	0.25	0.295	0.3535	0.3667	0.37	0.2625
Annual	2009	12	0	0.2	0.2	0.26	0.3	0.4	0.5535	0.5667	0.57	0.33333
Annual	2010	12	0	0.2	0.2	0.2	0.285	0.3925	0.531	0.6102	0.63	0.31667
Annual	2011	12	0	0.24	0.24	0.3325	0.445	0.49	0.7555	0.8391	0.86	0.44667
Annual	2012	12	0	0.2	0.2	0.2525	0.365	0.58	0.836	0.8712	0.88	0.4375
Annual	2013	12	0	0.2	0.2	0.2	0.2	0.2225	0.332	0.4024	0.42	0.23
Annual	2014	12	0	0.2	0.2	0.2575	0.31	0.3925	0.5025	0.5245	0.53	0.33083
Annual	2015	12	0	0.2	0.2	0.2375	0.28	0.34	0.454	0.5068	0.52	0.29833
Annual	2016	12	0	0.2	0.2	0.215	0.295	0.405	0.5405	0.5801	0.59	0.32583
Annual	2017	12	0	0.14	0.1455	0.2	0.2	0.3125	0.3715	0.4023	0.41	0.23917
Annual	2018	5	0	0.1	0.102	0.11	0.18	0.2	0.304	0.3248	0.33	0.184
Annual Overall	2003-2018	202	0	0.1	0.2	0.21	0.29	0.4075	0.668	0.8597	0.91	0.33604
Monitoring Station	**001;**	**Reporting Code:**		**00719;**		**Parameter Name:**		**Cyanide, Free (mg/l)**				
Annual	2003	4	1	0	0.0015	0.0075	0.01	0.01	0.01	0.01	0.01	0.0075
Annual	2004	4	0	0.005	0.00575	0.00875	0.01	0.01025	0.01085	0.01097	0.011	0.009
Annual	2005	4	0	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Annual	2006	4	0	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Annual	2007	4	0	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Annual	2008	4	1	0	0.0015	0.0075	5.005	10	10	10	10	5.0025
Annual	2009	4	0	0.01	0.01	0.01	0.01	2.5075	8.5015	9.7003	10	2.5075
Annual	2010	4	0	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Annual	2011	4	0	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Annual	2012	4	1	0	0.0015	0.0075	0.01	0.01	0.01	0.01	0.01	0.0075
Annual	2013	4	4	0	0	0	0	0	0	0	0	0
Annual	2014	4	4	0	0	0	0	0	0	0	0	0
Annual	2015	3	0	0.01	0.109	0.505	1	1	1	1	1	0.67
Annual Overall	2003-2015	51	11	0	0	0.01	0.01	0.01	5.5	10	10	0.63424
Monitoring Station	**001;**	**Reporting Code:**		**01074;**		**Parameter Name:**		**Nickel, Total Recoverable (ug/l)**				
Annual	2010	3	0	5	5	5	5	5	5	5	5	5
Annual	2011	4	0	5	5	5	5	5	5	5	5	5
Annual	2012	4	2	0	0	0	0.5	2	4.4	4.88	5	1.5
Annual	2013	4	4	0	0	0	0	0	0	0	0	0
Annual	2014	4	4	0	0	0	0	0	0	0	0	0
Annual	2015	4	1	0	0.75	3.75	7.5	10	10	10	10	6.25
Annual	2016	4	0	10	10	10	10	10	10	10	10	10
Annual	2017	4	0	10	10	10	10	10	10	10	10	10
Annual	2018	1	0	10	10	10	10	10	10	10	10	10
Annual Overall	2010-2018	32	11	0	0	0	5	10	10	10	10	4.875
Monitoring Station	**001;**	**Reporting Code:**		**01094;**		**Parameter Name:**		**Zinc, Total Recoverable (ug/l)**				
Annual	2010	3	0	10	10	10	10	10	10	10	10	10
Annual	2011	4	0	10	10	10	10	10	10	10	10	10
Annual	2012	4	1	0	0.15	0.75	5.5	20.095	44.323	49.169	50.38	15.345
Annual	2013	4	1	0	5.52	27.6	46.15	59.3	68.42	70.244	70.7	40.75
Annual	2014	4	0	24.8	24.92	25.4	27.2	34.725	48.945	51.789	52.5	32.925
Annual	2015	4	0	10	10.3	11.5	12.5	22.4	44.96	49.472	50.6	21.4
Annual	2016	4	0	24	24.9	28.5	34.5	39.75	41.55	41.91	42	33.75
Annual	2017	4	0	10	10.6	13	15	17	19.4	19.88	20	15
Annual	2018	1	0	15	15	15	15	15	15	15	15	15
Annual Overall	2010-2018	32	2	0	0.55	10	14.5	31.7	53.85	65.988	70.7	22.553
Monitoring Station	**001;**	**Reporting Code:**		**01113;**		**Parameter Name:**		**Cadmium, Total Recoverable (ug/l)**				

Monthly Operating Report (MOR) Statistics for: Mantua WWTP; 3PB00031 (permit #)

Season	Year	# of Obs.	# Below Detection	Minimum	Percentiles 5th	25th	50th	75th	95th	99th	Maximum	Mean
Annual	2010	3	2	0	0	0	0	0.25	0.45	0.49	0.5	0.16667
Annual	2011	4	0	0.5	0.5	0.5	0.5	0.875	1.775	1.955	2	0.875
Annual	2012	4	2	0	0	0	0.5	1.25	1.85	1.97	2	0.75
Annual	2013	4	4	0	0	0	0	0	0	0	0	0
Annual	2014	4	4	0	0	0	0	0	0	0	0	0
Annual	2015	4	1	0	0.075	0.375	0.75	1.25	1.85	1.97	2	0.875
Annual	2016	4	0	0.5	0.575	0.875	1	13.25	42.65	48.53	50	13.125
Annual	2017	4	0	0.5	0.5	0.5	0.5	0.625	0.925	0.985	1	0.625
Annual	2018	1	0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Annual Overall	2010-2018	32	13	0	0	0	0.5	1	2	35.12	50	2.0625
Monitoring Station	**001;**	**Reporting Code:**		**01114;**			**Parameter Name:**	**Lead, Total Recoverable (ug/l)**				
Annual	2010	3	0	5	5	5	5	5	5	5	5	5
Annual	2011	4	0	5	5	5	5	5	5	5	5	5
Annual	2012	4	2	0	0	0	0.5	2	4.4	4.88	5	1.5
Annual	2013	4	4	0	0	0	0	0	0	0	0	0
Annual	2014	4	4	0	0	0	0	0	0	0	0	0
Annual	2015	4	1	0	0.3	1.5	2	2.75	4.55	4.91	5	2.25
Annual	2016	4	0	2	2	2	2	2	2	2	2	2
Annual	2017	4	0	2	2	2	2	2	2	2	2	2
Annual	2018	1	0	2	2	2	2	2	2	2	2	2
Annual Overall	2010-2018	32	11	0	0	0	2	5	5	5	5	2.125
Monitoring Station	**001;**	**Reporting Code:**		**01118;**			**Parameter Name:**	**Chromium, Total Recoverable (ug/l)**				
Annual	2010	3	0	5	5	5	5	5	5	5	5	5
Annual	2011	4	0	5	5	5	5	5	5	5	5	5
Annual	2012	4	2	0	0	0	0.5	1.25	1.85	1.97	2	0.75
Annual	2013	4	4	0	0	0	0	0	0	0	0	0
Annual	2014	4	4	0	0	0	0	0	0	0	0	0
Annual	2015	4	1	0	0.75	3.75	7.5	10	10	10	10	6.25
Annual	2016	4	0	10	10	10	10	20	44	48.8	50	20
Annual	2017	4	0	10	10	10	10	10	10	10	10	10
Annual	2018	1	0	10	10	10	10	10	10	10	10	10
Annual Overall	2010-2018	32	11	0	0	0	5	10	10	37.6	50	6.0313
Monitoring Station	**001;**	**Reporting Code:**		**01119;**			**Parameter Name:**	**Copper, Total Recoverable (ug/l)**				
Annual	2010	3	0	5	5	5	5	5	5	5	5	5
Annual	2011	4	0	5	5	5	5	5	5	5	5	5
Annual	2012	4	1	0	0.15	0.75	3	6.1825	9.0205	9.5881	9.73	3.9325
Annual	2013	4	2	0	0	0	5	10.015	10.051	10.058	10.06	5.015
Annual	2014	4	3	0	0	0	0	1.9675	6.6895	7.6339	7.87	1.9675
Annual	2015	4	1	0	0.75	3.75	7.5	10	10	10	10	6.25
Annual	2016	4	0	10	10	10	10	10	10	10	10	10
Annual	2017	4	0	10	10	10	10	10	10	10	10	10
Annual	2018	1	0	10	10	10	10	10	10	10	10	10
Annual Overall	2010-2018	32	7	0	0	4	5	10	10	10.041	10.06	6.0519
Monitoring Station	**001;**	**Reporting Code:**		**01220;**			**Parameter Name:**	**Chromium, Dissolved Hexavalent (ug/l)**				
Annual	2003	4	2	0	0	0	0.005	2.5075	8.5015	9.7003	10	2.5025
Annual	2004	4	0	5	5	5	5	5	5	5	5	5
Annual	2005	4	0	0.01	1.5085	7.5025	10	10	10	10	10	7.5025
Annual	2006	4	0	0.01	1.5085	7.5025	10	10	10	10	10	7.5025
Annual	2007	4	0	0.01	1.5085	7.5025	10	10	10	10	10	7.5025
Annual	2008	4	0	10	10	10	10	10	10	10	10	10
Annual	2009	4	0	5	5.75	8.75	10	10	10	10	10	8.75
Annual	2010	3	0	10	10	10	10	10	10	10	10	10
Annual	2011	4	0	0.01	1.5085	7.5025	10	10	10	10	10	7.5025
Annual	2012	4	2	0	0	0	0.5	2	4.4	4.88	5	1.5
Annual	2013	4	4	0	0	0	0	0	0	0	0	0

Monthly Operating Report (MOR) Statistics for: Mantua WWTP; 3PB00031 (permit #)

Season	Year	# of Obs.	# Below Detection	Minimum	Percentiles 5th	25th	50th	75th	95th	99th	Maximum	Mean
Annual	2014	4	4	0	0	0	0	0	0	0	0	0
Annual	2015	4	1	0	0.6	3	4	5.5	9.1	9.82	10	4.5
Annual	2016	4	0	4	4	4	4	5.5	9.1	9.82	10	5.5
Annual	2017	4	0	4	4	4	4	4	4	4	4	4
Annual	2018	1	0	4	4	4	4	4	4	4	4	4
Annual Overall	2003-2018	60	13	0	0	0.01	5	10	10	10	10	5.3508
Monitoring Station	**001;**	**Reporting Code:**		**31616;**		**Parameter Name:**		**Fecal Coliform (#/100 ml)**				
Annual	2003	51	0	1	1	1	1	2	7	123	228	6.6078
Annual	2004	50	0	1	1	1	1	3.75	11	17.02	18	3.02
Annual	2005	52	0	1	1	1	1	3	10.45	14.92	19	2.7692
Annual	2006	52	0	1	1	1	2	9	53.5	306.7	424	19.077
Annual	2007	53	0	1	1	1	4	8	132.4	226.36	230	23.17
Annual	2008	52	0	1	1	1	3	20	242.6	281.56	304	30.596
Annual	2009	52	0	1	1	1	3	7	23.3	35.41	40	5.9038
Annual	2010	50	0	1	1	3	9.5	29.75	165.5	282.67	340	34.94
Annual	2011	9	0	4	5.6	12	42	54	210.8	245.36	254	64.667
Annual Overall	2003-2011	421	0	1	1	1	2	8	84	257.2	424	16.815
Monitoring Station	**001;**	**Reporting Code:**		**31648;**		**Parameter Name:**		**E. coli (#/100 ml)**				
Annual	2010	16	0	2	4.25	10	10	40	1673	5534.6	6500	425.38
Annual	2011	41	0	2	5.5	10	15	60	1000	1886.4	2000	180.54
Annual	2012	54	0	2	5	10	12	190.25	941.79	1773.2	2419.6	191.33
Annual	2013	54	0	1	1	1	10	15.2	251.31	650.39	920.8	45.796
Annual	2014	52	0	1	1	2	10	10	202.5	1338.8	2420	72.433
Annual	2015	52	0	1	1	1	1	1.25	9.58	17.245	22.6	2.2788
Annual	2016	52	0	1	1	1	1	2	4.1	7.432	10.9	1.6019
Annual	2017	54	0	1	1	1	1	2	50.875	1217.5	2419.6	51.998
Annual	2018	10	0	1	1	1	1	1	1.55	1.91	2	1.1
Annual Overall	2010-2018	385	0	1	1	1	4.1	10	324	2067.1	6500	87.793
Monitoring Station	**001;**	**Reporting Code:**		**50050;**		**Parameter Name:**		**Flow Rate (MGD)**				
Summer	2003	122	0	0.16058	0.17624	0.21367	0.25807	0.31999	0.51486	0.88619	1.3666	0.29983
Summer	2004	122	0	0.1531	0.17814	0.19647	0.21856	0.24835	0.33463	0.53527	0.63208	0.23616
Summer	2005	122	0	0.07066	0.13663	0.15792	0.17253	0.19796	0.24722	0.48815	0.92295	0.18942
Summer	2006	122	0	0.09849	0.14929	0.18663	0.20868	0.24581	0.3249	0.46726	0.62359	0.22268
Summer	2007	122	0	0.14234	0.15726	0.17458	0.19332	0.22011	0.2684	0.38356	0.5165	0.20481
Summer	2008	122	0	0.14559	0.16001	0.18332	0.19986	0.21573	0.27179	0.29435	0.32571	0.20349
Summer	2009	122	0	0.11	0.15615	0.16925	0.1835	0.201	0.24195	0.27664	0.354	0.18866
Summer	2010	122	0	0.13	0.14805	0.16825	0.1845	0.208	0.248	0.26816	0.405	0.19107
Summer	2011	122	0	0.156	0.196	0.219	0.242	0.27575	0.375	0.44333	0.58	0.25646
Summer	2012	122	0	0.091	0.10915	0.123	0.1345	0.151	0.18475	0.20127	0.216	0.1393
Summer	2013	122	0	0.1	0.11	0.136	0.1575	0.2	0.28835	0.8513	1.027	0.18607
Summer	2014	122	0	0.112	0.13405	0.15975	0.178	0.207	0.2567	0.37322	0.42	0.19039
Summer	2015	122	0	0.072	0.10305	0.12925	0.166	0.226	0.3888	0.68029	0.737	0.19889
Summer	2016	122	0	0.101	0.118	0.133	0.1485	0.16675	0.20085	0.23995	0.389	0.15371
Summer	2017	122	0	0.081	0.09	0.116	0.146	0.17475	0.22185	0.29295	0.344	0.14952
Summer Overall	2003-2018	1830	0	0.07066	0.119	0.157	0.187	0.22341	0.32165	0.51585	1.3666	0.2007
Winter	2003	59	0	0.08397	0.13023	0.15456	0.16778	0.1852	0.26363	0.29383	0.31905	0.17894
Winter	2004	91	0	0.17473	0.20637	0.22329	0.26132	0.30152	0.4145	0.5414	0.62118	0.27996
Winter	2005	90	0	0.1621	0.18838	0.225	0.27257	0.39581	0.80018	1.0312	1.1995	0.35394
Winter	2006	90	0	0.14195	0.16024	0.18572	0.20574	0.23677	0.27434	0.36097	0.36782	0.21164
Winter	2007	90	0	0.12427	0.15072	0.18431	0.22431	0.28931	0.56277	0.67545	0.8619	0.26561
Winter	2008	91	0	0.20238	0.22017	0.26015	0.3078	0.37492	0.58131	0.71466	0.9433	0.33903
Winter	2009	90	0	0.16083	0.16462	0.18577	0.21339	0.25515	0.45667	0.60869	0.679	0.24409
Winter	2010	90	0	0.099	0.15545	0.18025	0.1955	0.22475	0.27255	0.35148	0.501	0.20602
Winter	2011	89	0	0.141	0.1468	0.179	0.193	0.243	0.41	0.54572	0.551	0.22697
Winter	2012	91	0	0.213	0.227	0.2665	0.322	0.3855	0.4975	0.669	0.723	0.33903
Winter	2013	90	0	0.112	0.1408	0.16525	0.195	0.22275	0.3299	0.39699	0.405	0.20488
Winter	2014	90	0	0.098	0.11145	0.13625	0.1635	0.20375	0.3256	0.47655	0.748	0.18748

Monthly Operating Report (MOR) Statistics for: Mantua WWTP; 3PB00031 (permit #)

