Engineer's Report

Town of Stillwater DGEIS Water Supply Evaluation

Town of Stillwater
Saratoga County, New York

September 2007

THE Chazen COMPANIES

Prepared for:

Town of Stillwater
66 School and East Street
Stillwater, NY 12170

Chazen Project No.: 30601.17

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1.0 INTRODUCTION

The Town of Stillwater has requested that The Chazen Companies prepare a Generic Environmental Impact Statement (GEIS) to evaluate the cumulative effects of growth on the Town of Stillwater over the next ten (10) years. The development of the Luther Forest Technology Campus and the resulting growth potential is the primary reason for the initiation of this effort. The Town's goal is to manage and examine the impacts of growth on the community. The focus of this report is the Town of Stillwater water system as it relates to supplying the future needs of the Town.

The criteria outlined in the Great Lakes Upper Mississippi River Board of State Public Health & Environmental Managers, "Recommended Standards for Water Works", 2003 and the ISO, "Guide for Determination of Needed Fire Flow" were referenced in the development of this report.

This report examines the current water service areas in the Town of Stillwater, evaluates water supplies within the Town and identifies potential future water service areas resulting from projected growth. It also evaluates the ability of the existing water supplies to service the future water service areas and presents project budgets for the infrastructure construction required to service the future water service areas.

2.0 TOWN WATER SERVICE

Properties in the Town of Stillwater are serviced with potable water by various Town Water Districts, private water companies, outside users to neighboring municipal water systems and individual wells. The focus of this study is to determine areas of the town that will need community water supply service if the expected growth occurs. The report identifies concepts to extend existing Town and privately owned water distribution infrastructure to service the targeted growth areas.

2.1 Town Water Districts

The Town of Stillwater currently administers four water districts, designated as Water Districts No. 1, No. 3, No. 4 and No. 5. The Town of Stillwater purchases all water for its water districts from the neighboring communities including the Village of Stillwater and the City of Mechanicville. The Town of Stillwater does not own a water supply source or facility. A map showing the locations of the various Town water service areas is attached in Appendix A.

2.1.1 Water District No. 1

Water District No. 1 is generally located between the Village of Stillwater and the City of Mechanicville along NYS Route 4, just west of the Hudson River. Water District No. 1 primarily purchases water from the Village of Stillwater with a redundant interconnection to the City of Mechanicville.

Water District No. 1 serves customers through approximately 520 service connections. In 2006, Water District No. 1 customers purchased a total of 34,707,000-gallons which equates to an average daily flow of 95,100-gpd. The maximum daily demand by Water District No. 1 in 2006 was 141,300-gallons.

2.1.2 Water District No. 3

Water District No. 3 is located in the southern portion of the Town generally along Viall Avenue (County Route 75). This area is referred to as Turning Point. Water District No. 3 purchases water from the City of Mechanicville.

Water District No. 3 serves customers through approximately 150 service connections. Usage in Water District No. 3 is measured in combination with Water District No. 4 and is further described below.

2.1.3 Water District No. 4

Water District No. 4 is located in the southeastern portion of the Town generally along Brickyard Road, between Water District No. 1 and No. 3. Water District No. 4 purchases water from the City of Mechanicville.

Water District No. 4 serves customers through approximately 98 service connections. As stated above, Water District No. 3 and Water District No. 4 are measured in combination. In 2006, the Water Districts purchased a total of 15,139,500 which equates to an average daily flow of 41,500-gpd. The maximum daily demand by the Water Districts in 2006 was 98,200-gallons.

2.1.4 Water District No. 4, Extension No. 1

Water District No. 4, Extension No. 1 is located in the southeastern portion of the Town, north of Water District No. 4. Water District No. 4, Extension No. 1 includes the Revolutionary Heights Planned Development District (RHPDD).

Engineers for the RHPDD are in the process of completing design and permitting of the subdivision which will service approximately 140 units. Construction of the subdivision has not been initiated as of this report writing.

2.1.5 Water District No. 5

Water District No. 5 is located along Stratton Lane in the eastern portion of the Town. Water District No. 5 purchases water from the Village of Stillwater.

Water District No. 5 serves customers through approximately 12 service connections. Metered data is not available for Water District No. 5.

Table 1
Summary of Existing Water Districts

Existing Water District	Number of Connections	Estimated Average Daily Demand (GPD)	Estimated Average Daily Demand per User (GPD)	Water Source
No. 1	520	95,000[1]	183	V. Stillwater
No. 3	150	25,100[1]	167	C. Mechanicville
No. 4	98	16,400[1]	167	C. Mechanicville
No. 4, Ext. No. 1	140	24,500[2]	175	C. Mechanicville
No. 5	12	2,100[2]	175	V. Stillwater

1. Flow obtained from the Town of Stillwater 2006 Water Quality Report
2. Flow is estimated based upon an assumed 175-gpd per unit

2.2 Private Water Companies

Two private water companies provide water to properties in the northwestern portion of the Town of Stillwater along the eastern shore of Saratoga Lake. The private water supplies are the Saratoga Glen Hollow Water Supply Corporation and the Saratoga Water Services. The properties served by the private water companies are not in a Town water district.

2.2.1 Saratoga Glen Hollow Water Supply Corporation

The water supply to Saratoga Glen Hollow Water Supply Corporation is groundwater wellfield which is supplied by two production wells.

Under the current NYSDEC Water Supply Application, the water supply is approved to supply 0.2-mgd.

The Saratoga Glen Hollow Water Supply Corporation serves approximately 117 metered service connections within the Saratoga Glen Hollow Subdivision. The

system's peak daily water usage of 95,000-gallons reportedly occurred on July 4, 2004.

It appears the limiting factor for water production is the Water Supply Application from NYSDEC limitation of 200,000-gpd production. Approximately 105,000-gpd is available for additional users.

The NYSDEC Design Standards for Wastewater Treatment Works estimate the wastewater design flow from a 3-bedroom single family home to be 400-gpd. For the purposes of this study, wastewater generation is assumed to be equal to water demand. The typical water usage for single family homes in the Town of Stillwater is approximately 200-gpd. The table below shows the approximate number of single family homes that the Saratoga Glen Hollow Water Supply Corporation water supply could support, given its current water supply capacity:

Table 2
Current and Potential Water Usage from Saratoga Glen Hollow Water Supply Corporation

Permitted Supply GPD	Existing Average Household Use GPD	Existing Maximum Household Use GPD	Available Resource GPD	Potential Additional Homes @ 400 GPD/Home	Potential Additional Homes @ 200 GPD/Home
200,000	23,400	95,000	105,000	263	525

2.2.2 Saratoga Water Services

Saratoga Water Services is a groundwater supply which supplies approximately 35 users in the Town of Stillwater and 1,968 users in the Town of Malta. The system's well pumps fill two ground water storage tanks which are 300,000-gallon and 752,000-gallon capacity. The system is approved by NYSDEC to supply 3,060,000-gpd.

