

Town of Canandaigua

5440 Route 5&20 West
Canandaigua, NY, 14424

SEWER MASTER PLAN

for the

TOWN OF CANANDAIGUA

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MRB Group Project No. 0300.15001.00

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4. George Barden, Canandaigua Watershed Inspector

LIST OF ACRONYMS

ADF	Average Daily Flow
CIC	Citizens Implementation Committee
EDU	Equivalent Dwelling Unit
GPM	Gallons per Minute
I/I	Infiltration and Inflow
IMA	Inter-Municipal Agreement
IUP	Intended Use Plan
MGD	Million Gallons per Day
OCIDA	Ontario County Industrial Development Agency
O&M	Operation and Maintenance
OWTS	Onsite Wastewater Treatment System
PDR	Purchase of Development Rights
PPL	Priority Project List
SMPPT	Sewer Master Plan Project Team
SPDES	State Pollution Discharge Elimination System
STEP	Septic Tank Effluent Pumping system
TDH	Total Dynamic Head
WWTP	Wastewater Treatment Plant
WTP	Water Treatment Plant (drinking water)

Foreword

Created by Town Board resolution in April 2014, the Citizen's Implementation Committee (CIC) was tasked to revisit every goal and action step identified in the Town of Canandaigua's adopted Comprehensive Plan.

Local experts on the topic at hand joined the CIC to revisit and revise goals and action steps to make them quantifiable and more in keeping with current trends in the Town of Canandaigua (herein "Town"). In December 2014, the Town Board adopted the revised Comprehensive Plan goals and action steps; this revision consisted of twenty main goals with a total of approximately eighty action steps.

To begin implementation, the CIC held a strategic planning session in January 2015, to review each goal and action step, ranking each action step into short term, intermediate, and long term action items. From the strategic planning session the CIC recommended to the Town Board those top five action items to accomplish in the 2015 / 2016 calendar years. In March 2015, the Town Board passed a resolution accepting the CIC's top five action steps for 2015/2016:

1. Develop and Implement a Town of Canandaigua Farmland Enhancement Program;
2. Determine if the Natural Resource Inventory, which replaced the Limited Development Overlay, is successful in preservation of significant environmental features; revise if necessary;
3. Research Conservation Programs for tax abatements or incentives available to landowners;
4. Develop a Town of Canandaigua Sewer Master Plan;
5. Review and consider Code updates to the Mixed Use Overlay districts to maximize opportunities for commercial development.

The CIC then put out a call for volunteers interested in serving on one of five project teams, each focused on one of top five action steps. Approximately forty five interested residents answered this call. Throughout 2015 each project team met and worked on their assigned projects resulting in substantial progress including the creation of this document by the Sewer Master Plan Project Team (SMPPT), with the assistance of the Town Engineer, MRB.

I. INTRODUCTION

A Joint Sewer Master Plan (by MRB group, PC and Labella & Associates, PC) that includes the Village of Victor and the Towns of Victor, Farmington and Canandaigua was authorized and funded by the participating municipalities. The Joint Sewer Master Plan, currently in development at the time of this report, considers the potential sanitary sewer area that could be serviced by the Farmington Wastewater Treatment Plant (WWTP). For the Town of Canandaigua, this Joint Sewer Master Plan would only consider the areas north of Padelford Brook.

Because the Joint Sewer Master Plan would only the needs of the Town of Canandaigua (Town) in the far north of the Town, the Town Board authorized MRB group, PC to develop a Sewer Master Plan for the balance of the Town. Later in 2014 the Town Board assigned the CIC to support MRB Group to provide citizen participation and input regarding this document and its compliment to the Town's adopted Comprehensive Plan.

As described in the Foreword, this ultimately led to the CIC's formation of the Sewer Master Plan Project Team (SMPPT), who worked closely with MRB Group from April 2015 to the present. Collaboratively, the SMPPT and MRB Group considered the goals of the CIC to determine locations in the Town most appropriate for sanitary sewers in conformance with the Town's Comprehensive Plan including protection for farmland and environmentally sensitive areas of the Town.

The purpose of this Sewer Master plan is to provide the Town with a comprehensive planning tool that would provide factual data and other information relative to the sewer system serving the Town. This Sewer Master Plan will evaluate the collection system as a whole and provide information back to the Town to assist in their decisions. The Sewer Master Plan will be utilized and shared amongst the Town's Boards as they consider new development in the Town and the potential impact to the sanitary sewer system.

The SMPPT charge from the CIC was to evaluate the Town and consider where future

growth in the Town is most appropriate in conformance with the Town's Comprehensive Plan. This document will evaluate the potential for sewer extensions and analyze the existing infrastructure based on available information for flow conveyance limitations.

II. EXISTING CONDITIONS

The County owns, administers and maintains the sanitary sewer infrastructure and appurtenances in the Town of Canandaigua for all areas south of Padelford Brook. North of Padelford Brook, the Town of Canandaigua owns the sanitary sewer infrastructure and the administration, operation and maintenance is provided by the Town of Farmington (Canandaigua-Farmington Sewer District) via an Inter-Municipal Agreement (IMA). The sewage that is collected via a public sanitary sewer system is conveyed through the County sewer system and discharged to the City sewer system for ultimate treatment at the City/County WWTP. The WWTP discharges to the Canandaigua Outlet under a State Pollution Discharge Elimination System (SPDES) permit regulating the effluent standards.

A. STUDY AREA

The study area for this Sewer Master Plan is generally defined as the land mass of the Town of Canandaigua surrounding the City of Canandaigua south of Padelford Brook. The study area does not consider the City of Canandaigua, or other adjoining municipalities. As stated previously, the area of the Town north of Padelford Brook is included in the JSMP of Victor/Farmington/Canandaigua. A map of the study area is included in Appendix A.

1. Topography

The topography of the Town of Canandaigua can be described as undulating. The Town of Canandaigua is divided into three watersheds: The Canandaigua Outlet, Canandaigua Lake, and Hathaway Brook. The north and east portions of the Town drain towards the Canandaigua Outlet. The very western edge of the Town drains towards Hathaway Brook and the remaining lands drain towards Canandaigua Lake. A watershed map is included in Appendix B. The area draining to Canandaigua Lake can be described as somewhat steep to steep in areas. This area of the Town is also bisected by significant drainage gullies. A topography map of the Town is included in Appendix C.

2. Climate/Precipitation

The Town of Canandaigua gets approximately 34 inches of rainfall and 52 inches of snowfall each year, with the average number of days with measurable precipitation totaling 146 days.

On average, the Town of Canandaigua has 165 sunny days per year, with a summer high of 81 degrees Fahrenheit and winter low of 18 degrees Fahrenheit. Climate/Precipitation information is sourced from NOAA's National Climate Data Center website and The Weather Channel.

3. Land Use

Land use in the Town is predominantly agricultural. This is consistent with the Town's Comprehensive Plan goals to maintain its' rural character and protect farmland. According to the Town's Comprehensive Plan 2011 Update (EDR) Agricultural land represents approximately 42% of the land mass of the Town, followed by approximately 30% as residential and 19% vacant. A copy of the Town's Zoning Map is included in Appendix D.

4. Population

The Genesee/Finger Lakes Regional Planning Council prepared a report in May 2013 entitled "Regional Population Forecasts" which includes population projections to the year 2050 for all counties, cities, towns, and villages located within the Genesee – Finger Lakes Region.

The population of the Genesee – Finger Lakes Region has increased since 1960. The population has increased by about 30% (about 285,000 people) within the last 50 years. The future population is projected to continue to increase, but at a slower rate. The region is projected to grow 3.6% from year 2010 to year 2050 and increase population by 44,394 people. Ontario County is projected to have the highest percent increase at 9.5%, growing from a population of 107,931 people in year 2010 to a population of 118,234 people in year 2050. The Town of Canandaigua is

projected to increase by about 3.0% per 10 year period and grow from a population of 10,020 people in year 2010 to a population of 11,875 people in year 2050. Therefore, a significant increase in population of the Town is expected over the next four (4) decade period amounting to about 18.5%.

B. WASTEWATER COLLECTION SYSTEM

The Town does not operate and maintain the sewer collection system within the Town of Canandaigua. The sanitary sewer system south of Padelford Brook is operated and maintained through the Ontario County sewer districts, which is managed by the Ontario County Department of Public Works. A copy of the County Sewer Districts Map is included in Appendix F. As stated previously, the sanitary sewer system located north of Padelford Brook is operated and maintained by the Town of Farmington sewer district(s).