Season	Year	# of Obs.	# Below Detection	Minimum	Percentiles 5th	25th	50th	75th	95th	99th	Maximum	Mean
Winter	2015	90	0	0.128	0.1358	0.15125	0.171	0.19475	0.24265	0.33424	0.409	0.17847
Winter	2016	91	0	0.078	0.0925	0.1235	0.14	0.173	0.394	0.4636	0.622	0.17319
Winter	2017	90	0	0.105	0.13645	0.178	0.225	0.28725	0.37405	0.46276	0.477	0.23902
Winter	2018	90	0	0.082	0.09145	0.11925	0.1545	0.1995	0.45685	0.60067	0.687	0.19286
Winter Overall	2003-2018	1412	0	0.078	0.125	0.169	0.2121	0.27618	0.446	0.67834	1.1995	0.24027
Annual	2003	365	0	0.08397	0.15499	0.19236	0.23879	0.30063	0.43681	0.67186	1.3666	0.26202
Annual	2004	366	0	0.14843	0.17753	0.21002	0.24088	0.29805	0.51154	0.63454	0.98617	0.27441
Annual	2005	365	0	0.07066	0.14205	0.17269	0.20828	0.26651	0.53055	0.88675	1.1995	0.25052
Annual	2006	365	0	0.09849	0.14932	0.18292	0.21018	0.24291	0.33139	0.4865	0.63025	0.22217
Annual	2007	365	0	0.12427	0.15546	0.18384	0.21075	0.2657	0.44018	0.6131	0.8619	0.24171
Annual	2008	366	0	0.12463	0.16583	0.19475	0.225	0.29382	0.59162	0.83114	1.0351	0.27597
Annual	2009	365	0	0.11	0.156	0.173	0.19554	0.233	0.3496	0.64764	1.256	0.22037
Annual	2010	365	0	0.099	0.1462	0.172	0.193	0.224	0.3124	0.47476	0.567	0.20764
Annual	2011	364	0	0.141	0.17815	0.23	0.277	0.36975	0.57925	0.96533	1.221	0.32152
Annual	2012	366	0	0.091	0.117	0.137	0.168	0.233	0.39575	0.5137	0.723	0.20061
Annual	2013	365	0	0.099	0.111	0.139	0.172	0.216	0.296	0.45632	1.027	0.18903
Annual	2014	365	0	0.098	0.1312	0.157	0.185	0.235	0.3496	0.48712	0.638	0.20749
Annual	2015	365	0	0.072	0.102	0.129	0.16	0.217	0.3874	0.61536	0.741	0.19007
Annual	2016	366	0	0.09	0.11325	0.137	0.155	0.195	0.32175	0.42515	0.622	0.17802
Annual	2017	365	0	0.067	0.093	0.124	0.182	0.256	0.414	0.55916	0.691	0.20486
Annual	2018	151	0	0.095	0.1275	0.181	0.229	0.3145	0.5755	0.76	0.942	0.27158
Annual Overall	2003-2018	5629	0	0.067	0.121	0.166	0.203	0.2577	0.44121	0.6783	1.3666	0.23087
Monitoring Station	**001;**	**Reporting Code:**		**50092;**			**Parameter Name:**	**Mercury, Total (Low Level) (ng/l)**				
Annual	2010	3	0	0.68	0.69	0.73	0.78	0.915	1.023	1.0446	1.05	0.83667
Annual	2011	4	0	2.9	3.032	3.56	6.185	9.0175	10.044	10.249	10.3	6.3925
Annual	2012	4	0	4.42	4.4365	4.5025	6.88	9.7225	10.905	11.141	11.2	7.345
Annual	2013	4	0	0.715	0.72925	0.78625	0.905	2.0175	4.4595	4.9479	5.07	1.8988
Annual	2014	4	1	0	0.234	1.17	1.85	7.73	21.146	23.829	24.5	7.05
Annual	2015	4	0	0.699	0.73665	0.88725	1.04	1.2175	1.4275	1.4695	1.48	1.0648
Annual	2016	4	0	0.518	0.56735	0.76475	0.9155	1.0105	1.0741	1.0868	1.09	0.85975
Annual	2017	4	0	0.5	0.5	0.5	0.5235	0.87775	1.6716	1.8303	1.87	0.85425
Annual	2018	1	0	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23
Annual Overall	2010-2018	32	1	0	0.5	0.76375	1.11	3.94	10.705	20.377	24.5	3.3
Monitoring Station	**001;**	**Reporting Code:**		**51173;**			**Parameter Name:**	**Cyanide, Free (Low-Level) (ug/l)**				
Annual	2015	1	0	3	3	3	3	3	3	3	3	3
Annual	2016	4	0	0.003	0.003	0.003	0.0045	0.7545	2.5509	2.9102	3	0.753
Annual	2017	4	0	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003
Annual	2018	1	0	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003
Annual Overall	2015-2018	10	0	0.003	0.003	0.003	0.003	0.00525	3	3	3	0.6027
Monitoring Station	**001;**	**Reporting Code:**		**70300;**			**Parameter Name:**	**Residue, Total Filterable (mg/l)**				
Summer	2016	4	0	726	729	741	758	786	824.4	832.08	834	769
Summer	2017	4	0	866	868.7	879.5	921	969.5	997.1	1002.6	1004	928
Summer Overall	2015-2018	8	0	726	733	764	850	902.5	987.9	1000.8	1004	848.5
Winter	2016	3	0	620	640.6	723	826	843	856.6	859.32	860	768.67
Winter	2017	3	0	612	627.8	691	770	907	1016.6	1038.5	1044	808.67
Winter	2018	3	0	698	751.2	964	1230	1295	1347	1357.4	1360	1096
Winter Overall	2015-2018	9	0	612	615.2	698	826	1044	1308	1349.6	1360	891.11
Annual	2015	1	0	620	620	620	620	620	620	620	620	620
Annual	2016	12	0	612	674.7	764	837	870.5	981.6	1037.9	1052	828.67
Annual	2017	12	0	438	581	749	875	969.5	1036.3	1042.5	1044	841
Annual	2018	5	0	484	580.4	966	1096	1230	1334	1354.8	1360	1027.2
Annual Overall	2015-2018	30	0	438	541.6	749.5	862	964	1169.7	1322.3	1360	859.73
Monitoring Station	**001;**	**Reporting Code:**		**80082;**			**Parameter Name:**	**CBOD 5 day (mg/l)**				
Summer	2003	34	0	1	1	1	2	3	4.35	5	5	2.1765
Summer	2004	35	0	1.3	1.47	1.7	2.1	2.5	3.5	3.698	3.8	2.2371

Monthly Operating Report (MOR) Statistics for: Mantua WWTP; 3PB00031 (permit #)

Season	Year	# of Obs.	# Below Detection	Minimum	Percentiles 5th	25th	50th	75th	95th	99th	Maximum	Mean
Summer	2005	36	0	0.7	1.075	1.4	1.65	2.15	2.85	3.065	3.1	1.8083
Summer	2006	35	0	0.9	1	1.2	1.4	1.8	2.86	3.132	3.2	1.6143
Summer	2007	35	0	0.6	0.8	1	1.2	1.6	1.99	2.332	2.4	1.2943
Summer	2008	34	0	0.9	0.9	1.025	1.2	1.4	1.635	2.035	2.2	1.2441
Summer	2009	35	0	1	1	1.1	1.3	1.4	1.7	1.898	2	1.3
Summer	2010	35	0	0.9	1.31	1.7	2.2	2.55	3.06	3.596	3.8	2.1771
Summer	2011	36	0	1	1.675	2.075	2.3	2.65	3.225	3.495	3.6	2.3694
Summer	2012	34	0	1	1	2	2	4	7.35	8	8	3.1176
Summer	2013	34	0	1	1	1	2	2	5.05	7	7	2.1176
Summer	2014	34	0	1	1	1	1	2	2	2	2	1.4412
Summer	2015	35	0	1	1	2	2	2	3	3	3	2
Summer	2016	36	0	2	2	2	3	3	5	7.08	8.2	2.8944
Summer	2017	35	0	2	2	2	2	2.5	3	3	3	2.2571
Summer Overall	2003-2018	523	0	0.6	1	1.2	2	2.3	4	6.78	8.2	2.0052
Winter	2003	18	0	1	1	2	3	4	6.3	7.66	8	3.3333
Winter	2004	26	0	1.4	1.4	1.8	2	2.5	3.35	3.55	3.6	2.1577
Winter	2005	26	0	1.1	1.3	1.5	1.95	2.475	3	3.075	3.1	2.0692
Winter	2006	25	0	1	1.24	1.8	2.2	2.4	2.92	3.228	3.3	2.108
Winter	2007	26	0	0.8	0.9	1.2	1.5	1.975	2.475	3.025	3.2	1.6038
Winter	2008	26	0	1	1.025	1.2	1.5	1.7	2.1	2.325	2.4	1.5115
Winter	2009	26	0	1	1.2	1.325	1.8	2.275	2.8	2.8	2.8	1.8577
Winter	2010	24	0	1.6	1.645	2	2.2	2.4	3.185	3.277	3.3	2.2917
Winter	2011	26	0	0.7	1.125	1.525	1.7	1.875	2	2.075	2.1	1.6308
Winter	2012	26	0	1.3	1.425	1.7	1.8	2.075	2.8	2.95	3	1.9231
Winter	2013	26	0	1	1	2	2	3	4.75	6.5	7	2.4231
Winter	2014	26	0	1	1	2	2	2.75	3	3.75	4	2.1154
Winter	2015	26	0	1	1	2	2	3	3	3.75	4	2.3462
Winter	2016	24	0	2	2	2	3	4	4.85	5	5	3.125
Winter	2017	25	0	2	2	2	3	3	3.8	4	4	2.68
Winter	2018	25	0	2	2	3	3	3	4	4	4	3.04
Winter Overall	2003-2018	401	0	0.7	1	1.7	2	3	4	5	8	2.2352
Annual	2003	105	0	1	1	1	2	3	5	6	8	2.4171
Annual	2004	105	0	1	1.4	1.8	2.2	2.7	3.58	4.492	5	2.339
Annual	2005	104	0	0.7	1.1	1.4	1.8	2.4	3.085	3.397	3.8	1.9519
Annual	2006	104	0	0.5	0.9	1.2	1.5	2	2.6	3.194	3.3	1.6183
Annual	2007	104	0	0.6	0.815	1.1	1.35	1.7	2.4	3.179	3.5	1.4587
Annual	2008	106	0	0	0.9	1.1	1.3	1.5	2.05	2.295	3.9	1.3623
Annual	2009	103	0	1	1	1.2	1.5	1.9	2.6	2.8	2.8	1.6126
Annual	2010	104	0	0.7	1.13	1.6	2	2.3	3	3.297	3.8	2.0356
Annual	2011	104	0	1	1.315	1.7	2	2.425	3.1	3.591	10.8	2.149
Annual	2012	101	0	1	1	2	3	4	6	8	8	3.104
Annual	2013	104	0	1	1	1	2	3	6.85	8	8	2.3942
Annual	2014	105	0	1	1	1	2	2	3	8.88	10	1.8571
Annual	2015	103	0	1	1	2	2	3	3	3.98	4	2.2524
Annual	2016	104	0	2	2	2	3	3	4	5	8.2	2.7712
Annual	2017	104	0	2	2	2	2	3	3.85	4	4	2.4135
Annual	2018	44	0	2	2	2	2	3	3.85	4	4	2.5
Annual Overall	2003-2018	1604	0	0	1	1.4	2	2.5	4	6	10.8	2.1239
Monitoring Station	**001;**	**Reporting Code:**		**99983;**		**Parameter Name:**		**Zinc, Total (ug/l)**				
Annual	2003	4	0	40	40	40	45	57.5	75.5	79.1	80	52.5
Annual	2004	4	0	24	25.35	30.75	43.5	55	57.4	57.88	58	42.25
Annual	2005	4	0	10	10	10	10	10	10	10	10	10
Annual	2006	4	0	10	10	10	10	10	10	10	10	10
Annual	2007	4	0	10	10	10	10	10	10	10	10	10
Annual	2008	4	0	10	10	10	17.9	29.025	36.765	38.313	38.7	21.125
Annual	2009	4	0	10	10	10	10	10	10	10	10	10
Annual	2010	1	0	10	10	10	10	10	10	10	10	10
Annual Overall	2003-2010	29	0	10	10	10	10	33	56.4	73.84	80	21.845
Monitoring Station	**001;**	**Reporting Code:**		**99984;**		**Parameter Name:**		**Nickel, Total Recoverable (ug/l)**				

Monthly Operating Report (MOR) Statistics for: Mantua WWTP; 3PB00031 (permit #)

Season	Year	# of Obs.	# Below Detection	Minimum	Percentiles 5th	25th	50th	75th	95th	99th	Maximum	Mean
Annual	2003	4	0	10	11.5	17.5	25	35	47	49.4	50	27.5
Annual	2004	4	0	10	10	10	15	20	20	20	20	15
Annual	2005	4	0	5	5	5	5	5	5	5	5	5
Annual	2006	4	0	5	5	5	5	5	5	5	5	5
Annual	2007	4	0	5	5	5	5	5	5	5	5	5
Annual	2008	4	1	0	0.075	0.375	2.75	6.4	9.76	10.432	10.6	4.025
Annual	2009	4	0	5	5	5	5	5	5	5	5	5
Annual	2010	1	0	5	5	5	5	5	5	5	5	5
Annual Overall	2003-2010	29	1	0	2.3	5	5	10	26	44.4	50	9.3483
Monitoring Station	**001;**	**Reporting Code:**		**99985;**		**Parameter Name:**		**Chromium, Total (ug/l)**				
Annual	2003	4	0	10	10	10	10	10	10	10	10	10
Annual	2004	4	0	20	20	20	20	20	20	20	20	20
Annual	2005	4	0	5	5	5	5	5	5	5	5	5
Annual	2006	4	0	5	5	5	5	5	5	5	5	5
Annual	2007	4	0	5	5	5	5	5	5	5	5	5
Annual	2008	4	1	0	0.075	0.375	2.75	6.2075	9.1055	9.6851	9.83	3.8325
Annual	2009	4	0	5	5	5	5	5	5	5	5	5
Annual	2010	1	0	5	5	5	5	5	5	5	5	5
Annual Overall	2003-2010	29	1	0	2.3	5	5	10	20	20	20	7.5976
Monitoring Station	**001;**	**Reporting Code:**		**99988;**		**Parameter Name:**		**Lead, Total Recoverable (ug/l)**				
Annual	2003	4	0	10	11.5	17.5	25	40	64	68.8	70	32.5
Annual	2004	4	0	2	2	2	2	2.725	4.465	4.813	4.9	2.725
Annual	2005	4	0	5	5	5	5	5	5	5	5	5
Annual	2006	4	0	5	5	5	5	5	5	5	5	5
Annual	2007	4	0	5	5	5	5	5	5	5	5	5
Annual	2008	4	2	0	0	0	2.5	5	5	5	5	2.5
Annual	2009	4	0	5	5	5	5	5	5	5	5	5
Annual	2010	1	0	5	5	5	5	5	5	5	5	5
Annual Overall	2003-2010	29	2	0	0.8	5	5	5	26	58.8	70	8.1345
Monitoring Station	**001;**	**Reporting Code:**		**99989;**		**Parameter Name:**		**Copper, Total Recoverable (ug/l)**				
Annual	2003	4	0	10	10	10	15	20	20	20	20	15
Annual	2004	4	0	10	10	10	10	10.75	12.55	12.91	13	10.75
Annual	2005	4	0	5	5	5	5	5	5	5	5	5
Annual	2006	4	0	5	5	5	5	5	5	5	5	5
Annual	2007	4	0	5	5	5	5	5	5	5	5	5
Annual	2008	4	0	0.5	1.175	3.875	5.215	5.8475	6.8495	7.0499	7.1	4.5075
Annual	2009	4	0	5	5	5	5	5	5	5	5	5
Annual	2010	1	0	5	5	5	5	5	5	5	5	5
Annual Overall	2003-2010	29	0	0.5	5	5	5	10	17.2	20	20	7.1045
Monitoring Station	**001;**	**Reporting Code:**		**99990;**		**Parameter Name:**		**Cadmium, Total Recoverable (ug/l)**				
Annual	2003	4	0	2	2.15	2.75	6	9.25	9.85	9.97	10	6
Annual	2004	4	0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Annual	2005	4	0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Annual	2006	4	0	0.5	0.5	0.5	0.5	1.625	4.325	4.865	5	1.625
Annual	2007	4	0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Annual	2008	4	2	0	0	0	0.25	0.5	0.5	0.5	0.5	0.25
Annual	2009	4	0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Annual	2010	1	0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Annual Overall	2003-2010	29	2	0	0.2	0.5	0.5	0.5	7.4	9.72	10	1.3793
Monitoring Station	**001;**	**Reporting Code:**		**99993;**		**Parameter Name:**		**Mercury, Total (ug/l)**				
Annual	2003	4	0	0.2	0.2	0.2	0.2	0.225	0.285	0.297	0.3	0.225
Annual	2004	4	0	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Annual	2005	4	0	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2

Monthly Operating Report (MOR) Statistics for: Mantua WWTP; 3PB00031 (permit #)