Based on the record data from 2005 and 2006, the average daily demand of the Saratoga Water Services system is approximately 425,250-gpd. The peak daily flow over the period of record is 1,004,000-gallons.

Subtracting the peak daily flow from the approved capacity yields 2,056,000-gpd of potential reserve capacity. The actual capacity may be limited by current well pumping rates. The Saratoga Water Services service area reportedly currently has 300 approved units which area not yet on line.

The NYSDEC Design Standards for Wastewater Treatment Works estimate the design flow from a 3-bedroom single family home to be 400-gpd. The typical usage for single family homes in the Town of Stillwater is approximately 200-gpd. The table below shows the approximate number of single family homes that the Saratoga Water Services water supply could support, given its current water supply capacity:

Table 3
Current and Potential Water Usage from Saratoga Water Services

Permitted Supply GPD	Existing Average Household Use GPD	Existing Maximum Household Use GPD	Available Resource GPD	Potential Additional Homes @ 400 GPD/Home	Potential Additional Homes @ 200 GPD/Home
3,060,000	425,250	1,004,000	2,056,000	5,140	10,280

Table 4
Summary of Private Water Companies

Private Water Company	Number of Existing Connections	Estimated Current Average Daily Demand (GPD)	Estimated Average Daily Demand per User (GPD)
Saratoga Glen Hollow	117	25,000	214
Saratoga Water Services	35 Stillwater 1,968 Malta	425,250	212

2.3 Outside Users to Neighboring Municipal Systems

The City of Mechanicville serves properties in the southern portion of the Town of Stillwater which are outside users to the City of Mechanicville and are not included in a Town water district. Approximately 28 homes along Route 67 are serviced by the City of Mechanicville.

The Village of Stillwater services the Hillside Colony Mobile Home Park which is located on Lake Road west of the Village of Stillwater. Approximately 188 units are currently within the Hillside Colony Mobile Home Park which is not within a Town water district.

3.0 WATER DISRIBUTION PROJECTS UNDER CONSIDERATION – LUTHER FOREST TECHNOLOGY CAMPUS

Saratoga County is undertaking a regional water supply and distribution project to expand the water service area of the County and augment the water supply to the Luther Forest Technology Campus. The following data relative to the regional water supply and distribution project is from the Notice of Completion of Final EIS dated August 9, 2006.

The raw water source to the Saratoga County regional supply would be the Hudson River with the intake and treatment plant located in the Town of Moreau. Approximately 28 miles of transmission mains would be installed in the Towns or Cities of Moreau, Greenfield, Wilton, Saratoga Springs, Milton, Ballston, Malta and Stillwater and would terminate at the Luther Forest Technology campus in the Towns of Malta and Stillwater. The proposed water storage tank location is in the northwestern portion of the Town of Stillwater.

4.0 PUBLIC WATER SUPPLIES

4.1 City of Mechanicville

According to the City of Mechanicville Annual Drinking Water Quality Report for 2006, the City of Mechanicville obtains water from two (2) surface water reservoirs which are within the Town of Stillwater. The Mechanicville Reservoir has a storage capacity of 65 million gallons and is the primary source of water. The Terminal Reservoir, located along George Thompson Road has a capacity of 2.5 million gallons.

The City of Mechanicville operates a surface water filtration treatment plant located on George Thompson Road. The treatment process consists of flocculation, clarification and filtration. Filtered water from the treatment process is fed into a clearwell. Water from the clearwell is pumped out of the clearwell, chlorinated with

liquid sodium hypochlorite to two chlorine contact tanks. Three high lift pumps convey the finished water from the chlorine contact tanks into the distribution system and into two steel storage tanks. The combined capacity of the tanks is 2.5 million gallons.

Water from the City of Mechanicville is served to City customers through approximately 1,350 residential/commercial services. The City of Mechanicville also supplies water to the Towns of Stillwater, Schaghticoke and Halfmoon.

The City of Mechanicville water filtration plant produced 354,301,000-gallons in 2006 or an average of 971,000-gpd. The City of Mechanicville Water Treatment Plant Supervisor states that the City of Mechanicville has approximately 150,000-gpd of excess capacity.

The NYSDEC Design Standards for Wastewater Treatment Works estimate the design flow from a 3-bedroom single family home to be 400-gpd. The typical usage for single family homes in the Town of Stillwater is approximately 200-gpd. The table below shows the approximate number of single family homes that the City of Mechanicville water supply could support, given its current water supply capacity:

Table 5
Current and Potential Water Usage from the City of Mechanicville

Existing Average Household Use GPD	Existing Maximum Household Use GPD	Available Resource GPD	Potential Additional Homes @ 400 GPD/Home	Potential Additional Homes @ 200 GPD/Home
971,000	1,380,000	150,000	375	750

The table below shows the approximate number of single family homes that the City of Mechanicville can support, after the development of the Revolutionary Heights Planned Development and the addition of 140 single-family homes.

Table 6
Current and Potential Water Usage from the City of Mechanicville after Revolutionary Heights Planned Development

Existing Average Household Use GPD	Existing Maximum Household Use GPD	Available Resource GPD	Potential Additional Homes @ 400 GPD/Home	Potential Additional Homes @ 200 GPD/Home
971,000	1,380,000	122,000	305	610

4.2 Village of Stillwater

The Village of Stillwater treats drinking water from five wells which are located on a wellfield at the northeast end of Ferry Lane in the Village of Stillwater. The Village's Water Treatment Plant treats iron, manganese, sulfur and turbidity. Water is aerated, settled, filtered, disinfected and pumped to multiple storage facilities located within the Town of Stillwater.

The Village stores 688,000-gallons of finished water in its distribution system. A 200,000-gallon tank is located on the southwest portion of the distribution system in the vicinity of Hillside Colony Mobile Home Park and a 488,000-gallon tank is located on Dick Lynch Road in the northwest portion of the distribution system.

In addition to the Village storage, the Town has a 180,000-gallon elevated storage tank in the Riverside neighborhood. The Hillside Colony Mobile Home Park also stores 160,000-gallons.

Based upon discussions with the Village of Stillwater operating staff, the water system can safely produce 300-gpm for 12 hours per day for a total of 216,000-gpd. Any additional draw may impact the water treatment plant function.

An evaluation of the 2006 water production data results in an average daily flow of approximately 295,000-gpd with a maximum daily flow of 437,000-gallons which occurred on October 10, 2007. These data demonstrate that the Village system does not have capacity to serve additional users.