Both the City of Canandaigua and Ontario County have formed a partnership governed by an Inter-Municipal Agreement (IMA) which establishes the capacity for the County sewer districts that convey flows to the City of Canandaigua's sewer system and WWTP. A copy of the IMA is included in Appendix E. A map of the County/City sewer system is included in Appendix R.

1. Flow Meters

The County system discharges to the City sewer system via eight (8) points of connection. Those points of connection are monitored by flow meters that discharge to the City interceptors, mains, and collector sewers. The flow metering locations at or near the City limits are generally known as:

- West Lake Road
- East Lake Road
- Fallbrook
- North Street
- North Road
- Route 21 South (West Street)
- Amber Meadows

- Villas at Canandaigua

2. Interceptors Sewers

The interceptor sewers are identified in the City/County IMA and have an associated reserved County excess capacity shown in Average Daily Flow (ADF).

The interceptors are:

i. West Lake Road –

The West Lake Road interceptor is a 16-inch diameter sanitary sewer. The County's excess reserve capacity is 1.10 Million Gallons per Day (MGD). Using an average daily flow of 300 Gallons Per Day (gpd) per Equivalent Dwelling Unit (EDU), this reserve capacity is estimated to convey sanitary sewage from an additional 3,666 EDUs.

ii. West Street –

The West Street interceptor is an 8-inch diameter sanitary sewer. The County's excess reserve capacity is 0.065 MGD. Using an average daily flow of 300 gpd per EDU, this reserve capacity is estimated to convey sanitary sewage from an additional 216 EDUs.

iii. North Street –

The North Street interceptor is a 16-inch diameter sanitary sewer. The County's excess reserve capacity is 0.468 MGD. Using an average daily flow of 300 gpd per EDU, this reserve capacity is estimated to convey sanitary sewage from an additional 1,560 EDUs.

iv. East Lake Road –

The East Lake Road interceptor is a 20-inch diameter sanitary sewer. The County's excess reserve capacity is 0.965 MGD. Using an average daily flow of 300 gpd per EDU, this reserve capacity is estimated to convey sanitary sewage from an additional 3,217 EDUs.

3. Sanitary Sewers

The sanitary sewers that serve as connection points between the City/County systems are identified in the City/County IMA and have an associated reserved County excess capacity shown in average daily flow. The sanitary sewer are:

i. Ontario Street –

The Ontario Street sewer is a 10-inch diameter sanitary sewer. The County's excess reserve capacity is 0.176 MGD. Using an average daily flow of 300 gpd per EDU, this reserve capacity is estimated to convey sanitary sewage from an additional 587 EDUs.

ii. Parrish Street –

The Parrish Street sewer is an 8-inch diameter sanitary sewer. The County's excess reserve capacity is 0.020 MGD. Using an average daily flow of 300 gpd per EDU, this reserve capacity is estimated to convey sanitary sewage from an additional 67 EDUs.

iii. Amber Meadows (Hammocks) –

The Amber Meadows sewer is an 8-inch diameter sanitary sewer. The County's excess reserve capacity is 0.012 MGD. Using an average daily flow of 300 gpd per EDU, this reserve capacity is estimated to convey sanitary sewage from an additional 40 EDUs. This analysis included the City development project at this location.

iv. North Road –

The North Road sewer is a 12-inch diameter sanitary sewer. The County's excess reserve capacity is 0.044 MGD. Using an average daily flow of 300 gpd per EDU, this reserve capacity is estimated to convey sanitary sewage from an additional 145 EDUs.

4. Pump Stations

Ontario County owns and operates all of the sanitary pump stations located within the Town of Canandaigua. The following is a summary of the “main” pump stations as part of the sewer system. There are a few additional and smaller pump stations within the system that are beyond the scope of study of this document and it is assumed that their impact on the overall system is relatively insignificant.

There are six (6) “main” sewage pump stations located within the Town of Canandaigua that are addressed below:

1. Fire Hall Pump Station (1N)
2. Outhouse Park Pump Station
3. Lakeshore Lift Station
4. Pump Station 1W
5. Pump Station 4W
6. Pump Station 5W

The characteristics and capacity of each of these sewage pump stations is summarized below.

a. Fire Hall Pump Station (1N)

This duplex submersible pump station was recently upgraded with 850 Gallons Per Minute (gpm) pumps.

The pumping capacity of 850 gpm is equivalent to a peak hourly flow rate of 1,224,000 gpd. Using a peak hourly flow to average daily flow ratio of 4.0, gives us an average daily flow of 306,000 gpd. Using an average daily flow of 300 gpd per EDU, this pump station is estimated to have adequate capacity to convey sanitary sewage from 1,020 EDUs.

<u>Level</u>	<u>Elevation Present (feet)</u>
Bottom of Wetwell	743.00
Pumps off	745.50
Lead Pump on	746.50
Lag Pump on	747.50
High Water Alarm	748.50
Invert of Incoming Gravity Sewers	749.50
Finished Grade	773.00

b. Outhouse Pump Station

This duplex pump station includes two submersible raw sewage pumps, wetwell, bypass piping connections, operating controls and alarms, emergency generator, and maintenance vehicle parking. Excess capacity was included in this pump station to allow for future growth. The wetwell is an 8-foot diameter manhole. The station is level controlled, according to the following sewage levels provided in the report entitled “ Engineering Report for the Ontario County Outhouse Park Sewer Project Pump Station”, prepared by MRB Group (dated April 20, 2006):

<u>Level</u>	<u>Elevation Present (Feet)</u>	<u>Elevation Future (Feet)</u>
Bottom of Wetwell	758.78	758.78
Pumps off	760.50	760.50
Lead Pump on	763.00	764.13
Lag Pump on	763.75	764.88
High Water Alarm	764.50	765.63
Invert of Incoming Gravity Sewers	766.83	766.83
Finished Grade	784.50	784.50

The proposed pumps were Hydromatic Submersible Sewage Ejectors, 10 horsepower, Model S4L1000M3-6. The design point for this pump station

is 450 gpm at 40 feet of total dynamic head (TDH).

The pumping capacity of 450 gpm is equivalent to a peak hourly flow rate of 648,000 gpd. Using a peak hourly flow to average daily flow ratio of 4.0, gives us an average daily flow of 162,000 gpd. Using an average daily flow of 300 gpd per EDU, this pump station is estimated to have adequate capacity to convey sanitary sewage from 540 EDUs.

c. Lakeshore Lift Station

According to the Inter - Municipal Agreement for the conveyance and treatment of sewage and wastewater between the City of Canandaigua and Ontario County, the Lakeshore Lift Station is to be enlarged (at the joint expense of both parties) if the total flows are in excess of or anticipated to be in excess of 3.71 MGD and both parties have or anticipate flows exceeding their respective reserved capacities. The County's share of any capital costs incurred for improvements at the Lakeshore Lift Station is based on having 54.5% reserve capacity in the Lakeshore Lift Station, according to the following flow information provided in the IMA:

<u>Flow Characteristics</u>	<u>City Total</u>	<u>County Total</u>	<u>Total Flow</u>
Average Flow (1990 design year)	0.59 MGD	0.706 MGD	1.296 MGD
Max Flow (1990 design year)	1.24 MGD	2.47 MGD	3.71 MGD
Max Flow (2008 actual capacity)	0.99 MGD	1.17 MGD	2.16 MGD

The Lakeshore Pump Station is operated by the City. Using the pumping capacity of 3.71 MGD and a peak hourly flow to average daily flow ratio of 3.0, gives us an average daily flow of 1,236,700 gpd. Using an average daily flow of 300 gpd per EDU, this pump station is estimated to have

adequate capacity to convey sanitary sewage from 4,122 EDUs.

d. Pump Station 01W

The design point for this pump station is reportedly 1,000 gpm at 125 feet of TDH.

This pumping rate of 1,000 gpm is equivalent to a peak hourly flow rate of 1,440,000 gpd. Using a peak hourly flow to average daily flow ratio of 3.5, gives us an average daily flow of about 411,400 gpd. Using an average daily flow of 300 gpd per EDU, this pump station is estimated to have adequate capacity to convey sanitary sewage from 1,371 EDUs.