Season	Year	# of Obs.	# Below Detection	Minimum	Percentiles 5th	25th	50th	75th	95th	99th	Maximum	Mean
Annual	2006	4	0	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Annual	2007	4	0	0.00075	0.001043	0.002213	0.10135	0.275	0.455	0.491	0.5	0.17586
Annual	2008	4	0	0.2	0.356	0.98	1.745	3.015	4.851	5.2182	5.31	2.25
Annual	2009	4	0	0.00123	0.001796	0.004058	0.8775	3.175	6.595	7.279	7.45	2.3016
Annual	2010	1	0	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005
Annual Overall	2003-2010	29	0	0.0005	0.000942	0.2	0.2	0.2	4.086	6.8508	7.45	0.76587
Monitoring Station	**300;**	**Reporting Code:**		**74062;**		**Parameter Name:**		**Overflow Occurrence (No./Month)**				
Annual	2010	9	0	5	7	10	10	20	54.4	62.08	64	19.889
Annual Overall	2010-2010	9	0	5	7	10	10	20	54.4	62.08	64	19.889
Monitoring Station	**581;**	**Reporting Code:**		**00611;**		**Parameter Name:**		**Ammonia (NH3) In Sludge (mg/kg)**				
Annual	2011	1	0	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9
Annual	2012	1	0	2240	2240	2240	2240	2240	2240	2240	2240	2240
Annual	2013	1	0	2340	2340	2340	2340	2340	2340	2340	2340	2340
Annual	2014	1	0	1910	1910	1910	1910	1910	1910	1910	1910	1910
Annual	2015	1	0	1760	1760	1760	1760	1760	1760	1760	1760	1760
Annual	2016	1	0	4640	4640	4640	4640	4640	4640	4640	4640	4640
Annual	2017	1	0	368	368	368	368	368	368	368	368	368
Annual Overall	2011-2017	7	0	4.9	113.83	1064	1910	2290	3950	4502	4640	1894.7
Monitoring Station	**581;**	**Reporting Code:**		**00627;**		**Parameter Name:**		**Nitrogen Kjeldahl, Total In Sludge (mg/kg)**				
Annual	2003	3	0	12400	14410	22450	32500	33750	34750	34950	35000	26633
Annual	2004	1	0	143000	143000	143000	143000	143000	143000	143000	143000	143000
Annual	2005	2	0	33600	33660	33900	34200	34500	34740	34788	34800	34200
Annual	2006	2	0	27800	28280	30200	32600	35000	36920	37304	37400	32600
Annual	2007	2	0	42000	42310	43550	45100	46650	47890	48138	48200	45100
Annual	2008	2	0	39500	39755	40775	42050	43325	44345	44549	44600	42050
Annual	2009	1	0	32100	32100	32100	32100	32100	32100	32100	32100	32100
Annual	2011	1	0	39300	39300	39300	39300	39300	39300	39300	39300	39300
Annual	2012	1	0	35800	35800	35800	35800	35800	35800	35800	35800	35800
Annual	2013	1	0	20000	20000	20000	20000	20000	20000	20000	20000	20000
Annual	2015	1	0	19700	19700	19700	19700	19700	19700	19700	19700	19700
Annual	2016	1	0	24700	24700	24700	24700	24700	24700	24700	24700	24700
Annual	2017	1	0	30100	30100	30100	30100	30100	30100	30100	30100	30100
Annual Overall	2003-2017	19	0	12400	18970	28950	34800	39400	57680	125940	143000	38553
Monitoring Station	**581;**	**Reporting Code:**		**00668;**		**Parameter Name:**		**Phosphorus, Total In Sludge (mg/kg)**				
Annual	2015	1	0	32400	32400	32400	32400	32400	32400	32400	32400	32400
Annual	2016	1	0	28300	28300	28300	28300	28300	28300	28300	28300	28300
Annual	2017	1	0	34100	34100	34100	34100	34100	34100	34100	34100	34100
Annual Overall	2015-2017	3	0	28300	28710	30350	32400	33250	33930	34066	34100	31600
Monitoring Station	**581;**	**Reporting Code:**		**00938;**		**Parameter Name:**		**Potassium In Sludge (mg/kg)**				
Annual	2015	1	0	3580	3580	3580	3580	3580	3580	3580	3580	3580
Annual	2016	1	0	4020	4020	4020	4020	4020	4020	4020	4020	4020
Annual	2017	1	0	3300	3300	3300	3300	3300	3300	3300	3300	3300
Annual Overall	2015-2017	3	0	3300	3328	3440	3580	3800	3976	4011.2	4020	3633.3
Monitoring Station	**581;**	**Reporting Code:**		**01003;**		**Parameter Name:**		**Arsenic, Total In Sludge (mg/kg)**				
Annual	2011	1	0	2.64	2.64	2.64	2.64	2.64	2.64	2.64	2.64	2.64
Annual	2012	1	0	3.65	3.65	3.65	3.65	3.65	3.65	3.65	3.65	3.65
Annual	2013	1	0	1	1	1	1	1	1	1	1	1
Annual	2014	1	0	6.49	6.49	6.49	6.49	6.49	6.49	6.49	6.49	6.49
Annual	2015	1	0	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6
Annual	2016	1	0	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7
Annual	2017	1	0	8.63	8.63	8.63	8.63	8.63	8.63	8.63	8.63	8.63

Monthly Operating Report (MOR) Statistics for: Mantua WWTP; 3PB00031 (permit #)

Season	Year	# of Obs.	# Below Detection	Minimum	Percentiles 5th	25th	50th	75th	95th	99th	Maximum	Mean
Annual Overall	2011-2017	7	0	1	1.492	3.145	6.49	10.115	11.67	11.694	11.7	6.53
Monitoring Station	**581;**	**Reporting Code:**		**01028;**		**Parameter Name:**		**Cadmium, Total In Sludge (mg/kg)**				
Annual	2003	3	0	7.8	7.906	8.33	8.86	9.68	10.336	10.467	10.5	9.0533
Annual	2004	1	0	13.1	13.1	13.1	13.1	13.1	13.1	13.1	13.1	13.1
Annual	2005	2	0	8.6	8.71	9.15	9.7	10.25	10.69	10.778	10.8	9.7
Annual	2006	2	0	12.7	12.715	12.775	12.85	12.925	12.985	12.997	13	12.85
Annual	2007	2	0	11.1	11.22	11.7	12.3	12.9	13.38	13.476	13.5	12.3
Annual	2008	2	0	8.25	8.3475	8.7375	9.225	9.7125	10.103	10.181	10.2	9.225
Annual	2009	1	0	13.8	13.8	13.8	13.8	13.8	13.8	13.8	13.8	13.8
Annual	2011	1	0	1.69	1.69	1.69	1.69	1.69	1.69	1.69	1.69	1.69
Annual	2012	1	0	7.23	7.23	7.23	7.23	7.23	7.23	7.23	7.23	7.23
Annual	2013	1	0	5.64	5.64	5.64	5.64	5.64	5.64	5.64	5.64	5.64
Annual	2014	1	0	6.99	6.99	6.99	6.99	6.99	6.99	6.99	6.99	6.99
Annual	2015	1	0	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3
Annual	2016	1	0	3.42	3.42	3.42	3.42	3.42	3.42	3.42	3.42	3.42
Annual	2017	1	0	2.409	2.409	2.409	2.409	2.409	2.409	2.409	2.409	2.409
Annual Overall	2003-2017	20	0	1.69	2.3731	7.17	9.53	12.4	13.515	13.743	13.8	9.0945
Monitoring Station	**581;**	**Reporting Code:**		**01029;**		**Parameter Name:**		**Chromium, Total In Sludge (mg/kg)**				
Annual	2003	3	0	53.5	53.69	54.45	55.4	57.1	58.46	58.732	58.8	55.9
Annual	2004	1	0	61.2	61.2	61.2	61.2	61.2	61.2	61.2	61.2	61.2
Annual	2005	2	0	51.6	52.175	54.475	57.35	60.225	62.525	62.985	63.1	57.35
Annual	2006	2	0	39.1	39.485	41.025	42.95	44.875	46.415	46.723	46.8	42.95
Annual	2007	2	0	29.2	30.645	36.425	43.65	50.875	56.655	57.811	58.1	43.65
Annual	2008	2	0	53.6	54.16	56.4	59.2	62	64.24	64.688	64.8	59.2
Annual	2009	1	0	78.6	78.6	78.6	78.6	78.6	78.6	78.6	78.6	78.6
Annual Overall	2003-2009	13	0	29.2	35.14	51.6	55.4	61.2	70.32	76.944	78.6	54.908
Monitoring Station	**581;**	**Reporting Code:**		**01043;**		**Parameter Name:**		**Copper, Total In Sludge (mg/kg)**				
Annual	2003	3	0	622	624	632	642	653	661.8	663.56	664	642.67
Annual	2004	1	0	564	564	564	564	564	564	564	564	564
Annual	2005	2	0	533	533.8	537	541	545	548.2	548.84	549	541
Annual	2006	2	0	573	574.95	582.75	592.5	602.25	610.05	611.61	612	592.5
Annual	2007	2	0	521	524.35	537.75	554.5	571.25	584.65	587.33	588	554.5
Annual	2008	2	0	455	457.6	468	481	494	504.4	506.48	507	481
Annual	2009	1	0	581	581	581	581	581	581	581	581	581
Annual	2011	1	0	144	144	144	144	144	144	144	144	144
Annual	2012	1	0	661	661	661	661	661	661	661	661	661
Annual	2013	1	0	610	610	610	610	610	610	610	610	610
Annual	2014	1	0	376	376	376	376	376	376	376	376	376
Annual	2015	1	0	348	348	348	348	348	348	348	348	348
Annual	2016	1	0	347	347	347	347	347	347	347	347	347
Annual	2017	1	0	364	364	364	364	364	364	364	364	364
Annual Overall	2003-2017	20	0	144	336.85	435.25	556.5	610.5	661.15	663.43	664	513.05
Monitoring Station	**581;**	**Reporting Code:**		**01052;**		**Parameter Name:**		**Lead, Total In Sludge (mg/kg)**				
Annual	2003	3	0	70.1	70.21	70.65	71.2	77.05	81.73	82.666	82.9	74.733
Annual	2004	1	0	87.9	87.9	87.9	87.9	87.9	87.9	87.9	87.9	87.9
Annual	2005	2	0	72.8	73.2	74.8	76.8	78.8	80.4	80.72	80.8	76.8
Annual	2006	2	0	79.3	79.525	80.425	81.55	82.675	83.575	83.755	83.8	81.55
Annual	2007	2	0	67.2	67.235	67.375	67.55	67.725	67.865	67.893	67.9	67.55
Annual	2008	2	0	33.2	33.255	33.475	33.75	34.025	34.245	34.289	34.3	33.75
Annual	2009	1	0	44.4	44.4	44.4	44.4	44.4	44.4	44.4	44.4	44.4
Annual	2011	1	0	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5
Annual	2012	1	0	59.1	59.1	59.1	59.1	59.1	59.1	59.1	59.1	59.1
Annual	2013	1	0	32.1	32.1	32.1	32.1	32.1	32.1	32.1	32.1	32.1
Annual	2014	1	0	27	27	27	27	27	27	27	27	27
Annual	2015	1	0	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8

Monthly Operating Report (MOR) Statistics for: Mantua WWTP; 3PB00031 (permit #)

Season	Year	# of Obs.	# Below Detection	Minimum	Percentiles 5th	25th	50th	75th	95th	99th	Maximum	Mean
Annual	2016	1	0	29.7	29.7	29.7	29.7	29.7	29.7	29.7	29.7	29.7
Annual	2017	1	0	31.1	31.1	31.1	31.1	31.1	31.1	31.1	31.1	31.1
Annual Overall	2003-2017	20	0	16.5	26.475	31.85	63.15	74.425	84.005	87.121	87.9	55.005
Monitoring Station	**581;**	**Reporting Code:**		**01068;**		**Parameter Name:**		**Nickel, Total In Sludge (mg/kg)**				
Annual	2003	3	0	22.8	23.03	23.95	25.1	27.4	29.24	29.608	29.7	25.867
Annual	2004	1	0	24.8	24.8	24.8	24.8	24.8	24.8	24.8	24.8	24.8
Annual	2005	2	0	28.8	28.9	29.3	29.8	30.3	30.7	30.78	30.8	29.8
Annual	2006	2	0	26	26.24	27.2	28.4	29.6	30.56	30.752	30.8	28.4
Annual	2007	2	0	20.5	20.505	20.525	20.55	20.575	20.595	20.599	20.6	20.55
Annual	2008	2	0	23.7	23.74	23.9	24.1	24.3	24.46	24.492	24.5	24.1
Annual	2009	1	0	37.9	37.9	37.9	37.9	37.9	37.9	37.9	37.9	37.9
Annual	2011	1	0	7.35	7.35	7.35	7.35	7.35	7.35	7.35	7.35	7.35
Annual	2012	1	0	30.6	30.6	30.6	30.6	30.6	30.6	30.6	30.6	30.6
Annual	2013	1	0	26.9	26.9	26.9	26.9	26.9	26.9	26.9	26.9	26.9
Annual	2014	1	0	26.6	26.6	26.6	26.6	26.6	26.6	26.6	26.6	26.6
Annual	2015	1	0	31.8	31.8	31.8	31.8	31.8	31.8	31.8	31.8	31.8
Annual	2016	1	0	28	28	28	28	28	28	28	28	28
Annual	2017	1	0	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Annual Overall	2003-2017	20	0	7.35	19.843	23.475	26.3	29.925	32.105	36.741	37.9	25.988
Monitoring Station	**581;**	**Reporting Code:**		**01093;**		**Parameter Name:**		**Zinc, Total In Sludge (mg/kg)**				
Annual	2003	3	0	594	600.2	625	656	709.5	752.3	760.86	763	671
Annual	2004	1	0	570	570	570	570	570	570	570	570	570
Annual	2005	2	0	566	568.5	578.5	591	603.5	613.5	615.5	616	591
Annual	2006	2	0	622	628.95	656.75	691.5	726.25	754.05	759.61	761	691.5
Annual	2007	2	0	548	549.1	553.5	559	564.5	568.9	569.78	570	559
Annual	2008	2	0	676	676.05	676.25	676.5	676.75	676.95	676.99	677	676.5
Annual	2009	1	0	874	874	874	874	874	874	874	874	874
Annual	2011	1	0	204	204	204	204	204	204	204	204	204
Annual	2012	1	0	909	909	909	909	909	909	909	909	909
Annual	2013	1	0	842	842	842	842	842	842	842	842	842
Annual	2014	1	0	656	656	656	656	656	656	656	656	656
Annual	2015	1	0	691	691	691	691	691	691	691	691	691
Annual	2016	1	0	763	763	763	763	763	763	763	763	763
Annual	2017	1	0	847	847	847	847	847	847	847	847	847
Annual Overall	2003-2017	20	0	204	530.8	588	666	763	875.75	902.35	909	670.25
Monitoring Station	**581;**	**Reporting Code:**		**01148;**		**Parameter Name:**		**Selenium, Total In Sludge (mg/kg)**				
Annual	2011	1	0	2.12	2.12	2.12	2.12	2.12	2.12	2.12	2.12	2.12
Annual	2012	1	0	2.92	2.92	2.92	2.92	2.92	2.92	2.92	2.92	2.92
Annual	2013	1	0	1	1	1	1	1	1	1	1	1
Annual	2014	1	0	3.87	3.87	3.87	3.87	3.87	3.87	3.87	3.87	3.87
Annual	2015	1	0	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44
Annual	2016	1	0	4.01	4.01	4.01	4.01	4.01	4.01	4.01	4.01	4.01
Annual	2017	1	0	6.56	6.56	6.56	6.56	6.56	6.56	6.56	6.56	6.56
Annual Overall	2011-2017	7	0	1	1.336	2.52	3.44	3.94	5.795	6.407	6.56	3.4171
Monitoring Station	**581;**	**Reporting Code:**		**51129;**		**Parameter Name:**		**Sludge Fee Weight (dry tons)**				
Annual	2011	1	0	41.55	41.55	41.55	41.55	41.55	41.55	41.55	41.55	41.55
Annual	2012	1	0	37.81	37.81	37.81	37.81	37.81	37.81	37.81	37.81	37.81
Annual	2013	1	0	74.15	74.15	74.15	74.15	74.15	74.15	74.15	74.15	74.15
Annual	2014	1	0	34.23	34.23	34.23	34.23	34.23	34.23	34.23	34.23	34.23
Annual	2015	1	0	28.49	28.49	28.49	28.49	28.49	28.49	28.49	28.49	28.49
Annual	2016	1	0	31.05	31.05	31.05	31.05	31.05	31.05	31.05	31.05	31.05
Annual	2017	1	0	40.32	40.32	40.32	40.32	40.32	40.32	40.32	40.32	40.32
Annual Overall	2011-2017	7	0	28.49	29.258	32.64	37.81	40.935	64.37	72.194	74.15	41.086
Monitoring Station	**581;**	**Reporting Code:**		**51131;**		**Parameter Name:**		**Fecal Coliform in Sludge (CFU/gram)**				

Monthly Operating Report (MOR) Statistics for: Mantua WWTP; 3PB00031 (permit #)