Table 7
Summary of Current Unallocated Capacity from the Village of Stillwater and City of Mechanicville Water Supplies

Public Water Supply	Current Unallocated Capacity Available to additional Town of Stillwater users (GPD)
City of Mechanicville	150,000
Village of Stillwater	0

5.0 POTENTIAL WATER SERVICE AREAS

TCC identified select areas of the Town which are likely to have water service within the next ten years based upon input and direction from the Town's GEIS Steering Committee and the Town's Water Superintendent. These potential service areas were identified based on the anticipated growth and the ability to provide water service from existing supplies.

The potential water service areas are shown on the map in Appendix B.

The criteria utilized in determining the hydraulic limits of the proposed service areas was to provide the minimum required fire flow at the property's road front while maintaining a minimum of 20-psi at all points in the entire water distribution system. A fire flow of 500-gpm was utilized in the analysis as required by ISO Guide for Determination of Needed Fire Flow for one and two family dwellings with more than 100-feet between buildings.

The analysis of potential service areas does not consider future land development designs. Site specific design of the water system to serve these proposed areas will be required as development plans evolve.

The areas shown for extension of the Private Water Supplies were based on discussions with the facility owners and assumptions of the steering committee. A hydraulic analysis of the private water supply distribution system was not advanced as part of this report.

5.1 Route 4 Service Area

The proposed Route 4 Service Area generally extends north from the Village of Stillwater to just south of Hanehan Road and includes properties east and west of Route 4. The Service Area would connect to and purchase water from the Village of Stillwater water system. A connection to the existing water distribution system

would be made at the northern portion of the Village at the intersection of NYS Route 4 and Stratton Lane. The extension would run north on Route 4 terminating south of Phillips Road. Properties fronting Wrights Loop, Labrador Lane, Price Road and Riverside Court would be serviced by the proposed service area. Approximately 20,000-linear feet of water main would be required as well as a meter pit at the point of connection.

Property zoning within the proposed service area is currently Low Density Residential Development District along the Hudson River as well as the largest General Business District in the Town of Stillwater.

5.2 Viall Avenue Service Area

The proposed Viall Avenue Service Area generally extends north on Viall Avenue from Water District No. 3 and includes properties east and west of Viall Avenue. The service area would connect to an existing water main on Viall Avenue at the northern end of Water District No. 3. Water to the service area would be supplied by the City of Mechanicville and would require the construction of an elevated water storage tank. The proposed water main would run north on Viall Avenue to the intersection of Vanness Road. The water main would also run east on Vanness Road and west on Graves Road to service additional lots. Approximately 8,000-linear feet of water main would be required to service this extension.

The elevated water storage tank (fluted column or spheroid style) would be in the capacity range of 1-million gallons and would include controls and remote monitoring. The tank would likely be located along the higher elevation areas of Viall Avenue, with final location determined during the land owner negotiations/final design.

All lots served by this extension are Low Density Residential with the average lot size greater than 20 acres.

5.3 Route 67 Service Area

The proposed Route 67 Service Area would extend west on Route 67 from George Thompson Road to just east of Farley Road and includes properties north and south of Route 67. The service area would connect to the existing water main at the intersection of Route 67 and George Thompson Road. The existing main carries water from the Mechanicville Filtration Plant to the two Mechanicville Storage Tanks on Devoe Road. A meter pit located at the intersection of Route 67 and George Thompson Road would be required as part of this extension. The water main would run west along Route 67 to Farley Road and include service to Sweeney Road. Approximately 8,000-linear feet of water main would be required to service this extension.

Additionally, the users in the Town of Stillwater which are currently outside users of the City of Mechanicville water system would be consolidated into a Water District to simplify the administration of the water system. No physical modification to these properties would be made.

5.4 Saratoga Lake Service Area

The proposed Saratoga Lake Service area would connect to the private water supplies, Saratoga Glen Hollow Water Supply Corporation and Saratoga Water Services. The service area shown on the map was based on input from the owners of the private water companies and suggestion of the steering committee.

6.0 WATER CAPACITY AND AVAILABILITY TO EXISTING WATER DISTRICTS

As previously noted, the Town of Stillwater does not own and operate a water supply facility and relies on neighboring municipalities and private water supplies for water service in the Town. It is likely that the water supply availability from neighboring municipalities will change over the planning period due to regulatory mandates and modifications to internal water system demands. TCC recommends that an evaluation of water supply availability be completed when any additional service areas are considered.

Prior to allocating water supply to new users, it is first necessary to reserve water capacity for property owners within the existing Water Districts who are not currently provided service.

TCC identified existing vacant/developable parcels within each of the existing Water Districts and potential service areas and completed a buildout analysis as a preliminary step of the GEIS. The buildout analysis was used to estimate the ultimate number of residential and non-residential users within each of the existing Water Districts. The required reserve capacity was then identified for the Village of Stillwater and City of Mechanicville water systems to service the ultimate number of users in the Town of Stillwater Water Districts.

6.1 Buildout Analysis Summary

6.1.1 Residential Users

The following table is a summary of the additional number of residential dwelling units in each existing water district predicted by the buildout analysis and the associated water demand.

The NYSDEC Design Standards for Wastewater Treatment Works estimate the design flow from a 3-bedroom single family home to be 400-gpd. The typical usage for single family homes in the Town of Stillwater is approximately 200-gpd.

Table 8
Estimated Water Demand from Future Residential Development within Existing Water Districts

Existing Water District	Water Source	Additional Dwelling Units (1)	Estimated Flow (GPD)	
			At 400-gpd Design Flow	At 200-gpd Typical Flow
Water District No. 1	Village of Stillwater	84	33,600	16,800
Water District No. 3	City of Mechanicville	97	38,800	19,400
Water District No. 4	City of Mechanicville	37	14,800	7,400
Water District No. 5	Village of Stillwater	0	0	0
TOTAL		**146**	**87,200**	**43,600**

(1) From GEIS Buildout Analysis

6.1.2 Non-Residential Users

The following table is a summary of the additional non-residential building square footage in each existing water district predicted by the buildout analysis and the associated water demand.

The NYSDEC Design Standards for Wastewater Treatment Works suggest a design average daily flow from office buildings 0.1-gpd per square foot. Please note that the wastewater generation may vary based upon the property use and occupant.