<u>Level</u>	<u>Elevation Present (feet)</u>
Bottom of Wetwell	680.55
Pumps off	685.45
Lead Pump on	687.45
Lag Pump on	687.95
High Water Alarm	689.05
Invert of Incoming Gravity Sewers	686.36
Finished Grade	702.00

e. Pump Station 04W

This pump station has a triplex pump configuration, originally installed in 1978 with three (3), 3 horsepower, Hydromatic Model SH300M3-4 pumps.

The original pump station experienced chronic “ragging” problems within the submersible pump volutes. Ragging is most commonly associated with non-biodegradables found in the waste stream such as baby wipes, etc. They required daily visits by County maintenance staff due to the frequency and uncertainty of the pump clogging. County staff were required to work

within the confines of the Class 1 Division 1 confined space above the wetwell to remove the clogged pump and manually clear the impeller when required.

Improvements to this pump station were needed to improve station reliability, restore station service life, eliminate the chronic clogging problem, and improve operator safety and equipment access.

Barton & Loguidice, P.C. (B&L) was retained by the County to provide design and bidding phase services for upgrading this pump station in 2013. According to their Final Basis of Design Report Amendment at the 90% Submittal (dated November 14, 2013), Vaughan chopper pumps were recommended to be installed, which include a cutter impeller to shed the fibrous material and prevent ragging. Vaughan chopper pumps Model SE4L, 7.5 horsepower, with design point of 575 gpm at 18.5 feet TDH were specified.

In addition to the standard Vaughan pumps, pump No. 2 was to be provided with a Vaughan recirculator to enable the pump station operator to mix the wetwell contents. The recirculator was to aid the County to better maintain the pump station and prevent future clogging and grease buildup. The pump station improvements have been completed as outlined above per the County.

The pumping capacity of 575 gpm is equivalent to a peak hourly flow rate of 828,000 gpd. Using a peak hourly flow to average daily flow ratio of 4.0, gives us an average daily flow of 207,000 gpd. Using an average daily flow of 300 gpd per EDU, this pump station is estimated to have adequate capacity to convey sanitary sewage from 690 EDUs.

<u>Level</u>	<u>Elevation Present (feet)</u>
Bottom of Wetwell	678.59
Pumps off	680.59
Lead Pump on	683.09
Lag Pump on	684.09
High Water Alarm	684.84
Invert of Incoming Gravity Sewers	684.98
Finished Grade	698.05

f. Pump Station 05W

This pump station has a triplex pump configuration, originally installed in 1978 with three (3), 5 horsepower, Hydromatic Model SH500M3-4 pumps.

The original pump station also experienced chronic “ragging” problems within the submersible volutes. This required the County maintenance staff to make daily visits to the pump station to unclog the pumps and work within the Class 1 Division 1 confined space above the wetwell.

B&L was retained by the County in 2013 to provide design and bidding phase services for upgrading this pump station. According to their Final Basis of Design Report Addendum at the 90% Submittal (dated November 14, 2013), Vaughan chopper pumps were recommended to replace the original submersible pumps. Vaughan chopper pumps Model SE4L, 7.5 horsepower, with design point of 500 gpm at 23 feet TDH were specified. Identical Vaughan model chopper pumps and impellers were recommended for both pump station 04W and 05W at each station to provide the added benefit of enabling the County to interchange pumps and spare parts, as necessary. In addition to the standard Vaughan chopper pumps, pump No. 2 was provided with a Vaughan recirculator to enable the pump station operator to mix the wetwell contents and assist in preventing future clogging and grease buildup problems. The pump station improvements have been completed as

outlined above per the County.

The pumping capacity of 500 gpm is equivalent to a peak hourly flow rate of 720,000 gpd. Using a peak hourly flow to average daily flow ratio of 4.0, gives us an average daily flow of 180,000 gpd. Using an average daily flow of 300 gpd per EDU, this pump station is estimated to have adequate capacity to convey sanitary sewage from 600 EDUs.

<u>Level</u>	<u>Elevation Present (feet)</u>
Bottom of Wetwell	679.35
Pumps off	681.35
Lead Pump on	682.6
Lag Pump on	683.35
High Water Alarm	683.56
Invert of Incoming Gravity Sewers	683.56
Finished Grade	696.23

5. Treatment Plant

The City/County own and operate a Rotating Biological Contactor (RBC) treatment facility located at 183 Saltonstall Street, Canandaigua, NY. Treatment generally includes screening for removal of inorganics, RBCs for biological treatment followed by clarification, and anaerobic digestion for treatment of the biosolids. The WWTP discharges to the Canandaigua Outlet and has a rated capacity for up to 6.5 MGD. The facility capacity is shared between the City/County as follows:

City capacity – 4.0 MGD

County capacity – 2.5 MGD

Total capacity – 6.5 MGD

In 2015 the average daily flows recorded at the WWTP were 3.10 MGD. Based on the average daily flow, the WWTP is operating at approximately 46% of capacity, leaving 3.4 MGD in excess flow capacity. Using an average daily flow of 300 gpd per Equivalent Dwelling Unit (EDU), this WWTP is estimated to have adequate capacity to treat an additional 11,333 EDUs. A map of the County sewer system

with the reserve capacities of each connection point identified is included in Appendix S.

III. OPERATION AND MAINTENANCE

A. COUNTY SEWER DISTRICTS

Ontario County operates and maintains the sanitary sewer infrastructure and appurtenances associated with the County Sewer Districts. Treatment of the wastewater is provided by the County/City WWTP. Operation, maintenance, and treatment charges are combined into the County's annual sewer charge per EDU. The sewer charge for 2016 is \$385.00/EDU.

B. TOWN SEWER DISTRICTS

Operation and maintenance of the Canandaigua – Farmington sewer District is provided by the Town of Farmington per the IMA between the Town of Canandaigua and the Town of Farmington. Treatment of the wastewater is provided by the Farmington WWTP. Operation, maintenance, and treatment charges are combined into the Town's annual sewer charge per EDU. The sewer charge for 2016 is \$325.00/EDU.

IV. SEWER MASTER PLAN PROJECT TEAM ANALYSIS

A. EVALUATION OF EXISTING CONDITIONS

The SMPPT over the course of a year has performed several evaluations to determine where in the Town that sanitary sewer service would be most appropriate to promote growth and development. Those evaluations included:

- i. Reviewing the Town Code and Comprehensive Plan to determine where public sewers and potential development are or are not envisioned according to those documents.
- ii. Reviewing key indicators to identify locations in the Town where there may be a need for potential future sewers.
- iii. Reviewing potential sanitary sewer locations for their likelihood to produce unwanted Development Pressure to the Farmland Protection objectives of the Comprehensive Plan. Of particular concern is the preservation of the newly-established Padelford Greenway on the north side of the Town. The Padelford Greenway as outlined by the Padelford Greenway Plan prepared by the Canandaigua Development Office, is identified on a number of the maps referenced in this section.

1. Town Code/Town Comprehensive Plan Review

The SMPPT reviewed the Comprehensive Plan and Town Code and determined where future sanitary sewers are envisioned by those documents. By reviewing the descriptions of each of the zoning districts in Town Code, the SMPPT was able to determine that there are areas of the Town where sewers are expressively envisioned, undetermined because of omission, and areas expressively *not* envisioning sanitary sewer service.

Based on the zoning definitions, in the following zoning districts, sewer is not envisioned in the following districts:

- RR-3 (Rural Residential – 3 Acre)
- AR-2 (Agricultural Residential – 2 Acre)
- AR-1 (Agricultural Residential – 1 Acre)

Based on the zoning definitions, in the following zoning districts the expectation for sanitary sewer service is not expressed, and therefore is undefined:

- R-1-30 (Residential - 30,000 SF)
- RLD (Residential Lake District)
- NC (Neighborhood Commercial)
- CC (Community Commercial)
- MH (Manufactured Housing)
- LI (Light Industrial)

It is reasonable to assume that a mix of public sewer and private onsite treatment systems existed in these districts at the time the descriptions were developed.

Based on the zoning definitions, sewer is envisioned in the following districts:

- R-1-20 (Residential – 20,000 SF)
- MR (Multiple Residential)
- PUD (Planned Unit Development)
- RB-1 (Residential Business)
- SCR-1 (Southern Corridor Residential)
- I (Industrial)

In addition to the zoning districts outlined above, the Town also has a Mixed Use Overlay (MUO) District that is designed to allow for more flexibility in the ultimate development of the three growth nodes of the Town. The MUO allows a more intensified development than allowed by the underlying zoning provided the infrastructure is present to support the development.