Season	Year	# of Obs.	# Below Detection	Minimum	Percentiles 5th	25th	50th	75th	95th	99th	Maximum	Mean
Annual	2015	1	0	17129	17129	17129	17129	17129	17129	17129	17129	17129
Annual	2016	1	0	408.17	408.17	408.17	408.17	408.17	408.17	408.17	408.17	408.17
Annual	2017	1	0	731.4	731.4	731.4	731.4	731.4	731.4	731.4	731.4	731.4
Annual Overall	2015-2017	3	0	408.17	440.49	569.79	731.4	8930.2	15489	16801	17129	6089.5
Monitoring Station	**581;**	**Reporting Code:**		**70316;**		**Parameter Name:**		**Sludge Weight (Dry Tons)**				
Annual	2003	3	0	4.77	4.778	4.81	4.85	5.095	5.291	5.3302	5.34	4.9867
Annual	2004	1	0	12.9	12.9	12.9	12.9	12.9	12.9	12.9	12.9	12.9
Annual	2005	2	0	11.15	11.446	12.628	14.105	15.583	16.765	17.001	17.06	14.105
Annual	2006	2	0	10.95	11.182	12.108	13.265	14.423	15.349	15.534	15.58	13.265
Annual	2007	2	0	12.9	13.832	17.56	22.22	26.88	30.608	31.354	31.54	22.22
Annual	2008	2	0	11.71	11.721	11.765	11.82	11.875	11.919	11.928	11.93	11.82
Annual	2009	1	0	20.39	20.39	20.39	20.39	20.39	20.39	20.39	20.39	20.39
Annual	2011	1	0	41.55	41.55	41.55	41.55	41.55	41.55	41.55	41.55	41.55
Annual	2012	1	0	37.81	37.81	37.81	37.81	37.81	37.81	37.81	37.81	37.81
Annual	2013	1	0	74.15	74.15	74.15	74.15	74.15	74.15	74.15	74.15	74.15
Annual	2014	1	0	34.23	34.23	34.23	34.23	34.23	34.23	34.23	34.23	34.23
Annual	2015	1	0	28.49	28.49	28.49	28.49	28.49	28.49	28.49	28.49	28.49
Annual	2016	1	0	31.05	31.05	31.05	31.05	31.05	31.05	31.05	31.05	31.05
Annual	2017	1	0	40.32	40.32	40.32	40.32	40.32	40.32	40.32	40.32	40.32
Annual Overall	2003-2017	20	0	4.77	4.846	11.57	16.32	32.213	43.18	67.956	74.15	22.934
Monitoring Station	**581;**	**Reporting Code:**		**70318;**		**Parameter Name:**		**Sludge Solids, Percent Total (%)**				
Annual	2003	3	0	1.52	1.597	1.905	2.29	2.35	2.398	2.4076	2.41	2.0733
Annual	2004	1	0	3.07	3.07	3.07	3.07	3.07	3.07	3.07	3.07	3.07
Annual	2005	2	0	3.44	3.45	3.49	3.54	3.59	3.63	3.638	3.64	3.54
Annual	2006	2	0	3.68	3.6905	3.7325	3.785	3.8375	3.8795	3.8879	3.89	3.785
Annual	2007	2	0	3.3	3.35	3.55	3.8	4.05	4.25	4.29	4.3	3.8
Annual	2008	2	0	3.41	3.414	3.43	3.45	3.47	3.486	3.4892	3.49	3.45
Annual	2009	1	0	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15
Annual Overall	2003-2009	13	0	1.52	1.898	2.41	3.41	3.64	4.054	4.2508	4.3	3.1223
Monitoring Station	**581;**	**Reporting Code:**		**70322;**		**Parameter Name:**		**Sludge Solids, Percent Volatile (%)**				
Annual	2003	3	0	54.8	55.1	56.3	57.8	58.25	58.61	58.682	58.7	57.1
Annual	2004	1	0	57.7	57.7	57.7	57.7	57.7	57.7	57.7	57.7	57.7
Annual	2005	2	0	56	56.06	56.3	56.6	56.9	57.14	57.188	57.2	56.6
Annual	2006	2	0	56.1	56.16	56.4	56.7	57	57.24	57.288	57.3	56.7
Annual	2007	2	0	56.2	56.295	56.675	57.15	57.625	58.005	58.081	58.1	57.15
Annual	2008	2	0	57.8	57.885	58.225	58.65	59.075	59.415	59.483	59.5	58.65
Annual	2009	1	0	56.9	56.9	56.9	56.9	56.9	56.9	56.9	56.9	56.9
Annual Overall	2003-2009	13	0	54.8	55.52	56.2	57.3	57.8	59.02	59.404	59.5	57.238
Monitoring Station	**581;**	**Reporting Code:**		**71921;**		**Parameter Name:**		**Mercury, Total In Sludge (mg/kg)**				
Annual	2003	3	0	4.15	4.172	4.26	4.37	5.475	6.359	6.5358	6.58	5.0333
Annual	2004	1	0	3.26	3.26	3.26	3.26	3.26	3.26	3.26	3.26	3.26
Annual	2005	2	0	2.75	2.758	2.79	2.83	2.87	2.902	2.9084	2.91	2.83
Annual	2006	2	0	2.57	2.5775	2.6075	2.645	2.6825	2.7125	2.7185	2.72	2.645
Annual	2007	2	0	2.33	2.365	2.505	2.68	2.855	2.995	3.023	3.03	2.68
Annual	2008	2	0	2.86	2.8635	2.8775	2.895	2.9125	2.9265	2.9293	2.93	2.895
Annual	2009	1	0	4.65	4.65	4.65	4.65	4.65	4.65	4.65	4.65	4.65
Annual	2011	1	0	2.64	2.64	2.64	2.64	2.64	2.64	2.64	2.64	2.64
Annual	2012	1	0	3.65	3.65	3.65	3.65	3.65	3.65	3.65	3.65	3.65
Annual	2013	1	0	1	1	1	1	1	1	1	1	1
Annual	2014	1	0	1	1	1	1	1	1	1	1	1
Annual	2015	1	0	1	1	1	1	1	1	1	1	1
Annual	2016	1	0	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44
Annual	2017	1	0	0.409	0.409	0.409	0.409	0.409	0.409	0.409	0.409	0.409
Annual Overall	2003-2017	20	0	0.409	0.97045	2.51	2.885	3.4925	4.7465	6.2133	6.58	2.9125

Monthly Operating Report (MOR) Statistics for: Mantua WWTP; 3PB00031 (permit #)

Season	Year	# of Obs.	# Below Detection	Minimum	Percentiles 5th	25th	50th	75th	95th	99th	Maximum	Mean
Monitoring Station	**581;**	**Reporting Code:**		**78465;**		**Parameter Name:**		**Molybdenum In Sludge (mg/kg)**				
Annual	2011	1	0	5.28	5.28	5.28	5.28	5.28	5.28	5.28	5.28	5.28
Annual	2012	1	0	12	12	12	12	12	12	12	12	12
Annual	2013	1	0	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7
Annual	2014	1	0	13.3	13.3	13.3	13.3	13.3	13.3	13.3	13.3	13.3
Annual	2015	1	0	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4
Annual	2016	1	0	13.7	13.7	13.7	13.7	13.7	13.7	13.7	13.7	13.7
Annual	2017	1	0	6.56	6.56	6.56	6.56	6.56	6.56	6.56	6.56	6.56
Annual Overall	2011-2017	7	0	5.28	5.664	8.48	11.7	12.65	13.58	13.676	13.7	10.42
Monitoring Station	**581;**	**Reporting Code:**		**99991;**		**Parameter Name:**		**Nitrogen, Ammonia In Sludge (mg/kg)**				
Annual	2003	3	0	2000	2228	3140	4280	4735	5099	5171.8	5190	3823.3
Annual	2004	1	0	3060	3060	3060	3060	3060	3060	3060	3060	3060
Annual	2005	2	0	2690	2772	3100	3510	3920	4248	4313.6	4330	3510
Annual	2006	2	0	2950	2982	3110	3270	3430	3558	3583.6	3590	3270
Annual	2007	2	0	1600	1712.5	2162.5	2725	3287.5	3737.5	3827.5	3850	2725
Annual	2008	2	0	2230	2271	2435	2640	2845	3009	3041.8	3050	2640
Annual	2009	1	0	1850	1850	1850	1850	1850	1850	1850	1850	1850
Annual Overall	2003-2009	13	0	1600	1750	2230	3050	3850	4674	5086.8	5190	3128.5
Monitoring Station	**586;**	**Reporting Code:**		**51129;**		**Parameter Name:**		**Sludge Fee Weight (dry tons)**				
Annual	2011	1	0	41.55	41.55	41.55	41.55	41.55	41.55	41.55	41.55	41.55
Annual	2012	1	0	38.71	38.71	38.71	38.71	38.71	38.71	38.71	38.71	38.71
Annual	2013	1	0	56.77	56.77	56.77	56.77	56.77	56.77	56.77	56.77	56.77
Annual	2014	1	0	34.23	34.23	34.23	34.23	34.23	34.23	34.23	34.23	34.23
Annual	2015	1	0	28.49	28.49	28.49	28.49	28.49	28.49	28.49	28.49	28.49
Annual	2017	1	0	40.32	40.32	40.32	40.32	40.32	40.32	40.32	40.32	40.32
Annual Overall	2011-2017	6	0	28.49	29.925	35.35	39.515	41.243	52.965	56.009	56.77	40.012
Monitoring Station	**601;**	**Reporting Code:**		**00010;**		**Parameter Name:**		**Water Temperature (C)**				
Summer	2003	86	0	13	14	17	18	19	20	20.15	21	17.698
Summer	2004	88	0	15	16	18	19	20	21	21	21	18.852
Summer	2005	88	0	15	16	18	19	20	21	29	29	19.125
Summer	2006	87	0	15	16	17	19	19	20	20	20	18.264
Summer	2007	86	0	16	16	18	19	19.75	20	21	21	18.581
Summer	2008	86	0	14	16	17	18	19	19	20	20	17.86
Summer	2009	88	0	14	15	17	18	19	19	20	20	17.682
Summer Overall	2003-2010	609	0	13	16	17	18	19	20	21	29	18.297
Winter	2003	43	0	5	6	7	9	9	10	10	10	8.2791
Winter	2004	64	0	2	4	6	9	11	12	12	12	8.5156
Winter	2005	64	0	8	9	9	10	10	12	12	12	9.9063
Winter	2006	64	0	9	9	10	10	11	12	13	13	10.563
Winter	2007	64	0	10	10	11	12	13	14	14	14	11.875
Winter	2008	65	0	8	8	9	10	10	12	13	13	9.6923
Winter	2009	73	0	0.169	0.181	0.289	8	9	11	12	12	5.8012
Winter	2010	62	0	7	8	9	9	11	12.95	13	13	9.7097
Winter Overall	2003-2010	499	0	0.169	0.5877	9	10	11	13	14	14	9.2715
Annual	2003	259	0	5	7	10	13	17	19	20	21	13.232
Annual	2004	261	0	2	6	10	14	18	20	21	21	13.728
Annual	2005	260	0	9	9	10	14	18	20	24.28	29	14.338
Annual	2006	260	0	9	10	11	14	18	20	20	20	14.592
Annual	2007	260	0	10	10	12	15	18	20	20.41	21	14.862
Annual	2008	261	0	7	8	10	13	17	19	19.4	20	13.408
Annual	2009	268	0	0.169	0.2574	9	13.5	17	19	20	20	12.438
Annual	2010	106	0	7	8	9	10	13	15	16	17	10.811
Annual Overall	2003-2010	1935	0	0.169	8	10	14	17	20	21	29	13.63
Monitoring Station	**601;**	**Reporting Code:**		**00400;**		**Parameter Name:**		**pH (S.U.)**				

Monthly Operating Report (MOR) Statistics for: Mantua WWTP; 3PB00031 (permit #)

Season	Year	# of Obs.	# Below Detection	Minimum	Percentiles 5th	25th	50th	75th	95th	99th	Maximum	Mean
Summer	2003	88	0	6.8	6.9	6.9	7	7	7.2	7.3	7.3	7.0045
Summer	2004	88	0	7.3	7.3	7.4	7.5	7.5	7.6	7.6	7.6	7.4625
Summer	2005	88	0	7	7.2	7.3	7.45	7.6	7.8	7.9	7.9	7.4773
Summer	2006	68	0	6.8	7	7.1	7.2	7.4	7.5	7.866	8	7.2515
Summer	2007	86	0	6.8	6.9	7	7.1	7.3	7.6	7.7	7.7	7.1593
Summer	2008	86	0	6.8	6.9	6.9	7	7.1	7.35	7.545	7.8	7.0302
Summer	2009	88	0	6.9	6.9	6.9	7	7	7.1	7.2	7.2	6.9852
Summer	2010	88	0	6.6	6.8	6.8	6.9	6.9	7	7	7	6.8818
Summer	2011	88	0	6.7	6.8	6.9	6.9	7	7.1	7.826	8	6.95
Summer	2012	85	0	7	7.1	7.2	7.3	7.4	7.58	7.7	7.7	7.2918
Summer	2013	85	0	7.2	7.4	7.6	7.8	7.9	8	8.032	8.2	7.7388
Summer	2014	87	0	7.1	7.2	7.3	7.4	7.4	7.5	7.6	7.6	7.3632
Summer	2015	87	0	7.1	7.23	7.3	7.4	7.5	7.6	7.614	7.7	7.4023
Summer	2016	88	0	7.1	7.2	7.4	7.5	7.6	7.8	7.913	8	7.4977
Summer	2017	85	0	7.2	7.3	7.4	7.5	7.5	7.8	7.932	8.1	7.4765
Summer Overall	2003-2018	1285	0	6.6	6.9	7	7.3	7.5	7.8	7.9	8.2	7.2637
Winter	2003	43	0	6.9	6.91	7	7	7	7.19	7.316	7.4	7.0233
Winter	2004	64	0	6.9	6.915	7.1	7.1	7.2	7.4	7.7	7.7	7.1422
Winter	2005	64	0	6.9	7	7.1	7.2	7.3	7.6	7.7	7.7	7.2313
Winter	2006	65	0	7.2	7.4	7.4	7.5	7.6	7.7	7.8	7.8	7.5354
Winter	2007	64	0	6.6	7	7.2	7.3	7.4	7.5	7.6	7.6	7.3078
Winter	2008	65	0	6.6	6.7	6.8	7	7.3	7.6	7.736	7.8	7.0692
Winter	2009	65	0	6	6.62	6.8	6.9	7	9	9	9	7.1108
Winter	2010	62	0	6.2	6.505	6.7	7	8	9	9	9	7.2403
Winter	2011	64	0	6.6	6.615	6.8	6.8	6.9	7	7.037	7.1	6.8281
Winter	2012	65	0	6.9	6.9	7	7	7.1	7.1	7.2	7.2	7.0338
Winter	2013	61	0	6.9	6.9	7	7.2	11	13	13.4	14	8.6836
Winter	2014	65	0	5	6	7.3	7.6	7.8	8	8	8	7.3708
Winter	2015	65	0	7.4	7.4	7.5	7.6	7.7	7.8	7.836	7.9	7.5985
Winter	2016	62	0	6	7.205	7.5	7.6	8.775	10	11.39	12	8.0726
Winter	2017	63	0	7.4	7.4	7.5	7.6	7.7	7.9	34.026	76	8.6857
Winter	2018	60	0	7.3	7.4	7.5	7.6	7.8	8	8.082	8.2	7.6383
Winter Overall	2003-2018	997	0	5	6.7	7	7.3	7.6	8.44	12.04	76	7.4753
Annual	2003	261	0	6.8	6.9	7	7	7.1	7.3	7.4	71	7.2897
Annual	2004	261	0	6.9	7	7.2	7.4	7.5	7.6	7.7	7.9	7.3498
Annual	2005	261	0	7	7.1	7.2	7.4	7.5	7.7	7.8	7.9	7.3766
Annual	2006	241	0	6.8	7.1	7.3	7.4	7.5	7.7	7.8	8	7.4066
Annual	2007	260	0	6.6	6.8	7	7.2	7.3	7.5	7.6	7.7	7.1542
Annual	2008	261	0	6.6	6.8	6.9	7	7.1	7.4	7.7	7.8	7.049
Annual	2009	260	0	6	6.7	6.9	7	7	7.2	9	9	7.0031
Annual	2010	260	0	6.2	6.6	6.8	6.9	7	8	9	9	6.9681
Annual	2011	260	0	6.6	6.7	6.8	6.9	7	7.1	7.541	8	6.9354
Annual	2012	255	0	6.7	6.97	7.1	7.2	7.4	12	13	14	7.6071
Annual	2013	256	0	6.9	6.975	7.2	7.65	7.9	8	8.1	8.2	7.5523
Annual	2014	261	0	5	7	7.3	7.4	7.5	7.8	8	8	7.4073
Annual	2015	258	0	7.1	7.3	7.4	7.5	7.6	7.7	7.843	8.1	7.5174
Annual	2016	256	0	5.5	7.2	7.4	7.6	7.7	9	10.45	76	7.9234
Annual	2017	255	0	7.2	7.3	7.4	7.5	7.6	7.9	8.046	8.2	7.5357
Annual	2018	105	0	7.2	7.3	7.4	7.5	7.6	7.88	8	8.2	7.5457
Annual Overall	2003-2018	3971	0	5	6.8	7	7.3	7.5	7.8	9	76	7.342

Monitoring Station 601; Reporting Code: 00530; Parameter Name: Total Suspended Solids (mg/l)

Summer	2003	33	0	68	78.8	122	144	170	210	224.16	228	143.52
Summer	2004	35	0	73	94	108	137	172.5	240	247.26	251	145.83
Summer	2005	36	0	91	106.5	137.25	157.5	179.25	193.25	197.25	199	154.61
Summer	2006	35	0	60	70.2	111	137	162	182.8	201.92	206	134.43
Summer	2007	35	0	73	90.4	120.5	133	147	176.5	200.86	208	133.86
Summer	2008	34	0	71	94.65	139	162.5	171.75	192.2	217.42	226	153.56
Summer	2009	35	0	80	109.3	156.5	183	192	210.4	226.56	232	171.49
Summer	2010	35	0	86	117.1	152.5	167	197.5	217.7	243.8	254	171
Summer	2011	36	0	62	77.75	117	140	171.75	227	251.45	263	148.72

Monthly Operating Report (MOR) Statistics for: Mantua WWTP; 3PB00031 (permit #)