Table 9
Estimated Water Demand from Future Non-Residential Users within Existing Water Districts

Existing Water District	Water Source	Non-Residential Building Square Footage (1)	Estimated Flow (GPD)
Water District No. 1	Village of Stillwater	317,374	31,737
Water District No. 3	City of Mechanicville	0	0
Water District No. 4	City of Mechanicville	939,371	93,937
Water District No. 5	Village of Stillwater	10,519	1,052
TOTAL		**1,267,264**	**126,726**

(1) From GEIS Buildout Analysis

6.2 Water Supply Capacity Evaluation by Water Supply Source

6.2.1 Village of Stillwater Water Supply

The reserve capacity of the Village of Stillwater water supply allocated to undeveloped properties is based on the additional number of homes and non-residential development projected by the buildout analysis in Water District No. 1 and Water District No. 5.

The total number of additional homes projected by the buildout analysis in Water District No. 1 and Water District No. 5 is 84 and the additional square footage of non-residential development is 327,893 square-feet. The total estimated water demand from Water District No. 1 and Water District No. 5 is between 49,589-gpd and 66,389-gpd.

The Village of Stillwater does not currently have the suggested reserve capacity.

In addition to the Town of Stillwater Water Districts, the Hillside Colony Mobile Home Park ultimate water demand should also be considered in evaluating the Village of Stillwater's water supply capacity. The Hillside Colony Mobile Home Park is permitted to expand from the current 188 units to a maximum of 366 units.

Based on water meter records, Hillside Colony Mobile Home Park's 2006 annual consumption was 15,412,960 gallons or 42,227-gpd. The average daily flow to each unit was 225-gpd. The additional 178 permitted units would demand an additional 40,050-gpd.

6.2.2 City of Mechanicville Water Supply

The reserve capacity of the City of Mechanicville water supply allocated to undeveloped properties is based on the additional number of homes projected by the buildout analysis in Water District No. 3 and Water District No. 4.

The total number of additional homes projected by the buildout analysis in Water District No. 3 and Water District No. 4 is 134 and the additional square footage of non-residential development is 939,371 square-feet. The total estimated water demand from Water District No. 3 and Water District No. 4 is between 120,737-gpd and 147,537-gpd.

The reserve capacity assigned to Water District No. 3 and Water District No. 4 is very near the current reserve capacity available to the Town of Stillwater from the City of Mechanicville water supply.

7.0 WATER CAPACITY AND AVAILABILITY TO POTENTIAL SERVICE AREAS

7.1 Buildout Analysis Summary

7.1.1 Residential Users

The following table is a summary of the ultimate number of residential users in each potential service area predicted by the buildout analysis and the associated water demand. The ultimate number of residential users is defined as the existing homes within each service area plus the additional dwelling units predicted by the buildout analysis.

The NYSDEC Design Standards for Wastewater Treatment Works estimate the design flow from a 3-bedroom single family home to be 400-gpd. The typical usage for single family homes in the Town of Stillwater is approximately 200-gpd.

Table 10
Estimated Residential Water Demand – Potential Service Areas

Potential Service Area	Water Source	Dwelling Units (1)	Estimated Flow (GPD)	
			At 400-gpd Design Flow	At 200-gpd Typical Flow
Route 4 Service Area	Village of Stillwater	78	31,200	15,600
Viall Avenue Service Area	City of Mechanicville	332	132,800	66,400
Route 67 Service Area	City of Mechanicville	98	39,200	19,600
TOTAL		**508**	**204,100**	**101,600**

(1) Existing dwelling units plus additional dwelling units projected by the ultimate buildout analysis

7.1.2 Non-Residential Users

The following table is a summary of the ultimate number of non-residential building square footage in each potential service area predicted by the buildout analysis and the associated water demand. The ultimate number of non-residential users is defined as the existing non-residential building square footage within each service area plus the additional non-residential building square footage predicted by the buildout analysis.

The NYSDEC Design Standards for Wastewater Treatment Works suggest a design average daily flow from office buildings 0.1-gpd per square foot. Please note that the water usage may vary based upon the property use and occupant.

Table 11
Estimated Non-Residential Water Demand – Potential Service Areas

Existing Water District	Water Source	Non-Residential Building Square Footage (1)	Estimated Flow (GPD)
Route 4 Service Area	Village of Stillwater	202,049	20,205
Viall Avenue Service Area	City of Mechanicville	11,755	1,176
Route 67 Service Area	City of Mechanicville	303,492	30,349
TOTAL		**517,296**	**51,730**

(1) Existing dwelling units plus additional dwelling units projected by the ultimate buildout analysis

7.2 Water Supply Capacity Evaluation by Water Source

7.2.1 Village of Stillwater Water Supply

The Village of Stillwater would supply water to the Route 4 Service Area. The water capacity required would be based upon the existing homes and non-residential development plus the additional number of homes and non-residential development projected by the buildout analysis for the Route 4 Service Area.

The total number of homes in the Route 4 Service Area is 78 and the total square footage of non-residential development is 202,049-square feet. The total estimated water demand from the Route 4 Service Area is between 35,805-gpd and 51,405-gpd.

The Village of Stillwater does not have the capacity to supply the amount of water required to service the Route 4 Service Area. The Town of Stillwater must investigate alternate sources of water supply or the Village must undertake a capital improvement project to augment their production.

7.2.2 City of Mechanicville Water Supply

The City of Mechanicville would supply water to the Viall Avenue and the Route 67 Service Areas. The water capacity required would be based upon the existing homes and non-residential development plus the additional number of homes and non-

residential development projected by the buildout analysis for the Viall Avenue and the Route 67 Service Areas.

The total number of homes in the Viall Avenue and the Route 67 Service Areas is 430 and the total square footage of non-residential development is 315,247-square feet. The total estimated water demand from the Viall Avenue and the Route 67 Service Areas is between 117,525-gpd and 203,525-gpd.

The City of Mechanicville has minimal reserve capacity to supply addition users in the Town of Stillwater beyond that required by the existing Water Districts. The Town of Stillwater must investigate alternate sources of water supply or the City must undertake a capital improvement project to augment their production.

8.0 COMARISON OF WATER SOURCE CAPACITY TO POTENTAL REQUIRED CAPACITY

The following tables show the current available capacity from the Village of Stillwater and City of Mechanicville water supplies and the potential water demands from the water supplies based upon projected users.

Table 12
Available Village of Stillwater Water Capacity and Projected Demands

	GPD
Village of Stillwater 2007 Available Water Capacity	0
Water District No. 1 and No. 5 Reserve	49,589 - 66,389
Route 4 Service Area	35,805 - 51,405
Hillside Colony Mobile Home Park Expansion	40,050
Total Potential Deficit	**125,444 - 157,844**

Table 13
Available City of Mechanicville Water Capacity and Projected Demands

	GPD
City of Mechanicville 2007 Available Water Capacity	150,00
Water District No. 3 and No. 4 Reserve	120,737 - 147,537
Viall Avenue Service Area	67,676 - 133,976
Route 67 Service Area	49,949 - 69,549
Total Potential Deficit	**88,362 - 201,062**

9.0 CONSTRUCTION BUDGETS

The following opinions of probable cost have been developed for the construction of water distribution infrastructure to service each of the potential service areas. The opinions of probable cost do not consider the capital cost for water supply improvements which may be required to service the potential service, assume utilizing the competitive bidding process and prevailing wages and have been developed using 2007 construction budgeting. Since the future construction and markets conditions are unpredictable, the opinions of probable cost are for planning purposes only and will require detailed analysis if and when the projects are started.