A map that summarizes the above analysis of the Town Zoning Code including an overlay of the sanitary sewer system is included in Appendix G. A Zoning District Map with an overlay of the sanitary sewer system was also prepared to see the relation of the sanitary sewer system to the specific zoning districts referenced above. This map can be found in Appendix H.

2. Key Indicators that may Show a Need for Sewers in Developed Areas of the Town.

The SMPPT followed the Comprehensive Plan and Town Code review with studying the key indicators that may forecast an environmental need for public sewer extension based on the following:

- Soil Type: Hydrologic C & D soils are characterized as poorly draining and can be a factor in limiting what type of Onsite Wastewater Treatment System (OWTS) can be utilized on a site.
- Dwelling Unit Age: Onsite wastewater treatment systems have a life cycle and typically after 25 years (design life typically 20-30 years based on EPA's *Onsite Wastewater Treatment Manual*) can require modification or replacement. The age of the primary structure can indicate an older OWTS near the end of its useful life.
- Lot Size: The smaller lots may have a limited opportunity for replacement of an OWTS.
- Density: Clusters of parcels along a road that share the above characteristics can be an indicator that public sewer could potentially be a cost effective and viable alternative to OWTSs.

The map included in Appendix I is an overlay of the existing sewer districts, areas of poorly draining soils as characterized by the Natural Resource Conservation Service (NRCS), with the centroids of the primary structure color coded to differentiate those structures older than 25 years from those of age 25 yrs or less.

3. Review of Farmland Protection Areas Versus Areas Perceived to be Experiencing Development Pressure.

The SMPPT as part of their process developed an overlay showing the properties that have previously expressed interest in the Purchase of Development Rights (PDR) to protect the farmland and all of the properties that have had expressed recent interest in development to the Town Development Office. The perceived development pressure and PDR interest shown are “snap shots” of the current development pressure and protection climate in the Town of Canandaigua.

A map showing the existing sewers, existing PDRs, PDR interest, and perceived development pressure is included in Appendix J. This map provides a visual tool showing where agricultural protection and development pressure are located with respect to the existing sewer system.

B. FINDINGS OF EXISTING CONDITIONS

After review of the above mapping and materials and meetings with the Canandaigua Lake Watershed Manager, Canandaigua Lake Watershed Inspector, and Ontario County deputy Commissioner of Public Works, the SMPPT identified a number of areas for additional study for potential future sanitary sewer service. Those areas include:

- The Hamlet of Cheshire
- Grandview Park/Ontario Street Ext.(CR 4) Area
- CR 28/Emerson/Risser Rd. Area
- CR 16, south of Foster Road.
- The Town's industrially zoned areas between CR 46 and Ontario Street Ext.; also the area along Brickyard Road between the city line and Thomas Road.
- Unsewered locations on Middle Cheshire Rd and Acorn Hill Drive.

1. The Hamlet of Cheshire

The Hamlet of Cheshire underlying zoning classification is a combination of NC and R-1-30, both are indeterminate with relation to sanitary sewers. However, this area does show a confluence of the key indicators (poorly draining soils, small lots, older homes and density) that make this a location for potential sewer service. In fact, the need for sanitary sewer service was first noted in the Hamlet of Cheshire Master Plan (2004). In addition, recent development plans for the Hamlet of Cheshire as well as a community survey (conducted by the Town) have indicated a desire for sanitary sewers. For these reasons, the SMPPT recommend this location for future sanitary sewer service.

2. Grandview/Park/Ontario Street Ext. Area

The neighborhood area underlying zoning classification is a combination of R-1-30 and R-1-20. While R-1-30 is indeterminate with relation to sanitary sewers, R-1-20 implies sewers are required. Once again, this area does show a confluence of the key indicators (poorly draining soils (in this case shallow bedrock), small lots, older homes and density) that make this a location for potential sanitary sewer service. The need for sewers in this area was identified in the Feasibility Study for the Installation of Sanitary Sewers in the NYS RTE. 21/Grandview Park/CR 4 &

22 area of the Town of Canandaigua (2006). Again, this area is in close proximity to active agricultural lands. For this reason it is recommended that this future sewer service area be limited to just the Grandview/Park Area (the R-1-20 area).

3. CR 28/Emerson/Risser Rd Area

The neighborhood area underlying zoning classification is nearly all R-1-30 with one parcel zoned MR. As stated previously R-1-30 is indeterminate with relation to sanitary sewers, but MR suggests sewers are envisioned. Once again, this area does show a confluence of the key indicators (poorly draining soils, small lots, older homes and density) that make this a location for potential sewer service. Due to the proximity of the Padelford Greenway, the surrounding agricultural lands and the need to protect these lands, it is recommended to consider sewer for only the CR 28 Area.

4. CR 16, south of Foster Rd. Area

This area of the Town is unique with respect to potential sanitary sewer service, because it represents a significant risk for nutrient loading to Canandaigua Lake, it also represents the greatest potential for creating development pressure on the upland agricultural and environmentally sensitive areas of the watershed. At the time of this report the Town is considering a draft of the Watershed Council's Model Local Law that will require intensified OWTS inspections in the Canandaigua Lake watershed. A draft of the Model Local Law is included in Appendix K. As a result, this area is not recommended for immediate sanitary sewer service to protect the upland areas.

5. Town's Industrially Zoned Areas

The Town has two areas separate areas currently zoned Industrial. The first area is north of the City line along Brickyard Road extending north to Thomas Road and the other area is on the east side of the town between CR 46 and Ontario Street Ext. These areas require sanitary sewer service for development according to the zoning.

At the time of this report, the Ontario County Industrial Development Agency (OCIDA) intends to construct a new gravity sanitary sewer along Brickyard Road from North Street to the Canandaigua Airport as outlined in the Preliminary Engineer's Report prepared by McFarland Johnson (2016). This sewer shown on the Sewer Alignment Map prepared by McFarland Johnson is included in Appendix L.

6. Unsewered locations on Middle Cheshire Rd and Acorn Hill

These unsewered locations were identified by the Canandaigua Lake Watershed Inspector and recommended for potential future sanitary sewer service. These locations are in immediate proximity of existing sewers. These locations are:

- Acorn Hill Drive
- Middle Cheshire Road between West Ridge Run and Clark Meadows Way
- Middle Cheshire Road between Laura Lane and Timberline Drive

There is no immediate identified need for sanitary sewer service expansion to these areas, but due to the close proximity, it is likely sewer extension will occur when needed by residents. The Fox Ridge development is required to provide sanitary sewer service to the 5 parcels along the North-West boundary of the development as a condition of approval by the County for this project.

C. RECOMMENDATIONS

1. Potential Future Sanitary Service Areas

After review of the above mapping and materials, the SMPPT recommended the following areas for potential future sanitary sewer service:

- The Hamlet of Cheshire
- Grandview Park Area
- CR 28 Area, south of the intersection of Risser.
- Unsewered locations on Middle Cheshire Rd and Acorn Hill

These locations have been identified on the Potential Future Sanitary Service Areas map included in Appendix M. This map shows the existing sanitary sewer

system, potential future sanitary service areas and the topography of the Town.

2. Farmland and Environmental Protection

In recognition of the need for future sanitary sewer expansion, the SMPPT and CIC also noted a strong need to balance Farmland/Environmental Protection in keeping with the recommendations of the Town's Comprehensive Plan. The SMPPT outlined actions to mitigate the potential negative impacts as a result of sanitary sewer expansion in close proximity to farmland and environmentally sensitive areas of the Town. Those actions include:

- Continuing to support the PDR program to protect significant and functional farmland in the Town.
- Adopting service lateral restrictions for districts that may have negative impacts to agricultural lands. An example of a typical service lateral restriction resolution is included in Appendix N.
- Designing future sanitary sewer expansions utilizing technologies that limit the future expansion of the system beyond the intended service area. Those technologies include package wastewater treatment systems and low pressure sewers. Future expansion from these technologies is limited by treatment and/or conveyance capacity.