Season	Year	# of Obs.	# Below Detection	Minimum	Percentiles 5th	25th	50th	75th	95th	99th	Maximum	Mean
Summer	2012	34	0	64	73.8	118	138	158.5	222.7	266.88	288	142.12
Summer	2013	34	0	60	64.6	88	126	200	285.4	318.82	334	147.82
Summer	2014	34	0	66	75.3	92.5	106	123	191.9	218.02	220	116.53
Summer	2015	35	0	60	63.4	79	94	128	177.8	188.6	192	106.06
Summer	2016	36	0	64	76	109.5	145	191.5	248.5	274.5	278	153.28
Summer	2017	35	0	70	72	94	116	155	213.4	333.48	360	131.14
Summer Overall	2003-2018	522	0	60	74	108	141.5	172	224	281.16	360	143.67
Winter	2003	18	0	88	110.1	133	157	186	209.4	233.88	240	158.22
Winter	2004	26	0	24	76.5	105.5	168	218.5	308.5	332.5	338	172.08
Winter	2005	26	0	61	65.25	100.25	115	145.25	172.25	191	197	121.12
Winter	2006	25	0	72	92.6	130	155	169	184	215.92	226	148.32
Winter	2007	26	0	63	66	108.75	125	147	175.75	201.5	209	125.23
Winter	2008	26	0	60	63.5	83.5	101.5	119.5	175	219	232	109.12
Winter	2009	39	0	1	10.49	11.25	11.8	130	180.3	212.16	219	70.564
Winter	2010	24	0	77	98.1	122.75	152.5	180.25	197.65	218.25	224	150.58
Winter	2011	20	0	65	65	96.5	117	139.75	170.65	180.53	183	117.15
Winter	2012	26	0	64	69	88.25	104.5	140.5	154.25	172.25	178	110.5
Winter	2013	26	0	74	81	89.5	108	129.5	160.5	174	178	113.15
Winter	2014	26	0	62	68	93	114	120	147	165	170	110
Winter	2015	26	0	62	67	80.5	94	99.5	137.5	172.5	184	96
Winter	2016	26	0	68	74	92	108	125.5	194	290	322	121.92
Winter	2017	25	0	62	66.8	80	94	124	161.2	175.68	180	106
Winter	2018	25	0	64	64.8	84	102	134	156	171.2	176	109.2
Winter Overall	2003-2018	410	0	1	17.29	88	114	146	198.1	272.76	338	118.79
Annual	2003	104	0	68	88	121.5	144	186.5	284.5	344	386	160.41
Annual	2004	105	0	24	71.2	102	135	173	241.6	276.92	316	142.33
Annual	2005	104	0	61	79.45	115.75	142	171.5	185.7	193.97	199	141.64
Annual	2006	104	0	46	68.15	112.75	140	162	199.7	222.67	226	137.23
Annual	2007	104	0	44	74.2	107.75	133	149.25	173.7	208.97	232	129.2
Annual	2008	106	0	1	62.75	93.25	130.5	167.75	198.75	224.5	226	129.21
Annual	2009	115	0	10.4	11	102	153	179	207.3	238.88	251	130.94
Annual	2010	104	0	62	77	114.75	151.5	183	214.7	229.82	254	148.27
Annual	2011	91	0	59	66.5	104	127	160	221	254.9	263	133.81
Annual	2012	101	0	63	72	100	127	150	222	262	288	131.84
Annual	2013	104	0	60	72	88	117	146.5	244.5	287.88	334	128.31
Annual	2014	105	0	62	70.4	84	100	116	175.2	213.44	220	105.77
Annual	2015	105	0	43	64.4	82	94	122	183.6	194	322	106.62
Annual	2016	104	0	64	72.3	95.5	117	172	243.7	310.98	368	139.1
Annual	2017	104	0	56	68.3	84	108	142.5	213.1	309.76	360	122.1
Annual	2018	44	0	72	76.3	93.5	109	126	175.4	221.62	250	115.23
Annual Overall	2003-2018	1604	0	1	68	96	126	162	215.85	283.94	386	131.93
Monitoring Station	**601;**	**Reporting Code:**		**80082;**		**Parameter Name:**		**CBOD 5 day (mg/l)**				
Summer	2003	33	0	15	34	63	75	95	110	113.4	115	75.394
Summer	2004	35	0	60	67.85	82.5	107.5	123	153	156.3	158	107.21
Summer	2005	36	0	102.5	130	140	146.25	160	167.5	169.13	170	148.68
Summer	2006	35	0	70	115	137.5	152.5	167.5	184	194.1	197.5	150.57
Summer	2007	35	0	82.5	104.75	132.5	142.5	150	166.5	171.65	172.5	138.93
Summer	2008	34	0	90	101.63	125.63	138.75	150	163.38	170.03	172.5	136.4
Summer	2009	35	0	87.5	132.5	143.75	152.5	160	167.5	169.15	170	150.64
Summer	2010	35	0	122.5	126.75	137.5	142.5	147.5	160.75	165.8	167.5	142.51
Summer	2011	36	0	125	131.88	139.38	142.5	158.13	170.63	172.5	172.5	147.64
Summer	2012	34	0	78	100.95	117.25	135.5	149.25	180.2	237.18	255	137.47
Summer	2013	34	0	42	42.65	69.25	86.5	126.75	170.65	184.34	185	97.647
Summer	2014	34	0	60	70.55	83.5	102.5	140.75	190.05	212.1	222	114.85
Summer	2015	35	0	51	53.1	66	78	91.5	161.1	185.94	189	87.857
Summer	2016	36	0	57	62.25	86.25	108	148.5	195.75	205.8	210	117
Summer	2017	35	0	66	68.1	87	108	129	191.4	207.96	210	113.66
Summer Overall	2003-2018	522	0	15	63	95.25	135	150	170	200.37	255	124.72
Winter	2003	18	0	65	69.25	85	89	109.5	132.55	144.11	147	96.444
Winter	2004	26	0	50	66.25	80	91.25	99.5	123.75	125	125	90.519
Winter	2005	26	0	57.5	60.625	88.125	108.75	121.88	150.63	162.5	165	106.35

Monthly Operating Report (MOR) Statistics for: Mantua WWTP; 3PB00031 (permit #)

Season	Year	# of Obs.	# Below Detection	Minimum	Percentiles 5th	25th	50th	75th	95th	99th	Maximum	Mean
Winter	2006	25	0	55	57.5	100	122.5	155	182.5	186.3	187.5	123.44
Winter	2007	26	0	68.5	83.75	122.5	138.75	162.5	170	171.88	172.5	135.85
Winter	2008	26	0	72.5	100.63	110	117.5	131.88	153.75	158.75	160	121.25
Winter	2009	38	0	6.9	6.9	7	7.6	126.88	155.38	159.08	160	65.245
Winter	2010	24	0	145	148.63	165	170	175	177.13	179.43	180	167.5
Winter	2011	26	0	100	101.25	123.13	138.75	151.88	172.5	174.38	175	138.46
Winter	2012	26	0	100	103.13	113.13	127.5	140	163.25	166.88	167.5	129.48
Winter	2013	26	0	66	81	109.25	125.5	140.5	161	162.75	163	123.08
Winter	2014	26	0	65	73.5	96.5	110.5	120	157.5	168.75	170	110.35
Winter	2015	26	0	81	85.5	93.5	99.5	110.75	138	159	165	105.08
Winter	2016	26	0	45	57	66.75	78	102	180	201	201	90.692
Winter	2017	25	0	51	63	78	93	111	128.4	163.2	174	96.72
Winter	2018	25	0	57	60.6	72	90	120	164.4	174.08	176	100.56
Winter Overall	2003-2018	415	0	6.9	48.5	88	111	137.5	170.75	182.15	201	111.28
Annual	2003	104	0	15	45	70	85	97.25	116.7	129.94	147	82.75
Annual	2004	105	0	28	67.6	92.5	108	130	189.5	217.2	237.5	115.56
Annual	2005	104	0	57.5	83.25	126.88	142.5	162.5	190	195	197.5	141.44
Annual	2006	102	0	55	70.25	111.25	141.25	159.38	182.5	199.98	202.5	135.03
Annual	2007	104	0	55	93.25	122.5	140	152.5	170	174.93	182.5	136.87
Annual	2008	105	0	72.5	98	110	127.5	150	170	179.7	187.5	130.38
Annual	2009	115	0	6.9	7	123.75	150	160	175	179.65	182.5	125.66
Annual	2010	104	0	100	125	140	155	167.5	175	179.93	182.5	152.1
Annual	2011	104	0	100	110	130	142.5	157.5	172.5	174.93	180	143.03
Annual	2012	101	0	78	105	118	136	155	201	215	255	140.17
Annual	2013	104	0	42	63	87	108.5	135	165	184.94	186	111.39
Annual	2014	105	0	60	72	84	103	120	170.8	191.88	222	108.61
Annual	2015	105	0	45	54.6	72	84	108	153	188.64	201	92.371
Annual	2016	104	0	45	57	78	94.5	123.75	188.55	209.73	219	105.95
Annual	2017	104	0	45	63.45	81	99	126	167.55	215.82	250	107.26
Annual	2018	44	0	57	63	74.25	90	103.5	143.1	171.27	176	95.364
Annual Overall	2003-2018	1614	0	6.9	63	92.5	123	150	175	202.31	255	121.13
Monitoring Station	**801;**	**Reporting Code:**		**00010;**		**Parameter Name:**		**Water Temperature (C)**				
Summer	2003	4	0	16	16.6	19	20	20.75	22.55	22.91	23	19.75
Summer	2004	4	0	7	8.8	16	19.5	20.5	21.7	21.94	22	17
Summer	2005	4	0	15	15.75	18.75	20	20.25	20.85	20.97	21	19
Summer	2006	4	0	16	16.6	19	20.5	21.25	21.85	21.97	22	19.75
Summer	2007	4	0	17	17.45	19.25	20	20.75	22.55	22.91	23	20
Summer	2008	4	0	17	17.3	18.5	20	21	21	21	21	19.5
Summer	2009	4	0	19	19.3	20.5	21	21.5	22.7	22.94	23	21
Summer	2010	4	0	18	18.6	21	22	22.5	23.7	23.94	24	21.5
Summer	2011	4	0	17	17.45	19.25	21.5	23	23	23	23	20.75
Summer	2012	4	0	17	17.6	20	22	23	23	23	23	21
Summer	2013	4	0	16	16.45	18.25	19.5	20	20	20	20	18.75
Summer	2014	4	0	17	17.3	18.5	20	21	21	21	21	19.5
Summer	2015	4	0	16	16	16	18	20.75	22.55	22.91	23	18.75
Summer	2016	4	0	13	14.05	18.25	20.5	21.25	21.85	21.97	22	19
Summer	2017	4	0	20	20.15	20.75	21	21.25	21.85	21.97	22	21
Summer Overall	2003-2018	60	0	7	15.95	19	20	21.25	23	23.41	24	19.75
Winter	2004	2	0	1	1	1	1	1	1	1	1	1
Winter	2005	3	0	2	2	2	2	2	2	2	2	2
Winter	2006	3	0	1.5	1.53	1.65	1.8	1.85	1.89	1.898	1.9	1.7333
Winter	2007	3	0	3	3.1	3.5	4	6.5	8.5	8.9	9	5.3333
Winter	2008	3	0	0.5	0.75	1.75	3	3.5	3.9	3.98	4	2.5
Winter	2009	2	0	7	7.15	7.75	8.5	9.25	9.85	9.97	10	8.5
Winter	2010	2	0	4	4.2	5	6	7	7.8	7.96	8	6
Winter	2011	3	0	1	1.1	1.5	2	2.2	2.36	2.392	2.4	1.8
Winter	2012	3	0	3	3.1	3.5	4	4	4	4	4	3.6667
Winter	2013	3	0	4	4	4	4	5.5	6.7	6.94	7	5
Winter	2014	3	0	2	2	2	2	2.2	2.36	2.392	2.4	2.1333
Winter	2015	3	0	1	1.3	2.5	4	5	5.8	5.96	6	3.6667
Winter	2016	3	0	4	4.1	4.5	5	7.5	9.5	9.9	10	6.3333

Monthly Operating Report (MOR) Statistics for: Mantua WWTP; 3PB00031 (permit #)

Season	Year	# of Obs.	# Below Detection	Minimum	Percentiles 5th	25th	50th	75th	95th	99th	Maximum	Mean
Winter	2017	3	0	5	5.4	7	9	9	9	9	9	7.6667
Winter	2018	3	0	2	2.4	4	6	7.5	8.7	8.94	9	5.6667
Winter Overall	2003-2018	42	0	0.5	1	2	4	5.75	9	10	10	4.131
Annual	2003	10	0	1	2.35	11	13	19	21.65	22.73	23	13.2
Annual	2004	11	0	1	1.5	8	13	19.5	21	21.8	22	12.636
Annual	2005	12	0	0.7	1.305	2	11.5	17	20.45	20.89	21	10.542
Annual	2006	12	0	1.5	1.72	8.75	11	17.75	21.45	21.89	22	12.367
Annual	2007	12	0	3	3.55	7.75	15.5	18.5	21.35	22.67	23	13.333
Annual	2008	12	0	0.5	1.325	6.75	12	17.5	21	21	21	11.708
Annual	2009	11	0	4	5.5	10	12	20	22	22.8	23	13.818
Annual	2010	10	0	2.4	4.92	9	16	21	23.1	23.82	24	14.84
Annual	2011	12	0	1	1.55	4	14	18.5	23	23	23	12.583
Annual	2012	33	0	3	5.2	14	16	17	21.8	23	23	14.788
Annual	2013	12	0	2.4	2.73	4	15	19.25	21.35	22.67	23	12.7
Annual	2014	12	0	2	2	2	10.5	18.25	21	21	21	10.75
Annual	2015	12	0	1	2.65	5	14.5	16.25	21.35	22.67	23	12.167
Annual	2016	12	0	4	4.55	6	13.5	20	21.45	21.89	22	12.917
Annual	2017	12	0	5	5.55	9	14	20.25	21.45	21.89	22	14.25
Annual	2018	5	0	2	2.8	6	6	13	14.6	14.92	15	8.4
Annual Overall	2003-2018	200	0	0.5	2	6.75	14	19	22.05	23	24	12.906
Monitoring Station	**801;**	**Reporting Code:**		**00300;**		**Parameter Name:**		**Dissolved Oxygen (mg/l)**				
Summer	2003	4	0	3.6	3.63	3.75	4.2	4.65	4.77	4.794	4.8	4.2
Summer	2004	4	0	8.2	8.38	9.1	9.5	9.625	9.685	9.697	9.7	9.225
Summer	2005	4	0	6.1	6.205	6.625	6.85	7	7.24	7.288	7.3	6.775
Summer	2006	4	0	5.8	5.83	5.95	6.75	7.575	7.755	7.791	7.8	6.775
Summer	2007	4	0	5.8	5.875	6.175	6.35	6.5	6.74	6.788	6.8	6.325
Summer	2008	4	0	5.5	5.62	6.1	6.4	6.65	7.01	7.082	7.1	6.35
Summer	2009	4	0	6.2	6.335	6.875	7.25	7.45	7.57	7.594	7.6	7.075
Summer	2010	4	0	5.7	5.745	5.925	6.1	6.525	7.305	7.461	7.5	6.35
Summer	2011	4	0	6.3	6.33	6.45	6.55	6.825	7.365	7.473	7.5	6.725
Summer	2012	4	0	5.6	5.615	5.675	5.85	6.025	6.085	6.097	6.1	5.85
Summer	2013	4	0	6.8	6.815	6.875	7.15	7.65	8.25	8.37	8.4	7.375
Summer	2014	4	0	6.4	6.475	6.775	6.9	7.225	8.005	8.161	8.2	7.1
Summer	2015	4	0	6.6	6.645	6.825	6.9	7.175	7.835	7.967	8	7.1
Summer	2016	4	0	6.7	6.715	6.775	6.9	7.05	7.17	7.194	7.2	6.925
Summer	2017	4	0	6.7	6.715	6.775	6.9	7.1	7.34	7.388	7.4	6.975
Summer Overall	2003-2018	60	0	3.6	4.79	6.175	6.8	7.325	8.45	9.641	9.7	6.7417
Winter	2004	2	0	7.6	7.67	7.95	8.3	8.65	8.93	8.986	9	8.3
Winter	2005	3	0	8.3	8.51	9.35	10.4	10.5	10.58	10.596	10.6	9.7667
Winter	2006	3	0	11.3	11.3	11.3	11.3	11.55	11.75	11.79	11.8	11.467
Winter	2007	3	0	10.2	10.25	10.45	10.7	11.2	11.6	11.68	11.7	10.867
Winter	2008	3	0	9.6	9.66	9.9	10.2	10.3	10.38	10.396	10.4	10.067
Winter	2009	2	0	9	9	9	9	9	9	9	9	9
Winter	2010	2	0	10.4	10.455	10.675	10.95	11.225	11.445	11.489	11.5	10.95
Winter	2011	3	0	9.6	9.68	10	10.4	10.4	10.4	10.4	10.4	10.133
Winter	2012	3	0	11	11.07	11.35	11.7	11.85	11.97	11.994	12	11.567
Winter	2013	3	0	5.2	5.26	5.5	5.8	6.35	6.79	6.878	6.9	5.9667
Winter	2014	3	0	8.7	8.74	8.9	9.1	9.95	10.63	10.766	10.8	9.5333
Winter	2015	3	0	9.4	9.43	9.55	9.7	9.85	9.97	9.994	10	9.7
Winter	2016	3	0	8.6	8.61	8.65	8.7	9.5	10.14	10.268	10.3	9.2
Winter	2017	3	0	9.2	9.21	9.25	9.3	9.7	10.02	10.084	10.1	9.5333
Winter	2018	3	0	8.6	8.65	8.85	9.1	9.85	10.45	10.57	10.6	9.4333
Winter Overall	2003-2018	42	0	5.2	6.935	9	10.05	10.6	11.7	11.918	12	9.719
Annual	2003	10	0	3.6	3.69	4.65	5	6.55	8.55	8.91	9	5.68
Annual	2004	11	0	5.1	6.35	7.9	9.4	10.05	13.55	14.71	15	9.4364
Annual	2005	12	0	6.1	6.21	6.775	7.3	8.9	10.915	11.223	11.3	8.0333
Annual	2006	12	0	5.8	5.91	6.6	7.7	10.25	11.525	11.745	11.8	8.275
Annual	2007	12	0	5.8	6.075	6.7	7.75	9.75	11.15	11.59	11.7	8.2917
Annual	2008	12	0	5.5	5.94	6.95	7.9	10.25	10.815	11.123	11.2	8.3167
Annual	2009	11	0	6.2	6.65	7.5	8.9	9.3	10.7	11.34	11.5	8.5727
Annual	2010	10	0	5.7	5.835	6.525	8.2	10	10.4	10.4	10.4	8.2