9.1 Route 4 Service Area

The opinion of probable cost for the Route 4 Service Area improvements is $2,078,000 in 2007 dollars including construction budget, contingency and legal, technical and administrative allowances. A detailed opinion of probable cost is attached in Appendix C.

9.2 Viall Avenue Service Area

The opinion of probable cost for the Viall Avenue Service Area improvements is $4,277,000 in 2007 including construction budget, contingency and legal, technical and administrative allowances. A detailed opinion of probable cost is attached in Appendix D.

9.3 Route 67 Service Area

The opinion of probable cost for the Route 67 Service Area improvements is $1,041,100 in 2007 including construction budget, contingency and legal, technical and administrative allowances. A detailed opinion of probable cost is attached in Appendix E.

10.0 POTENTIAL FINANCING SCENARIOS

The following potential financing scenarios have been developed to finance the construction costs for each of the potential service areas. The water demand of the non-residential units is converted to "Equivalent Dwelling Units" (EDU's) for the purposes of presenting financing scenarios. An EDU analysis is an accepted method to equate the water consumption of non-residential buildings to single family homes for the purposes of project financing and user cost calculations.

The debt retirement calculations assume a 30-year bond period at 5% interest. The availability of grant and/or low interest loan monies will have a significant impact on the annual user costs presented and should be evaluated at the project inception.

The NYS Office of the State Comptroller has an established threshold for annual user costs for a typical single family home above which approval of the State Comptroller is necessary for district establishment. The 2008 threshold for Town Districts is $613. Many of the annual user cost scenarios presented below are above the State Comptroller threshold. Correspondence from the NYS Office of the State Comptroller dated December 2007 outlining the established thresholds is attached in Appendix F.

Two user cost scenarios are presented for each potential service area based upon assigning a per EDU design demand of 400-gpd (Scenario #1) or 200-gpd (Scenario #2) for non-residential users. The non-residential EDU's are calculated by dividing the non-residential estimated design demand from the potential service area by the design flow of 400-gpd (Scenario #1) or 200-gpd (Scenario #2).

10.1 Route 4 Service Area

The total non-residential demand is 20,205-gpd. Based upon the design demand of 400-gpd (Scenario #1), the non-residential users are equivalent to 51 EDU's and based upon 200-gpd (Scenario #2), the non-residential users are equivalent to 101 EDU's. The total number of residential units is 78.

The water rate from the Village is Stillwater is assumed to be $6.20 per thousand gallons.

Table 14
Potential Annual User Cost Scenarios – Route 4 Service Area

	Scenario #1	**Scenario #2**
Opinion of Probable Cost	$2,078,000	$2,078,000
Annual Debt Service (30 years at 5%)	$135,278	$135,278
Number of Equivalent Dwelling Units	129	179
Annual Capital Cost per EDU	$1,049	$756
Annual Cost of Water (O&M and usage)(1)	$905	$453
Estimated Annual Cost per EDU	**$1,954**	**$1,209**

(1) O&M and usage are based on the Village water rate times the annual water consumption of 146,000-gallons (Scenario #1) or 73,000-gallons (Scenario #2).

10.2 Viall Avenue Service Area

The total non-residential demand is 1,176-gpd. Based upon the design demand of 400-gpd (Scenario #1), the non-residential users are equivalent to 3 EDU's and based upon 200-gpd (Scenario #2), the non-residential users are equivalent to 6 EDU's. The total number of residential units is 332.

The water rate from the City of Mechanicville is assumed to be $6.60 per thousand gallons.

Table 15
Potential Annual User Cost Scenarios – Viall Avenue Service Area

	Scenario #1	**Scenario #2**
Opinion of Probable Cost	$4,277,000	$4,277,000
Annual Debt Service (30 years at 5%)	$278,433	$278,433
Number of Equivalent Dwelling Units	335	338
Annual Capital Cost per EDU	$831	$824
Annual Cost of Water (O&M and usage) (1)	$964	$483
Estimated Annual Cost per EDU	**$1,795**	**$1,307**

(1) O&M and usage are based on the City water rate times the annual water consumption of 146,000-gallons (Scenario #1) or 73,000-gallons (Scenario #2).

10.3 Route 67 Service Area

The total non-residential demand is 30,349-gpd. Based upon the design demand of 400-gpd (Scenario #1), the non-residential users are equivalent to 76 EDU's and based upon 200-gpd (Scenario #2), the non-residential users are equivalent to 152 EDU's. The total number of residential units is 98.

The water rate from the City of Mechanicville is assumed to be $6.60 per thousand gallons.

Table 16
Potential Annual User Cost Scenarios – Route 67 Service Area

	Scenario #1	Scenario #2
Opinion of Probable Cost	$1,041,100	$1,041,100
Annual Debt Service (30 years at 5%)	$67,776	$67,776
Number of Equivalent Dwelling Units	174	250
Annual Capital Cost per EDU	$390	$271
Annual Cost of Water (O&M and usage) (1)	$964	$483
Estimated Annual Cost per EDU	**$1,354**	**$754**

(1) O&M and usage are based on the City water rate times the annual water consumption of 146,000-gallons (Scenario #1) or 73,000-gallons (Scenario #2).

11.0 CONCLUSIONS

The Town of Stillwater has requested that The Chazen Companies prepare a GEIS to evaluate the effects of growth on the Town of Stillwater over the next ten (10) years. The effort is prompted by the development of the Luther Forest Technology Campus and the resulting growth potential. The focus of the study is the Town of Stillwater water system as it relates to supplying the future needs of the Town.

Based on the information presented and the analysis completed, the Town of Stillwater water system is projected to be expanded for service in three key areas described within the report text as the Route 4 Service Area, the Viall Avenue Service Area and the Route 67 Service Area. The water supply sources of the Village of Stillwater and City of Mechanicville will require increased production to fully supply these expanded service areas or the Town of Stillwater will need to develop their own water supply.

The opinion of probable cost for the Route 4 Service Area is $2,078,000 which is projected to serve 78 residential units and 202,049-square feet of non-residential building area. The average cost per EDU is estimated between $1,209 and $1,954 including debt retirement and cost of water.