V. RECENT DEVELOPMENT PATTERNS

In general, development in the Town of Canandaigua since 2009 occurred north of the City and generally between Brickyard Road, CR 28, and south of the Padelford Greenway. This development is in accordance with the Town's Comprehensive Plan since this area is identified as one of the three growth nodes. Additionally, the development has occurred in the immediate vicinity of Outhouse Park as a result of the Happiness House project. The more significant developments have been comprised of apartments and townhomes reputedly appealing to the aging population of the County.

The following analysis will review the recent development patterns in the Town of Canandaigua and compare it with the stated reserve capacities identified in the most recent IMA between the City/County is dated June 11th, 2009. This results of this analysis will provide a benchmark to the remaining capacities at the connection points to the City sewer system with reference to the IMA stated capacities. This analysis assumes that Canandaigua developments approved prior to 2009 are already accounted for and not part of the stated reserve capacities. The following table lists the major developments in the Town of Canandaigua since 2009 that contribute to the County sewer system:

Table V.1: Recent Major Developments (post 2009)

<u>Development Name</u>	<u>Approved Units (EDUs)</u>	<u>Pump Station Impact</u>	<u>Connection Point Impact</u>
Candlewood Apts.	32	N/A	North Street Interceptor
Veterans Housing	48	N/A	North Street Interceptor
DePaul Apts.	48	N/A	North Street Interceptor
S.T.C	317	Fire Hall PS (1N)	North Street Interceptor
Happiness House	144	Outhouse PS	North Street Interceptor
Goodman Apartments	24	N/A	North Street Interceptor
Hammocks	200	N/A	Amber Meadows
Holiday Inn Express	75	Lake Shore PS	Super 8 sewer (city)

A. IMPACTS TO THE NORTH STREET INTERCEPTOR

In addition to the above major subdivisions, the Ontario County Industrial Development Agency (OCIDA) is in the preliminary phase of extending a gravity sewer along Brickyard Road from North Street to the Canandaigua airport. This project is estimated to ultimately contribute an additional 33,000 GPD of flow to the North Street Interceptor or based on 300 GPD/EDU, approximately 110 EDUs. Since 2009, development in the Town of Canandaigua has approved a total 723 EDUs (including OCIDA) contributing to the North Street Inceptor. The remaining reserve capacity is 1,560 EDUs (stated reserve capacity circa 2009) less 723 EDUs = 837 EDUs.

Table V.2: North Street EDU Summary (post 2009)

<u>Flow Source</u>	<u>EDUs</u>	<u>Notes</u>
Candlewood Apts.	32	
Veterans Housing	48	
DePaul Apts.	48	
Happiness House	144	
Goodman Apartments	24	
S.T.C.	317	
OCIDA Airport Sewer	110	Proposed
Total	723	Excludes I/I Impacts

B. IMPACTS TO THE outhouse PUMP STATION (PS)

The Happiness House project contributes flow to the Outhouse PS. This pump station has a total capacity of 540 EDUs. Already contributing to this pump station is the Old Brookside PUD that includes 419 EDUs at full build out and the Town of Canandaigua facilities that is estimated to be approximately 7 EDUs. Adding the Happiness House project to the existing load to the PS yields 540 EDUs, therefore on an EDU basis, this pump station is near or at

capacity. The following table summarizes the EDUs contributing flow to this pump station:

Table V.3: Outhouse PS EDU Summary

<u>Flow Source</u>	<u>EDUs</u>	<u>Notes</u>
Old Brookside PUD	419	
Happiness House	144	
Town Highway/Hall	7	
Total	540	Excludes I/I Impacts

C. IMPACTS TO THE FIRE HALL RD PS (1N)

The Smart Systems Technology Center (S.T.C.) project contributes flow to the Fire Hall Rd PS. As a result of the S.T.C. project, the County is in the process of upgrading the Fire Hall Rd pump station. This pump station will have an estimated total capacity of 1,020 EDUs upon completion. At the time of the sewer capacity analysis performed by Bergmann & Associates, the dry weather flow contributing to the Fire Hall Rd PS was 95,000 GPD or approximately 317 EDUs using 300 GPD/EDU. S.T.C will contribute an estimated additional 317 EDUs as full build out based on the estimated projected flows.

Since the time of the sewer capacity analysis, the Town of Canandaigua has approved the CenterPoint Town Home project totaling 109 EDUs. This is part of the CenterPoint PUD with an overall approved density of 461 EDUs (approved prior to 2009). Phase 3 of the CenterPoint apartments remains undeveloped at the time of this report. Phase 3 represents a total of 122 units.

The table below summarizes the EDUs contributing to this pump station. According to flow data collected as part of the Sewer Capacity Analysis (Bergmann & Associates), the contributing sewershed area to the Fire Hall Rd Pump Station experiences significant Inflow and Infiltration (I/I). It would appear that after the pump station is upgraded that there will be some capacity remaining for future development.

Table V.4: Fire Hall Rd PS EDU Summary

<u>Flow Source</u>	<u>EDUs</u>	<u>Notes</u>
Existing (Dry Weather) Flow	317	
S.T.C	317	
CenterPoint Town Homes.	109	Approved after 2014
CenterPoint Apartment (Phase 3)	122	Pending
Total	865	Excludes I/I Impacts

VI. PROJECTED DEVELOPMENT PATTERNS

The Genesee – Finger Lakes Regional Planning Council (GFLRPC) indicates that the Town of Canandaigua is still considered as an area for future population growth. It is therefore anticipated that a continued development pressure will be present over the same planning period. In addition to continued commercial and industrial development, the Town will also continue to develop its' housing based on the needs of the population, including apartments, townhomes, single family homes, etc. It is beyond the scope of this document to determine which form of residential housing is required or more likely to occur to meet the future growth needs of the Town.

The Town's population is projected to increase by 1,855 over the planning period. Using the 2010 census data, there are 2.65 persons per dwelling. The population increase can then be estimated to need roughly an additional 700 single family dwellings over the planning period.

It is anticipated that future residential development will occur in the immediate proximity of public sewers with available capacity, in locations where the zoning is favorable to this type of development, and where the topography will allow for entrance to the public sewer. Sanitary sewer extension will most likely be driven by the development pressure based on perceived market needs.

A. POSSIBLE FUTURE GROWTH AREAS

1. SCR-1:

The area of the Town that is in agreement with these above conditions is the lands currently zoned SCR-1. This area of the Town is likely to experience residential development pressure. A probable maximum build out analysis of vacant/undeveloped land in this zoning district was performed to develop a conservative number of potential future EDUs. The probable maximum build out analysis did not consider the conservation subdivision approach as the intent is to develop a conservative number.

The probable maximum build out analysis considered vacant parcels in the SCR-1 with property class codes 311, 314 and 322 as well as agriculturally vacant parcels with property class codes 105 and large rural residences with a property class code of 240. The analysis excluded the large parcel already associated with a larger common development and the lands owned by the City. The results of this analysis show these lands could conservatively yield and additional 1,032 EDUs. A summary of the analysis is included in Appendix O.

Development of this area would ultimately discharge to either the West Lake Road interceptor or the Villas sewer. The Villas sewer reserve capacity is unknown at the time of this report. The West Lake Road interceptor appears to have adequate capacity for full build out. Additionally a portion of these future EDUs likely discharge to the three pump station on West Lake Road. Based on the current capacities, pump station 05W appears to have adequate capacity. Pump station 04W would require increased capacity in the event that pump station 05W reaches capacity, under full build out conditions. Pump station 01W appears to have adequate capacity.

2. Outhouse Park Area

Another area of the Town that may experience residential growth pressure is the lands immediately to the West of Outhouse Park between CR 30 and Buffalo Street Extension. The area is currently zoned AR-2 and one of the large parcels is owned by the Town of Canandaigua as open space. The Town owned parcel is not included in the build out analysis. It also excludes the parcel owned by Genesee Media Corporation. The build out analysis considered parcels with a property class code of 311, 120, 240 and 210. The results of this analysis show these lands could conservatively yield an additional 318 EDUs. A summary of the analysis is included in Appendix O.

Development of this area would ultimately discharge to the North Street interceptor sewer. It would appear that this connection point has adequate reserve capacity to handle flows from this area of the Town. Additionally, flows generated from this area will discharge to the Outhouse Pump Station. As stated previously in this report, the Outhouse Pump Station is near or at its capacity with the number of EDUs currently allocated to the station. Improvements to this pump station would be required to handle the additional flows as a result of development in this area.