Monthly Operating Report (MOR) Statistics for: Mantua WWTP; 3PB00031 (permit #)

Season	Year	# of Obs.	# Below Detection	Minimum	Percentiles 5th	25th	50th	75th	95th	99th	Maximum	Mean
Annual	2011	12	0	6.3	6.41	6.9	8.5	9.8	10.725	10.945	11	8.4583
Annual	2012	33	0	5.2	5.66	7.9	9.2	9.7	11.82	12.068	12.1	8.7394
Annual	2013	12	0	5.8	5.8	6.7	7.15	8.325	9.755	10.591	10.8	7.525
Annual	2014	12	0	6.1	6.265	6.8	8	8.8	9.49	9.578	9.6	7.8167
Annual	2015	12	0	6.6	6.765	6.9	7.85	8.525	9.835	9.967	10	7.9583
Annual	2016	12	0	6.7	6.755	6.975	7.45	8.175	9.75	10.19	10.3	7.8083
Annual	2017	12	0	6.7	6.755	7	7.5	8.15	9.605	10.001	10.1	7.7833
Annual	2018	5	0	8	8.02	8.1	9	9.1	10.3	10.54	10.6	8.96
Annual Overall	2003-2018	200	0	3.6	5.695	6.875	8	9.425	11.205	12.1	15	8.1665
Monitoring Station	**801;**	**Reporting Code:**		**00400;**		**Parameter Name:**		**pH (S.U.)**				
Summer	2003	4	0	6.9	6.915	6.975	7	7.025	7.085	7.097	7.1	7
Summer	2004	4	0	7.3	7.3	7.3	7.3	7.35	7.47	7.494	7.5	7.35
Summer	2005	4	0	7.4	7.415	7.475	7.65	7.825	7.885	7.897	7.9	7.65
Summer	2006	4	0	6.9	6.93	7.05	7.25	7.45	7.57	7.594	7.6	7.25
Summer	2007	4	0	6.9	6.915	6.975	7.15	7.35	7.47	7.494	7.5	7.175
Summer	2008	4	0	6.8	6.845	7.025	7.15	7.275	7.455	7.491	7.5	7.15
Summer	2009	4	0	6.9	6.915	6.975	7	7.15	7.51	7.582	7.6	7.125
Summer	2010	4	0	6.7	6.715	6.775	6.9	7.025	7.085	7.097	7.1	6.9
Summer	2011	4	0	6.7	6.73	6.85	6.9	6.9	6.9	6.9	6.9	6.85
Summer	2012	4	0	6.7	6.7	6.7	6.75	6.85	6.97	6.994	7	6.8
Summer	2013	4	0	7.3	7.315	7.375	7.4	7.45	7.57	7.594	7.6	7.425
Summer	2014	4	0	7.3	7.315	7.375	7.4	7.425	7.485	7.497	7.5	7.4
Summer	2015	4	0	7.3	7.315	7.375	7.4	7.45	7.57	7.594	7.6	7.425
Summer	2016	4	0	7.3	7.3	7.3	7.4	7.5	7.5	7.5	7.5	7.4
Summer	2017	4	0	7.3	7.33	7.45	7.5	7.525	7.585	7.597	7.6	7.475
Summer Overall	2003-2018	60	0	6.7	6.7	7	7.3	7.5	7.6	7.841	7.9	7.225
Winter	2004	2	0	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1
Winter	2005	3	0	6.9	6.91	6.95	7	7.15	7.27	7.294	7.3	7.0667
Winter	2006	3	0	7.6	7.62	7.7	7.8	7.8	7.8	7.8	7.8	7.7333
Winter	2007	3	0	7.4	7.43	7.55	7.7	7.7	7.7	7.7	7.7	7.6
Winter	2008	3	0	6.9	6.96	7.2	7.5	7.5	7.5	7.5	7.5	7.3
Winter	2009	2	0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Winter	2010	2	0	6.5	6.525	6.625	6.75	6.875	6.975	6.995	7	6.75
Winter	2011	3	0	6.6	6.61	6.65	6.7	6.75	6.79	6.798	6.8	6.7
Winter	2012	3	0	6.7	6.71	6.75	6.8	6.85	6.89	6.898	6.9	6.8
Winter	2013	3	0	6.7	6.7	6.7	6.7	6.8	6.88	6.896	6.9	6.7667
Winter	2014	3	0	7.2	7.21	7.25	7.3	7.5	7.66	7.692	7.7	7.4
Winter	2015	3	0	7.4	7.41	7.45	7.5	7.7	7.86	7.892	7.9	7.6
Winter	2016	3	0	7.3	7.31	7.35	7.4	7.45	7.49	7.498	7.5	7.4
Winter	2017	3	0	7.4	7.42	7.5	7.6	7.7	7.78	7.796	7.8	7.6
Winter	2018	3	0	7.3	7.31	7.35	7.4	7.6	7.76	7.792	7.8	7.5
Winter Overall	2003-2018	42	0	6.5	6.7	6.9	7.3	7.5	7.8	7.859	7.9	7.2357
Annual	2003	10	0	6.9	6.945	7	7	7.1	7.1	7.1	7.1	7.03
Annual	2004	11	0	7	7.05	7.25	7.3	7.4	7.5	7.5	7.5	7.3
Annual	2005	12	0	6.9	6.9	7.175	7.4	7.575	7.845	7.889	7.9	7.3917
Annual	2006	12	0	6.9	7.01	7.4	7.5	7.6	7.745	7.789	7.8	7.45
Annual	2007	12	0	6.9	6.955	7.3	7.4	7.55	8.465	9.213	9.4	7.5333
Annual	2008	12	0	6.8	6.855	7.05	7.25	7.425	8.355	9.191	9.4	7.375
Annual	2009	11	0	6.8	6.85	6.9	7	7	7.35	7.55	7.6	7.0091
Annual	2010	10	0	6.5	6.59	6.725	6.85	7	7.21	7.282	7.3	6.88
Annual	2011	12	0	6.6	6.655	6.775	6.85	6.9	6.9	6.9	6.9	6.8167
Annual	2012	33	0	6.7	6.7	7	7.3	7.4	8.14	8.2	8.2	7.2818
Annual	2013	12	0	6.7	6.7	7	7.4	7.6	7.7	7.7	7.7	7.3
Annual	2014	12	0	7.1	7.155	7.3	7.4	7.5	7.69	7.778	7.8	7.4083
Annual	2015	12	0	7.3	7.3	7.375	7.4	7.6	7.79	7.878	7.9	7.4833
Annual	2016	12	0	7.3	7.3	7.3	7.45	7.525	7.735	7.867	7.9	7.4583
Annual	2017	12	0	6.9	7.12	7.4	7.5	7.65	7.8	7.8	7.8	7.5
Annual	2018	5	0	7.1	7.14	7.3	7.4	7.4	7.48	7.496	7.5	7.34
Annual Overall	2003-2018	200	0	6.5	6.7	7	7.3	7.5	7.8	8.212	9.4	7.2905
Monitoring Station	**801;**	**Reporting Code:**		**00530;**		**Parameter Name:**		**Total Suspended Solids (mg/l)**				

Monthly Operating Report (MOR) Statistics for: Mantua WWTP; 3PB00031 (permit #)

Season	Year	# of Obs.	# Below Detection	Minimum	Percentiles 5th	25th	50th	75th	95th	99th	Maximum	Mean
Summer	2003	4	0	4	6.1	14.5	25	35	42.2	43.64	44	24.5
Summer	2004	4	0	12	12.45	14.25	21.5	32.5	43.3	45.46	46	25.25
Summer	2005	4	0	20	20.6	23	26	31.75	40.75	42.55	43	28.75
Summer	2006	4	0	13	13.3	14.5	20	29.75	41.15	43.43	44	24.25
Summer	2007	4	0	12	12.75	15.75	18	22.5	30.9	32.58	33	20.25
Summer	2008	4	0	11	12.5	18.5	22	23.5	24.7	24.94	25	20
Summer	2009	4	0	9	9.9	13.5	18.5	23	25.4	25.88	26	18
Summer Overall	2003-2010	28	0	4	9.7	15	21.5	28	44	45.46	46	23
Winter	2004	2	0	6	6.25	7.25	8.5	9.75	10.75	10.95	11	8.5
Winter	2005	3	0	7	7.6	10	13	13.5	13.9	13.98	14	11.333
Winter	2006	3	0	3	3.4	5	7	7.5	7.9	7.98	8	6
Winter	2007	3	0	9	9.3	10.5	12	13	13.8	13.96	14	11.667
Winter	2008	3	0	8	8.9	12.5	17	49.5	75.5	80.7	82	35.667
Winter	2009	2	0	9	9.1	9.5	10	10.5	10.9	10.98	11	10
Winter	2010	2	0	4	4.75	7.75	11.5	15.25	18.25	18.85	19	11.5
Winter Overall	2003-2010	18	0	3	3.85	7.25	10	13.75	28.45	71.29	82	14.111
Annual	2003	10	0	4	4.9	9.5	16.5	29.75	42.65	43.73	44	20.3
Annual	2004	11	0	5	8	11.5	14	23	39	44.6	46	18.636
Annual	2005	12	0	7	7.55	12	19.5	23.25	34.75	41.35	43	18.917
Annual	2006	12	0	3	5.2	9	12.5	21	33.55	41.91	44	15.833
Annual	2007	12	0	0.5	4.075	12	17	20.5	29.15	32.23	33	16.625
Annual	2008	12	0	6	6	10.25	16	21.5	50.65	75.73	82	20.5
Annual	2009	11	0	7	8	9.5	12	20.5	24	25.6	26	14.818
Annual	2010	3	0	4	5	9	14	14.5	14.9	14.98	15	11
Annual Overall	2003-2010	83	0	0.5	5.1	10.5	15	22	42.8	52.48	82	17.669
Monitoring Station	**801;**	**Reporting Code:**		**00610;**		**Parameter Name:**		**Nitrogen, Ammonia (NH3) (mg/l)**				
Summer	2003	4	0	0.09	0.09	0.09	0.105	0.12	0.12	0.12	0.12	0.105
Summer	2004	4	0	0.04	0.043	0.055	0.09	0.1225	0.1285	0.1297	0.13	0.0875
Summer	2005	4	0	0.03	0.036	0.06	0.09	0.1125	0.1185	0.1197	0.12	0.0825
Summer	2006	4	0	0.04	0.046	0.07	0.085	0.11	0.158	0.1676	0.17	0.095
Summer	2007	4	0	0.04	0.0445	0.0625	0.07	0.095	0.155	0.167	0.17	0.0875
Summer	2008	4	0	0.03	0.03	0.03	0.035	0.055	0.091	0.0982	0.1	0.05
Summer	2009	4	0	0.03	0.03	0.03	0.04	0.0525	0.0585	0.0597	0.06	0.0425
Summer	2010	4	0	0.03	0.03	0.03	0.055	0.0825	0.0885	0.0897	0.09	0.0575
Summer	2011	4	0	0.03	0.03	0.03	0.04	0.0625	0.0925	0.0985	0.1	0.0525
Summer	2012	4	0	0.03	0.0405	0.0825	0.1	0.1	0.1	0.1	0.1	0.0825
Summer	2013	4	0	0.03	0.03	0.03	0.035	0.04	0.04	0.04	0.04	0.035
Summer	2014	4	0	0.04	0.0415	0.0475	0.05	0.07	0.118	0.1276	0.13	0.0675
Summer	2015	4	0	0.03	0.03	0.03	0.03	0.035	0.047	0.0494	0.05	0.035
Summer	2016	2	0	0.05	0.0525	0.0625	0.075	0.0875	0.0975	0.0995	0.1	0.075
Summer	2017	2	0	0.03	0.032	0.04	0.05	0.06	0.068	0.0696	0.07	0.05
Summer Overall	2003-2018	56	0	0.03	0.03	0.03	0.05	0.1	0.13	0.17	0.17	0.067321
Winter	2004	3	0	0.05	0.052	0.06	0.07	0.105	0.133	0.1386	0.14	0.086667
Winter	2005	3	0	0.05	0.052	0.06	0.07	0.1	0.124	0.1288	0.13	0.083333
Winter	2006	3	0	0.04	0.04	0.04	0.04	0.045	0.049	0.0498	0.05	0.043333
Winter	2007	2	0	0.03	0.031	0.035	0.04	0.045	0.049	0.0498	0.05	0.04
Winter	2008	2	0	0.03	0.0305	0.0325	0.035	0.0375	0.0395	0.0399	0.04	0.035
Winter	2009	2	0	0.03	0.035	0.055	0.08	0.105	0.125	0.129	0.13	0.08
Winter	2010	2	0	0.05	0.0545	0.0725	0.095	0.1175	0.1355	0.1391	0.14	0.095
Winter	2011	3	0	0.03	0.032	0.04	0.05	0.115	0.167	0.1774	0.18	0.086667
Winter	2012	3	0	0.05	0.051	0.055	0.06	0.06	0.06	0.06	0.06	0.056667
Winter	2013	3	0	0.03	0.032	0.04	0.05	0.05	0.05	0.05	0.05	0.043333
Winter	2014	3	0	0.04	0.04	0.04	0.04	0.1	0.148	0.1576	0.16	0.08
Winter	2015	3	0	0.03	0.03	0.03	0.03	0.085	0.129	0.1378	0.14	0.066667
Winter	2016	1	0	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Winter	2017	1	0	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Winter	2018	1	0	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07
Winter Overall	2003-2018	35	0	0.03	0.03	0.04	0.05	0.07	0.146	0.1732	0.18	0.065143
Annual	2003	10	0	0.05	0.05	0.06	0.075	0.09	0.12	0.12	0.12	0.079
Annual	2004	12	0	0.04	0.04	0.04	0.055	0.0825	0.1345	0.1389	0.14	0.070833

Monthly Operating Report (MOR) Statistics for: Mantua WWTP; 3PB00031 (permit #)