The opinion of probable cost for the Viall Avenue Service Area is $4,277,000 which is projected to serve 332 residential units and 11,755-square feet of non-residential building area. The average cost per EDU is estimated between $1,307 and $1,795 including debt retirement and cost of water.

The opinion of probable cost for the Route 67 Service area is $1,041,100 which is projected to serve 98 residential units and 303,492-square feet of non-residential building area. The average cost per EDU is estimated between $754 and $1,354 including debt retirement and cost of water.

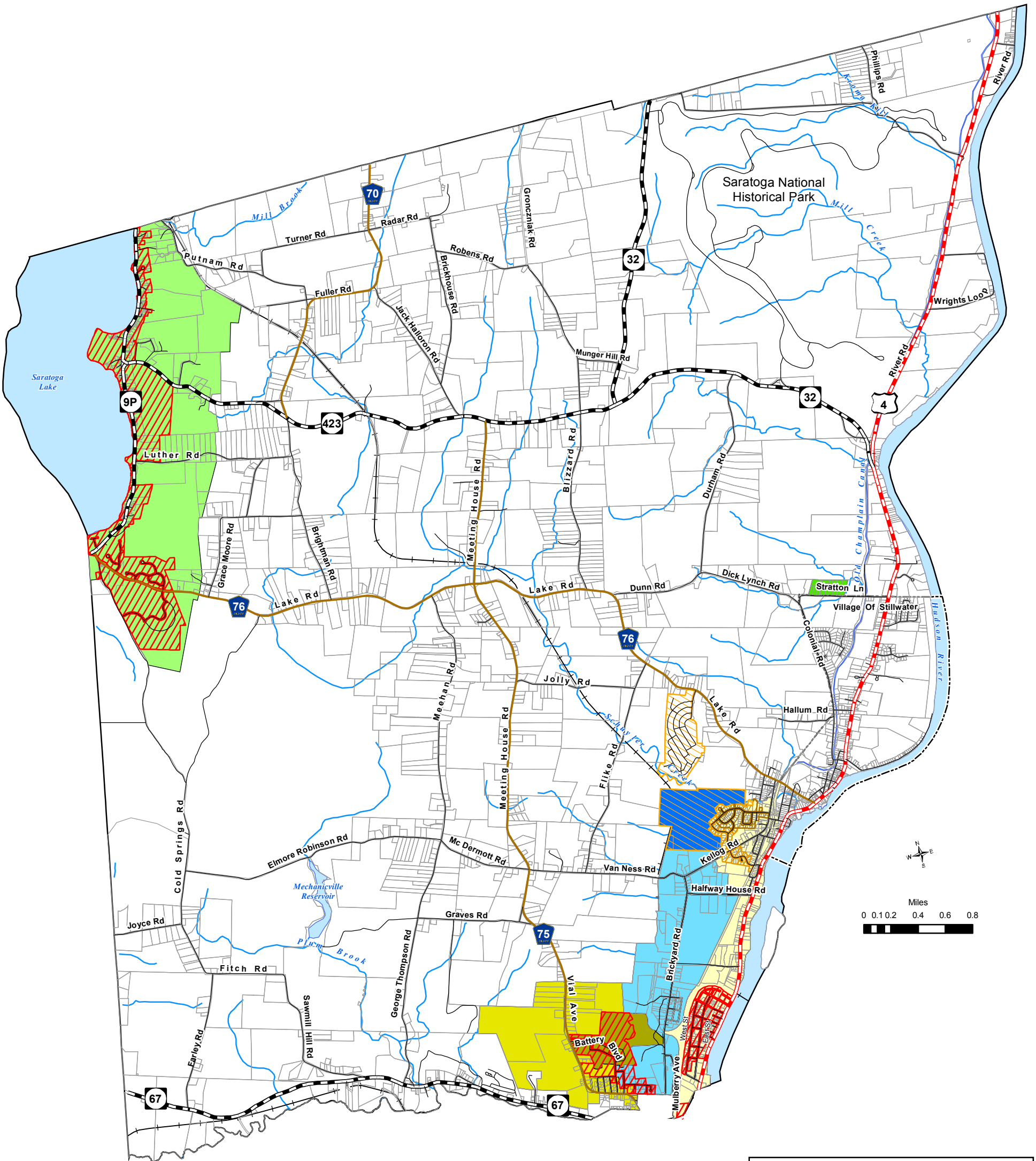
Respectfully submitted:

Eric P. Johnson, PE
Senior Engineer

Reviewed and Approved by:

Joseph M. Lanaro, PE
Vice President
Engineering Services

APPENDIX A
Town Water District Map



THE Chazen COMPANIES
Engineers/Surveyors
Planners
Environmental Scientists
GIS Consultants

CHAZEN ENGINEERING & LAND SURVEYING CO., P.C.

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Orange County Office:
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Phone: (845) 567-1133

Capital District Office:
547 River Street
Troy, New York 12180
Phone: (518) 273-0055

North Country Office:
100 Glen Street
Glens Falls, New York 12801
Phone: (518) 812-0513

Town Of Stillwater Draft GEIS

Water and Sewer Districts

Town Of Stillwater
Saratoga County, New York

Drawn:	CLC
Date:	05/08/2007
Scale:	1:48,000
Project:	30601.17
Figure:	

Map Document: (R:\3\30600-30699\30601.17_Stillwater_GEIS\GIS\maps\30601_17_Water&SewerDistrictsWithoutWaterUsersFromMechanicville_11x17.mxd)
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APPENDIX B
Potential Water Service Area Map