3. Uptown Area

Another area of the Town that is likely to experience residential growth pressure is the lands immediately north of the City between Brickyard and CR 28 and generally south of Thomas Road. The area has various zoning designations and a large area is part of the Town's Mixed Use Overlay (MUO). Based on the MUO regulations, the permitted development of vacant lands in the MUO that would result in the greatest density is in accordance with the MR zoning with 8 units/acre. The build out analysis considered parcels with a property class code of 210, 240, 311, 314, 322, and 330. The results of this analysis show these lands could conservatively yield and additional 2,312 EDUs. A summary of the analysis is included in Appendix O.

Development of this area would ultimately discharge to the North Street interceptor sewer. This connection point does not have adequate reserve capacity to handle all the flows from this area of the Town. Additionally, some of the additional flows generated from this area will discharge to the Fire Hall Rd Pump Station. This pump station once upgraded should have capacity to serve the contributing areas.

4. MUO-2 Area

This area is the most northern portion of the Town in the immediate vicinity of NYS Rte. 332. This area is considered in the Joint Sewer Master Plan. The sewer, a 12" gravity sewer installed as part of the Purdy/Mobile Road Sewer Project, has adequate capacity to serve the future development of this area.

5. NYS Rte. 364 Corridor Area

The NYS Rte. 364 area is on the eastern side of the Town just south of 5 & 20 West. This area is zoned CC, R-1-20, MH and MR. This area is noted per the map in Appendix J as experiencing development pressure. This area currently has public water and sewer. Development of this area would ultimately discharge to the East Lake Road Interceptor sewer. This connection point does adequate reserve capacity to handle all the flows from this area of the Town.

VII. CAPITAL IMPROVEMENTS

The following capital improvements outline potential sewer projects to three of the areas identified by the SMPPT. Each capital improvement considered alternatives including gravity sewer, pump station and forcemain, regional package treatment systems, grey water sewers, and low pressure sewers. The preferred method for sanitary service is based on the alternative having the lowest present worth and therefore the lowest financial impact to the potential service areas.

A. CHESHIRE SEWER SERVICE AREA

The first potential sanitary sewer service area evaluated is located along NYS Route 21 immediately north of the intersection with Wells Curtice Road. It includes 69 parcels of land, the majority of which are residential (53 parcels are single family homes, two family homes, and three family homes). Five parcels are vacant residential parcels. The remaining 11 parcels are commercial, office building, one story multiuse, social organization, religious, government, and a fire station.

Using an estimated 3 people per single family home, 6 people per two family home, and 9 people per three family home and flow of 100 gallons per day (gpd) per person, gives us an estimated average daily flow of 19,800 gpd for the 58 occupied and vacant residential parcels. Water usage records for the remaining 11 parcels of land were requested and obtained from the Town which showed that the 2013 and 2014 water usage from each of these parcels was less than the 300 gpd estimate used for each single family home. The total estimated average daily flow from this potential service area is approximately 20,500 gpd and consists of a total of 74 Equivalent Dwelling Units (EDUs).

1. Cheshire Alternatives:

The following four alternatives were considered for providing sanitary sewer service to this area:

- a. Gravity collector sewer along NYS Route 21 through the potential sewer area; pump station at the lowest ground surface location near NYS Route 21 intersection with Wells Curtice Road; force main from pump station

along Wells Curtice Road, Johnson Road, and Middle Cheshire Road; with tie-in to existing gravity sewer system along Foster Road.

- b. Septic Tank Effluent Pumping collection system located behind the buildings along NYS Route 21 through the potential sewer area; transmission force main from the NYS Route 21 intersection with Wells Curtice Road along Wells Curtice Road, Johnson Road, and Middle Cheshire Road; with tie-in to existing gravity sewer system along Foster Road.
- c. STEP collection system located behind the buildings along NYS Route 21 through the potential sewer area to an on-site wastewater treatment facility located near the NYS Route 21 intersection with Wells Curtice Road; with discharge to stream down Menteth Gully.

A map of the forcemain alternatives considered for the Cheshire Sewer Area is included in Appendix P. The selected forcemain alternative is shown as Alternative 2 on the map. The estimated capital and O&M costs for each of these alternatives are described in detail below.

2. Alternative #1: Gravity collector sewer along NYS Route 21; pump station near NYS Route 21 intersection with Wells Curtice Road; force main from pump station along Wells Curtice Road, Johnson Road, and Middle Cheshire Road; with tie-in to existing gravity sewer system along Foster Road.

- a. Construction Cost:

8" Diameter Gravity Collector Sewer -	
4,480 feet (\$110/foot) =	\$492,800

Manholes - 4,480 feet / 150 feet = 30 manholes

30 manholes (\$4,500 each) =	\$135,000
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Lateral Connections within ROW

69 connections (30 feet) (\$55/foot) =	\$113,900
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	NYS Highway Jack and Bore	
	100 feet (\$400/foot) =	\$40,000
	 Main Pump Station	
	(with emergency power generator) =	\$220,000
	 Force Main	
	9,200 feet (\$80/foot) =	\$736,000
	 Connection to Existing Sewer Manhole =	<u>\$2,500</u>
	Subtotal	\$1,740,200
	10% Construction Contingencies	<u>\$174,000</u>
	Total Construction Cost	\$1,914,200
	25% Engineering, Legal & Admin Allowance	<u>\$478,600</u>
	Total Project Cost	\$2,392,800
b.	O&M Annual Cost:	
	74 EDUs (\$325 per EDU) =	\$24,050
	Pump Station Electricity and Maintenance =	<u>\$2,400</u>
	Total Annual O&M Cost	\$26,450
c.	Total Project Present Worth	
	Total Project Cost	\$2,392,800
	Present Worth of O&M Cost (20 years @ 3%)	<u>\$393,500</u>
	Total Project Present Worth	\$2,786,300
d.	Total Annual Cost per EDU (loan at 2.5% over 30 years)	
	New Debt Service (\$2,392,800) (0.04778) / 74 EDUs =	\$1,545
	O&M Annual Cost = (\$26,450) / 74 EDUs =	<u>\$357</u>
	Total Annual Cost per EDU	\$1,902

3. Alternative #2: Septic Tank Effluent Pumping collection system behind the buildings along NYS Route 21; transmission force main from NYS Route 21 intersection with Wells Curtice Road along Wells Curtice Road, Johnson Road, and Middle Cheshire Road; with tie-in to existing gravity sewer system along Foster Road.

a. Construction Cost

1,000 gallon Septic Tank Effluent Pumping System	
74 EDUs (\$7,020 each) =	\$519,500
Collection Forcemain (2" diameter)	
4,500 feet (2) (\$45/foot) =	\$405,000
Transmission Forcemain (3" diameter)	
9,200 feet (\$50/foot) =	\$460,000
Connection to Existing Sewer Manhole =	<u>\$2,500</u>
Subtotal	\$1,387,000
10% Construction Contingencies	\$138,700
Total Construction Cost	\$1,525,700
25% Engineering, Legal & Admin Allowance	<u>\$381,400</u>
Total Project Cost	\$1,907,100

b. O&M Annual Cost

74 EDUs (\$325 per EDU) =	\$24,050
STEP System	<u>\$7,200</u>
Total Annual O&M Cost	\$31,250

c. Total Project Present Worth

Total Project Cost	\$1,907,100
Present Worth of O&M Cost (20 years @ 3%)	<u>\$464,900</u>
Total Project Present Worth	\$2,372,000

d.	Annual Cost per EDU (loan at 2.5% over 30 years)	
	New Debt Service (\$1,907,100) (0.04778) / 74 EDUs =	\$1,231
	O&M Annual Cost (\$31,250) / 74 EDUs =	<u>\$422</u>
	Total Annual Cost per EDU	\$1,653

4. Alternative #3: Septic Tank Effluent Pumping collection system behind the buildings along NYS Route 21 to an on-site wastewater treatment facility located near the NYS Route 21 intersection with Wells Curtice Road; with discharge to stream down Menteth Gully.