Season	Year	# of Obs.	# Below Detection	Minimum	Percentiles 5th	25th	50th	75th	95th	99th	Maximum	Mean
Annual	2005	12	0	0.03	0.041	0.065	0.085	0.1025	0.1245	0.1289	0.13	0.0825
Annual	2006	12	0	0.03	0.03	0.04	0.04	0.065	0.126	0.1612	0.17	0.059167
Annual	2007	11	0	0.03	0.035	0.05	0.07	0.075	0.125	0.161	0.17	0.07
Annual	2008	11	0	0.03	0.03	0.03	0.03	0.04	0.075	0.095	0.1	0.04
Annual	2009	11	0	0.03	0.03	0.03	0.04	0.05	0.095	0.123	0.13	0.047273
Annual	2010	11	0	0.03	0.03	0.03	0.03	0.08	0.115	0.135	0.14	0.055455
Annual	2011	12	0	0.03	0.03	0.03	0.05	0.065	0.136	0.1712	0.18	0.060833
Annual	2012	42	0	0.03	0.04	0.107	0.1505	0.177	0.21465	0.2811	0.318	0.142
Annual	2013	12	0	0.03	0.03	0.03	0.03	0.04	0.0445	0.0489	0.05	0.034167
Annual	2014	11	0	0.03	0.03	0.03	0.04	0.085	0.145	0.157	0.16	0.064545
Annual	2015	12	0	0.02	0.02	0.03	0.03	0.0575	0.1895	0.2379	0.25	0.061667
Annual	2016	4	0	0.04	0.0415	0.0475	0.05	0.0625	0.0925	0.0985	0.1	0.06
Annual	2017	4	0	0.03	0.03	0.03	0.05	0.07	0.07	0.07	0.07	0.05
Annual	2018	1	0	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Annual Overall	2003-2018	188	0	0.02	0.03	0.03	0.05	0.12	0.1839	0.23086	0.318	0.078266
Monitoring Station	**801;**	**Reporting Code:**		**31616;**		**Parameter Name:**		**Fecal Coliform (#/100 ml)**				
Annual	2003	6	0	70	82.5	125	145	172.5	360	408	420	180
Annual	2004	5	0	80	88	120	250	260	388	413.6	420	226
Annual	2005	6	0	70	77.5	100	115	145	225	245	250	133.33
Annual	2006	6	0	20	30	62.5	145	325	660	740	760	248.33
Annual	2007	6	0	40	55	100	100	130	275	311	320	133.33
Annual	2008	6	0	110	112.5	125	155	170	440	512	530	206.67
Annual	2009	6	0	40	40	42.5	70	105	230	262	270	100
Annual	2010	1	0	100	100	100	100	100	100	100	100	100
Annual Overall	2003-2010	42	0	20	40	92.5	120	210	420	665.7	760	172.38
Monitoring Station	**801;**	**Reporting Code:**		**31648;**		**Parameter Name:**		**E. coli (#/100 ml)**				
Annual	2010	4	0	40	43	55	100	225	429	469.8	480	180
Annual	2011	5	0	124	139.2	200	370	538	547.6	549.52	550	356.4
Annual	2012	14	0	7	8.3	10.25	12	130.5	526.26	538.53	541.6	109.33
Annual	2013	6	0	8.6	18.95	50.5	100	256	418	451.6	460	168.43
Annual	2014	6	0	20	25.9	45.2	72.5	100.55	120.7	125.58	126.8	72.967
Annual	2015	6	0	43.1	53.575	89.95	125.4	175.25	3184.9	3984.8	4184.8	791.45
Annual	2016	2	0	120	164.85	344.25	568.5	792.75	972.15	1008	1017	568.5
Annual	2017	2	0	63	64.75	71.75	80.5	89.25	96.25	97.65	98	80.5
Annual Overall	2010-2017	45	0	7	9	20	98	196	548.32	2791	4184.8	256.17
Monitoring Station	**801;**	**Reporting Code:**		**80082;**		**Parameter Name:**		**CBOD 5 day (mg/l)**				
Summer	2003	4	0	0.6	0.63	0.75	0.9	6	18	20.4	21	5.85
Summer	2004	4	0	0.4	0.43	0.55	0.75	0.95	1.07	1.094	1.1	0.75
Summer	2005	4	0	0.5	0.575	0.875	1.3	1.725	2.025	2.085	2.1	1.3
Summer	2006	4	0	0.4	0.505	0.925	1.2	1.5	1.98	2.076	2.1	1.225
Summer	2007	4	0	0.5	0.545	0.725	0.95	1.15	1.27	1.294	1.3	0.925
Summer	2008	4	0	0.5	0.515	0.575	0.6	0.625	0.685	0.697	0.7	0.6
Summer	2009	4	0	0.8	0.83	0.95	1.05	1.275	1.695	1.779	1.8	1.175
Summer Overall	2003-2010	28	0	0.4	0.435	0.6	0.95	1.15	2.1	15.897	21	1.6893
Winter	2004	2	0	1.4	1.45	1.65	1.9	2.15	2.35	2.39	2.4	1.9
Winter	2005	3	0	1.6	1.8	2.6	3.6	5.3	6.66	6.932	7	4.0667
Winter	2006	3	0	1.5	1.5	1.5	1.5	2	2.4	2.48	2.5	1.8333
Winter	2007	3	0	0.4	0.47	0.75	1.1	5.15	8.39	9.038	9.2	3.5667
Winter	2008	3	0	0.8	0.87	1.15	1.5	1.95	2.31	2.382	2.4	1.5667
Winter	2009	2	0	0.7	0.715	0.775	0.85	0.925	0.985	0.997	1	0.85
Winter	2010	2	0	2.1	2.125	2.225	2.35	2.475	2.575	2.595	2.6	2.35
Winter Overall	2003-2010	18	0	0.4	0.655	1.175	1.55	2.475	7.33	8.826	9.2	2.4056
Annual	2003	10	0	0.6	0.69	1	1	1.3	12.63	19.326	21	3.12
Annual	2004	11	0	0.4	0.5	0.95	1.4	2.05	3.2	3.52	3.6	1.5727
Annual	2005	12	0	0.4	0.455	1	1.3	1.725	4.525	6.505	7	1.8
Annual	2006	12	0	0.4	0.455	1.075	1.35	1.55	5.295	8.419	9.2	1.9
Annual	2007	12	0	0.4	0.455	0.6	0.8	1.15	11.175	20.635	23	2.7083

Monthly Operating Report (MOR) Statistics for: Mantua WWTP; 3PB00031 (permit #)

Season	Year	# of Obs.	# Below Detection	Minimum	Percentiles 5th	25th	50th	75th	95th	99th	Maximum	Mean
Annual	2008	12	0	0.3	0.41	0.5	0.65	0.85	2.235	2.367	2.4	0.89167
Annual	2009	11	0	0.07	0.185	0.75	1	1.5	2.35	2.55	2.6	1.1427
Annual	2010	3	0	1.4	1.46	1.7	2	2.05	2.09	2.098	2.1	1.8333
Annual Overall	2003-2010	83	0	0.07	0.4	0.7	1.1	1.6	3.52	21.36	23	1.8575
Monitoring Station	**901;**	**Reporting Code:**		**00010;**		**Parameter Name:**		**Water Temperature (C)**				
Summer	2003	4	0	16	16.6	19	20	20.75	22.55	22.91	23	19.75
Summer	2004	4	0	17	17.3	18.5	19.5	20.5	21.7	21.94	22	19.5
Summer	2005	4	0	15	15.75	18.75	20.5	21	21	21	21	19.25
Summer	2006	4	0	17	17.45	19.25	20.5	21.25	21.85	21.97	22	20
Summer	2007	4	0	17	17.45	19.25	20	20.75	22.55	22.91	23	20
Summer	2008	4	0	16	16.45	18.25	20	21	21	21	21	19.25
Summer	2009	4	0	19	19.3	20.5	21	21.5	22.7	22.94	23	21
Summer	2010	4	0	18	18.6	21	22.5	23.5	24.7	24.94	25	22
Summer	2011	25	0	15	16	17	18	19	22.4	23	23	18.24
Summer	2012	4	0	17	17.45	19.25	21.5	23	23	23	23	20.75
Summer	2013	4	0	18	18.15	18.75	19.5	20	20	20	20	19.25
Summer	2014	4	0	17	17.45	19.25	20.5	21	21	21	21	19.75
Summer	2015	4	0	16	16.15	16.75	18.5	20.75	22.55	22.91	23	19
Summer	2016	4	0	13	14.2	19	21	21.25	21.85	21.97	22	19.25
Summer	2017	4	0	20	20.15	20.75	21	21.25	21.85	21.97	22	21
Summer Overall	2003-2018	81	0	13	16	18	20	21	23	23.4	25	19.444
Winter	2004	2	0	1	1	1	1	1	1	1	1	1
Winter	2005	3	0	2	2	2	2	2	2	2	2	2
Winter	2006	3	0	1.1	1.16	1.4	1.7	1.85	1.97	1.994	2	1.6
Winter	2007	3	0	2	2.2	3	4	6	7.6	7.92	8	4.6667
Winter	2008	3	0	0.5	0.75	1.75	3	3.5	3.9	3.98	4	2.5
Winter	2009	2	0	7	7.15	7.75	8.5	9.25	9.85	9.97	10	8.5
Winter	2010	2	0	4	4.2	5	6	7	7.8	7.96	8	6
Winter	2011	3	0	1	1.1	1.5	2	2.2	2.36	2.392	2.4	1.8
Winter	2012	3	0	2	2.2	3	4	4	4	4	4	3.3333
Winter	2013	3	0	4	4	4	4	5.5	6.7	6.94	7	5
Winter	2014	3	0	1	1.1	1.5	2	2.05	2.09	2.098	2.1	1.7
Winter	2015	3	0	1	1.3	2.5	4	4.5	4.9	4.98	5	3.3333
Winter	2016	3	0	4	4.1	4.5	5	7.5	9.5	9.9	10	6.3333
Winter	2017	3	0	6	6.2	7	8	8.5	8.9	8.98	9	7.6667
Winter	2018	21	0	1	3	5	6	9	9	11.4	12	6.5238
Winter Overall	2003-2018	60	0	0.5	1	2	4	7	9.05	10.82	12	4.7967
Annual	2003	10	0	1	2.35	11	13	19	21.65	22.73	23	13.2
Annual	2004	11	0	1	1.5	9.5	16	19.5	21	21.8	22	13.545
Annual	2005	12	0	0.5	1.16	2	11.5	17	21	21	21	10.6
Annual	2006	12	0	1.1	1.595	8	11	17.75	21.45	21.89	22	12.258
Annual	2007	12	0	2	3.1	7.75	15.5	18.5	21.35	22.67	23	13.25
Annual	2008	12	0	0.5	1.325	6.75	12	16.75	21	21	21	11.625
Annual	2009	31	0	4	8	13	14	16	21	22.4	23	14.129
Annual	2010	10	0	2.4	4.92	12.5	16	21.25	24.1	24.82	25	15.74
Annual	2011	33	0	1	3.2	16	18	19	21.2	23	23	15.879
Annual	2012	12	0	2	3.1	6	10.5	18.5	23	23	23	12.25
Annual	2013	12	0	2	2.055	4	15.5	19.25	21.35	22.67	23	12.758
Annual	2014	12	0	1	1.55	2	10	18.5	21	21	21	10.75
Annual	2015	12	0	1	2.65	5.75	14.5	17	21.35	22.67	23	12.333
Annual	2016	12	0	4	4.55	6.75	13.5	19.5	21.45	21.89	22	12.917
Annual	2017	12	0	6	6.55	9	14.5	20.25	21.45	21.89	22	14.417
Annual	2018	23	0	1	3.1	5	6	9	12	14.34	15	7
Annual Overall	2003-2018	238	0	0.5	2	7	14	18	22	23	25	12.77
Monitoring Station	**901;**	**Reporting Code:**		**00300;**		**Parameter Name:**		**Dissolved Oxygen (mg/l)**				
Summer	2003	4	0	3.8	3.8	3.8	4	4.5	5.22	5.364	5.4	4.3
Summer	2004	4	0	8.2	8.395	9.175	9.6	9.725	9.785	9.797	9.8	9.3
Summer	2005	4	0	6.7	6.715	6.775	6.85	6.95	7.07	7.094	7.1	6.875
Summer	2006	4	0	6	6.06	6.3	6.75	7.2	7.44	7.488	7.5	6.75

Monthly Operating Report (MOR) Statistics for: Mantua WWTP; 3PB00031 (permit #)

Season	Year	# of Obs.	# Below Detection	Minimum	Percentiles 5th	25th	50th	75th	95th	99th	Maximum	Mean
Summer	2007	4	0	5.8	5.86	6.1	6.3	6.55	6.91	6.982	7	6.35
Summer	2008	4	0	5.8	5.875	6.175	6.45	6.625	6.685	6.697	6.7	6.35
Summer	2009	4	0	6.2	6.29	6.65	6.85	7.125	7.665	7.773	7.8	6.925
Summer	2010	4	0	5.7	5.76	6	6.25	6.575	6.995	7.079	7.1	6.325
Summer	2011	25	0	6.3	6.42	9.2	9.5	9.6	9.78	9.952	10	9.128
Summer	2012	4	0	5.6	5.66	5.9	6.1	6.375	6.795	6.879	6.9	6.175
Summer	2013	4	0	6.7	6.715	6.775	6.9	7.375	8.275	8.455	8.5	7.25
Summer	2014	4	0	6.6	6.645	6.825	6.95	7.35	8.19	8.358	8.4	7.225
Summer	2015	4	0	6.7	6.745	6.925	7	7.35	8.19	8.358	8.4	7.275
Summer	2016	4	0	6.8	6.815	6.875	6.95	7.075	7.255	7.291	7.3	7
Summer	2017	4	0	6.7	6.745	6.925	7.25	7.625	7.925	7.985	8	7.3
Summer Overall	2003-2018	81	0	3.8	5.6	6.5	7	9.3	9.7	9.84	10	7.5284
Winter	2004	2	0	7.8	7.86	8.1	8.4	8.7	8.94	8.988	9	8.4
Winter	2005	3	0	8.3	8.46	9.1	9.9	10.2	10.44	10.488	10.5	9.5667
Winter	2006	3	0	10.1	10.19	10.55	11	11.35	11.63	11.686	11.7	10.933
Winter	2007	3	0	10.3	10.32	10.4	10.5	11.15	11.67	11.774	11.8	10.867
Winter	2008	3	0	9.7	9.77	10.05	10.4	10.6	10.76	10.792	10.8	10.3
Winter	2009	2	0	8.9	8.905	8.925	8.95	8.975	8.995	8.999	9	8.95
Winter	2010	2	0	10	10.095	10.475	10.95	11.425	11.805	11.881	11.9	10.95
Winter	2011	3	0	9.4	9.5	9.9	10.4	10.45	10.49	10.498	10.5	10.1
Winter	2012	3	0	11.1	11.15	11.35	11.6	11.7	11.78	11.796	11.8	11.5
Winter	2013	3	0	5.2	5.25	5.45	5.7	6.35	6.87	6.974	7	5.9667
Winter	2014	3	0	9.2	9.33	9.85	10.5	10.55	10.59	10.598	10.6	10.1
Winter	2015	3	0	9.3	9.36	9.6	9.9	10.15	10.35	10.39	10.4	9.8667
Winter	2016	3	0	8.7	8.71	8.75	8.8	9.65	10.33	10.466	10.5	9.3333
Winter	2017	3	0	9.1	9.16	9.4	9.7	9.9	10.06	10.092	10.1	9.6333
Winter	2018	21	0	8.7	10	10.6	10.9	11.2	11.4	11.48	11.5	10.81
Winter Overall	2003-2018	60	0	5.2	7.76	9.625	10.5	11	11.705	11.841	11.9	10.135
Annual	2003	10	0	3.8	3.8	4.4	5.4	6.25	8.73	8.946	9	5.72
Annual	2004	11	0	5.3	6.55	8.6	9.6	9.85	13.5	14.7	15	9.6182
Annual	2005	12	0	6.3	6.465	6.775	7.25	8.975	10.59	10.678	10.7	8
Annual	2006	12	0	5.9	5.955	6.85	7.6	10.15	11.315	11.623	11.7	8.25
Annual	2007	12	0	5.8	6.02	6.85	7.95	9.75	11.085	11.657	11.8	8.3083
Annual	2008	12	0	5.8	6.075	6.675	7.7	10.425	10.98	11.156	11.2	8.325
Annual	2009	31	0	6.2	6.85	9.1	9.8	10	10.3	11.45	11.9	9.3613
Annual	2010	10	0	5.7	5.88	6.575	8	8.775	10.22	10.364	10.4	7.88
Annual	2011	33	0	6.3	6.46	9.2	9.4	9.6	10.66	11.036	11.1	9.1758
Annual	2012	12	0	5.2	5.42	6.15	6.65	10.025	11.69	11.778	11.8	7.8333
Annual	2013	12	0	5.7	5.81	6.65	7	8.425	9.665	10.413	10.6	7.4833
Annual	2014	12	0	6.2	6.42	6.825	8.15	9.225	10.005	10.401	10.5	8.05
Annual	2015	12	0	6.7	6.865	7.15	8.15	8.7	10.125	10.345	10.4	8.1833
Annual	2016	12	0	6.8	6.855	6.975	7.55	8.275	10.06	10.412	10.5	7.925
Annual	2017	12	0	6.7	6.865	7.375	7.6	8.25	9.55	9.99	10.1	7.9083
Annual	2018	23	0	8.1	8.29	10.5	10.9	11.15	11.4	11.478	11.5	10.596
Annual Overall	2003-2018	238	0	3.8	5.8	7	8.9	9.9	11.23	11.863	15	8.5786

Monitoring Station 901; Reporting Code: 00400; Parameter Name: pH (S.U.)