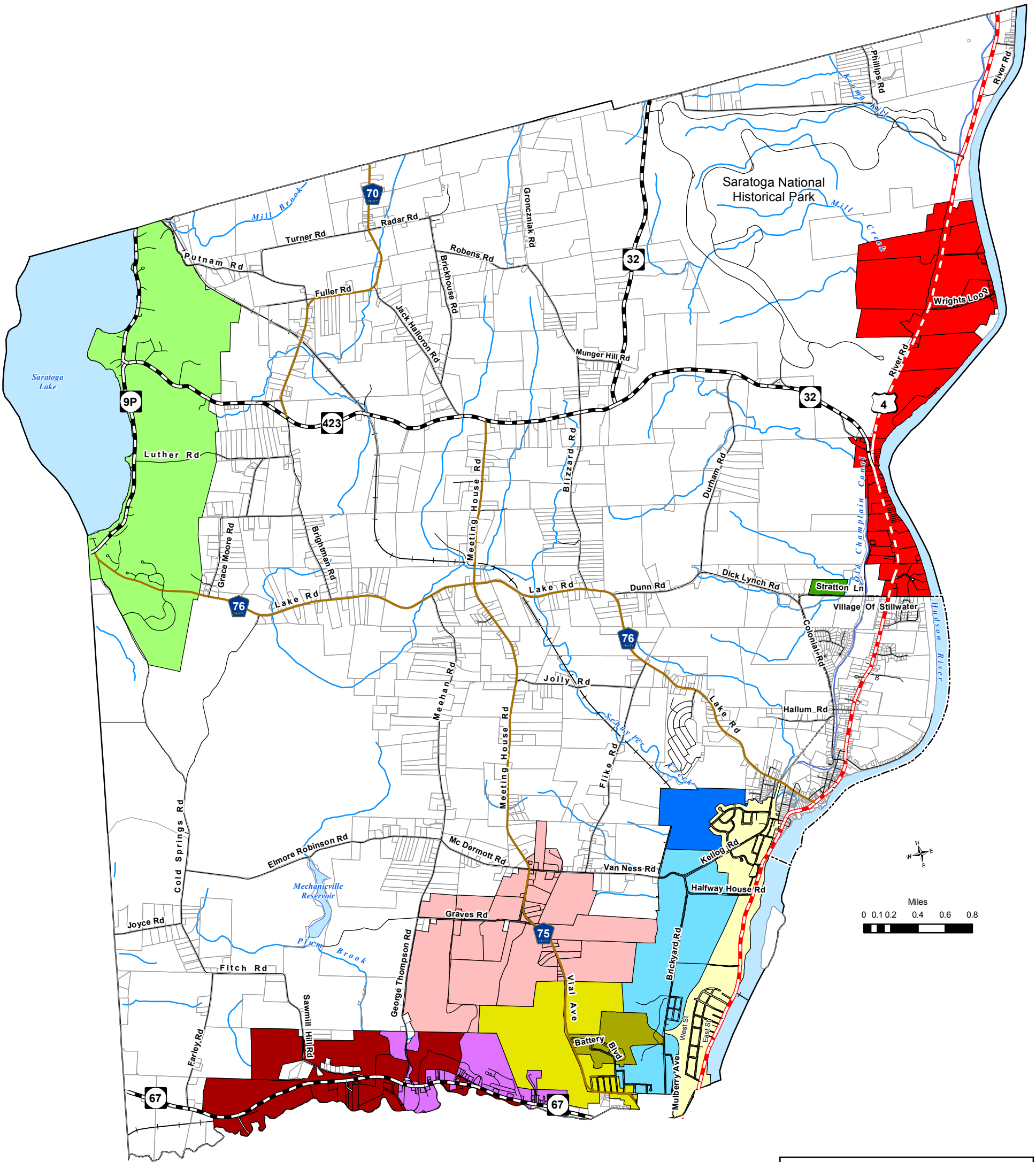

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Figure:	

Map Document: (R:\3\30600-30699\30601.17_Stillwater_GEIS\GIS\maps\30601_17_ProposedWaterExtensions_24x36.mxd)
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APPENDIX C
Opinion of Probable Cost – Route 4 Service Area

Opinion of Probable Cost – Route 4 Service Area

Description	Quantity	Unit	Unit Price	Extended Total
Mobilization	1	LS	$50,000.00	$50,000
Exploratory Excavation	100	CY	$40.00	$4,000
Record Drawings	1	LS	$2,500.00	$2,500
Maintenance and Protection of Traffic	1	LS	$5,000.00	$5,000
Erosion and Sediment Control	1	LS	$15,000.00	$15,000
Rock Excavation	200	CY	$125.00	$25,000
Select Backfill	500	CY	$20.00	$10,000
Asphalt Replacement (top)	500	SF	$3.50	$1,750
Asphalt Replacement (binder)	500	SF	$3.50	$1,750
Gravel Driveway Restoration	450	LF	$18.00	$8,100
Paved Driveway Restoration	300	LF	$45.00	$13,500
Connection to Existing Water Main	1	LS	$1,000.00	$1,000
8" PVC C-900	20,100	LF	$35.00	$703,500
Water Service (tap, corp stop, copper pipe)	90	EA	$1,500.00	$135,000
Directional Drilling (60 ft lengths)	30	EA	$6,000.00	$180,000
Meter Pit	1	EA	$7,500.00	$7,500
8" Gate Valve	30	EA	$750.00	$22,500
Fire Hydrant Assembly	25	EA	$3,150.00	$78,750
Flushing, Pressure Testing, Bact. Testing	20,100	LF	$1.00	$20,100
Site Restoration	20,100	LF	$5.00	$100,500
Subtotal				$1,385,450
Construction Contingency (20%)				$277,050
Construction Subtotal				**$1,662,500**
Legal, Technical and Administrative Allowance (25%)				$415,500
Total Project Budget				**$2,078,000**

APPENDIX D

Opinion of Probable Cost – Viall Avenue Service Area

Opinion of Probable Cost – Viall Service Area

Description	Quantity	Unit	Unit Price	Extended Total
Mobilization	1	LS	$25,000.00	$25,000
Exploratory Excavation	100	CY	$40.00	$4,000
Record Drawings	1	LS	$2,000.00	$2,000
Maintenance and Protection of Traffic	1	LS	$3,000.00	$3,000
Erosion and Sediment Control	1	LS	$15,000.00	$15,000
Rock Excavation	50	CY	$125.00	$6,250
Select Backfill	75	CY	$20.00	$1,500
Asphalt Replacement (top)	250	SF	$3.50	$875
Asphalt Replacement (binder)	250	SF	$3.50	$875
Gravel Driveway Restoration	200	LF	$18.00	$3,600
Paved Driveway Restoration	100	LF	$45.00	$4,500
Connection to Existing Water Main	1	LS	$1,000.00	$1,000
8" PVC C-900	8,050	LF	$35.00	$281,750
Water Service (tap, corp stop, copper pipe)	40	EA	$1,500.00	$60,000
Directional Drilling (60 ft lengths)	16	EA	$6,000.00	$96,000
Meter Pit	1	EA	$7,500.00	$7,500
8" Gate Valve	12	EA	$750.00	$9,000
Fire Hydrant Assembly	10	EA	$3,150.00	$31,500
Flushing, Pressure Testing, Bact. Testing	8,050	LF	$1.00	$8,050
Site Restoration	8,050	LF	$5.00	$40,250
Elevated Water Storage Tank (1-milion gallons)	1	LS	$2,000,000.00	$2,000,000.00
Tank controls, electrical and site work	1	LS	$250,000.00	$250,000.00
Subtotal				$2,851,650
Construction Contingency (20%)				$570,330
Construction Subtotal				$3,422,000
Legal, Technical and Administrative Allowance (25%)				$855,000
Total Project Budget				$4,277,000