a.	Construction Cost:	
	1,000 gallon Septic Tank Effluent Pumping System	
	74 EDUs (\$7,020 each) =	\$519,500
	Collection Forcemain (2" diameter)	
	4,500 feet (2) (\$45/foot) =	\$405,000
	Transmission Forcemain (3" diameter)	
	1,000 feet (\$50/foot) =	\$50,000
	On-site WWTP (per Orenco proposal)	
	25,000 gallon Flow EQ / Pre-anoxic Tank =	\$51,900
	2-stage Advan Tex Treatment System =	\$692,100
	Discharge Equipment =	\$3,600
	Ancillary Equipment =	\$78,700
	Shipping, Commissioning & Training =	\$68,500
	Control Building =	\$40,000
	Flow Meter =	\$10,000
	Ultraviolet Disinfection =	\$55,000
	Reaeration Tank & Equipment =	\$25,000
	Sitework =	\$100,000
	Utilities Service =	\$50,000
	Emergency Power Generator =	\$75,000
	MEP Work =	\$140,000

	Subtotal	\$1,389,800
	Effluent Discharge Pipe	
	1,000 feet (\$110/foot) =	<u>\$110,000</u>
	Subtotal	\$2,474,300
	10% Construction Contingencies	<u>\$247,400</u>
	Total Construction Cost	\$2,721,700
	25% Engineering, Legal & Admin Allowance	<u>\$680,400</u>
	Total Project Cost	\$3,402,100
b.	O&M Annual Cost	
	STEP System	\$7,200
	Package Treatment Facility =	\$14,946
	Permits, sampling, etc. =	<u>\$2,400</u>
	Total O&M Annual Cost	\$24,546
c.	Total Project Present Worth	
	Total Project Cost	\$3,402,100
	Present Worth of O&M Cost (20 years @ 3%)	<u>\$365,200</u>
	Total Project Present Worth	\$3,767,300
d.	Annual Cost per EDU (loan at 2.5% over 30 years)	
	New Debt Service	
	(\$3,402,100) (0.04778) / 74 EDUs =	\$2,197
	O&M Annual Cost (\$24,546) / 74 EDUs =	<u>\$332</u>
	Total Annual Cost per EDU	\$2,529

Summary of Cost Estimates for Alternatives:

	<u>Project Cost</u>	<u>Annual O&M</u>	<u>Total Project Present Worth</u>	<u>Annual Cost per EDU</u>
Alternative #1	\$2,392,800	\$26,450	\$2,786,300	\$1,902
Alternative #2	\$1,907,100	\$31,250	\$2,372,000	\$1,653
Alternative #3	\$3,402,100	\$24,546	\$3,767,300	\$2,529

While Alternative #2 has the lowest overall total cost it is worth noting that lack of public buy in of the Septic Tank Effluent Pumping System may in fact result in Alternative #1 being the preferred alternative. As part of the district formation process, both alternatives should be presented in a public informational meeting and selected based on the potential district's preference.

B. GRANDVIEW PARK SEWER SERVICE AREA

The second potential sanitary sewer service area is located in the Grandview Park area and is bounded by Gorham Street, East Street and the Conrail Railroad. This area is located in the northeast section of the Town (immediately adjacent to the east boundary line of the City of Canandaigua). This area was studied for potential sanitary sewer extension by the Town in 2006 (*Feasibility Study for the Installation of Sanitary Sewers in the RTE 21/Grandview Park/CR 4 area of the Town of Canandaigua*, October 2006). At that time, this area was stated to have a high priority for sanitary sewer service based on the deteriorating conditions of the existing septic systems. Poor performance of the existing septic systems is most likely attributed to age and less than adequate soil conditions. This area also contains a large population density and is in close proximity to existing sewers within the City of Canandaigua.

Sanitary sewer service in this particular area would contribute to solving the long-term environmental problem of pollution of the area's water bodies caused by raw sewage discharges from failing on-site septic systems. Of particular concern is the Canandaigua Lake Outlet, which is a Class C stream, which receives surface runoff and groundwater

from this area. The Class C stream designation means that the best use for this stream is fishing and fish propagation.

Using an estimated 3 people per single family home and flow of 100 gallons per day (GPD) per person gives an estimated average daily flow of 6,000 GPD for the 20 parcels and Equivalent Dwelling Units (EDUs) located in this Grandview Park area.

A low pressure sewer system is proposed to serve this area with small diameter sewer force mains installed along Grandview Park, East Street and Gorham Street with the point of discharge to the City of Canandaigua sanitary sewer system being located at the intersection of East Street and Gorham Street.

a.) Construction Cost

1 ¼" HDPE Sanitary Sewer Lateral	
1,000 feet (\$11/foot) =	\$11,000
2" HDPE Sanitary Sewer Force Main	
350 feet (\$15/foot) =	\$5,250
3" HDPE Sanitary Sewer Force Main	
1,600 feet (\$20/foot) =	\$32,000
4" HDPE Sanitary Sewer Force Main	
75 feet (\$25/foot) =	\$1,875
20 Simplex Individual Grinder Pumps =	\$94,000
20 Check Valves / Curb Box Assemblies =	\$6,000
20 Flushing Connection Handholes =	\$5,000
Asphalt Roadway Repair =	\$5,000
Driveway Pavement Repair =	\$8,400
Lawn and Turf Repair =	\$4,515
Maintenance and Protection of Traffic =	\$1,000
Mobilization =	<u>\$1,000</u>
Subtotal	\$175,000

10% Construction Contingencies	<u>\$17,500</u>
Total Construction Cost	\$192,500
25% Engineering, Legal and Admin Allowance	<u>\$48,100</u>
Total Project Cost	\$240,600
b.) O&M Annual Cost	
20 EDUs (\$325 per EDU) =	\$6,500
Low Pressure Sewer System =	<u>\$2,000</u>
Total Annual O&M	\$8,500
c.) Total Project Present Worth	
Total Project Cost	\$240,600
Present Worth of O&M Cost (20 years @3%)	<u>\$126,500</u>
Total Project Present Worth	\$367,100
d.) Annual Cost per EDU (loan at 2.5% over 30 years)	
New Debt Service (\$240,600) (0.04778) / 20 EDUs =	\$575
O&M Annual Cost (\$8,500) / 20 EDUs =	<u>\$425</u>
Total Annual Cost per EDU	\$1,000

C. COUNTY ROAD 28

The third potential sanitary sewer service area evaluated is located along County Road 28, immediately south of Risser Road. It includes a total of 48 parcels of land, the majority of which are residential (38 parcels are single family homes, two family homes, three family homes, and rural residential units). Eight parcels are vacant residential parcels. The remaining two parcels are a mini storage facility and a special school.

Using an estimated 3 people per single family home, 6 people per two family home, and 9 people per three family home and flow of 100 gallons per day (gpd) per person, gives an estimated average daily flow of 15,000 GPD for the 46 occupied and vacant residential parcels. Water usage records for the remaining two parcels of land were requested and obtained from the Town which showed that the mini storage facility was off and the special

school used just under 400 gpd. The total estimated average daily flow from this potential service area is about 15,700 gpd and consists of a total of 52 Equivalent Dwelling Units (EDUs).

Using the results obtained from the evaluation of the alternatives for the NYS Route 21 sewer area as a guide, the two lowest total cost alternatives were considered for this County Road 28 service area:

- Gravity collector sewer along County Road 28; pump station located at the lowest ground surface elevation near the County Road 28 intersection with Risser Road; force main from the pump station south along County Road 28; with tie-in to the existing gravity sewer system along Parkside Drive.
- Septic Tank Effluent Pumping collection system installed behind the buildings; transmission force main from the County Road 28 intersection with Risser Road south along County Road 28; with tie-in to the existing gravity sewer system along Parkside Drive.

A map of the alternatives considered for the CR 28 Sewer Area is included in Appendix Q. The capital construction and O&M costs for both of these alternatives are described in detail below.

1. Alternative #1: Gravity collector sewer along County Road 28; pump station at the lowest ground surface elevation near the County Road 28 intersection with Risser Road, force main from the pump station south along County Road 28; with tie-in to the existing gravity sewer system along Parkside Drive.