Summer	2003	4	0	6.9	6.915	6.975	7	7.025	7.085	7.097	7.1	7
Summer	2004	4	0	7.3	7.3	7.3	7.35	7.425	7.485	7.497	7.5	7.375
Summer	2005	4	0	7.4	7.415	7.475	7.65	7.825	7.885	7.897	7.9	7.65
Summer	2006	4	0	7	7.03	7.15	7.3	7.425	7.485	7.497	7.5	7.275
Summer	2007	4	0	6.8	6.845	7.025	7.25	7.425	7.485	7.497	7.5	7.2
Summer	2008	4	0	6.8	6.845	7.025	7.15	7.275	7.455	7.491	7.5	7.15
Summer	2009	4	0	6.9	6.915	6.975	7	7.2	7.68	7.776	7.8	7.175
Summer	2010	4	0	6.6	6.63	6.75	6.9	7	7	7	7	6.85
Summer	2011	25	0	6.7	6.72	6.9	6.9	6.9	7	7	7	6.88
Summer	2012	4	0	6.9	6.915	6.975	7	7.075	7.255	7.291	7.3	7.05
Summer	2013	4	0	7.3	7.315	7.375	7.45	7.525	7.585	7.597	7.6	7.45
Summer	2014	4	0	7.3	7.315	7.375	7.4	7.425	7.485	7.497	7.5	7.4
Summer	2015	4	0	7.2	7.23	7.35	7.45	7.525	7.585	7.597	7.6	7.425
Summer	2016	4	0	7.2	7.2	7.2	7.35	7.525	7.585	7.597	7.6	7.375
Summer	2017	4	0	7.2	7.26	7.5	7.65	7.75	7.87	7.894	7.9	7.6

Monthly Operating Report (MOR) Statistics for: Mantua WWTP; 3PB00031 (permit #)

Season	Year	# of Obs.	# Below Detection	Minimum	Percentiles 5th	25th	50th	75th	95th	99th	Maximum	Mean
Summer Overall	2003-2018	81	0	6.6	6.8	6.9	7	7.4	7.7	7.9	7.9	7.1593
Winter	2004	2	0	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1
Winter	2005	3	0	6.8	6.82	6.9	7	7.15	7.27	7.294	7.3	7.0333
Winter	2006	3	0	7.6	7.61	7.65	7.7	7.75	7.79	7.798	7.8	7.7
Winter	2007	3	0	7.4	7.43	7.55	7.7	7.7	7.7	7.7	7.7	7.6
Winter	2008	3	0	6.8	6.86	7.1	7.4	7.4	7.4	7.4	7.4	7.2
Winter	2009	2	0	6.8	6.805	6.825	6.85	6.875	6.895	6.899	6.9	6.85
Winter	2010	2	0	6.5	6.525	6.625	6.75	6.875	6.975	6.995	7	6.75
Winter	2011	3	0	6.6	6.61	6.65	6.7	6.8	6.88	6.896	6.9	6.7333
Winter	2012	3	0	6.7	6.71	6.75	6.8	6.8	6.8	6.8	6.8	6.7667
Winter	2013	3	0	6.7	6.71	6.75	6.8	6.85	6.89	6.898	6.9	6.8
Winter	2014	3	0	7.2	7.21	7.25	7.3	7.5	7.66	7.692	7.7	7.4
Winter	2015	3	0	7.5	7.5	7.5	7.5	7.65	7.77	7.794	7.8	7.6
Winter	2016	3	0	7.4	7.41	7.45	7.5	7.5	7.5	7.5	7.5	7.4667
Winter	2017	3	0	7.3	7.33	7.45	7.6	7.75	7.87	7.894	7.9	7.6
Winter	2018	21	0	7.1	7.4	7.6	7.7	7.8	7.9	7.9	7.9	7.6762
Winter Overall	2003-2018	60	0	6.5	6.7	7	7.5	7.7	7.9	7.9	7.9	7.3717
Annual	2003	10	0	6.9	6.945	7	7	7.1	7.1	7.1	7.1	7.03
Annual	2004	11	0	7	7.05	7.25	7.3	7.4	7.5	7.5	7.5	7.3091
Annual	2005	12	0	6.8	6.91	7.175	7.4	7.575	7.845	7.889	7.9	7.3917
Annual	2006	12	0	7	7.11	7.4	7.45	7.6	7.7	7.7	7.7	7.4583
Annual	2007	12	0	6.8	6.965	7.3	7.4	7.4475	7.7	7.7	7.7	7.3692
Annual	2008	12	0	6.8	6.8	7.025	7.25	7.4	8.4	9.28	9.5	7.35
Annual	2009	31	0	6.8	6.9	6.9	7	7	7.1	7.59	7.8	6.9806
Annual	2010	10	0	6.5	6.545	6.725	6.9	7	7.1	7.1	7.1	6.86
Annual	2011	33	0	6.6	6.7	6.8	6.9	6.9	7	7	7	6.8667
Annual	2012	12	0	6.7	6.755	6.9	7	7	7.39	7.478	7.5	7
Annual	2013	12	0	6.7	6.755	7	7.4	7.6	7.645	7.689	7.7	7.3
Annual	2014	12	0	7.1	7.155	7.3	7.4	7.5	7.645	7.689	7.7	7.4083
Annual	2015	12	0	7.2	7.255	7.475	7.5	7.6	7.69	7.778	7.8	7.5
Annual	2016	12	0	7.2	7.2	7.375	7.45	7.525	7.69	7.778	7.8	7.45
Annual	2017	12	0	7.1	7.155	7.45	7.55	7.75	7.9	7.9	7.9	7.5667
Annual	2018	23	0	7.1	7.22	7.6	7.7	7.75	7.89	7.9	7.9	7.6304
Annual Overall	2003-2018	238	0	6.5	6.8	6.9	7.2	7.5	7.8	7.9	9.5	7.2409
Monitoring Station	**901;**	**Reporting Code:**		**00530;**		**Parameter Name:**		**Total Suspended Solids (mg/l)**				
Summer	2003	4	0	2	4.25	13.25	22.5	34.5	50.1	53.22	54	25.25
Summer	2004	4	0	8	8.9	12.5	22.5	31.75	33.55	33.91	34	21.75
Summer	2005	4	0	22	22.15	22.75	23	27.25	37.45	39.49	40	27
Summer	2006	4	0	11	11	11	12.5	20.25	35.25	38.25	39	18.75
Summer	2007	4	0	7	7.75	10.75	12.5	17.25	27.45	29.49	30	15.5
Summer	2008	4	0	8	9.2	14	16	20	29.6	31.52	32	18
Summer	2009	4	0	7	7.3	8.5	10	11.75	13.55	13.91	14	10.25
Summer Overall	2003-2010	28	0	2	7	11	15	28.5	39.65	50.22	54	19.5
Winter	2004	2	0	5	5.4	7	9	11	12.6	12.92	13	9
Winter	2005	3	0	8	8.1	8.5	9	11.5	13.5	13.9	14	10.333
Winter	2006	3	0	6	6.1	6.5	7	7.5	7.9	7.98	8	7
Winter	2007	3	0	11	11.2	12	13	21	27.4	28.68	29	17.667
Winter	2008	3	0	7	7.4	9	11	47	75.8	81.56	83	33.667
Winter	2009	2	0	9	9.8	13	17	21	24.2	24.84	25	17
Winter	2010	2	0	5	5.6	8	11	14	16.4	16.88	17	11
Winter Overall	2003-2010	18	0	5	5	7.25	10	13.75	37.1	73.82	83	15.556
Annual	2003	10	0	2	3.35	8.5	14.5	22.5	42.3	51.66	54	18
Annual	2004	11	0	8	8	12.5	14	25	38.5	42.1	43	19.455
Annual	2005	12	0	7	7.55	9.75	15	23	31.2	38.24	40	17.417
Annual	2006	12	0	6	6	7.5	12.5	18	33.5	37.9	39	15.25
Annual	2007	12	0	0.5	3.525	10	12.5	17	26.7	29.34	30	13.625
Annual	2008	12	0	5	5.55	7	12	21.25	54.95	77.39	83	19.333
Annual	2009	41	0	0.156	0.167	0.197	0.222	0.285	12	15.8	17	2.7223
Annual	2010	3	0	5	5.3	6.5	8	11	13.4	13.88	14	9
Annual Overall	2003-2010	113	0	0.156	0.1902	0.25	9	16	32.8	52.68	83	11.682

Monthly Operating Report (MOR) Statistics for: Mantua WWTP; 3PB00031 (permit #)

Season	Year	# of Obs.	# Below Detection	Minimum	Percentiles 5th	25th	50th	75th	95th	99th	Maximum	Mean
Monitoring Station	901;	Reporting Code:		00610;		Parameter Name:		Nitrogen, Ammonia (NH3) (mg/l)				
Summer	2003	4	0	0.07	0.073	0.085	0.105	0.125	0.137	0.1394	0.14	0.105
Summer	2004	5	0	0.04	0.042	0.05	0.07	0.07	0.11	0.118	0.12	0.07
Summer	2005	4	0	0.03	0.03	0.03	0.07	0.11	0.11	0.11	0.11	0.07
Summer	2006	4	0	0.04	0.0445	0.0625	0.075	0.1	0.148	0.1576	0.16	0.0875
Summer	2007	4	0	0.07	0.07	0.07	0.115	0.195	0.279	0.2958	0.3	0.15
Summer	2008	4	0	0.03	0.0315	0.0375	0.06	0.0875	0.1055	0.1091	0.11	0.065
Summer	2009	4	0	0.03	0.03	0.03	0.04	0.0525	0.0585	0.0597	0.06	0.0425
Summer	2010	4	0	0.03	0.03	0.03	0.06	0.095	0.107	0.1094	0.11	0.065
Summer	2011	33	0	0.01	0.04	0.235	0.254	0.292	0.4034	0.44036	0.449	0.25848
Summer	2012	4	0	0.04	0.0475	0.0775	0.09	0.0925	0.0985	0.0997	0.1	0.08
Summer	2013	4	0	0.03	0.03	0.03	0.035	0.045	0.057	0.0594	0.06	0.04
Summer	2014	4	0	0.04	0.043	0.055	0.065	0.08	0.104	0.1088	0.11	0.07
Summer	2015	4	0	0.03	0.03	0.03	0.035	0.0475	0.0655	0.0691	0.07	0.0425
Summer	2016	2	0	0.04	0.044	0.06	0.08	0.1	0.116	0.1192	0.12	0.08
Summer	2017	2	0	0.03	0.032	0.04	0.05	0.06	0.068	0.0696	0.07	0.05
Summer Overall	2003-2018	86	0	0.01	0.03	0.04	0.095	0.24275	0.362	0.42605	0.449	0.1443
Winter	2004	3	0	0.05	0.051	0.055	0.06	0.1	0.132	0.1384	0.14	0.083333
Winter	2005	3	0	0.05	0.051	0.055	0.06	0.1	0.132	0.1384	0.14	0.083333
Winter	2006	3	0	0.03	0.031	0.035	0.04	0.05	0.058	0.0596	0.06	0.043333
Winter	2007	2	0	0.03	0.031	0.035	0.04	0.045	0.049	0.0498	0.05	0.04
Winter	2008	2	0	0.03	0.0305	0.0325	0.035	0.0375	0.0395	0.0399	0.04	0.035
Winter	2009	2	0	0.03	0.035	0.055	0.08	0.105	0.125	0.129	0.13	0.08
Winter	2010	2	0	0.05	0.0545	0.0725	0.095	0.1175	0.1355	0.1391	0.14	0.095
Winter	2011	3	0	0.04	0.042	0.05	0.06	0.12	0.168	0.1776	0.18	0.093333
Winter	2012	3	0	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Winter	2013	3	0	0.05	0.05	0.05	0.05	0.055	0.059	0.0598	0.06	0.053333
Winter	2014	3	0	0.04	0.04	0.04	0.04	0.11	0.166	0.1772	0.18	0.086667
Winter	2015	3	0	0.03	0.03	0.03	0.03	0.085	0.129	0.1378	0.14	0.066667
Winter	2016	1	0	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Winter	2017	1	0	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Winter	2018	1	0	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Winter Overall	2003-2018	35	0	0.03	0.03	0.04	0.05	0.06	0.152	0.18	0.18	0.066571
Annual	2003	10	0	0.04	0.0445	0.06	0.07	0.085	0.131	0.1382	0.14	0.077
Annual	2004	13	0	0.03	0.036	0.04	0.05	0.07	0.128	0.1376	0.14	0.063077
Annual	2005	12	0	0.03	0.03	0.055	0.07	0.095	0.1235	0.1367	0.14	0.075
Annual	2006	12	0	0.03	0.03	0.0375	0.04	0.0625	0.116	0.1512	0.16	0.055
Annual	2007	11	0	0.03	0.04	0.05	0.07	0.075	0.23	0.286	0.3	0.090909
Annual	2008	11	0	0.03	0.03	0.03	0.03	0.05	0.095	0.107	0.11	0.046364
Annual	2009	19	0	0.03	0.03	0.04	0.13	4	6	6	6	2.1837
Annual	2010	11	0	0.03	0.03	0.03	0.04	0.07	0.125	0.137	0.14	0.056364
Annual	2011	41	0	0.01	0.03	0.18	0.243	0.276	0.391	0.4382	0.449	0.22049
Annual	2012	12	0	0.03	0.03	0.04	0.05	0.09	0.1	0.1	0.1	0.060833
Annual	2013	12	0	0.03	0.03	0.03	0.03	0.0425	0.06	0.06	0.06	0.038333
Annual	2014	11	0	0.03	0.03	0.03	0.04	0.09	0.17	0.178	0.18	0.070909
Annual	2015	12	0	0.02	0.02	0.03	0.03	0.0725	0.1715	0.2023	0.21	0.060833
Annual	2016	4	0	0.04	0.04	0.04	0.04	0.06	0.108	0.1176	0.12	0.06
Annual	2017	4	0	0.03	0.03	0.03	0.05	0.0725	0.0785	0.0797	0.08	0.0525
Annual	2018	1	0	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Annual Overall	2003-2018	196	0	0.01	0.03	0.04	0.06	0.14	0.42875	5.05	6	0.30102
Monitoring Station	**901;**	**Reporting Code:**		**00900;**		**Parameter Name:**		**Hardness, Total (CaCO3) (mg/l)**				
Annual	2015	1	0	160	160	160	160	160	160	160	160	160
Annual	2016	4	0	92	98.6	125	138	140	140	140	140	127
Annual	2017	4	0	104	106.4	116	120	126	140.4	143.28	144	122
Annual	2018	1	0	104	104	104	104	104	104	104	104	104
Annual Overall	2015-2018	10	0	92	97.4	108	128	140	152.8	158.56	160	126
Monitoring Station	**901;**	**Reporting Code:**		**31616;**		**Parameter Name:**		**Fecal Coliform (#/100 ml)**				
Annual	2003	6	0	70	82.5	125	160	187.5	302.5	332.5	340	173.33

Monthly Operating Report (MOR) Statistics for: Mantua WWTP; 3PB00031 (permit #)

Season	Year	# of Obs.	# Below Detection	Minimum	Percentiles 5th	25th	50th	75th	95th	99th	Maximum	Mean
Annual	2004	6	0	100	112.5	150	170	317.5	390	398	400	225
Annual	2005	6	0	80	85	112.5	155	182.5	572.5	674.5	700	230
Annual	2006	6	0	30	32.5	42.5	135	250	575	659	680	213.33
Annual	2007	6	0	40	50	80	90	100	385	461	480	146.67
Annual	2008	6	0	80	90	125	155	252.5	295	299	300	181.67
Annual	2009	13	0	1	1	1	3	40	158	191.6	200	40.462
Annual	2010	1	0	60	60	60	60	60	60	60	60	60
Annual Overall	2003-2010	50	0	1	1	42.5	115	190	444	690.2	700	152.12
Monitoring Station	**901;**	**Reporting Code:**		**31648;**		**Parameter Name:**		**E. coli (#/100 ml)**				
Annual	2010	4	0	25	33.25	66.25	90	160	304	332.8	340	136.25
Annual	2011	13	0	2	2	3	3	40	1294.6	2038.1	2224	251.85
Annual	2012	5	0	104	104.96	108.8	148	386	411.6	416.72	418	232.96
Annual	2013	6	0	10.9	15.675	58.75	145.5	269	380.5	399.3	404	174.32
Annual	2014	6	0	41	44.25	61.8	97.6	139.4	157	159.08	159.6	99.833
Annual	2015	6	0	48.9	66.775	129.8	170.5	195	2812.2	3509	3683.2	732.08
Annual	2016	2	0	213	230.9	302.5	392	481.5	553.1	567.42	571	392
Annual	2017	2	0	61	62.15	66.75	72.5	78.25	82.85	83.77	84	72.5
Annual Overall	2010-2017	44	0	2	3	28.75	106.4	202.5	659.4	3055.7	3683.2	271.6
Monitoring Station	**901;**	**Reporting Code:**		**80082;**		**Parameter Name:**		**CBOD 5 day (mg/l)**				
Summer	2003	4	0	0.6	0.6	0.6	1	7.05	20.61	23.322	24	6.65
Summer	2004	4	0	0.6	0.615	0.675	0.8	0.925	0.985	0.997	1	0.8
Summer	2005	4	0	0.9	0.945	1.125	1.45	1.85	2.21	2.282	2.3	1.525
Summer	2006	4	0	0.5	0.62	1.1	1.35	1.575	1.995	2.079	2.1	1.325
Summer	2007	4	0	0.5	0.56	0.8	0.9	1.1	1.58	1.676	1.7	1
Summer	2008	4	0	0.5	0.515	0.575	0.65	0.75	0.87	0.894	0.9	0.675
Summer	2009	4	0	0.8	0.86	1.1	1.35	1.625	1.925	1.985	2	1.375
Summer Overall	2003-2010	28	0	0.5	0.5	0.675	0.9	1.425	2.23	18.141	24	1.9071
Winter	2004	2	0	1.2	1.25	1.45	1.7	1.95	2.15	2.19	2.2	1.7
Winter	2005	3	0	1.8	1.94	2.5	3.2	3.35	3.47	3.494	3.5	2.8333
Winter	2006	3	0	1.3	1.31	1.35	1.4	1.75	2.03	2.086	2.1	1.6
Winter	2007	3	0	0.5	0.57	0.85	1.2	5.25	8.49	9.138	9.3	3.6667
Winter	2008	3	0	0.9	0.93	1.05	1.2	1.85	2.37	2.474	2.5	1.5333
Winter	2009	2	0	0.8	0.805	0.825	0.85	0.875	0.895	0.899	0.9	0.85
Winter	2010	2	0	1	1.07	1.35	1.7	2.05	2.33	2.386	2.4	1.7
Winter Overall	2003-2010	18	0	0.5	0.755	1.05	1.35	2.35	4.37	8.314	9.3	2.0778
Annual	2003	10	0	0.6	0.6	0.65	1	1.85	14.19	22.038	24	3.42
Annual	2004	11	0	0.6	0.65	0.9	1.2	1.85	3.05	3.17	3.2	1.5182
Annual	2005	12	0	0.5	0.72	1.175	1.35	1.725	2.84	3.368	3.5	1.5333
Annual	2006	12	0	0.5	0.72	1	1.25	1.575	5.34	8.508	9.3	1.95
Annual	2007	12	0	0.5	0.5	0.8	0.9	1.2	9.935	17.987	20	2.5333
Annual	2008	12	0	0.3	0.355	0.575	0.7	0.9	2.225	2.445	2.5	0.91667
Annual	2009	19	0	0.07	0.727	1.05	1.4	1.85	2.41	2.482	2.5	1.4458
Annual	2010	3	0	1	1.05	1.25	1.5	1.5	1.5	1.5	1.5	1.3333
Annual Overall	2003-2010	91	0	0.07	0.5	0.8	1.2	1.7	3.05	20.4	24	1.8195