APPENDIX E

Opinion of Probable Cost – Route 67 Service Area

Opinion of Probable Cost – Route 67 Service Area

Description	Quantity	Unit	Unit Price	Extended Total
Mobilization	1	LS	$30,000.00	$30,000
Exploratory Excavation	100	CY	$40.00	$4,000
Record Drawings	1	LS	$2,000.00	$2,000
Maintenance and Protection of Traffic	1	LS	$3,000.00	$3,000
Erosion and Sediment Control	1	LS	$15,000.00	$15,000
Rock Excavation	100	CY	$125.00	$12,500
Select Backfill	250	CY	$20.00	$5,000
Asphalt Replacement (top)	500	SF	$3.50	$1,750
Asphalt Replacement (binder)	500	SF	$3.50	$1,750
Gravel Driveway Restoration	150	LF	$18.00	$2,700
Paved Driveway Restoration	100	LF	$45.00	$4,500
Connection to Existing Water Main	1	LS	$1,000.00	$1,000
8" PVC C-900	11,175	LF	$35.00	$391,125
Water Service (tap, corp stop, copper pipe)	30	EA	$1,500.00	$45,000
Directional Drilling (60 ft lengths)	8	EA	$6,000.00	$48,000
Meter Pit	1	EA	$7,500.00	$7,500
8" Gate Valve	15	EA	$750.00	$11,250
Fire Hydrant Assembly	13	EA	$3,150.00	$40,950
Flushing, Pressure Testing, Bact. Testing	11,175	LF	$1.00	$11,175
Site Restoration	11,175	LF	$5.00	$55,875
Subtotal				$694,075
Construction Contingency (20%)				$138,825
Construction Subtotal				**$832,900**
Legal, Technical and Administrative Allowance (25%)				$208,200
Total Project Budget				**$1,041,100**

APPENDIX F

Correspondence from the NYS Office of the State Comptroller

THOMAS P. DiNAPOLI
COMPTROLLER

STATE OF NEW YORK
OFFICE OF THE STATE COMPTROLLER
110 STATE STREET
ALBANY, NEW YORK 12236

STEVEN J. HANCOX
DEPUTY COMPTROLLER
DIVISION OF LOCAL GOVERNMENT
AND SCHOOL ACCOUNTABILITY
Tel: (518) 474-4037 Fax: (518) 486-6479

December 2007

Dear Local Government Official:

Please find attached a listing of the average estimated cost thresholds for your use in determining whether approval of the State Comptroller is necessary for certain special district actions in the year 2008.

Certain "low cost" special districts, i.e., those which are at or below average estimated cost thresholds contained in the enclosure, do NOT require approval of the State Comptroller. However, unless no debt is being issued, a certified copy of the notice of hearing for the "low cost" district must be sent to our office. This copy must be sent, on or about the date of publication, to the NYS Office of the State Comptroller, Division of Legal Services, 110 State Street, 14th Floor, Albany, NY 12236. It should be sent no later than 14 calendar days after publication. This notice enables us to accurately calculate future average estimated cost thresholds.

In addition, certified copies of resolutions or orders which, among other things, finally establish or extend a district, and in the case of counties authorize an increase and improvement of facilities, are required to be filed with this Office regardless of whether the Comptroller's approval is required. Resolutions or orders that are subject to permissive referendum should not be filed until the period for filing a petition has passed, or if a petition is filed, a referendum has been held.

We would be happy to provide advisory services and assist you in identifying and resolving issues in connection with special district actions, even if the proceedings are not subject to our approval. You can obtain additional information and guidelines on submitting applications by contacting our office. The information in this letter can also be found on our website:

http://www.osc.state.ny.us/localgov

If you have questions or need more information, please contact Ellen McDonald of our Division of Legal Services at (518) 474-3517 or Scott Waldorf of our Division of Local Government and School Accountability at (518) 473-1198.

Sincerely,

Steven J. Hancox
Deputy Comptroller
Division of Local Government
and School Accountability

Enc.

AVERAGE ESTIMATED COSTS FOR COUNTY AND TOWN SPECIAL IMPROVEMENT DISTRICTS

(EFFECTIVE FOR PROCEEDINGS FOR WHICH A NOTICE OF HEARING IS PUBLISHED FROM JANUARY 1, 2008 THROUGH DECEMBER 31, 2008)

The Comptroller's approval is required if debt is proposed to be issued by a town or county, and the "cost of the district or extension" to the "typical property" or, if different, the "typical one or two family home" as stated in the notice of hearing, is above the average estimated cost thresholds listed below.[1]

Costs include debt service, operation and maintenance and other charges related to the improvement in the first year following formation of the district or extension, or the increase and improvement of facilities (or, if greater, the first year in which both principal and interest and operation and maintenance will be paid). To ensure accurate calculations of estimated costs, towns and counties should not assume the receipt of federal or state aid in the absence of firm commitments from the appropriate agency. In addition, estimated borrowing costs should be based on the proposed maturity of the obligations and interest rate assumptions derived from market surveys or a letter of commitment. Charges imposed by other governmental entities, such as public authorities or other municipalities, should also be included in the computation. Costs are exclusive of hook-up fees.

TOWN DISTRICTS

The following average estimated costs apply to town special district establishments, extensions, or increases in the maximum amount to be expended.[2]

Sewer	$ 667
Water	$ 613

COUNTY DISTRICTS

The following average estimated cost applies to county special district establishments, extensions or increases in the maximum amount to be expended.

Sewer	$ 384

The following average estimated cost applies to county special district increases and improvements of facilities. Please note that this figure represents only the increased cost to the typical property as a result of the increase and improvement.

Sewer	$ 11
Water	$ 3

OTHER DISTRICTS

For all other types of district proceedings, there was insufficient data to calculate meaningful average estimated costs. Therefore, any proceedings not listed above will be subject to applicable requirements for obtaining the Comptroller's approval, irrespective of the cost to the typical property or home.

[1] For those proceedings that are subject to a permissive referendum requirement, the Comptroller's Office will accept the filing of an application prior to the expiration of the time for filing a petition requesting a referendum, or if a petition is filed, the vote on the proposition. However, no approval order will be granted until after the completion of all such requirements.

[2] Chapter 456 of the Laws of 2004 amended Town Law §§202-d and 209-h, with respect to proceedings pursuant to articles 12 and 12-A of the Town Law that authorizes an increase in the maximum amount to be expended for the improvement in a district. Under the amendment, the Comptroller's approval, if required, may be given only after a public hearing and, in the case of article 12-A districts, permissive referendum requirements are met. Prior to the amendment, the public hearing and permissive referendum procedures were undertaken after the Comptroller's approval.