- a. Construction Cost

- 8" Diameter Gravity Collector Sewer

- 5,200 feet (\$110/foot) = \$572,000

- Manholes

	5,200 feet / 150 feet per manhole = 35 manholes	
	35 manholes (\$4,500 each) =	\$157,500
	Lateral Connections within ROW	
	48 connections (30 feet) (\$55/foot) =	\$79,200
	Main Pump Station (with emergency power generator) =	\$220,000
	Force Main	
	3,700 feet (\$80/foot) =	\$296,000
	Connection to Existing Sewer Manhole =	<u>\$2,500</u>
	Subtotal	\$1,327,200
	10% Construction Contingencies	<u>\$132,700</u>
	Total Construction Cost	\$1,459,900
	25% Engineering, Legal & Admin Allowance	<u>\$365,000</u>
	Total Project Cost	\$1,824,900
b.	O&M Annual Cost	
	52 EDUs (\$325 per EDU) =	\$16,900
	Pump Station Electricity & Maintenance =	<u>\$2,400</u>
	Total Annual O&M Cost	\$19,300
c.	Total Project Present Worth	
	Total Project Cost	\$1,824,900
	Present worth of O&M Cost (20 years @ 3%)	<u>\$287,100</u>
	Total Project Present Worth	\$2,112,000
d.	Annual Cost per EDU (loan at 2.5% over 30 years)	
	New Debt Service (\$1,824,900) (0.04778) / 52 EDUs =	\$1,677
	O&M Annual Cost (\$19,300) / 52 EDUs =	<u>\$371</u>
	Total Annual Cost per EDU	\$2,048

2. Alternative #2: Septic Tank Effluent Pumping collection system installed behind

the buildings; transmission force main from the County Road 28 intersection with Risser Road south along County Road 28; with tie-in to the existing gravity sewer system along Parkside Drive.

a. Construction Cost

1,000 gallon STEP System (per Orenco proposal)

52 EDUs (\$7,020 each) = \$365,000

Collection Forcemain (2" diameter)

5,200 feet (2) (\$45/foot) = \$468,000

Transmission Forcemain (3" diameter)

3,700 feet (\$50/foot) = \$185,000

Connection to Existing Sewer Manhole = \$2,500

Subtotal \$1,020,500

10% Construction Contingencies \$102,100

Total Construction Cost \$1,122,600

25% Engineering, Legal and Admin Allowance \$280,700

Total Project Cost \$1,403,300

b. O&M Annual Cost

52 EDUs (\$325 per EDU) = \$16,900

STEP System \$9,600

Total Annual O&M Cost \$26,500

c. Total Project Present Worth

Total Project Cost \$1,403,300

Present Worth of O&M Cost (20 years @ 3%) \$394,300

Total Project Present Worth \$1,797,600

d. Annual Cost per EDU (loan at 2.5% over 30 years)

New Debt service (\$1,403,300) (0.04778) / 52 EDUs = \$1,289

O&M Annual Cost (\$26,500) / 52 EDUs = \$510

Total Annual Cost per EDU	\$1,799
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Summary of Cost Estimates for Alternatives:

	<u>Project Cost</u>	<u>Annual O&M</u>	<u>Total Project Present Worth</u>	<u>Annual Cost per EDU</u>
Alternative #1	\$1,824,900	\$19,300	\$2,112,000	\$2,048
Alternative #2	\$1,403,300	\$26,500	\$1,797,600	\$1,799

Therefore, Alternative #2 has the lowest overall total cost and is recommended for implementation.

VIII. POTENTIAL FUNDING SOURCES

There are several funding assistance programs that can be considered by the Town to provide low interest loans and potential grants for implementation of these proposed improvement projects.

A. CLEAN WATER STATE REVOLVING FUND

The New York State Environmental Facilities Corporation (NYSEFC) administers the Clean Water State Revolving Fund (CWSRF) on behalf of the NYS Department of Environmental Conservation. The CWSRF provides financing to municipalities for planning, design, and construction of eligible water quality projects (including sanitary sewer system extensions and wastewater treatment plants). Low cost financing, in the form of low interest loans and grants, are available.

Short-term financing is available at 0% interest for up to 3 years in order to design and construct eligible sanitary facilities, with long-term financing being offered for up to 30 years. Reduced interest rate long-term financing is available as low as 0% interest for up to 30 years for municipalities meeting the financial hardship criteria.

The first step in obtaining financing through the CWSRF is to get the project listed. Based on information provided by the municipality on the CWSRF Project Listing Form, the NYSEFC will score the project and list it on the Project Priority List (PPL).

To be included on the Annual PPL of the Intended Use Plan (IUP), the municipality must submit an approvable engineering report, project schedule, and Smart Growth Assessment Form. The Grandview Park Sewer Area is currently listed on the Multi-Year list with the CWSRF program.

B. COMMUNITY DEVELOPMENT BLOCK GRANTS

Community Development Block Grant (CDBG) program gives grants directly to states, which then allocate them to small cities and non-urban counties. Grants may be used for

public infrastructure projects (e.g., wastewater and drinking water facilities). Seventy (70) percent of grant funds must be used for activities that benefit low and moderate income people.

HUD administers the Small Cities program in New York. Water, sewer and other public facility projects are eligible especially those that protect public health and reduce environmental risk. Villages, small towns, and cities with population of 50,000 or less are eligible.

C. USDA – RURAL DEVELOPMENT

The U.S. Department of Agriculture – Rural Development offers a similar funding assistance program to municipalities for water and wastewater projects. Both low interest loans (covering a period of 38 years) and grants (up to 75%) are available through this program. Loan interest rates are based on the Median Household Income (MHI) of the service area. To qualify, population of the municipality must be less than 10,000 people which, unfortunately, the Town of Canandaigua does not meet.

IX. CONCLUSIONS

The Town should continue to encourage growth and development within its identified growth nodes. It would appear that MUO-1 and MUO-2 are adequately served in the near future by the existing connection points to the City and Town of Farmington respectively. The long term build out of the MUO-2 area of the Town may require increased facilities to accommodate the ultimate flows generated at full build out. The Town should monitor growth in this node respective to the identified capacities. Development of the MUO areas of the Town would appear to fill the need for Townhome, condominium, and apartments style dwellings, but single family residential homes may be more likely to develop in other areas of the Town.

The MUO-3, while identified as a growth node, does not appear ready for the intended growth. The Town should revisit designation of this area as a growth node and potentially revise the MUO status. As part of this endeavor, the Town should consider the NYS Rte. 364 area since it already has sanitary sewer service and public water.

The priority areas for future sanitary sewer service identified by the SMPPT analysis should be considered in order:

1. Hamlet of Cheshire
2. Grandview Park
3. CR 28 Area

The Town should consider submitting funding applications to both the CDBG/CWSRF programs for these areas. The Town should also consider performing income surveys in these areas to determine if financial hardship exists in these areas relative to sewer district creation. It is reasonable to assume that implementation of the above sewer extensions will be as a result of both financial aid and public interest and may not necessary occur in the order of priority listing.

The Town of Canandaigua is a growing community with clear objectives throughout its

planning documents to maintain its agrarian character, protect Canandaigua Lake and the environmentally sensitive areas of the Town. The Town must balance its growth with these objectives. A key factor in managing the growth of the Town will be to limit the expansion of sanitary sewers into areas not envisioned for future development. The Town should continue to pursue Purchase of Development Rights and conservation easements in key locations to limit future expansion of sanitary sewers. These locations are generally lands zoned AR-2 adjacent to lands zoned for more intensified development such as the SCR-1 and R-1-30 zoned areas.

X. REFERENCES

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APPENDIX A

STUDY AREA

APPENDIX B

WATERSHED MAP

APPENDIX C

TOPOGRAPHY MAP

APPENDIX D

ZONING MAP

APPENDIX E

CITY/COUNTY INTER- MUNICIPAL AGREEMENT (2009)

APPENDIX F

COUNTY SEWER DISTRICT MAP

APPENDIX G

TOWN CODE SEWER “ENVISIONMENT” MAP

APPENDIX H

SEWER SYSTEM/ZONING OVERLAY MAP

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SEWER NEED INDICATORS OVERLAY MAP

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PDR INTEREST vs. DEVELOPMENT PRESSURE OVERLAY MAP

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CANANDAIGUA AIRPORT PROPOSED SEWER MAP

APPENDIX M

POTENTIAL FUTURE SANITARY SEWER SERVICE AREAS MAP

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TYPICAL LATERAL RESTRICTION RESOLUTION

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PROBABLE MAXIMUM BUILD OUT ANALYSIS

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CHESHIRE AREA SEWER ALTERNATIVES

APPENDIX Q

CR 28 AREA SEWER ALTERNATIVES

APPENDIX R

COUNTY / CITY SEWER SYSTEM

APPENDIX S

COUNTY SEWERSHED W/ CAPACITIES